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LIST OF ABBREVIATIONS

AIIM:	Association for Information and Image Management
AMR:	Automated Medical Records
AMR:	Automated Medical Records
BCS:	Business Classification Scheme
CO_2:	Carbon Dioxide
CEO:	Chief Executive Officer
CMR:	Computerised Medical Records
CoSA:	Council of State Archivists
CDs :	Compact Discs
CATI:	Computer Assisted Telephone Interviewing
CASI:	Computer Assisted Self-Administered Interview
CAPI:	Computer Assisted Personal Interviewing
CMMI:	Capability Maturity Model Integration
DVDs:	Digital Video Discs
DIM:	Document Imaging Management
DPCMM:	Digital Preservation Capability Maturity Model
DRs:	Digital Repositories
DPCMM:	Digital Preservation Capability Maturity Model
eHIS:	Electronic Health Information System
ERDMS:	Electronic Records and Document Management System
ECM:	Enterprise Content Management
EHR:	Electronic Health Records
EMR:	Electronic Medical Records
EHCRs:	Electronic Health Care Records
ERMS:	Electronic Records Management System
EDMS:	Electronic Document Management System
EMS:	Emergency Medical Services
ECTA:	Electronic Communication and Transaction Act
HTML:	Hyper Text Markup Language
HR:	Human Resource
IDMS:	Integrated Document Management Software or Systems

IT:	Information Technology
ICT:	Information Communication Technology
ISO:	International Standards Organisation
IMLS:	Institute of Museums and Library Services
IRMT:	International Records Management Trust
LAN:	Local Area Networks or Large Area Network
LPA	Limpopo Provincial Archives
MS Office:	Microsoft Office
MEC:	Member of the Executive Council
M-CAPI:	Mobile Computer Assisted Personal Interviewing
MoReq:	Model requirements for the management of electronic records
NARSSA:	National Archives and Records Service of South Africa
OAIS:	Open Archival Information System
ODF:	Open Document Format
Phis:	Provincial Health Information System
PDF & PDF/A:	Adobe's Portable Document Format
PAIA:	Promotion of Access to Information Act
SPSS:	Statistical Package for the Social Science
SANS:	South African National Standards
SOAP:	Simple Object Access Protocol
RM:	Records Management
TIFF:	Tagged Image File Format
TDRMM:	Trusted Digital Repository Maturity Model
TDR:	Trusted Digital Repository
UNISA:	University of South Africa
UK:	United Kingdom
US:	United States
XML:	Extensible Markup Language

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Proper records management is a critical key factor to the successful achievement of many organisational functions such as healthcare, business continuity, service improvement decisions and the planning process (Makhura 2005:19; Yusuf and Chell 2005:16). For records management to be implemented properly and support organisational functions, it is highly dependent on the model used to manage the records. In most instances, ineffective records management models have many negative impacts on the records (Marutha 2011:166,171; Yusuf and Chell 2005:129-130). The negative impact includes, but is not limited to, poor and untimely recording of data, misfiling, missing files, damaged and unauthorised destruction of records, records theft and other related perils (Makhura 2005:19; Marutha 2011:212). As a result, this can compromise the quality of records and affect the support role of records to organisations. For instance, in the context of medical records, if the records' quality is poor due to incomplete and duplicated data recordings, the information collected will not reflect the true picture of the healthcare service rendered or conducted (Kristianson, Ljunggren and Gustafsson 2009:316-318). This can have serious consequences for the lives of citizens as in the case reported in newspapers about the Polokwane Hospital not being able to provide medical records for one of its chronic patients suffering from cervical cancer (Maponya 2013:6). The file was to be used for further treatment by the private doctor to perform radiotherapy on the patient, but, before that, he needed the medical records to obtain information about the patient's medical history. Unfortunately, the medical records, including X-ray films, could not be found and hospital officials' response was that they were either missing or misfiled. That placed the doctor and the patient under severe pressure and risk since there may be no treatment or proper actions without the medical history of the patient.

As Ngoepe (2013) would attest, in the situation where proper records management models are in place, records can assist organisations with the provision of reliable information. Many organisations, including healthcare-based organisations, have developed records management models nationally and internationally. For example, the United Kingdom (UK) Department of Education developed a records management model for education services, called the Information Workplace Platform (IWP), and launched it in April 2008, to provide secured collaborative services

using SharePoint 2007. This also reduced the costs and information technology (IT) complexity (Castillo-Soto and Baker 2011:205). IWP enables access to the right information at the right time for decision-making and access to citizens (Castillo-Soto and Baker 2011:205). In developing or improving a records management programme and/or model, Ismail and Jamaludin (2009:136) recommended that the five elements of trusted records management be considered. Even though Ismail and Jamaludin focused their study on electronic records these elements may be applicable to all categories of records in different formats and medium. The five elements are:

- Records management governance practice, which is about records management legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities,
- The recordkeeping system, which is about the records management operations, recordkeeping functional requirements and metadata requirements,
- Records archival processes, which is about records appraisal, retention, preservation strategies and storage management,
- Recordkeeping technology, which is about management of electronic records systems and electronic system security, and
- Records management staff capacity and competencies, which are about records management and archives management and related skills and competencies such as electronic system development, information system analysis and design, business and management.

Furthermore, the quality, timely, trustworthy and reliable knowledge or information may be produced through the use of proper records management models, coupled with an effective electronic records management system such as the Enterprise Content Management (ECM) system or the Electronic Health Records (EHR) system (Harries 2008:22; Kumar 2011:2; Weeks 2013:144-150). Alalwan and Weistroffer (2012:441) attest that ECM is the best tool to manage a large overload of unstructured and structured information properly for many organisations. It is an ideal solution for an organisation that creates a large volume of records in a short period of time. For instance, the ECM system was implemented by the Western Cape Department of Health when they improved their Forensic Pathology Services and Oncology Unit at the Tygerberg Hospital and the Khayelitsha Hospital. After successful testing of the system in these hospitals, the system was implemented in the entire Tygerberg Hospital in Bellville, Cape Town (Weeks 2013:143). This study sought to investigate the development of a medical records management framework that can assist in managing patients' medical records effectively for the provision of quality information access and safety of records in the public health sector of Limpopo.

However, looking at the background of the Limpopo Department of Health, a large number of medical records are created every day when patients consult doctors at different hospitals, but they do not have a collaborative system such as the ECM to integrate the records management responsibility. This is because the electronic system used for patients' administration is not capable of tracking paper-based records' movement or creation. It is also incapable of capturing the medical history of the patients, but captures only personal details and billing data (Marutha 2011:172-173; Marutha and Ngulube 2012:47). The system was also not capable of integrating records and information between different healthcare institutions to ensure easy sharing of medical records and information among different hospitals located in different geographical areas. This is critical because information in medical records is used for many reasons in different healthcare institutions, forums and functions since patients may use different healthcare institutions for similar or related illnesses or medical problems. Among other forums, functions and usage are the clinical audit (doctors peer reviews), nursing audit (nurses peer reviews), further patient treatment, statistical purposes, compilation of performance indicators, response to litigations, public access to information, investigations and support to police/court cases (e.g. rape cases and common assaults) (Marutha 2011:173). This implies that the organisation did not have the understanding that healthcare service delivery practice and medical records management always impact on each other, whether negatively or positively, depending on whether the practice is proper or improper. Without authentic records, healthcare clients are always likely to suffer.

1.2 RESEARCH PROBLEM

The problem statement aims to tell the reader what exactly the problem is and how it happened or is happening. It should be specific and straight to the point (Hernon and Metoyer-Duran 1993:82-83) and should state exactly the reason for conducting the study (Hernon and Schwartz 2007: 308). The main problem that led to this study is that, due to an ineffective records management framework (Erasmus 2013:2; Marutha 2011:189-204; Marutha and Ngulube 2012:39), the healthcare institutions experience difficulties to:

- Provide quality data for creating knowledge to support organisational decision-making and problem-solving (Anova health institute 2012). A failure to create adequate records or to maintain them may have serious consequences (Shepherd 2006:7). For instance, an audit by the Anova Health Institute team on data quality in some of the health facilities sampled under

the Letaba sub-district of the Limpopo province revealed that there were no consistency and correlation of data from District Heath Information System (DHIS), the actual report submitted by the facility and the primary source data in the registers (Anova health institute 2012).

- Timeously retrieve and provide records for patients' healthcare services and citizen information requests (Maponya 2013:6; Marutha and Ngulube 2012:39 and Monama 2013:5). Thus, because records usually get lost, or are destroyed or retained unnecessarily if they are not properly managed. This eventually results in government failure to produce evidence about what they were doing and to support business continuity (Shepherd 2006:7). For instance, when the Public Protector of South Africa visited Mankweng Hospital, she received complaints from outpatients that records management officials took a long time to retrieve their files and that some files are completely missing, which required them to wait for a long time before receiving healthcare service. The public protector stated that this situation is not acceptable (Monama 2013:5). On the other hand, the doctor, an oncologist at Polokwane Hospital could not perform radiotherapy on a chronic patient suffering from cervical cancer due to missing or unavailable medical records, to access information about patient medical history (Maponya 2013:6).
- Improve the quality of healthcare service delivery. The process of rendering a healthcare service depends on the knowledge for the timeous improvement of performance or properly rendering of the service (Bordoloi and Islam 2012:110). Information is kept in the record created during the business transaction activities. In case information in the records created is not complete, valid and accurate, it may produce misleading knowledge since some information will just be estimations due to a lack of proper recordkeeping framework. This misleading knowledge may be used by the healthcare institutions during decision-making, problem-solving and reporting to different levels of healthcare services (Wright and Odama 2012:147-149).

1.3 PURPOSE OF THE STUDY

This is the item of the study that offers the researcher an opportunity to inform the reader about what the study is aiming to achieve, which is also known as the purpose of the study (Marshal and Rossman 2006:3). The purpose of this study was to investigate the management of medical records in the Limpopo Province in order to develop a collaborative medical records management system framework or model for proper patients records management practice.

1.4 RESEARCH OBJECTIVES

The researcher formulated the following objectives with the purpose to accomplish the above rationale of the study:

(1) To assess medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities in the Limpopo public hospitals,
(2) To examine records management operations, recordkeeping functional requirements and metadata requirements in relation to the recordkeeping system in the Limpopo public hospitals,
(3) To establish medical records archival processes in terms of appraisal, retention, preservation strategies and storage management in the Limpopo public hospitals,
(4) To investigate existing recordkeeping technology used to manage and protect electronic medical records in the Limpopo public hospitals,
(5) To establish staff capacity and competencies for management of medical records in the Limpopo public hospitals
(6) To assess the readiness for implementation of ECM in the Limpopo public hospitals as a modern electronic records management system,
(7) To assess understanding of the relationship between medical records management and provision of healthcare service in the Limpopo public hospitals, and
(8) To propose a framework that can embed medical records management into the healthcare service delivery for facilitating medical records management practice in the Limpopo public hospitals.

1.5 RESEARCH QUESTIONS

In order to achieve the above objectives, and to explore the causes and possible solutions to the problem, this study attempts to answer the following questions:

(1) What is the medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities in the Limpopo public hospitals?
(2) What are the records management operations, recordkeeping functional requirements and metadata requirements in relation to the recordkeeping system in the Limpopo public hospitals?

(3) What are the medical records archival processes in terms of appraisal, retention, preservation strategies and storage management in the Limpopo public hospitals?

(4) How is the recordkeeping technology used to manage and protect electronic medical records in the Limpopo public hospitals?

(5) How adequate is the staff capacity and competencies for the management of medical records in the Limpopo public hospitals?

(6) How ready are the hospitals for the implementation of ECM in the Limpopo public hospitals as a modern electronic records management system?

(7) What framework can be proposed to embed medical records management into the healthcare service delivery for facilitating medical records management practice in the Limpopo public hospitals?

(8) Do the healthcare institutions in Limpopo understand the relationship between medical records management and healthcare service delivery?

1.6 JUSTIFICATION FOR THE STUDY

In the justification of the study the researcher has to justify the anticipated contribution of the study in the improvement of academic research and literature in the field of study, business or operational practice and policies (Creswell 1994:111). This study aimed to investigate, develop and recommend an effective medical records management system framework or model that can help to ensure a sound patient records management practice in the public health sector of South Africa, particularly Limpopo province hospital. Generally, the department and its institutions may benefit much from the findings and recommendation of this study if adopted and properly implemented. If properly implemented, the proper records management model could ensure that the organisation could minimise challenges such as missing files, shortage of physical filing space, lengthy turnaround time in retrieving files and lengthy patient waiting time. The study will specifically assist to minimise the management struggle in responding to litigations, requests from the Auditor-General, citizen requests, enquiries and patients' follow-up visits and quality data. This will increase efficiency and effectiveness of business activity and compliance with legislative requirements in the public health sector (Swan, Cunningham and Robertson 2002:79).

1.7 DEFINITION AND DISCUSSION OF THE KEY TERMS

In this section, the researcher defined and explained the meaning of the key concepts used in the study. This gives the reader a better understanding of the information discussed in the content in context.

1.7.1 Record

The concept 'record' is defined in different ways from different perspectives, but it relates to the same meaning as attested by Yusuf and Chell (2005:29-31) and Kemoni (2009:190-191). Yusuf and Chell (2005:29) further elaborates that people from different backgrounds or schools of thought usually tend to confuse the meaning of the concept 'record' with words like 'data', 'information', 'knowledge' and 'document'. For instance, some people define it from its physical form and others define it based on its use for the future. Records are defined by ISO 15489-1 (2001:3) as "information created, received, and maintained as evidence and information by an organisation or person, in pursuance of legal obligations or in the transaction of business". It is defined by Mampe and Kalusopa (2012) as "information documented in any form created, received and maintained by an organization as evidence of its daily transactions". It can also be defined as a transaction preserved to be used as evidence in future due to the nature of the information it contains. According to International Records Management Trust (1999:5), a 'record' is a document that an organisation or individuals create, receive and maintain in different forms and mediums, and eventually use them in discharging their legal mandates and/or pursuing business transactions that provide information as evidence.

1.7.2 Records management

Records management is defined as the process of controlling records or recorded information throughout the life cycle, thus from creation to disposal (Webster, Hare and Julie 1999:285; National Archives and Records Service of South Africa 2007:1). Records management is a process of systematically controlling the records throughout its life span, from creation to its last stage when it is disposed. During its management, a record is controlled when it is created, received, maintained, used and disposed of, with the purpose of keeping evidence and information that concern activities and transaction of the organisational business. Records management also aimed to comply with operational business needs, statutory and fiscal requirements, and clients expectations" (ISO15489-1 2001:3; National Archives of Scotland 2014).

1.7.3 Electronic records

Electronic records are defined by different sources in different ways based on its format, medium, the way it is created, managed and accessed but definitions are normally interrelated, and leading towards similar meaning. 'Electronic records' refers to records that are created, stored, communicated, shared and accessed/retrieved electronically by means of computer hardware and software. Examples of such records are e-mails and other electronic business transactions (National Archives and Records Service of South Africa 2007:iv; McDonald 2006 and Tafor 2003:72). The North Dakota Information Technology Department (2013) defines electronic records as:

> Records that are in machine-readable form. Electronic records may be any combination of text, data, graphics, images, video or audio information that is created, maintained, modified or transmitted in digital form by a computer or related system"... "Electronic records management is the efficient management of records stored on computerized systems. The key to electronic records management is to be able to support such documents through their entire life cycle.

1.7.4 Medical records

'Medical record' is also known as 'patient records' or 'clinical records' (Darr, Harrison, Shakked and Shalom 2009:351-352) or health records (Health Professional Council of South Africa 2008). 'Health records' are defined by the Health Professional Council of South Africa (2008) as "any relevant record made by a health care practitioner at the time of or subsequent to a consultation and / or examination or the application of health management". In other organisations, medical records are computerized or created using computer technology with the purpose of improving healthcare service delivery (Darr et al. 2009:350). If created, stored and shared electronically, medical records are known as Electronic Medical Records (EMRs) (Darr et al. 2009:350) or Electronic Health Records (EHRs) and defined by (Rawabdeh 2007:522) as "a longitudinal collection of electronic health information about individual patient and population". Marutha (2013:2) and Marutha (2011:15) refers to medical records as the records created, stored, managed and shared in the business process of rendering health care or a medical service to the patients. The Health Professional Council of South Africa (2008) listed the following as the key components of health records:

- Hand-written contemporaneous notes taken by the healthcare practitioner,
- Notes taken by previous practitioners, attending healthcare practitioners or other healthcare practitioners, including a typed patient discharge summary or summaries,

- Referral letters to and from other healthcare practitioners,
- Laboratory reports and other laboratory evidence such as histology sections, cytology slides and printouts from automated analysers, X-ray films and reports, ECG races, etc.,
- Audio-visual records such as photographs, videos and tape recordings,
- Clinical research forms and clinical trial data,
- Other forms completed during the health interaction such as insurance forms, disability assessments and documentation of injury on duty, and
- Death certificates and autopsy reports.

1.7.5 Enterprise content management

Association for Information and Image Management (AIIM) (2010); Katuu (2012b:4) and Katuu (2012a:39) define ECM as "the strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to organizational processes". It is a strategy that consists of a set of software products to manage all types of enterprise content throughout its entire life cycle (Bell, Shegda, Gilber and Chin 2010; Katuu 2012a:39). ECM came into existence after frequent interchangeable use of the concepts Electronic Records Management System (ERMS) and Electronic Document Management System (EDMS) (Katuu 2012a:38; Katuu2012b:3-4). EDMS was also known as the Document Imaging Management (DIM) System as it was a system used to reproduce records into electronic format by scanning the hardcopy records for quick retrieval of records (Cvision Technologies 2013 and Katuu 2012a:38). The interchangeable use of the two concepts resulted in their combination to eventually form Electronic Record and Documents Management System (ERDMS) or Integrated Document Management Software or Systems (IDMS) (Katuu 2012a:38-39). The ECM emanated from the migration of ERDMS into the web content and the introduction of improved add-ons such as web content management tools, e-mail integration and workflow/business process management to cover the application and development of EDRMS. It is a collective business processes management approach and is more than just records management and document management, but it covers many other components, including knowledge management (Katuu 2012a:38-40).

1.8 ORIGINALITY OF THE STUDY

According to Jayasundara (2009:24-26) and Walker (1997: 150-152), originality of the study can be ensured by means of developing new methodologies, tools and/or techniques, new area of research, new interpretation and application of existing materials, new applications of the current literature to the "new area or new blend of ideas". The originality of the study should be identified from the

potential addition of scholarly research and new literature in the field of study, improvement of policies and practice in the field of specialty (Creswell 1994:111). Higginson and Corner (1996:114) underscore that a PhD study or thesis must contribute widely to the existing knowledge in the subject field of the study. The study must be proven that it is original by means of "new facts and exercise of independent critical power". The thesis must show that the study was new and how is it going to add value in the subject field. In other words, the study must be unique, conducted by following a unique methodology, techniques and design to the unique population or area in relation to other previous studies. This could result in the production of the required unique results or knowledge in the subject field of the study.

Looking at the current study, over many years, many studies have been conducted in the field of records management and information management nationally and internationally. The researcher's investigations revealed no evidence that the study about *'a framework to embed medical records management into the healthcare service delivery in the Limpopo Province of South Africa'* was conducted and achieved with empirical results. Studies that were discovered to have been already completed appear to be too broad, too specific, cover a smaller population or geographical area, include some topics that are too narrow and used different perspectives. Among other studies, Marutha (2011) completed a study about medical records management support to service delivery. The other study was completed by Chandran (2002) about emergency care in the Free State province as a retrospective study of the patient and disease profile and the quality of patient records. Elkabir (2000) performed a study of electronic medical records' applicability in a South African context. Geoghegan (2000) reviewed whether peri-operative nursing records used in the Western Cape Metropolitan Health Region are in line with international standards. Katuu (2015) critically analysed how records were being managed in the South African public healthcare institutions. The literature from the previous studies enhanced the quality and originality of this study, since this study strove for a high degree of knowledge originality.

However, the researcher was motivated to conduct the study on this topic after realising that there is a gap in information science research and literature, particularly records management. In order to make this study more original with exceptional and valuable outcomes, this study applied a robust research methodology, design, tools and techniques. This ensured high validity and reliability of the findings or outcomes of the study. Such outcomes added the new scholarly research, literature and, particularly, the new knowledge in the field of information science. The study also developed and proposed a medical records management model. The knowledge produced may also be used by the

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relevant or affected organisations to improve their policies, models and business records management practices. The intensive literature review was also used to integrate ideas to incorporate the formation of the new knowledge and model. This implies that the findings of this study are original.

1.9 THEORETICAL AND CONCEPTUAL FRAMEWORK

The key goal of records management is to maintain records authenticity, and to ensure its accessibility, safety, security, confidentiality and privacy throughout its life cycle (Kalusopa and Ngulube 2012:203). This is why it is true that the implementation of EDRM in the organisation brings about business administrative success or improvement. This is because with EDRM, IT and people are involved, business process is integrated into records management, records are managed to facilitate administration and not policy, and records and documents are treated on a continuum basis rather than on a life cycle basis. EDRM uses an organisation-centred approach, because it applies a corporate classification scheme and unifies corporate information and corporate users' mental models. Government needs to take into consideration the fact that information is important for the organisation (Harries 2008:17).

Lost data in both electronic and paper records reduces public trust and confidence in data security or quality. This is why "many organisations are reconfiguring their traditional records management functions, incorporating them within a broader context of information management, knowledge management, and customer relationship management" (Harries 2008:16). The theoretical framework for this study was based on the five elements of trusted electronic records management as structured by Ismail and Jamaludin (2009:136-140). The elements of trusted electronic records management is structured into five main categories as follows:

- ***Governance*** (which is about legal and regulatory infrastructure, organizational policy and organizational recordkeeping responsibility and accountability),
- ***Recordkeeping system*** (which is about records management operation. recordkeeping functional requirements and recordkeeping metadata requirements),
- ***Archival*** (which is about appraisal practice, electronic records retention, preservation strategy and storage management),
- ***Technological*** (which is about the management of electronic records systems and electronic system security), and
- ***Skills and competency*** (which is about records and archives competency and related skills).

The five constructs were used to inform the research objectives and questions. However, although the title of the framework by Ismail and Jamaludin (2009:136-140) reflects more on electronic records management, the content (the five elements) of the framework also cover records of a paper-based format and storage medium. The above theoretical framework was applied in accordance with the records continuum model and records life cycle, since both models outline and discuss steps and dimensions for records management, respectively. This gives a landscape to apply and discuss the five elements of trusted electronic records management by Ismail and Jamaludin (2009:136-140) as the theoretical framework for this study, especially for electronic records. In theoretical framework the discussion was based on the records management governance, recordkeeping system, archiving, technology, skills and competency in relation to each step and dimension.

Nevertheless, the study was concerned with the development of an appropriate medical records management system model for the public health sector. Therefore, consideration of the records continuum model cannot be undermined in any records management system planning and implementation. Yusof and Chell (2000:135) underscore that the records continuum is all about records management, starting from planning before its creation, during the process of designing the records management system and all the time that it is in existence after its creation. In other words, it is about the before, the during and the after records creation. It brings about all administrative activities and management for records throughout the business processes until disposal. Bantin (2009:5), Chachage and Ngulube (2006:4-5), Makhura (2005:43) and Yusof and Chell (2000:135) also elaborated that the continuum model guides on the on-going process of records management throughout its lifespan, with the continuation of organisational business processes. Records management and business activities move together because records contain recorded business activities and/or transactions; therefore, it contains evidence of business activities. This means that records exist as a product of a certain business activity or transaction. This model also guides in terms of vital records capturing, relevant functions, systems and procedures for proper capturing and maintenance. In doing this, this model ensures that records become preserved easily and properly and are easily accessible. The records continuum model serves as an enhancement to the records life cycle, as it guides from the process of the records system design before creation and also brings about ICT and electronic records management. Upward (2000); Yusuf and Chell (2005:60) came up with a structural illustration of the records continuum model as in Figure 1.1. According to Cumming (2010:48), Upward (2000) and Yusuf and Chell (2005:59), the model is illustrated in four (4) dimensions, which are (1) Document creation, in which actors trace

transactions as archival documents, (2) Records capture, in which records are captured as evidence from activities of the units, (3) Organisation of corporate memory, in which archives are organised as corporate and individual memory by organisational functions and (4) Pluralisation of collective memory, in which institutional archives are pluralised with the purpose to keep collective memory.

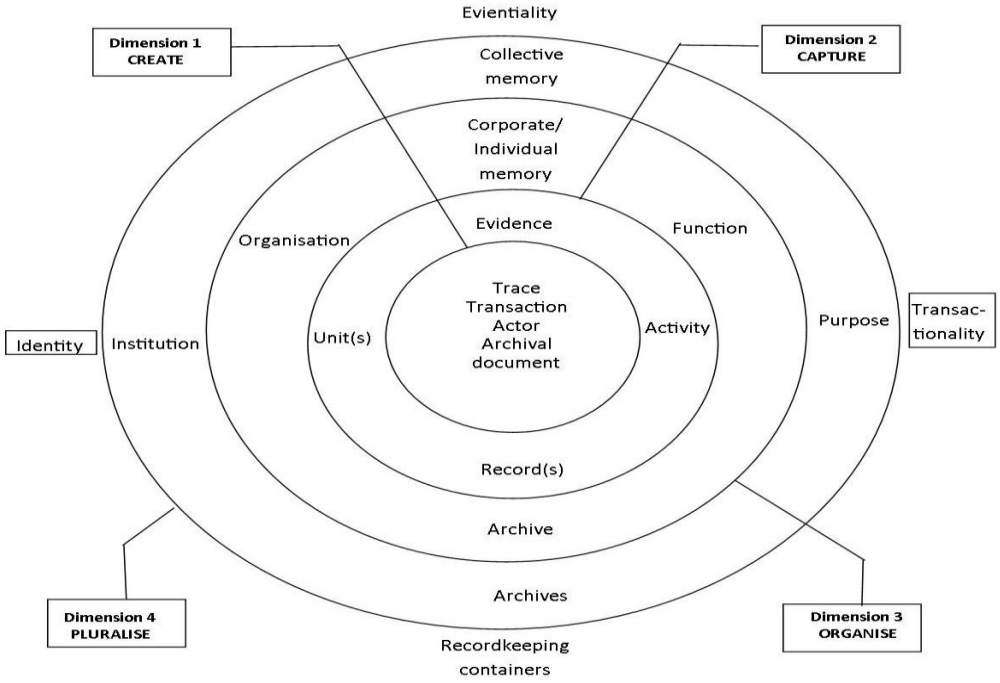

Figure 1.1: Records continuum model (Upward 2000; Yusuf and Chell 2005:60)

1.10 SCOPE AND DELIMITATIONS OF THE STUDY

This item of the research assists the reader to describe the range of the study and outline of the study boundaries. As also alluded to by Marshall and Rossman (2006:42), it brought about conceptual framework and study design. This study was conducted at the Limpopo Provincial Department of Health in South Africa. Within the Department of Health, the study was focused on only public or state hospitals in the five districts of the Limpopo province, namely: Capricorn, Sekhukhune, Mopani, Vhembe and Waterberg. In this study, other institutions under the Department of Health such as clinics, health centres or emergency medical services (EMS) centres were not covered to ensure a manageable scope of the study. The study tackled only management of medical records, which are created by and which affected the organisational line/core function.

Records created by support functions such as financial management records, transport management records and human resource management records were not part of this study. The questionnaire data were collected only from records management officials at different job position levels since they are charged with the responsibility of managing medical records every day. The interview data was collected from heads of the clinical service unit, nursing service unit and records management unit, since their work is affected by medical records on a daily basis and they are expected to have more information and knowledge on the problem under the study. Hence, the study focused on employees dealing with medical records on a daily basis.

1.11 RESEARCH METHODOLOGY

In the scientific research, several research approaches are used, such as quantitative approach and qualitative approach. The other approach is mixed method research (MMR), in which more than one approach is mixed or integrated (Creswell 1994:176; Fidel 2008: 265; Johnson and Christensen 2008:280; Ngulube 2013: 5-7). For the purpose of this study, the researcher used a multi-methods approach by triangulating the quantitative approach with a bit of the qualitative data at the methodological stage during data collection, analysis and interpretation to confirm the quantitative results (Bryman 2012:392; Creswell 2014:201; Ngulube 2013:6). This minimised biases, limitations and weaknesses of the study (Creswell 2003:15; Fidel 2008:265-169; Johnson and Christensen 2008:280; Matveev 2002; Ngulube 2013:5-7) to improve the quality of the research (Fidel 2008:265; Gorman and Clayton 1997:28). This study used an explanatory survey research design. The survey was conducted by applying the quantitative method in a bigger scope and added a limited scope of qualitative method to support the explanation on the quantitative data during analysis, interpretation and presentation of research results (Creswell 2014:15-16). Research design was used as an action plan for the research (Hernon and Schwartz 2009b:1) that also identified a simple and affordable way of conducting the study (Terre Blanche, Durrheim and Painter 2006:34). This study was based on positivist/postpositivism paradigm. The study applied the positivist/postpositivism paradigm for quantitative approach since the main focus of the study was on the causes or outcomes of the problem using observation and measurement against objectives, testing theories and laws governing the population of the study (Creswell 2014:7; Bryman 2012:29-30).

Likewise, Ngulube (2005a:46) argues that the researcher needs to define the population before collecting data. The target population in this study was the nursing service unit, clinical services unit and records management unit in all 40 public hospitals of the Limpopo province of South

Africa. These units were purposively identified since the nursing service unit and clinical services unit create and use medical records daily when rendering healthcare services. The records management unit is assigned with the duty and responsibility to manage records and make sure the records are available, accessible, protected, reliable and authentic at all the times. However, the sampling frame was applied to improve the validity of the research results (Bryman 2012:187; Christensen, Johnson and Turner 2011:151; Johnson and Christensen 2008:224; Ritchie and Lewis 2003:88). In framing the sampling of this study for the questionnaire data collection, the researcher arranged a list of all categories of the identified population of the study. All records management officials for post levels 4 to 12 was listed from the staff establishment spreadsheet according to their districts, hospitals and post levels. The human resource (HR) staff establishment was used as a source of the population to be listed. This facilitated a random selection of individual participants (Leedy and Ormond 2005:183). The sample frame was used to stratify and randomly select employees from different post levels in the records management unit of each hospital per district, who would eventually participate in this study (Powell and Connaway 2004: 100). The interview data collection was focused on the nursing service unit head, clinical service unit head and records management unit head per hospital in each district of Limpopo.

Furthermore, in conducting this study, the total population identified was 622, from which a sample of 49% (306) was drawn. To draw this total sample, the records management officials from each hospital in different districts were stratified according to their post levels using the human resource management staff establishment compiled in a MS Office Excel spreadsheet. In this study, 49% of the total population was accounted for by 306 participants out of a total population of 622. The sample size confidential level was confirmed to be more than 95% and the margin of error was 4% according to the Raosoft sample size calculator. The Raosoft sample size calculator also recommended a sample size of 306 out of the total population of 622, to which the researcher adopted.

Moreover, the researcher used two different sampling methods in this study, which are the probability sampling method known as the stratified simple random sampling method and the non-probability sampling method called the purposive sampling method. Stratified random sampling was used to collect quantitative data to reduce standard errors by controlling variance proportions (Sapsford 1999:70) as it covers all categories of the population (Fuller 1993:1). On the other hand, the researcher used the purposive sampling method to collect qualitative data by selecting participants based on the purpose for which he will obtain the data or that the sample has the data

(Bryman 2012: 417-418; Wamundila 2008:25). In this sampling method, the researcher targeted to people in the sample as those with more knowledge, understanding and information about the issues under study (Johnson and Christensen 2008:239; Kumar 2005:179). The researcher purposively identified clinical managers, nursing managers and records managers and/or any official heading these units in the institutions as a key source of information. For the purpose of this study data was collected using the questionnaires, interviews, document/system assessment (e.g. policies and procedures) and observation of the state of records management and records management systems to accomplish empirical and epistemological outcomes by ensuring that these techniques close each other's weaknesses from its disadvantages by its diverse advantages (Mouton 2002:110).

1.12 OUTLINE OF CHAPTERS

This section outlines how the chapters of the research report or the dissertation are structured. It also shows what is discussed under each chapter. In this study, the report was presented in six chapters as outlined below:

CHAPTER 1: BACKGROUND OF THE STUDY

This chapter discusses the introduction and background to the study, the research problem, the research rationale, the research objectives, the research questions, the justification of the study, the originality of the study, the definition of key terms, the ethical considerations, the summary of research methodology, the outline of chapter and timeline.

CHAPTER 2: CONTEXTUAL OVERVIEW OF RECORDS MANAGEMENT AND MODELS

This chapter discusses literature relating to records management governance (which is about legal and regulatory infrastructure, organizational policy, organizational recordkeeping responsibility and accountability); the recordkeeping system (which is about records management operation, recordkeeping functional requirements and recordkeeping metadata requirements); archival (which is about appraisal practice, electronic records retention, preservation strategy and storage management); records management technological issues (which is about management of electronic records systems and electronic system security); and records management skills and competency (which is about records and archives competency and related skills).

CHAPTER 3: RESEARCH METHODOLOGY

This chapter covers the research methodology, design and population of the study, sampling methods, data collection methods, data analysis, research paradigm and limitation of the study.

CHAPTER 4: PRESENTATION OF THE FINDINGS OF THE STUDY

Here the researcher presents the results of the research under this chapter.

CHAPTER 5: INTERPRETATION OF THE FINDINGS

In this chapter, the researcher interprets the findings of the study.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the researcher summarises, concludes and recommends improvements to the study findings.

1.13 SUMMARY

This chapter introduced the reader to the background of the study in which several issues of records management were discussed. In the background, significant, effective management of records, examples of records management models and systems implemented by other organisations were discussed. The records management situation at the Limpopo Department of Health was also discussed. The chapter further discussed the problem statement and gave the rational for the study. The readers were also familiarized with the objectives and questions of the study. The researcher also justified the reason for conducting the study. The key concepts used in the content of this study were also defined and discussed under this chapter to simplify the reading and understanding for the reader. The originality of the study was also discussed to show how this study was unique, compared to many other studies conducted before and how is it going to add value to the current literature or knowledge and/or help the organisation being researched to improve their mode of records management practice and service delivery. Furthermore, the chapter also outlined the theoretical framework of the study in which the five elements of trusted electronic records management of Ismail and Jamaludin (2009:136-140) were adopted. Scope and limitation of the study was also discussed, making it clear that the focus of the study was limited to medical records and employees working with records in the public hospitals of Limpopo. Research methodology was also introduced by means of a summarised statement about research design, population, sampling, data collection tools and techniques, and validation of the data collection techniques. Lastly, the chapters' outline was illustrated to indicate what the structure of the completed thesis look like and when the researcher conducted and completed a certain activity of the study. The next chapter discusses the literature related to the study, which includes records management practice governance, recordkeeping systems, records archival processes, records management technological issues and records management skills and competencies.

CHAPTER 2

MEDICAL RECORDS MANAGEMENT AND HEALTHCARE SERVICE DELIVERY

2.1 INTRODUCTION

Chapter One introduced the reader to the study and gave the background of the study. This chapter reviews the literature relating to the contextual overview of records management and models. Specific literature reviewed focused on records management governance practice, recordkeeping systems, records archival processes, recordkeeping technology, records management capacity and competencies. The chapter also discussed issues relating to organisational readiness for enterprise content management as the latest records management system framework. This chapter was established or structured based on the eight objectives of this study. Five of these objectives were formulated on the basis of the theoretical framework for the study. All five elements of the theoretical framework adopted from Ismail and Jamaludin's (2009:134-145) theory about a framework for managing trusted records were covered as objectives in this study. The theoretical framework was discussed in detail in Chapter One of this study.

Furthermore, it was the purpose of this study to investigate, develop and recommend a collaborative medical records management system framework or model for sound patient records management practice that support healthcare service delivery. As Ngoepe (2014:1) attests, different organisations are unique in their "make-up, culture, goals and management style". He further elaborates that, based on those reasons, "effective records management cannot be obtained by copying other organisations' records management programmes" (Ngoepe 2014:1). This implies that each organisation needs to do their groundwork thoroughly and come up with their own functional records management model.

2.1.1 THE NEED AND THE ROLE OF THE LITERATURE REVIEW

The literature review plays an important role in the scientific study for empirical results. The literature review assists the study with the information about which studies have been done and which results they produced in relation to the current study. In other words, the researcher benchmarks with other related studies to establish whether one's study is necessarily significant to conduct or not. It brings about the foundation of the study. In most instances, literature is discussed from general to specific in relation to the problem of the study (Creswell 2014:28; 2003:29-30).

Creswell (2014: 28-29; 2003:30) attests that literature is usually reviewed by integrating a series of literature of related topics from general to specific and, eventually, summarizes it into key issues. This was the case in this study and Creswell (2014) outlined four forms/ways of literature review:

- Integrating what other scholars have done or stated previously,
- Critiquing previous scholarly work,
- Building bridges between related literature works, and
- Identifying key issues in the field of study.

Looking at the benefits, the following were listed by Levy and Ellis (2006:183) as the benefits of effective literature review:

- Helping the researcher understand the existing body of knowledge, including where excess research exists (i.e. what is already known?) and where new research is needed (i.e. what is needed to be known?),
- Providing a solid theoretical foundation for the proposed study (related to "what is already known?"),
- Substantiating the presence of the research problem (related to "what is needed to be known?"),
- Justifying the proposed study as one that contributes something new to the body of knowledge, and
- Framing the valid research methodologies, approaches, goals and research questions for the proposed study.

Furthermore, Creswell (2003:31) underscores that, in a qualitative study, the literature can be used as the background of the study to frame the problem, and in the separate literature review section to eventually compare and contrast findings at the end of the study. In a quantitative study, the literature review gives direction to the research questions in the background. In the major section of the literature review, literature helps to describe the theory that can be used in the study and reasons for its usage or significance. Eventually, the researcher revisits integrated literature to compare the literature findings with the results of their study. In a mixed methods study, the literature review depend much on the most dominating approach, which is either qualitative or quantitative (Creswell 2014: 30-31).

2.1.1.1 Literature review procedures and sources

According to Creswell (2014: 31), literature is reviewed from "research studies and also conceptual articles or opinions pieces that provide framework for thinking about the topic". He elaborates that there is no standard way in which to conduct the literature review, but scholars mostly conduct a literature review by systematically capturing, evaluating and summarising the literature. According to Levy and Ellis (2006:182),

> Literature review process is sequential steps to collect, knows, comprehend, apply, analyse, synthesise, and evaluate quality literature in order to provide a firm foundation to a topic and research method... the output of the literature review process should demonstrate that the proposed research contributes something new to the overall body of knowledge (Levy and Ellis 2006:182).

Furthermore, Levy and Ellis (2006:182) proposed the literature review process steps, namely (1) Inputs, (2) Processing and (3) Outputs as illustrated in Figure 2.1. During literature processing, the researcher must identify and comprehend the relevant literature, apply it to the study, analyse, synthesise and evaluate it for quality output (Levy and Ellis 2006:182).

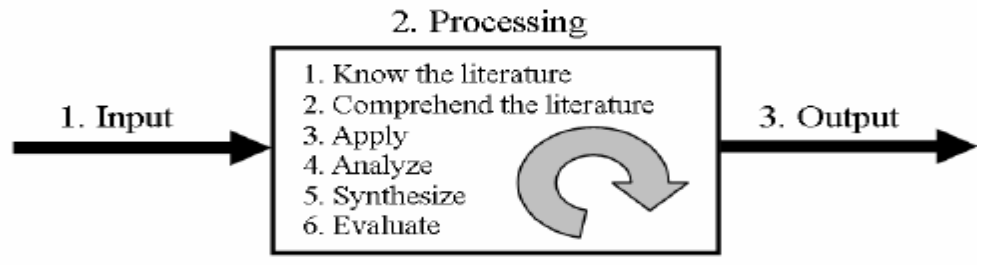

Figure 2.1: Stages of effective literature review process (Levy and Ellis 2006:182)

On the other hand, Creswell (2014: 31-32; 2003:34-35) recommended the following seven steps of conducting the literature review as follows:

1) ***Identify keywords:*** To be used in the search for literature or locating information sources and identifying the topic from material reading,
2) ***Search the literature in the library using the keywords***: Use tools like library catalogues to search for books, databases and articles in order to locate and access the information materials holding, such as journals and books related to the study,
3) ***Locate around 50 articles and books related to your study*** in an initial search. Books and articles are easy to obtain. Determine the availability of located sources in the library and a

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way of getting them, e.g. circulation, if available, inter-lending, if located from other libraries, or purchasing, if total not locatable by the library,

4) ***Browse located group of information source*** to check if they address issues relevant to your study and establish whether these articles and chapters will contribute positively towards bringing a better understanding of the literature under review,
5) ***Design a literature map***: This is done by drawing a visual picture of the literature by grouping the literature being searched on the topic to show the eventual contribution of the study to the literature,
6) ***Draft summaries of the most relevant articles*** with their reference to have full reference at the end, and
7) ***Assemble the literature review****:* Structure and organise thematically by important concepts. Summarize the literature review section with major themes, explain how your study adds to the literature, discuss gaps in the theme and give critical discussion of the reviewed literature.

Furthermore, Creswell (2014: 34) recommends that when scholars conduct a computer database literature search, they should consider using both free online databases and the one subscribed by the library, and they should use several databases. Researchers should also use guides for terminologies like thesaurus to locate the right article. Articles used should be close to the topic, looking at the terms used to describe its meaning to be used for further search. Consideration should also be given to the use of databases that can provide access to full text. Creswell (2014: 35; 2003:38) also guides on the prioritisation during selection of literature review materials as follows:

1) ***Encyclopaedias:*** Very important when examining the topic at the first stage to "start with the broad synthesis of the literature",
2) ***Journal articles:*** National journal that is especially used to report the results of research study,
3) ***Books:*** Consider chapters, monographs or the entire book if it relates to your particular study,
4) ***Conference papers:*** Papers presented at conferences, usually obtainable from the conferences and organisational websites or can be received on request,
5) ***Dissertations:*** Browse summaries and identify dissertations relevant to your topic and request copies or loan from the library and, if possible, download from the internet, and
6) ***Web/internet:*** Screen and check quality web-published articles' relevancy to the study. The researcher has to be cautions as to whether the article or the web is rigorous, thoughtful and suitable for use in the academic literature review.

2.1.1.2 Referencing of sources

Referencing of sources is a very significant part of the literature review, as many sources are consulted and should be cited in this activity. Citation of sources is a way of acknowledging other sources that have been used in discussion of the study (University of the West of England Research Observatory 2007). The researcher must consider using an appropriate referencing style as recommended and considered by the promoter and the relevant department or university. The referencing style is used consistently throughout the study document. Referencing is done in the text by summary and in full details in the list of references (end-text) at the end of the document. The researcher must also consider a style for citing multiple authors (Creswell 2014:41; 2003:43-44). The University of the West of England Research Observatory (2007) attests that inappropriate citation of consulted sources may lead to unethical conduct known as plagiarism, which is a serious offence in academic study. They also pointed out that one of the academic writing citation styles is known as Harvard. In the list of references, the citation may either be numbered or listed alphabetically, but this depends on the promoter's consideration / expectation (Creswell 2014:41; 2003:43-44). For the sake of this study, the UNISA Department of Information Science recommended the use of the same method of citing and listing references. The other consideration is that the end-text citation list may also be done in a form of footnotes, either at the bottom of every page or at the end of every chapter or at the end of the document / all chapters (Creswell 2014:42). This was also used by most of the researchers for research study at UNISA.

2.1.1.3 Map of research literature

This is the first step required for the researcher as he commences with the literature review part of the study. The literature map is a tool used to organise and structure topics for the literature related to the study that need to be acquired by means of internet searches and library request. This enables the researcher to realise the nature of the literature that needs to be reviewed and that the study will add to for more literature in the field of study (Creswell 2014:36; 2003:39). In a simple definition, Creswell (2014:36; 2003:39) defines it as "a visual summary of the research that has been conducted by others, and is typically represented in a figure". The literature map is also constructed in different ways. Some may be structured hierarchically, presented from top to bottom, starting with the main topic and ending with the proposed study, others may be in the form of circles of topics with centralisation/intersection of future research (Creswell 2014:36-37). As illustrated in Figure 2.2, the map of research literature for this study flags eight main items to be discussed based on the literature. All of the items were formulated from the objectives of the study. Only five of those items were also formulated from the theoretical framework of the study into objectives, which

are recordkeeping systems, records management governance, archiving, recordkeeping technology and records management capacity and competencies.

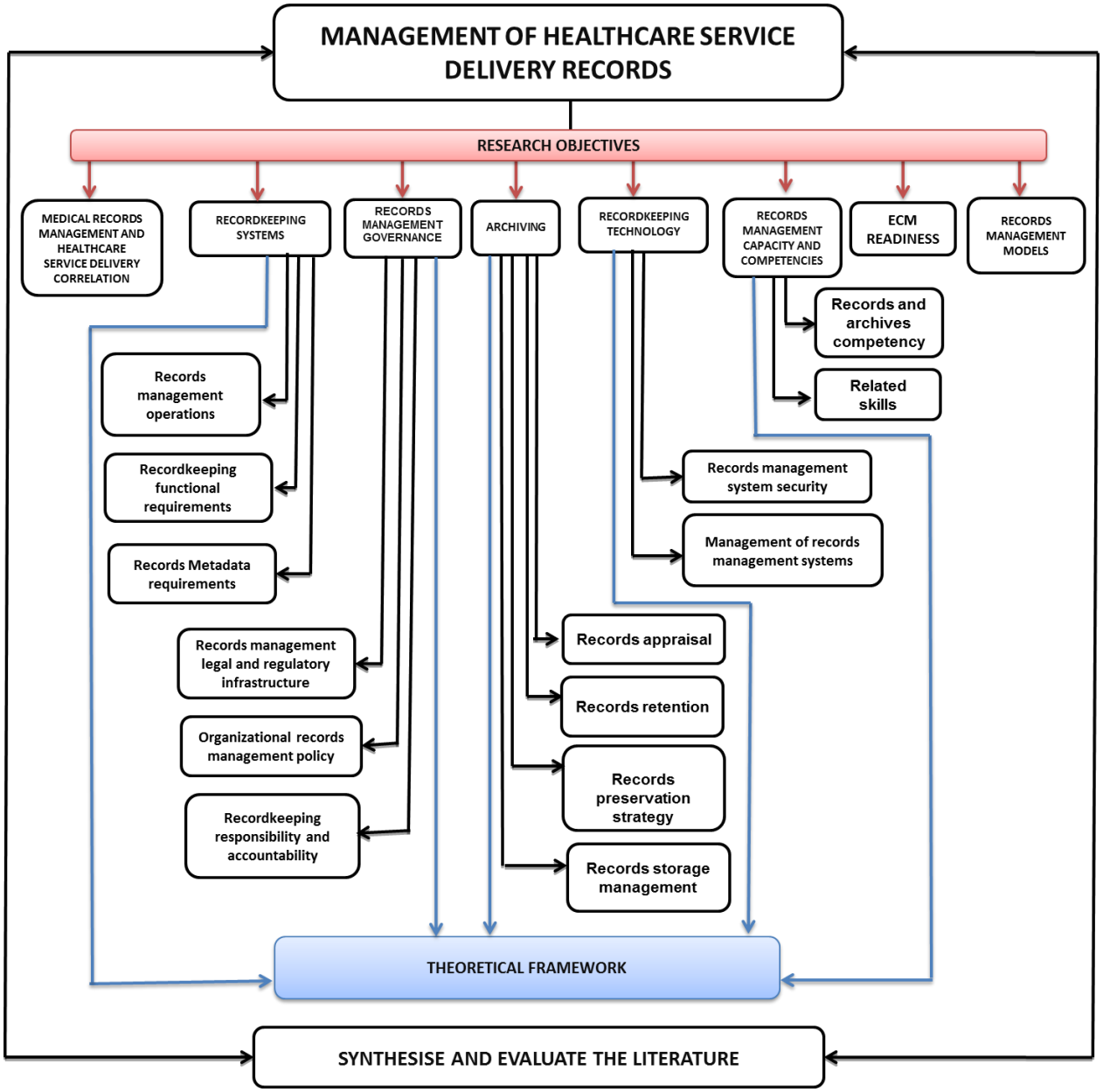

Figure 2.2: Map of the research literature

2.2 MANAGEMENT OF HEALTHCARE SERVICE DELIVERY RECORDS

Long before colonialism, systematic records management in Africa was just a dream for organisations and government bodies (Asogwa 2012:198; Nengomasha 2013:2). This is because there was no systematic or procedural management of records, maybe due to a lack of knowledge

about the use and benefits of records and its proper management and archiving (Asogwa 2012:198; Nengomasha 2013:2; Ngoepe 2014:10). The same situation was true of healthcare records. The healthcare service delivery records are normally known as medical records**.** Medical records need to be managed in such a manner that they will be accessed at the right place, in a right condition and format, at the right time and by the right or relevant person to ensure smooth continuity of healthcare business. This is because medical records are a pivotal point of proper healthcare service (Weeks 2013:141).

It is possible that healthcare records may also be managed electronically in the healthcare sector. The major challenge is that, nowadays, employees in the organisations are still focusing their minds on paper-based records management techniques (Weeks 2013:140-143). Weeks further elaborates that introducing electronic medical records management will require more efforts to reshape the mindset of medical professionals toward a change in healthcare business process. In the healthcare institutions, there is a mindset that electronic medical records management is hard and makes healthcare service activities difficult (Weeks 2013:140-143; Boonstra and Broekhuis 2010:2). This happens as a result of the intensified culture of paper-based medical records management. This usually results from resistance by the healthcare professionals to change from paper-based records to the electronic means of creating and managing records (Weeks 2013:141). That might be because "as with any other business activities, digital preservation includes many organisational issues that have to be considered" (Decman and Vintar 2013:417), which was also emphasised by Boonstra and Broekhuis (2010:2).

However, the above challenges need change management strategies as a solution, which is not the major focus of this study. For instance, the best change management technique to transform employees' resistance to moving from the culture of paper-based records management to electronic is training (Weeks 2013:141). Weeks further explains that, through training, employees will gain skills about their responsibilities on the new technology. Lott (1997:iv) and Weeks (2013:135-136) underscore that education and technology can bring much improvement in the lives of human beings in a short period of time, including the healthcare services. For instance, Lott (1997:iv) elaborates that there are many improvements to methods of illness testing and technology, knowledge on illness causes and course, drug development and patients' treatment models. However, the records management operation is currently dominated by paper-based or manual management in South Africa, especially in the public sector (Lott 1997:iv; Weeks 2013:140-143). This is the same case with the public medical records management.

However, Ismail and Jamaludin (2009:136) discuss some of the key issues that need to be considered in records management, especially electronic records management such as records management governance, recordkeeping system, recordkeeping technology, archiving, skills and competency. These key issues form the body of this chapter as they are based on the study theoretical framework and objectives. Nevertheless, there are great relationship between medical records creation and management with the healthcare service delivery and thus relationship issues are discussed in one of the next sections.

2.2.1 Records Management Governance

The other objective of this study was to assess medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. The intention was to explore availability, understanding and appropriate implementation of legal and regulatory infrastructural requirements, policies and procedures, as well as appropriate allocation of responsibilities and accountabilities. Looking at the countries in other continents, McLeod, Childs and Heaford (2007:217) underscore that the United Kingdom (UK) developed their legislation and records management toolkits based on the ISO standards to improve their records management as required for citizen right of access to information to that which Nengomasha (2013:7-9) recommends for the sub-Saharan countries. On the other hand, the USA developed legislation to govern and enforce proper recordkeeping after serious scandals (McLeod, Childs and Heaford2007:217). However, most African countries are lagging behind with many best practices for different operational strategies in most business activities or programmes, which does not exclude the records management programme (Abbot 2007:7; Nengomasha 2013:3; Ngoepe 2014:1; Ngoepe 2012:140; Ngoepe and Van der Walt 2010:88). Abbot (2007:7); Ngoepe (2014:1) and Asogwa (2012: 201-202) attest that, in African countries, relevant and proper records management laws existing are not enforced for proper records management. Hence, that is the sign of poor planning or lack of planning in records management programme implementation. This is also specifically the case with medical records management (Asogwa 2012: 201-202). Instead, what existed was “patchwork of national laws which do not provide a coherent recordkeeping regime” (Asogwa 2012: 201-202). This becomes a very serious challenge since, in any organisation or state, the law needs to be formulated and introduced to govern the people or employees responsible for conducting certain business-related activities (Nengomasha 2013:5; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). Ngoepe (2014:10) discovered in his study about records management models in South Africa that, in most government

bodies, records management strategies, policies and procedure were either not exiting or not implemented. He also discovered that there was no implementation of approved filing plans in line with the organisational structure. These challenges were also discovered, among others, by Nengomasha (2013:2-8) in her study about records and archives management in sub-Saharan Africa and Ndenje-Sichalwe, Ngulube and Stilwell (2011:268) in their study about managing records as a strategic resource in the government ministries.

However, this is not exclusive to records management activities in any formal organisation. The governance tools are mostly introduced in the form of (a) legal and regulatory infrastructure, (b) organisational policy and (c) recordkeeping responsibility and accountability. The purpose of these was to mandate or authorise a certain category of employees to conduct certain records management activities in the organisation (Ismail and Jamaludin 2009:136). This ought to be the case with medical records management and management of healthcare service delivery. Asogwa (2012: 201-202) highlights that "in Sub-Saharan Africa, there are cases of serious weakness of records management legislation, policies and organisational frameworks", which Ngoepe (2014:10; 2008:111) underscores. These weaknesses need to be guarded against as Decman and Vintar (2013:412-413) also guide that "Governments should also be aware that their actions with regard to regulating formats should be focused on the phases of creation, digitalisation, and capture, including electronic document and record management systems (EDRMS)".

However, the researcher shares the sentiment that the healthcare organisation and legislature are responsible for regulating healthcare records management (Lott 1997:iv; Nengomasha 2013:3). Lott (1997:iv) elaborates that this will ensure that records are always available whenever people need information about healthcare services previously rendered. This will help healthcare givers to avoid always asking or questioning patients about previous services and illnesses when they help them with the new healthcare-related problem. It will also ensure that records are always treated and considered as a "principal resources of information" in the healthcare institution, which will help to avoid unnecessary delay in rendering healthcare service. For instance, a study by Lott (1997:v) revealed that healthcare policies and legislative prescripts need to address medical records management issues and this is supported by Boonstra and Broekhuis (2010:11). These are issues such as medical records accessibility, security, confidentiality and disposal of such healthcare records and information. If these issues are not addressed, healthcare institutions end up relying on guidelines from other bodies. For instance, other bodies' guidelines may be healthcare professional

bodies' policies, legislation, regulations and guidelines as was also the case in Saskatchewan, Canada (Lott 1997: v).

Furthermore, Lott (1997:v) and Asogwa (2012:201) state that after being developed, these healthcare facilities guiding documents have to be reviewed and updated from time to time as technology and ways of working change or advance, which was supported by Currie and Finnegan (2010:164). Lott (1997:v) states that the legislative prescripts need the regulations in a form of policy to best explain issues such as medical records ownership. Other organisational officials think that, as records creators, they own the record, but reality is that ownership is vested in the healthcare facility. Policies may possibly also regulate issues relating to the need for written authority/consent from the patient for the dissemination, retention and disposal of the their personal medical information/records, except if instructed by court order (Lott 1997:v; National Health act No.61 of 2003, section 14(2)).

2.2.1.1 Records management legal and regulatory infrastructure

This section discusses literature about medical records management governance practice in terms of legal and regulatory infrastructure as part of the study objectives. The intention is to explore availability, understanding and appropriate implementation of legal and regulatory infrastructure. It is imperative for any country to develop and implement a legislative framework that will assist in guiding healthcare processes (Katuu 2015:94; Cullinan 2006:4), including archiving and management of health records. The colonial regime failed to establish effective archives, records management legislative framework and relevant infrastructure to govern proper archive and records management in their colonised African countries until independence. For instance, there was no adequate legislation and infrastructure (Asogwa 2012:199) and policies (Boonstra and Broekhuis 2010:11). The significance of archives and records management law in any country or organisation cannot be overemphasised. These laws are made available to ensure mandatory establishment of the sound organisational records management framework for any organisational business transaction. The records management and archive law should give a directive on how records must be created, kept and maintained for future organisational and individual employees' accountability (Ismail and Jamaludin 2009:136-137; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). The manner in which records are captured, created, transmitted, used, stored, indexed, retrieved, controlled, retained and preserved need to be conducted in compliance with legislation and standards (Chachage and Ngulube 2006:10; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268).

Therefore, it is the responsibility of the records manager to ensure that records management operations are conducted in compliance with appropriate prescripts and organisational guidelines. The records system should comply with the current business requirements, regulatory environment and community expectations. The records creators should be made aware of the impact of these requirements in their business actions. The records system should be assessed regularly to check if it still complies with all the requirements. The assessment activities and results should also be documented and properly preserved as evidence of the assessment (ISO 15489-1 2001). MoReq2 (2008:42) attests that the establishment of ERMS guiding documents, like policies, need availability of laws and regulations like "data security law and archival law and industrial regulations".

However, the unfortunate part of the matter was that the "creation, management, use and preservation" of recorded information were conducted following the legislation that was not up to date and not in line with the current records management technology. This is because they were not updated rapidly as technology changes or improves from time to time. For instance, in most African countries, the scope of records archival laws covered the basic model of paper-based records archiving and the archive responsibilities as an institution. These dated archival laws became inhibitors to many archival institutions when it comes to managing electronic records. Due to these dated archival laws 'in Africa and other developing countries', archival institutions experienced many difficulties with managing records effectively (Asogwa 2012:207; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). For instance, there was no lawful record definition, electronic records were not admissible for legal proceedings in court and existing laws only described archival institutions as archival records custodians (Asogwa 2012:207). The researcher agrees with the statement that most of the African countries owned dated records management laws, which resulted in all these serious hiccups but does not agree with Asogwa (2012:207) that

> In Africa there are no laws or legislation on electronic records and electronic archives management, and therefore it is useless to manage these records without procedural and legal laws since they are not fully recognized in law courts as legal document because of their propensity for alteration at whims (Asogwa 2012:207).

Yet, Decman and Vintar (2013:407) argue that there are inadequate legislation for records management in the public administration looking at the new changes, developments and ways of doing things in different environments. This implies that there is a need for the public sector to review their legislation on a regular basis or when the situation requires. For instance,

implementation of records management preservation solutions, such as the central repository solution also needs the creation of acts and regulations to ensure proper control over the management of records on the network and remote storage areas (Decman and Vintar 2013:417). The researcher shares the sentiment with Lott (1997:vi) and Asogwa (2012:209) that there are still many gaps in legislative prescript due to the fast advancement of technology. This implies that legislative prescripts need to be reviewed and improved from time to time in relation to the current situation and technological requirements. It also means that healthcare professionals and records management professionals need lifelong learning as things, change or improve continuously. This is not exclusive to medical records management. However, South Africa introduced several pieces of legislation that govern proper management of medical records, such as the National Archives and Records Service of South Africa Act (No. 43 of 1996), the Limpopo Provincial Archives Act (LPA) (No. 5 of 2001, the National Health Act (No. 61 of 2003), the Promotion of Access to Information Act (No. 2 of 2000) (PAIA), the Electronic Communication and Transaction Act (No. 25 of 2002) and the Constitution of the Republic of South Africa (No. 108 of 1996). The latter serves as "the foundational law in the country" (Katuu 2015:92) because it covers almost all the other legislative frameworks.

Furthermore, the purpose of the National Archives and Records Service of South Africa Act (No. 43 of 1996) was to "provide for a National Archives and Record Service; the proper management and care of the records of governmental bodies; and the preservation and use of a national archival heritage and related matters" as also elaborated by Katuu (2015:107) and Chaterera, Ngulube and Rodrigues (2014:368). The LPA was also introduced with the same purpose; to govern management of records and archives in the Limpopo province. The South African national archivist and the Limpopo provincial archivist are mandated by law to take full responsibility for ensuring that public records are properly managed within the government bodies' custodies (National Archives and Records Service of South Africa Act (NARSSA Act) (No. 43 of 1996, Section 13(1); Limpopo Provincial Archives Act, Section 13(1); Ngoepe 2014:2; Chaterera, Ngulube and Rodrigues 2014:369). This is why decisions about records management in government bodies are subject to approval by the national archivist (National Archives and Records Service of South Africa Act (No. 43 of 1996, Section 13(1); the LPA, Section 13(1)). For instance, the government bodies must obtain the national/ provincial archivist's authorisation before they can dispose of their records by means of transfer to archive repository, destruction or erasure (the NARSSA Act, section 13(2)(a) to (c) and the LPA Act No. 5 of 2001, section 13(2)(a) to (c) and Ngoepe 2014:3). The national/provincial archivist shall authorise or approve government bodies' records filing

systems/classification system, conversion of records to microfilm or electronic formats and ways of managing electronic system. The national/provincial archivist shall, in accordance with the head of the government bodies, conduct inspections of records held by the government bodies. Section (13)(4) of the NARSSA Act (No. 43 of 1996) and Section (13)(3) of the Limpopo Provincial Archives Act (No. 5 of 2001) also added that the national/provincial archivist "may from time to time issue a directives and instructions" to the government bodies in relation to the records management regulation. Section (13)(5)(a) to (c) of the NARSSA Act (No. 43 of 1996) and Section (13)(4)(a) to (c) of the LPA also stipulates that the head of government bodies shall appoint the records manager in line with the personnel recruitment law, who shall be given additional powers and shall be assigned with the responsibility to guide the government body and ensure that they comply with the requirements of the act.

The other records management related legislative framework is the National Health Act (No. 61 of 2003) as underscored by Katuu (2015:108). South Africa developed healthcare legislation for the first time in 1807, after the British colonialism (Katuu 2015:94; Klug 2012:158). The National Health Act was the latest and was introduced in the healthcare sector of South Africa with the purpose to "provide a framework for a structured uniform health system within the Republic, taking into account the obligations imposed by the Constitution and other laws on the national, provincial and local governments with regard to health services; and to provide for matters connected therewith". Section 13 of the act is about "obligation to keep record" of the health establishment. It stipulates that the head of the healthcare establishment must ensure that health records are created and maintained within the healthcare establishment in line with the NARSSA Act and PAIA to ensure proper healthcare service continuity. Section 14 of the National Health Act is about confidentiality of information contained in the healthcare records, and it stipulates that people are not allowed to disclose or are prohibited from disclosing information relating to "patients health status, treatment or stay in a health establishment". The disclosure can only be legally allowed with a written user consent, law enforcement or court order or if "non-disclosure of the information represents a serious threat to public".

Furthermore, Section 15 of the National Health Act is about access to health records and stipulates that "health worker or any health care provider that has access to the health records of a user may disclose such personal information to any other person", such as co-workers for lawful purpose as required by the scope and course of the duties in favour of the user. Section 16 governs "access to

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health records by healthcare provider" and stipulates that the healthcare provider may be authorised by the user to examine such user's health records for treatment. Authorisation for study and research may be given by the user, head of healthcare establishment and health research ethics committee. In case the health record does not contain user identity information no authorisation will be required. Section 17(1) of the National Health Act governs the "protection of health records" and it stipulates that the head of the health institution must establish security measures to ensure that no unauthorised person accesses the health records or the health records storage facility or a health records management system. These stipulations are also extensively discussed by Katuu (2015:106-108). Section 17(2) of the National Health Act stipulates that it is a chargeable offence for any person to commit the following actions on the patients' records:

- Falsifies any record by adding or deleting or changing any information contained in that record,
- Creates, changes or destroys a record without authority to do so ,
- Fails to create or change a record when properly required to do so,
- Provides false information with the intent for it to be included in a record without authority ,
- Copies any part of a record without authority,
- Connects the personal identification elements of a user's record with any element of that record that concerns the user's condition, treatment or history,
- Gains unauthorised access to a record or record-keeping system,
- Connects any part of a computer or other electronic system on which records are kept to any other computer or other electronic system, or any terminal or other installation connected without authority,
- Modifies or impairs the operation of any part of the operating system of a computer or other electronic system on which a user's records are kept, and
- Modifies or impairs the operation of any part of the programme used to record, store, retrieve or display information on a computer or other electronic system on which a user's records are kept.

Furthermore, the other records-related act is PAIA, which was introduced with the purpose to "give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights" and is underscored by Katuu (2015:112-113). Section 11(1) to (3) is about the "right of access to records of public bodies". It stipulates that the information requester should not be denied access to

information as long as s/he properly followed the procedure for access to information as guided by PAIA and that no denial of access should be based on the requester's reasons or on information officer's suspicion or believe might be the reason for requesting the records.

Nonetheless, South Africa also introduced Electronic Communication and Transaction Act (ECTA) (No. 25 of 2002) with the purpose of facilitating and regulating communication and transaction of an electronic format and medium and of simplifying the implementation of the national electronic service delivery strategy. Part 1 of the act governs "legal requirements for data messages". From section 11 to section 17, the act gives directives for issues relating to, among others, legal recognition for data messages, written information, electronic signature, originality of information or record, admissibility and evidential weight of data message, retention and production of documents or information.

2.2.1.2 Organisational records management policy

This section discusses literature about medical records management governance practice in terms of policies and procedures as part of the objectives of this study. The intention was to explore availability, understanding and appropriate implementation of policies and procedures. Like many other organisational activities or functions, records management also needs policy that will need to be implemented as a guide in terms of formal organisational records management principles, best practices and procedures, records classification, disaster recovery or management (Ismail and Jamaludin 2009:137; Ngoepe 2014:10; Sinha and Shenoy 2013:330; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268-272). This will help them to avoid what Ngoepe (2014:10) calls "shooting in the dark" due to lack of guiding rules. In order for the organisation to properly develop or create effective records management policies they need guiding documents such as local and/or international standards and acts of their country of operation (Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). In many African countries there is still a lack of understanding of modern and international standards for records management (Asogwa 2012:199).

Furthermore, the standards may assist organisations to benchmark in developing their own effective policies and procedures. Records management policy is needed to ensure that business transactions are traceable or identifiable. It will also ensure that records are managed in such a way that they are easily accessible and contain authentic information. The policy also assists the organisation to categorise or classify their records in terms of their context and metadata as to the creator, type of business process transaction and their relation to the rest of the other records (Ismail and Jamaludin

2009:137; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). The organisation also needs the policies and guidelines to rule and guide employees on records management related issues, such as records retention period and the method of disposal (Asogwa 2012:199; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268).

Nevertheless, Ngoepe (2008:21) also states that records creation and capturing require development of consistent rules that will bring about data integrity and accessibility, system decision for records log and indexing. Policy will also guide the maintenance of the integrity and authenticity of the information it contained to ensure that it is trustworthy or usable throughout the life span. The records must always be authentic, even after migration from one computer hardware or software to another (Ismail and Jamaludin 2009:137). It is evident that, in order for the organisation to improve their records keeping, they must develop and implement records management strategies, improve their records management policies and guidelines, identify their vital records and establish the business continuity plan (Bhana 2008:7; Nengomasha 2013:5; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268).

Nowadays, in the public sector policies, procedures and standards to manage, guide and regulate administrative activities are no longer adequate enough. Instead, policies should be improved to focus at all levels of records management administration to ensure 'manageable and successful preservation solution for the public sector' (Decman and Vintar 2013:407; Asogwa 2012:199). For instance, the organisation or archive and records management personnel should develop policy guidelines that also cover the disposal of records as to which records should be kept, for how long and how it must be disposed of. The organisation must study the international and national standards on records management, which would also guide in developing their policy-guiding documents (Asogwa 2012:199; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268).

However, the researcher agrees with Lott (1997:vi) and Sinha and Shenoy (2013:330) that as the fast technological advancement influences the review and change in legislative prescripts, the healthcare organisations also need to review and enhance their policies and procedures. This ensures that they are always in line with the new legislation and technology. The healthcare and records management professionals will also need ongoing training on the new procedures for effective implementation. This is with the sense that records management systems, methods, technology and ways of administration improve or change continuously and when this happen, policies should be reviewed and improved to be comprehensive and accommodative to the new

developments. For instance, policy is one of the requirements for implementation of records management preservation solutions, such as the central repository (the cloud) solution, to ensure proper control over the management of records on the network and remote storage areas (Decman and Vintar 2013:417). When the government decides on the implementation of records management solutions, including cloud computing solutions, to preserve records in a centrally shared storage they must be highly committed to fund and "shape policies based on standards, best practices and existing or reformatted legislation" (Decman and Vintar 2013:420). MoReq2 (2008:42) also attests that the establishment of ERMS-guiding documents, like security policies, records policies, laws and regulations, are required to ensure the successful management and security of records. The ERMS also needs to be supported by a procedure manual (MoReq2 2008:10).

In South Africa, NARSSA developed and published many guiding documents. These guiding documents contain information about how to create records management policy and the scope that needs to be covered by the policy, the so-called prototypes. These documents guide and give directives to all government bodies on how to develop their own policies, filing plans, procedure manuals and ensure effective implementation. As attested to by NARSSA (2007b), these documents that contain detailed information regarding the management of records and policy development include:

- Records Management Policy Manual,
- Managing electronic records in government bodies: Policy, principles and requirements,
- Managing electronic records in government bodies: Metadata requirements,
- Guidelines for the compilation of records management policy,
- Prototype registry procedure manual, and
- Performance criteria for records managers in government bodies.

Moreover, government bodies must establish and disseminate policies, procedures and guidelines that properly document 'records capturing and records management' (NARSSA 2006c: 32; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). Katuu (2012b:6) agrees that standards and best practice guidelines are some of the functional requirements for management of ECM application and digital curation system used to manage and preserve digital content as part of organisational records or information.

2.2.1.3 Recordkeeping responsibility and accountability

This section discusses literature about medical records management governance practice in accordance with responsibilities and accountabilities as part of the study objectives. The intention was to explore understanding, allocation and appropriate taking of responsibilities and accountabilities. In sub-Saharan Africa, record managers were allocated few powers on most significant records management related issues such as records retention periods and the way of disposing of records, due to poor records management legislation, policies and organisational frameworks (Asogwa 2012:201-202). This is in contravention of the ISO 15489 (2001), which stipulates that "records management responsibilities should be defined, assigned, and promulgated throughout the organisation and delineates who is responsible for taking necessary action" (Asogwa 2012: 201; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). In some policies there was a provision for the establishment of a records management committee, which comprised political employees with no records management capability, skills and competencies to take on certain responsibilities for records management. This committee had the powers to take any decision about records management activities, including records disposal (Asogwa 2012: 202), which is also stipulated in the LPA Act and the NARSSA Act.

However, in every formal and well-established organisation, every function, key performance area and activity are assigned as responsibilities and accountabilities to a specific unit/section, and officials must pursue different sectional missions that support the achievement of the overall organisational mission. The same is true for records management in which responsibilities and accountabilities are assigned to certain suitably qualified officials to achieve the sectional mission of records management for the organisation, although, in some organisations, records managers are appointed at a much lower level and with no suitable qualifications. Responsibilities may be assigned to either a group or individual in a form of designation or unit/section. In assigning responsibilities, the organisation needs to ensure that qualified professionals are assigned or appointed to discharge their professional duties with no difficulties or problems relating to skills and competencies (Ismail and Jamaludin 2009: 137; Ngoepe 2014:7). It is very important since "this will establish a clear line of authority for records management in the organisation" (Ismail and Jamaludin 2009: 137). For instance, the records managers have a responsibility to ensure that the records are safe and are disposed of when they are no longer useful for the organisation (Lott 1997: iv; Ngoepe 2014:7; Chaterera, Ngulube and Rodrigues 2014:368). In fact, the records manager, as well as the archivist, needs to participate in all records management and archiving activities

throughout the records' life cycle when surveying records, developing retention schedule, appraising and managing vital records (Chaterera, Ngulube and Rodrigues 2014:368).

However, in the case of South Africa, all heads of government bodies are required to designate the records manager at a senior level to take responsibility for the management of records created by respective bodies during service transactions and activities (NARSSA Act, Section 13(5)). The records manager should be appointed at senior management level and must be devoted to the records management function and should also be appointed as a deputy information officer for the government body (National Archives and Records Service of South Africa 2007b; Ngoepe 2014:8). Ngoepe (2014:3, 6) attests that it is required by both national and provincial legislation in South Africa that the records manager should be appointed or designated to a senior official of the government body.

Ngoepe (2014:6-10) and Nengomasha (2013:6) further elaborate that records management as a programme needs to be managed by the qualified practitioner appointed to be accountable at top management level to influence or guide management decisions in terms of records management. Instead, the South African government bodies appoint their records managers at the junior employee's level. The other problem is that, in some government bodies, records management responsibilities are assigned to managers responsible for other services or units like cleaning and facilities management, and this impacts negatively on the proper management of records since records management is always under-prioritised. Some records managers are appointed by means of word of mouth, rather than through official letter (Ngoepe 2014:6-10). The purpose of the records manager post is to ensure that records management practice is in accordance with the organisational objectives and that it complies with the NARSSA Act (NARSSA 2006b:5). It is unfortunate that in some government bodies, the records management function is misplaced or linked to the wrong directorates or divisions, e.g. Finance, Human Resources, Information Communication Technology, where it receives less priority in terms of budget allocation and other resources. To make it worse, in some of the government bodies records are managed by the creators with no relevant skills or competencies since no records manager was appointed or no records management structure existed. This results in a high risk of losing the records and/or its authenticity (Ngoepe 2014:8-9).

Hence, the competent and skilled records manager is necessary to ensure the promotion of "effective, efficient and accountable" records management through inspections and other management strategies in compliance with the NARSSA Act and related legislative prescripts (NARSSA 2007b) as also emphasised by Ngoepe (2014:7). "The records manager is responsible for

all aspects of records management" (NARSSA 2006b:1). Among other records management aspects, the records manager must also be responsible to design, implement and maintain records systems for classification and management of records. The other key responsibility of the records manager is to train all employees on sound records management or ensure that they are trained. The records manager must also ensure that the necessary interventions are made to ensure that records management practice is done in compliance with the principles as stipulated by the National Archives and Records Service Act (National Archives and Records Service of South Africa 2006c:128; National Archives and Records Service of South Africa 2006b:1; Ngoepe 2014:7). The other responsibilities include the development and implementation of records management strategies, policies, disaster recovery plans and lists of vital records (Ngoepe 2014:7; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272).

However, records management will never be complete without the creation and availability of the records metadata. The accountability for management of metadata must also be assigned to the records manager to monitor its creation, with the assistance of the IT manager. Records metadata management roles and responsibilities must be defined in the electronic records management policy and allocated to relevant staff members throughout the entire government body, to ensure that staff know who is responsible for which role throughout the life span of the records. For instance, metadata capturing and metadata management (NARSSA 2006a:7; 2006c:51-52). NARSSA (2007b) listed the following as some of the key duties of the records manager, which were also emphasised by Ngoepe (2014:7):

- Establish and maintain a records management unit,
- Formulate and implement a records management strategy and related records management action plans,
- Formulate and implement a records management policy and related records management procedures,
- Compile and maintain approved records classification system(s)for paper-based and electronic records,
- Manage electronic correspondence systems, e-mail and websites with an Integrated Document Management System,
- Implement systematic disposal programmes to reduce the storage cost involved in storing records no longer required for administrative, legal and functional purposes after a written disposal authority has been obtained from the national archivist,

- Keep all records in safe custody,
- Inspect sub-offices to ensure that sound records management practices are followed,
- Ensure that records management and registry staff are trained to apply the proper registry procedures to facilitate sound management of records,
- Train creators of records to allocate file reference numbers/subjects to records according to the approved file plan,
- Address information security classification and declassification procedures as prescribed by the information security policy, and
- Provide access to information contained in records in terms of PAIA.

However, the records manager is not the only employee responsible and accountable for records management issues, the overall responsibility and accountability for regulation of records and archive management is assigned to the national archivist. The accountability for implementation of records management is assigned to the head of government bodies creating the records (NARSSA Act 1996).

> Heads of governmental bodies must recognize their responsibility for the records management practices of the bodies in terms of both the National Archives and Records Service Act, 1996 and the Promotion of Access to Information Act, 2000. They should ensure that the budget for the records management function is sufficient and that the necessary human and technological resources are allocated to support the records management function as well as to provide access to information contained in records (National Archives and Records Service of South Africa (NARSSA 2007b).

Furthermore, the government body must establish a records management directorate that should take responsibility for keeping and managing the body's records under the head or leadership of records manager. Registry heads and staff should be appointed to deal with daily records management responsibilities as records are created during business transactions. The directorate must handle all records, whether paper-based or electronic (NARSSA 2007b). SANS 23081(2006) listed the following records management responsibilities for relevant organisational staff:

(a) Records management professionals are responsible for:
  - the reliability, authenticity, usability and integrity of metadata associated with records,
  - training users on capturing, managing and using metadata,
  - participating in the definition of metadata requirements,
  - developing related policies and strategies, and
  - monitoring the process of metadata creation.

(b) All employees are responsible and accountable for:

- ensuring the accuracy and completeness of the records management metadata for which they are responsible.

(c) Executives are responsible for:

- ensuring that internal controls are in place so that customers, auditors, courts, and other authorized users can rely on the information that the organisation produces, and
- supporting the use of records management metadata and related policies throughout the organisation.

(d) Information technology personnel are responsible for:

- the reliability, usability and integrity of the systems used to capture and maintain metadata, and
- ensuring that all records management metadata is linked to the related records and that these links are maintained.

More significantly, electronic records management responsibilities and accountabilities must be assigned to specific staff belonging to a specific organisational unit, who must, together with the IT staff, "accept responsibility for the intellectual control and physical management of all electronic records". In most organisations, especially government bodies, the electronic records management is usually neglected and left to information technology practitioners (Chaterera, Ngulube and Rodrigues 2014:373). The records manager must be assigned the responsibility and accountability for leadership in records management, including electronic records. The records manager needs to partner with the IT manager for electronic records management (NARSSA 2006c:52; Yusuf and Chell 2005:80).

2.2.2 Recordkeeping systems

The other objective of this study was to investigate the nature of medical recordkeeping systems in the healthcare institutions in line with records management operations, recordkeeping functional requirements and metadata requirements. The intention was to explore whether the existing recordkeeping system covers all fundamental records management operational activities, functional requirements and metadata requirements. Hence, the recordkeeping system may be defined as the overall activities that are undertaken by the organisation when managing and controlling records and all the resources required in conducting such activities, rather than "automated system" or "software package" (Horsman 2001:9). It is deemed advantageous to use the records management system that is integrative of records in different formats and mediums for smooth management of

records such as paper-based and electronic (Mcleod 2012:187; Ngoepe 2014:5; Ndenje-Sichalwe, Ngulube and Stilwell 2011:276). The recordkeeping system should also be developed guided by organisational business procedures and activities (Horsman 2001:9; Ngoepe 2014:5). This is why Horsman (2001:9) also defines 'recordkeeping system' in a simple definition as "the whole of the procedures, methods, knowledge, means and documents with which an organisation gives form to its recordkeeping function".

This is supported by Ismail and Jamaludin (2009: 137-138) who describe 'recordkeeping' as "the process of preserving records that are complete, reliable and accurate as evidence used for organisational decision making and proving business transactions made". The recordkeeping system is therefore used to create and capture records as the business transactions are conducted on the organisational business process. This helps to keep records about what business transactions were conducted, by whom, when, where, how and for what, as also "required by the legal and statutory regulations". The recordkeeping system covers functionalities relating to (a) records management operations, (b) recordkeeping functional requirements and (c) metadata requirements (Ismail and Jamaludin 2009: 137-138) to be discussed in the next sections.

However, it is a requirement of the NARSSA Act that "all governmental bodies establish a records management programme" as also emphasised by Ngoepe (2014:6). The researcher supports Lott (1997:iv); Boonstra and Broekhuis (2010:1-2) that records need to be managed using the healthcare system to ensure proper access to information for keeping patients and clinicians informed. This is significant because when patients are informed, they can easily realise the need for certain services and seek for the service or intervention from clinicians or healthcare workers. Informed patients may also seek alternative service or second opinions from relevant people if they are not satisfied with the current service. In most instances, the healthcare records are decentralised to the healthcare institutions such as hospitals and health centres and therefore should be the system design. That makes it not easy to organise and integrate patients' information.

Furthermore, the researcher's viewpoint is that records management is an organisational collective responsibility and many organisational officials need to be partnered and be involved to play their role in ensuring permanent authenticity of the records. This was also suggested by Ngoepe (2014:6-7). This is because, more importantly, records need safety and security, proper preservation and filing for easy access and usability. Decentralisation of patients' records also makes it difficult for the clinicians to share information transacted from different healthcare institutions, which may

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result in services or prescriptions and treatment repeated for similar patients. Electronic documents and records management systems may be an absolute solution for patients' records simultaneous sharing with different healthcare institutions, regardless of geographical distances. This makes records management a collective responsibility rather than the records manager per se and this is why NARSSA (2006b:2) underscores that

> In the execution of their functions, record managers should form partnerships with the decision and support personnel, IT personnel, systems analysts, risk managers and the internal auditors to enable them to work together to create records systems that are trustworthy and that produce reliable and authentic records (NARSSA 2006b:2).

2.2.2.1 Records management operations

This section discusses literature about the nature of medical recordkeeping systems in line with records management operations as part of the study objectives. The intention was to explore whether the existing recordkeeping system covers all fundamental records management operational activities. Records management operations are simply the process of managing records which involve all the activities discharged in managing the records throughout the life cycle (Ismail and Jamaludin 2009: 138; Ngoepe 2014:2). In the healthcare institution, the healthcare records are managed when it comes to handling, organising, safety and security measures. Therefore, in order to ensure effective records management operation, an effective records management system framework needs to be established during the records management planning process (Lott 1997:iv) as also deemed necessary by Ngoepe (2014:2), Ngoepe and Van der Walt (2010:88), Ndenje-Sichalwe, Ngulube and Stilwell (2011:269). However, specific records management operations or activities that need to be covered by the recordkeeping system includes:

> capturing records into the records system, determining the records retention period, registering records, classifying records, storage and handling procedures, access and retrieval, applying the disposal authority and documenting records management processes (Ismail and Jamaludin 2009: 138).

However, the functional requirements for electronic records management also include records capturing, identifying, arrangement, description, classifying, storage, preservation, metadata and access, appraisal, retention, disposal, access management, security management and rendering of search and retrieval services to clients (Horsman 2001:14-16; Katuu 2012b:6; International Council on Archives 2008:16; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). Additional to these, the paper-based records also require accessioning as an activity on top of all the other operations

(Katuu2012b:7). Documentation of records management processes or creation of policies and procedures also forms part of the key operational tasks for records management (Chinyemba and Ngulube 2005; Ndenje-Sichalwe Ngulube and Stilwell 2011:269). This is because "management of records after their creation is just as important as ensuring that the right records have been captured" in the system (Chinyemba and Ngulube 2005).

Fundamentally, the records management process-guiding document should be created to clearly describe the legal, organisational and technical requirements of the recordkeeping operation. The document should also cover records management processes authorisations. The good examples of these processes include classification, disposition, indexing and review of records (ISO 15489-1 2001, Granath, Alariksson and Axelsson 2004:31; Nengomasha 2009:112; Ngoepe 2014:3; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). Some of the records management operational activities need to be documented for approval of the appropriate authorities. For instance, the documentation of operational procedure about records capturing and the records retention period should also be properly documented and submitted to organisational management for approval. The decision about usage of off-site storage should also be documented for outside approval, for instance by the archival authority or auditors (ISO 15489-1 2001, Granath, Alariksson and Axelsson 2004:31; Nengomasha 2009:112; Ngoepe 2014:3). This implies that the absence of these operational activities in an organisation represents or shows non-records management compliant in the organisation. In most organisations, some activities are performed while others are not discharged (Ngoepe 2014:3; Ngoepe and Van der Walt 2009:130). For example, from the researcher's experience, some of the organisations are arranging and keeping their records, even if they do not have a documented plan or guiding documents like a file plan, but only to find that the records are not appraised and disposal is never done.

Nonetheless, Horsman (2001:14-16) further describes each of the functions in accordance with their logical sequence as on the records management workflow. ***Record Capturing*** is the first stage of records management when records are registered and/or entered into the system, and metadata for those particular records that are acquired is captured (Horsman 2001:14; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). ISO (15489-1 2001); Ndenje-Sichalwe, Ngulube and Stilwell (2011:269) stress that, among other records capturing activities, is the process of selecting or deciding which records should be captured or not captured into the records system. ISO (15489-1 2001) adds that this is done by analysing the regulatory environment, business nature and process as well as the records requirements for accountability. The risks of losing each significant record for not being

captured must also be considered. The records to be determined for capturing are business and personal actions that should also be linked with metadata.

However, using an electronic system for records capturing is an advantage, since the records system will assist the organisation in establishing the relationship or differences between different records and creators of each of the records (ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). It will also determine the business activities that led to the creation of each of the different or similar records. The records system must be capable of placing records and its relationship, and link it to other records similar to or different from it. The records capturing is conducted by allocating explicit metadata, embedded in and attached to a specific record, regardless of its format. The metadata should be designed according to the records system procedure to retract the records status, structure and integrity with authority (ISO 15489-1 2001).

The other record-capturing operational activity is records registration. Registration is the process of "giving a record a unique identifier. For example, number or title to provide evidence that it is created" (State Records New South Wales 2004). In other organisational records systems, records need to be registered before all other actions, like capturing into the system, can be implemented. Registration is there to assist in authorising and eventually proving the records' capturing and creation. It also regulates retrieval of records from the records system (ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). The records registration entails records' brief description and its metadata to identify its uniqueness. This is a way of formalising the capturing of records into the system. The records system can also be designed to ensure the possibility of automatic electronic registration without the intervention of the records manager (ISO 15489-1 2001). Registration of records as they enter the system is done with the purpose of establishing physical and intellectual control over the records that are entering the records system (Chinyemba and Ngulube 2005). ISO15489-1(2001) further states that the following techniques may be used to properly capture records:

- Classification and indexing to ensure appropriate records linking, grouping, naming, security protection, user permission for retrieval, disposal and vital records identification,
- Arrangement in logical structure and sequence,
- Records registration for evidence of its existence, and
- System profiling business action. This will provide business context metadata, records location, outstanding actions on records and records access history in dates and actions.

Furthermore, during the second stage called ***Record Storage***, records are stored in a relevant storage medium in such a way that it may not be altered and will be easy to maintain for permanent authenticity and reliability (Horsman 2001:14). Records storage is mostly used to keep and handle records that are no longer used consistently or are terminated and used occasionally for business purposes (Chinyemba and Ngulube 2005). The organisation must use the records storage media that will maintain the records' usability, reliability, authenticity and preservation for their entire life span (ISO 15489-1 2001; Asogwa 2012:206; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269).

As a result, this is because they need to be properly maintained, handled and stored at all the times. Records of a permanent value must be preserved and handled in a storage medium that is secured in terms of protection against unauthorised access, loss, destruction, theft and disaster. The organisation must have records migration policies and procedures to ensure the possibility of migrating records from one system to another in case the organisation changes the records system. The design of the records system must be of such a nature that the organisational change to another system does not affect records accessibility, authenticity, reliability and usability through their entire life span. For example, records may be migrated from one software or hardware system to another. Migration processes must be recorded to serve as a future proof (ISO 15489-1 2001; Asogwa 2012:206).

In the third stage, known as ***Record Arrangement***, records are classified according to activities of the transactions that led to its creation, and files are opened for different categories of records. Eventually, files are separated according to records relationships (Horsman 2001:15). During classification, records are categorised systematically in a consistent way to ensure that they are grouped according to their relation for easy capturing, retrieval, maintenance and disposition (State Records New South Wales 2004; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). Records' classification enables the records system to give default security level, location and sentencing to each of the records (Raas 1999:119). Classification has to do with the classification of records in terms of business activities. Classification of business activities regulates and simplifies business process activities. Classification of records assists in establishing a link between different records, naming records consistently and facilitating retrieval of records of a specific business activity or function. It also renders security protection to records, as its different users are allocated different authorities for access and action on a particular type of record in the system. Responsibilities for management of specific types of records are also distributed through classification and it is used to determine records' retention period and disposal actions (ISO 15489-1 2001).

Furthermore, a large number of business processes can be supported by the records classification system since it is based on the analysis of the business activities of the organisation. The classification system and indexes as recordkeeping operation may also need the support of vocabulary control to explain and define specific terms used by the organisation. The organisation may opt for either manual or electronic index. The coding and numbering of records are also important for the system to identify the location of the records for retrieval purpose (ISO 15489-1 2001). Using a classification scheme to index and locate the records is also done to establish physical and intellectual control over the records that are entering the records system (Chinyemba and Ngulube 2005). Ngoepe (2004) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:269) underscore that records should be classified wisely according to their subjects so that users do not encounter problems when searching for a specific individual record/information out of the whole pool of records. According to the findings of his survey, NARSSA has assisted government bodies in designing classification systems and approved most of them (Ngoepe 2004).

The fourth stage of records operational activities is ***Records Description***. In this stage records are labelled in terms of its metadata and contextual information. For instance, metadata entails technical data such as creator, transaction and receiver. The contextual information entails details such as the sender, addressee, business process and organisational unit (Horsman 2001:15). The metadata assists in characterising and distinguishing records-specific business context when making business decisions or deciding on personnel accountability. For instance, metadata may assist with information about who, when, what, how and why records were created (ISO 15489-1 2001). For example, in the public health sector, metadata will prove who received treatment from which clinician, when and what type of treatment and prescriptions were given to that particular patient.

The fifth stage of records operational practice is ***Records Appraisal***, in which the organisation makes decisions about the retention period for their records. In this regard, the organisation decides how long certain records should be preserved in the organisation before they are disposed of (Horsman 2001:15-16). Furthermore, ***Records Disposition*** is the sixth stage, in which records are either destroyed or transferred to archive repository for permanent preservation as required or planned in the retention schedule (Horsman 2001:16). The disposal of records is also one of the important operational activities in managing records properly. It is all about retaining, deleting, transferring or destroying records after the decision about appraisal is taken. The process of disposal

includes actions such as records appraisal, sentencing, destruction or transfer of records to National Archive repository (State Records New South Wales 2004).

However, in disposing of any records stored in the system as evidence of a business activity or processes, authority needs to be applied and granted. For example, in South Africa, authority is granted or denied by the National Archives based on certain conditions or reasons in response to the organisation or government body application. The organisation must investigate the records before deciding to dispose of it to check if there is any work, litigations or investigations pending on the records that will need the records as evidence. They must be sure that the records are no longer required or valuable to the organisation (ISO 15489-1 2001; National Archive and Records Service of South Africa 2007a:26).

The seventh stage is ***Records Preservation***, whereby valuable records are maintained or conserved for future use, whether electronically in the electronic system or manually in filing custody. Electronic records migration is also considered at this stage for future obsolete E-Systems (Horsman 2001:16). In the case of paper-based records, tracking must be taken into account. Records tracking also forms part of the recordkeeping operational responsibility. Poor management of records makes it difficult to identify where the records are located at the time of need (Chinyemba and Ngulube 2005; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270). The records tracking is about tracking the record's movement and use whenever records are circulated to different users in an organisation at a given time and date for different purposes. In tracking records movement and use, the system identifies actions/activities outstanding to be conducted on the records and facilitates retrieval by identifying records' location, which also assists in preventing loss of records. The system tracking also assists in keeping the historical information of records in terms of movement to different users and different activities conducted by different specific users. It also helps to identify the current person in possession of the records, the date, and the time and period of the possession from person to person. The system should allow and track transfer of records from person to person until the records are returned to its original location in the custody (Chachage and Ngulube 2006:14; ISO 15489-1 2001; State Records New South Wales 2004). For instance, the survey revealed that, in Kenya, poor records management made it difficult to trace records of office relating to controversial plot allocation (Kemoni and Ngulube 2008:279). It is worth noting that failure to track records' movement will eventually lead to no healthcare service or poor healthcare service being rendered in the healthcare institutions.

Lastly, the eighth stage is ***Making Records Accessible,*** in which authorised people are provided with the records in an authentic and reliable condition when they require it (Horsman 2001:16-17). Provision of access to records for relevant clients is also one of the significant records management operational requirements. The records that are not accessible and retrievable are not useful for the organisation as they cannot be provided to the members of the organisation when they need to use them (Chinyemba and Ngulube 2005). Records access must be properly managed for protection of records from unauthorised access for security, privacy and confidentiality purposes (State Records New South Wales 2004; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270). A formal guideline to regulate and facilitate access to different records is a requirement in an organisation to specify who is allowed/not allowed to access certain specific records on certain grounds. The guideline may be informed by specific legislation about privacy, security, freedom of information and archives. The restrictions must be set to regulate the operation of the records system based on the organisational regulatory environment business operation and principles on right of access. This is because records may contain information of a different nature such as personal, commercial and operational sensitive information. That is why access to some of the records or information should not be permitted. Records access control is done in relation to the business needs and regulatory requirements to both internal and external users (ISO 15489-1 2001). ISO further emphasises that the following factors need to be considered in managing access to records:

- Categorisation of records by access status and specific time,
- Release records to authorised users only,
- Encrypted records read when required and authorised,
- Records processes and transactions only conducted by authorised officials, and
- Assignment of responsibility to one of the business units to specify and allocate access permission (ISO 15489-1 2001).

These records management operational activities are also illustrated by Horsman (2001:17) in Figure 2.3.

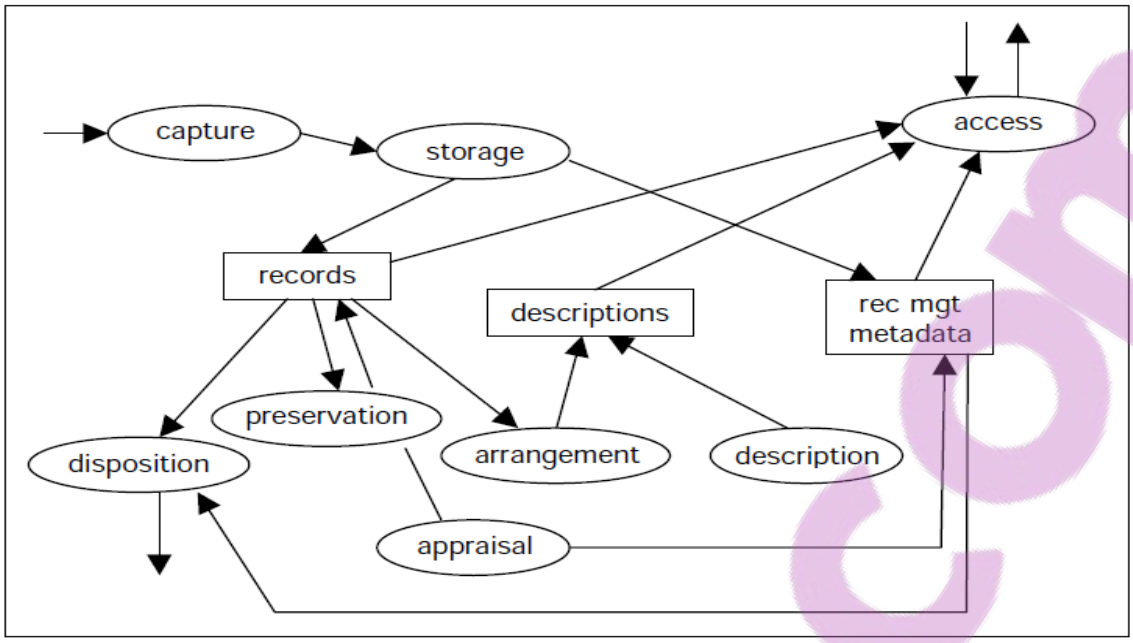

Figure 2.3: Schematic illustration of the recordkeeping operational functions (Horsman 2001:17)

Moreover, records management has operational models to be followed as a guideline in planning the processes of discharging the records management operational responsibilities. These records management operational functions are best discussed using the key records management models such as *the records life cycle model* and *the record continuum model*.

2.2.2.1.1 Records management operation as outlined by the records life cycle model

The records life cycle is a fundamental and popular model of records management (Chachage and Ngulube 2006:3; Yusof and Chell 2000:136; Chaterera, Ngulube and Rodrigues 2014:368; Records Management Unit of Public Works 2012) and it is central to records management activities from the beginning of its life to the end. It explains and describes the life span of records, regardless of its form or medium from its creation to its disposal (Bantin 2009:3; Marutha 2011:29; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266-269; Katuu 2015:133; Yusof and Chell 2000:135; Chaterera, Ngulube and Rodrigues 2014:368). The records life cycle stages discuss how records must be handled or operated at each stage. These stages cover operational activities during records' (a) creation and receipt, (b) maintenance and use and (c) disposal (Bantin 2009:3; NARSSA 2004: 44; Katuu 2015:133; Yusof and Chell 2000:135-136). For instance, during the records creation and receipts stage, records management staff ensures protection of records against any alterations from creators who may be corrupt or fraudulent due to poor administration or failure to follow proper business practice procedures. However, during the records' maintenance and use, the organisation maintains the records by ensuring that every user in or out of the organisation access and use the

records under the control and care of the records management staff. Moreover, records are disposed of when they are no longer useful to the organisation. Disposal is done in the form of destruction if the records in question do not have a secondary value or long-term value. Furthermore, if records have a permanent or secondary value, they are disposed of by means of transfer to the archive repository (Bantin 2009:3; NARSSA 2004:44; NARSSA 2007a: 51-52; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266-270). However, a record's life cycle is capable of providing a framework for the smooth development and implementation of the records management programme (Yusof and Chell 2000:135), since it assists the records manager in examining the kinds of records created and their way of creation and utilisation (Records Management Unit of Public Works 2012).

2.2.2.1.2 Records management operation as outlined by the record continuum model

This model was discussed briefly in Chapter One under the item for the theoretical framework. In this chapter, the model is discussed in line with the records management operational activities. The records continuum is a records management model designed by Upward (2000:23), which helped to enhance the records life cycle model to cover operations in electronic records management and paper-based ones. The model also helps to scrutinise different levels of documentation for good records management investigations outcomes (Valtonen 2007:180; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266; Chaterera, Ngulube and Rodrigues 2014:368). The records continuum "represents a means of graphically representing complexity which can apply to any records environment" (Reed 2005:1). In discussing the records management operations, Upward (2000:23) developed the continuum model and divided it into four dimensions named Create, Capture, Organise and Pluralise, and four continua, which to Cumming (2010:48) are called axes. The four axes are *evidentially* referring to records as evidence of the actions by the actors, *transactionality* referring to record as produced out of certain transaction, *recordkeeping containers* referring to the resources used for properly preserving the records and *identity* referring to the identification by records metadata details. This is evidence that "records managers are operating in a multidimensional environment in terms of document creation structures, workflow procedures and enterprise control" (Valtonen 2007:179).

However, in order to discuss issues relating to recordkeeping properly, operational activities of the four dimensions of the records continuum model need consideration. During the dimension ***records create***, the records are created when organisational officials are engaged in different business activities as the end product of their action. This is because any action, whether transaction or communication, is recorded at this stage in a formal organisation (Upward 2000:122; Reed 2005:2).

During this dimension, actions are recorded and documented, together with its metadata (Cumming 2010:48). In the records ***capture dimension***, records metadata is captured into a system accessible to all relevant organisational users (Upward 2000:122). In other words, records that represent the actions of organisational officials or responsible units are captured into the relevant system as evidence for the future (Cumming 2010: 48). The records are captured in relation to the rest of the other records in the system according to characteristics and actions in sequence. Records are then distributed in such a way that they will be accessed and understood by other users and colleagues in business activities and stakeholders. Records are registered and grouped using the relevant records management system at this dimension. Metadata and reference for different records captured are also captured with the records (Reed 2005:2).

However, during the dimension ***records organise***, records are organised within the system according to the organisational filing plans or structuring and methods. This is to ensure easy access, retrieval and usability (sharing) by the end users from different organisational units and stakeholders (Upward 2000:122). The records are integrated with other related records of business actions and organised in such a way that they will be differentiated and accessible over time, more than the appropriate organisational access. In other words, records are archived for permanent community use as personal and organisational memory and as regulated by policy and rules that affect all levels of the dimensions (Reed 2005:2). The records are also defined according to different units that created them or organisational consideration to form and keep or preserve the organisational business memory (Cumming 2010:48). Furthermore, during the dimension ***records pluralise***, access to records is opened to everyone in the broader community. Information is accessed and used in an unpredictable way (Upward 2000:122). In other words, the records are archived as a collective social, historical and cultural memory for the entire community of interest (Cumming 2010:48; Chaterera, Ngulube and Rodrigues 2014:368). Records are accessed, analysed and reviewed by community people not belonging to the creating, capturing and organising organisation for different purposes, including accountability and historical memory (Reed 2005:2; Chaterera, Ngulube and Rodrigues 2014:368).

2.2.2.2 Recordkeeping functional requirements

This section discusses literature about the nature of medical recordkeeping systems in accordance with the recordkeeping functional requirements as part of the study objectives. The intention was to explore whether the existing recordkeeping system covers all fundamental records management functional requirements. This entails a crucial process of identifying functions of recordkeeping and

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of documenting these functions in a form of policy or procedure manual. It deals with the question of identifying which activities should be involved in keeping the records and how these activities are going to be conducted by whom, to ensure proper keeping of the business transaction. The recordkeeping functional requirements include, for example, activities such as records creation, maintenance and disposition (Ismail and Jamaludin 2009: 138). Recordkeeping functional requirements also provide the "basis for designing and developing systems that facilitate records management processes" (Ismail & Jamaludin 2009: 138). Horsman (2001:9) also attests that the recordkeeping system can bring about "system analysis and design methodologies". The electronic records management system is best coupled with central digital records repository (the cloud). This is because the introduction of central records repository (the cloud) also requires the adoption of an information system for records preservation, sharing and enabling interoperability. This should be started with designing or redesigning and adapting records management business activities and processes of the organisational records management. Standardised formats of records like Simple Object Access Protocol (SOAP) and packaging Extensible Markup Language (XML) may be ideally utilised (Decman and Vintar 2013:417). Asogwa (2012:201) also accentuates that

> In technologically developed countries, advances in networking and development of software that support complex information flows and collaborative work, has allowed more organisations the opportunities to adopt systems that not only process and store information, but also maintain the organisation's records. In Africa, records managers are yet to capture the basics of electronic record management (Asogwa 2012:201).

Furthermore, it is a requirement in records management that design should be investigated or assessed and a records management system should be implemented for the organisation. The intention is to meet specific records management requirements since the system needs to meet organisation requirements, be part of the core process, be realistic and gather the hard information and records rather than the easy (Willis 2005:94-95). This process of designing and implementing the records management system can best be achieved by following the eight steps of ISO/TR 15489-2(2001) and ISO 15489-1(2001), which are (1) Preliminary Investigation, (2) Business Activity Analysis, (3) Identification of Records Requirements, (4) Assessment of Current Records System, (5) Identification of Strategies to Meet Records Requirements, (6) Designing the Records System, (7) Implementation of Records System and (8) Post-implementation Review.

(1)Preliminary investigation

This is the first step in which information about the organisation is collected from different sources of the organisation. For example, information from organisational documentations and staff is collected through interviews or questionnaires. Furthermore, information about the organisational structure, its role and purpose, the business it conducts, as well as legal, regulatory and political relation is collected from existing organisational documents. Other facts to be collected are critical factors and weaknesses relating to records management (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:179). In so doing, one will gain a clear understanding of the organisation's business, legal, administration and social context of its operation. This will give direction for the need to create and maintain records (ISO/TR 15489-2 2001; ISO 15489-1 2001 and Ngoepe 2008:52; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:179). This step will explore the strengths and weaknesses of the organisation relating to the management of its records, as well as the records management project scope to be carried out. It will enable the system developer to make an effective decision about the new records system to be developed. This is because it explores records problems, feasibility and risks are also assessed in this stage. Preliminary investigation will enable the compilation of the organisational business classification scheme. The information collected will also be used to develop system functionality to select which records will be allowed to be captured into the system and its retention period. This information will also be used to assess compliance with records management requirements and the functionality of the current organisational systems (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:179).

(2) Analysis of business activity

In this step, information collected from different sources of the organisation are used to develop the business classification system. This is done by identifying and documenting every business function, activity and transaction to establish their hierarchy. The business processes flow is identified and documented in this stage. This is the stage of developing the conceptual model of what and how the organisational business work is flowing. This step will also identify the relationship between records, business and processes of the organisation. It will assist in taking a decision about the creation, capturing, control, storage, access and disposal of organisational records (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:179-180).

(3) Identification of requirements for records

The major purpose for this step is to explore the needs or requirements for the organisation to create, receive and keep records generated during its business activities. These needs are documented in such a way that they are structured and easy to maintain. This will enable the smooth running of the business since it makes accountability for the organisation and individual employees possible for matters in terms of legislation and administration. They account to business and interest groups/stakeholders internally and externally. To identify the records requirements business needs, legal and regulatory obligations and other critical responsibility to the community are analyzed systematically. The requirements are also identified by assessing whether the organisation is not exposure to risk without proper records creation and preservation (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:181). During this stage, "the responsibility for records management must also be defined and assigned" for different staff members, including the records manager, ICT manager and many more (Ngoepe 2008:53). This step also outlines the reasons why records must be created, maintained and disposed of, as well as the need for designing systems to capture and maintain records. It outlines how each requirement can be met through proper records management. It will also clarify the reason for measuring the performance of the current systems available in an organisation (ISO/TR 15489-2 2001 and ISO 15489-1 2001).

(4)Assessment of the existing systems

The rationale behind this step is to conduct a survey on the current system used to manage records and other related organisational information management systems. The main aim of the survey is to discover whether these systems properly capture and maintain business activity records. This survey will explore any relationship between the organisation's agreed records requirements, its performance and current systems capabilities (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:182; Chaterera, Ngulube and Rodrigues 2014:369).

(5)Identification of strategies for satisfying records requirements

The major purpose of this step is to determine relevant policies, procedures, standards and other tactics that the organisation can use for proper management of their records (ISO/TR 15489-2 2001; ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:182). Ngoepe (2008:52) underscore that senior management staff must be involved at this stage to gain support for the proposed record system. The engagement may be in a form of training and meetings during

which staff are motivated about the importance and benefits of proper records keeping. They must be convinced that records management needs to be prioritised based on its benefits and the implications it may have for the organisation. This will make them approve records management policies and ensure availability of the resources for records management. This is because the senior management officials usually do not see records management functions as costs saving or significant for business production (Ngoepe 2008:53). ISO/TR 15489-2 (2001) and ISO 15489-1 (2001) state that the archive's authority may be involved in developing records strategies. The strategies to be developed might entail adopting policies and procedures, developing standards, designing new system components and implementing systems. All these need to be done in such a manner that it correlates identified requirements for records keeping and maintenance. In completion of this step, the organisation will have a planned, systematic and appropriate approach to be used for records creation, capturing, maintenance, use and preservation. This will lay a good foundation for the records system design or redesign (ISO/TR 15489-2 2001; ISO 15489-1 2001). The end products of this stage will help the organisation to "identify vital records, develop retention strategy, justify appointment of the records manager, assign responsibilities, design a records management policy" (Ngoepe 2008:53).

(6)Designing of a records system

The purpose of this step is mainly to develop a records system plan using the selected strategies and tactics. This records system plan must fulfil the identified and documented requirements. It must also resolve identified organisational records management gaps. This step will cover a broad definition of the system, encompassing people, processes, tools and technology (ISO/TR 15489-2 2001; ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:184). In pursuing this step, records management professionals and other experts working with users to develop specification that best meets records requirements need to be involved. This will ensure a sense of system ownership, common understanding and knowledge of its intention to all the users (ISO/TR 15489-2 2001; ISO 15489-1 2001).

(7)Implementation of a records system

In this step, the designed plan will be implemented by systematically identifying and putting together mixed strategies. In order to minimize accountability and financial risk, the implementation process must be planned and documented carefully. This might be due to the complexity of the integration of improved records system to cover communication and business processes. The improved integrated records system must minimize disruption to business activities, improve the

quality of service and function as a long-term accreditation investment to the organisation (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:276).

(8)Post-implementation review

The major purpose of this step is to identify and correct records system gaps by measuring its effectiveness and functionality and evaluating the development process as well as establishing its monitoring strategy for its entire duration (ISO/TR 15489-2 2001; ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:186). This will help the organisation to confirm guarantees on its investment on the records system since it will demonstrate objective information as to whether it is creating and managing appropriate organisational business records. By so doing, risks such as system failure and overtime will be detected and dealt with accordingly (ISO/TR 15489-2 2001; ISO 15489-1 2001).

2.2.2.3 Metadata requirements

This section discusses literature about the nature of medical recordkeeping systems in accordance with the records metadata requirements as part of the study objectives. The intention was to explore whether the existing recordkeeping system covers all fundamental records metadata requirements. Metadata is the information about the records that are electronically captured in the electronic records management system used to manage that record. Metadata is used to identify or describe the record in relation to the other related or similar records (Ismail and Jamaludin 2009:138; National Archives and Records Service of South Africa 2006a:5). MoReq2 (2008:168) defines metadata as a "data describing context, content and structure of records and their management through time". The information contained in the audit trail can also be considered metadata. Metadata gives or provides a description of records in terms of, among others, characters, "identity, authenticity, content, structure and management requirements" (Ismail and Jamaludin 2009: 138). Other examples of metadata are date of records creation, transaction date, volume number and much more, depending on the organisational needs for access control for security to such records or intellectual property (MoReq2 2008:159). NARSSA (2006a:5) elaborates that

> Metadata is descriptive data that gives context to electronic documents. Without the necessary descriptive metadata attached a document cannot be considered to be a record. Descriptive metadata gives information about where a record comes from, who the creator was, when it was created, where it is located, etc. Metadata also contains information describing the systems that generated the records and it also includes information on records management processes and preservation processes like migration procedures and actions, as well as any other preservation actions taken on records (NARSSA 2006a:5).

However, NARSSA (2006a:9) recommends that "manual capturing of metadata" be avoided and consideration be given to "system generated metadata". If the metadata is from a different or separate system it should be copied to the records system containing records for that metadata, rather than being linked between the systems to avoid losing it as the other system might remove or delete it. Losing it may permanently affect authenticity of the records even after them being transferred to the archive repository (NARSSA 2006a:10).

Nevertheless, there are several benefits associated with metadata in organisational records management. For instance, metadata ensures that records are protected, accessible and usable at all the times, gives a good understanding of the record, maintains records value, authenticity, reliability and integrity; and access, privacy and rights are also managed and supported. Metadata also facilitates the process of records migration (SANS 23081 2006; Asogwa 2012:206). It is in terms of the quality of metadata that government bodies comply with legal and regulatory requirements and requirements for records management. This is because metadata enables provision of authentic records and compliance with the requirements of records management by providing appropriate information, properly managing record retrieval, retention period and disposal (National archives and records service of South Africa 2006a:9).

Furthermore, the metadata ensures that the record is a real record and not just a document, because a record without record metadata is a document. Metadata needs effective protection as much as the record it represents in order to avoid alteration. Under normal circumstances there must be an authorised person regulated by policy to correct metadata that was created due to human error. The metadata error correction must also be captured as the audit trail by the record system. The policy must specify the nature of errors that may be corrected by the authorised person. The metadata repository must also be backed up and guarded against the records disasters. During the records migration, metadata also needs to be migrated with the records they represent (National archives and records service of South Africa 2006a:8). Giving a couple of examples of metadata, the SANS 23081(2006) outlined some of the records management metadata classified as:

- *Records Metadata*, which covers details about the *record's identity* such as unique identifier; record name; record structure; data and time of creation; and relationship with other records; the identity of the creator; and access security restrictions,
- *Policy, mandates and business rules metadata*, which covers reasons for creation of policy, mandate and business rules,

- *Business processes metadata*, which covers functions and activities related to record creation or resulted in records creation, and
- *Records management processes metadata*, records file plans, disposal authorities and retention periods, authorised individuals to execute the records management process, date and time of processes execution.

2.2.3 Organisational records archiving

The other objective of this study was to establish medical record archival processes in terms of appraisal, retention, preservation strategies and storage management. The intention was to explore whether the healthcare records archival process was appropriate and whether the healthcare records attained were appropriately appraised and assigned retention periods, as well as to check the appropriateness of records preservation strategies and storage management. Records archiving is the function of records management, which includes permanent preservation of archival value records and provision of access to these records as a "corporate collective memory". It provides the opportunity for the public to permanently preserve their created memory about the past for the future generation and future researchers. Records archiving is about the act of selecting and preserving created, maintained and protected archival records as the memory of the organisations. These records are eventually preserved permanently as per their secondary and tertiary value by means of (a) appraising, (b) setting retention periods, (c) applying preservation strategies and (d) appropriate records storage management (Ismail and Jamaludin 2009: 138). Kampffmeyer (2006:11) and Kampffmeyer (2004:6) attest that electronic records management like ECM must also cover the records management functionality requirements such as records archiving, among other requirements. Electronic records management is called "electronic archiving" (Kampffmeyer 2004:16). He further explains that

> Electronic archiving systems today generally consist of a combination of administration software like Records Management, Imaging or Document Management, Library Services (IRS - Information Retrieval System) and storage subsystems. But it is not just electronic media that are suitable for long-term archiving. For purely securing information microfilm is still viable, and is now offered in hybrid systems with electronic media and database-supported access. The decisive factor for all long-term storage systems is the timely planning and regular performance of migrations, in order to keep information available in the changing technical landscape. This on-going process is called Continuous Migration (Kampffmeyer 2004:16).

2.2.3.1 Organisational record appraisal

This section discusses literature about medical record archival processes in terms of records appraisal. The intention was to explore whether the healthcare records attained were appropriately appraised. This is the process of planning about the organisational business records that are to be created during business transactions and of determining how long each category of records will be preserved. For example, determine which records are to be kept permanently and which ones for a short period in business accountability. During appraisal, business activities are assessed or evaluated through survey to determine the kind of records to be created during the business process and captured into the recordkeeping systems, and how long they will need to be kept (Ismail and Jamaludin 2009: 138; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270-271; Chaterera, Ngulube and Rodrigues 2014:370). Maryland State Archives (2015) states that

> Records appraisal is an analysis of all records to determine their administrative, fiscal, historical, legal, or other archival value. The purpose of this process is to determine for how long, in what format, and under what conditions a record series ought to be preserved. Records appraisal is based upon the information contained in the records inventory. Records series shall be either preserved permanently or disposed of when no longer required for the current operations of office (Maryland State Archives 2015).

Assessment of the regulatory environment, business nature and process, requirements for accountability and risks are the key factors in deciding and determining records retention period. The decision about the records retention period should be taken in collaboration or consultation with business administrative staff, the designated records manager and all other stakeholders. The decision must be taken with consideration to compliance with both internal and external policies, standards, statutory or regulatory requirements and other business activity requirements. This decision must not be made with the intention of deliberately denying people the right of access to information (ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270-271).

Furthermore, electronic records should also be appraised at an early stage. This is because it is not easy to appraise a terminated electronic system since the information about its operation and metadata may also be lost. The electronic records storage is more affordable than paper-based records and this is why other organisations do not recommend appraisal of electronic records. Keeping records that are less important to the organisation may pose direct and indirect costs. Direct costs include disk space, bandwidth, hardware, software and migration. It can indirectly cost an organisation system maintenance staff, records retrieval time, back-up and disaster recovery.

"Appropriate appraisal scheduling and disposal procedures should be applied to electronic records" (NARSSA 2006c:16).

2.2.3.2 Organisational records retention and disposal

This section discusses literature about medical record archival processes in terms of records retention and disposition, with the intention of exploring the appropriateness of records retention assignment and disposal strategies. Records retention has to do with the keeping or retaining of medical records for a certain period according to its value in a records storage medium until such time that it reaches its disposal period to either be destroyed or transferred to an archival repository for permanent preservation. The organisation should have their own "documented records retention and disposal program" to secure that records with fiscal, legal and business continuity (vital records) value are preserved (Ismail and Jamaludin 2009: 139; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270-271). Furthermore, survey plays a central role in starting the records retention process since it enables, among others, activities of managing records creation of retention schedule, identification of records with permanent value and identification of records that are due for disposal (Chaterera, Ngulube and Rodrigues 2014:370). In the case of South Africa, similar to Maryland State Archives (2015), proper retention and disposal rules must be applied only after the national archivist issued a written disposal authority (NARSSA 2006c:32), although there were always some delays or lack of support for disposal approval from the NARSSA (Ngoepe 2014:8; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272). Asogwa (2012:201) also attests that South Africa, unlike other African countries such as Botswana, Kenya and Zimbabwe, has developed and put in place for implementation the relevant guiding policies for electronic records management, destruction and disposal following proper disposal authority.

However, the researcher is of the same view as MoReq2 (2008:51) that the organisation needs to develop a retention and disposal schedule that will guide them "to govern the retention and eventual fate of records from on-going operation". This is also underscored by Ngoepe (2014:7); Nengomasha (2013:3) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:271-272). This is the reason why Chinyemba and Ngulube (2005) confirm that "a records retention and disposition schedule is crucial to the management of records of the organisation". The schedule will guide the organisation on the period of retaining the records and the way in which each category or class of records should be disposed of. The records retention tables give a procedure to the organisation as to how and when to move inactive records to inactive storage and destroy records that have no organisational value (Chinyemba and Ngulube 2005; MoReq2 2008:51; Ngoepe 2014:7; Ndenje-

Sichalwe, Ngulube and Stilwell 2011:271). The records may be retained and disposed of in classes, files, sub-files and volumes according to the requirements of the organisational business that created such records (MoReq22008:51). This is because a shortage of filing space is always considered fundamental in the government bodies (Chaterera, Ngulube and Rodrigues 2014:369). Yet, according to the study by Ngoepe (2014:9-10) on records management models in South Africa, most government bodies are still lingering around in terms of records disposal. For instance, Ngoepe stated that most government bodies had no ability or knowledge to distinguish archival value records from the ephemeral records and no disposal authority was issued from the National Archives for ephemeral records destruction.

Furthermore, in an electronic records management, retention and disposition may be managed using the ERMS. This is why ISO 15489-1 (2001) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:271) underscore that the records retention and disposal process should be taken into consideration during the system design. The system must be designed in such a way that it facilitates implementation of records retention and disposal as decided by the organisation. If possible, the system should be programmed to activate automatic alerts for disposal. It must be capable of providing an audit trail that shows completed disposal or disposed of records and records outstanding for disposal. The researcher does not share the view of Lott (1997:vi) and Yusuf and Chell (2005:63) that records can be preserved permanently if they are digitised and kept in media such as tape recordings, even if, according to policies, such records have to be disposed of after a certain period. This is because records may not be permanently useful or required for the organisation of origin and, if is no longer required, the end result should be disposal. Even if the records have secondary value, they will still be disposed of by means of transfer to an archive repository, whether in paper or electronic format as required by the NARSSA Act (No. 43 of 1996) and attested by Ngoepe (2014:7); Ndenje-Sichalwe, Ngulube and Stilwell (2011:271).

2.2.3.3 Records preservation strategy

This section discusses the literature relating to medical records archival processes in relation to storage management as part of the study objective, with the intention to check appropriateness of records preservation strategies. Records preservation strategy is very important to ensure that records are preserved in such a way that they will be available and accessible in its good condition as long as they are still required for different purposes. This is also the case with electronic records, especially in relation to records migration between systems as technology changes from time to time. The organisation should strategize to ensure that, even if technology changes or becomes

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obsolete or organisational structure changes the records, quality and characteristics are maintained and the risk of losing records are minimised (Ismail and Jamaludin 2009: 139). The best records preservation approach, especially for an organisation or government body with many institutions under its control, is to proactively ensure that records are organised in both paper and digital format and medium. The paper records may be organised and preserved locally at institutional level and the digital records from all the institutions may be preserved centrally in the cloud solution under the control of the centrally higher level government body using standardised hardware and software (Asogwa 2012:206; Decman and Vintar 2013:418).

Furthermore, Decman and Vintar (2013:414) elaborate that the cloud as a records preservation method is a good strategy for public records administration, management, preservation and archiving as a form of "centralised technological solution for intermediate preservation and archiving". This can suitably be relevant for hospitals for centralisation and sharing of medical records, preservation, access and archiving technology. It will enable hospitals to properly handle records preservation at all levels, such as physically, logically and conceptually. This will ensure trustworthiness records to archive when they are forwarded during the disposal stage as archival value records. It can be used as a cost-effective electronic records centre in terms of maintenance and sharing of records of all categories, whether active, semi-active and inactive records. It can be a better records preservation strategy/solution than having separate preservation solutions at each hospital, which can be costly in terms of staff and other resources. The cloud mode of records preservation strategy can be even more effective with modern technology and fast internet connection (Decman and Vintar 2013:414).

However, the government will need to establish and manage on their own, centralised records preservation repository. Different institutions or hospitals should have their own Electronic Document and Records Management Systems (EDRMS) connected to the government cloud system. This is to ensure records storage and sharing of all categories of records (active, semi-active and inactive) through the central repository system is possible. Institutions will share infrastructure (hardware) to handle the physical level of records and software to handle logical and conceptual level of records. This will enable all the hospitals to ensure "secured network to transfer, store and manage documents" in a remote central geographical location (the cloud). By clouding records preservation, the institutions will be sharing infrastructure, service architecture, software and records management service delivery responsibilities. The central repository establishment and management of records should be guided by the national archivist to ensure compliance even when

archival value records are transferred to an archival repository system during disposal. This will eliminate redundancy of systems and duplication of efforts and resources across the institutions of the same government department. Relevant policies should also be developed to give guidance on the system processes (Decman and Vintar 2013:415).

Nevertheless, the central record preservation repository has several advantages and benefits and only a few known disadvantages. The first advantage is that the establishment of the repository will be cost-effective as the government or the sharing institutions may simply establish on their own. Consumption of energy on service and storage will be less. Another advantage is a lower cost on IT management, since IT staff might be attached to the government or might belong. It will also reduce duplication of records per client, regardless of where the client was assisted/served. Access to records in the repository will be limited to only authorised people from different institutions. The infrastructure costs will be reduced since the institutions will be sharing communication network. IT employees, equipment and costs will be shared with the other institutions. The repository may be accessed at any time and any place using different IT devices, including mobile technologies such as “computers, smart phones and tablets” (Decman and Vintar 2013:416). The centralised records preservation solution needs appropriate support from higher central government level. It needs the proactive support in terms of budget to ensure the smooth running of “digital preservation” and “risk management”. It also needs a lifetime support to finance “personnel, hardware, software, management and other activities” that may threaten its successful operation (Decman and Vintar 2013:418).

However, the only disadvantage of the central records preservation system is that once the system fails, it affects service delivery for all the institutions simultaneously. The government must address issues relating to security, network dependency to access the records, the cloud service quality and availability, bottlenecked bandwidth, compliance with guiding regulations and standards, and cloud computing risk management program. To avoid even more risks, the government should adopt community cloud managed and used by themselves (Decman and Vintar 2013:416-417). Data migration and system conversion must also be considered when designing a system for records preservation. The system must be designed in such a way that records remain authentic, reliable and useable for their entire lifespan, even after the system changes. Changes to the system may include system format conversion to modern appearance format, data migration from one system hardware and software to another. This is to ensure access and reuse of the same/old data from the old system

in the new technological system (ISO 15489-1 2001; Duranti 1999:155; Lin, Ramaiah and Wal 2003:120).

Furthermore, the records management staff need to be trained on the old and new system formats to have the skills to analyse and recommend the right system, implement and test migration. During formatting, some data might be corrupted or lost forever (Asogwa 2012:206; Lin, Ramaiah and Wal 2003:120). "Absence of migration strategies for e-records" is one of the challenges in the Eastern and Southern Africa Regional Branch of the International Council of Archivists (ESARBICA) (Wamukoya and Mutula 2005a:75). The survey conducted in Namibia revealed that government officials experienced challenges of accessing records transferred from old software and hardware, which is from FOXPRO to Oracle. This was because the new system was not tested prior to data alteration/loss (Nengomasha 2009:117-118). This is when the content information of the old system is imported into the new system. Quality assurance for transferred data is vital to avoid errors in the new system during this process. Converting electronic records to non-proprietary electronic format to be technologically stored and managed is easy to organize, cheaper for storage and more conducive to easy access to records (Chester 2006:63). He further listed several e-record formats that one may consider for organisational recordkeeping or archiving as follows:

a) Text

- Pure Text: Alphanumeric information, and
- Extensible Markup Language (XML).

b) Still image

- Tagged Image File Format (TIFF).

c) Mixed Text and Picture formats

- Hyper Text Markup Language (HTML),
- Adobe's Portable Document Format (PDF and PDF/A), and
- Mixed graphic and text (JPEG2000 and DjVu).

d) Desktop Tool Formats

- Native format (e.g. Microsoft Office & CAD), and
- Open Document Format (ODF) and open XML

e) Audio Video

- CDs and DVDs, and
- Digital audio/visual formats like WAVE, AIIF, MP3, Real Media, AVI and QuickTime.

On the other hand, the researcher shares Katuu's (2012:11) view that it is fundamental to take maturity levels for both digital preservation and digital repository into consideration. There are several maturity models that can be applied in measuring and improving maturity levels for digital content preservation and repository. Some other maturity models are Digital Preservation Capability Maturity Model (DPCMM) by Dollar and Ashley (2013), Shaman/Scape Capability Model by Becker, Antunes, Barateiro and Vieira (2012) and Trusted Digital Repository Maturity Model (TDRMM) by Cho (2012).

Furthermore, Cho (2012) underscores that the Trusted Digital Repository (TDR) and its attributes are necessary to ensure that digital resources are provided to its end-users in a manner that they are reliable and trustworthy over a long period of time as required. Many approaches have been attempted in TDR implementations. These implementation attempts include the identification of mandatory requirements that characterise digital repositories' (DRs) trustworthiness and evaluation of proper keeping of the requirements by organisational DRs. Mandatory requirements include international standards, archival system architecture, metadata requirements, functional requirements and managerial practices. The trustworthiness of DRs can be evaluated by means of audit criteria and risk assessment (Cho 2012). Successful implementation of TDR requires creation and implementation of effective policies for DR information administering activities. For instance, digital information administration includes registration, classification, retention, preservation and access provision, skilled and competent staff, maintenance and control technology (Cho 2012). Trusted Digital Repository Maturity Model (TDR-MM) was introduced in five model stages. Capability Maturity Model Integration (CMMI) was introduced as a link to the TDR-MM. CMMI were introduced in five levels of maturity from immature level to the mature level. This model was introduced for assessing the current state of digital repository maturity/trustworthiness and guides on a way forward to improve in future to the next level of trustworthiness/maturity (Cho 2012).

However, Dollar and Ashley (2013) introduced the digital preservation model, known as the Digital Preservation Capability Maturity Model (DPCMM). The DPCMM was introduced with the purpose of ensuring that organisations prepare to act proactively in terms of improving their digital preservation capability. It guides organisations on how to best go about improving their digital preservation capability from their current state of capability maturity level going up. For instance, from time to time, organisations may use the model for measuring and identifying areas that require improvement to the next maturity level that is from nominal to optimal in their digital preservation capability. It plays a key role in identifying, protecting and providing access to "long-term and

permanent digital assets" by supporting "the management of a digital preservation program". In this model, maturity levels are cumulative in five levels. This means that the organisation needs to maintain their current performance or achievements at certain levels in order to move to the next higher level to avoid deterioration of capability maturity, due to downgrade of certain achievements. This model was developed as guided by ISO 14721 Open Archival Information System (OAIS) Reference model and ISO 16363 audit criteria certification checklist. The DPCMM aims to assist organisations in improving from "disorganised and undisciplined electronic records management program, or one that does not exist, into increasingly mature stages of digital preservation capability" (Dollar and Ashley 2013:1-2).

Furthermore, Figure 2.4 displays the situation of digital preservation capabilities at each maturity level as discussed by Dollar and Ashley (2013:3). Stage 1 of the model is called ***Nominal***. During this stage the organisation does not have or does not implement "systematic digital preservation program" and that poses the risk of losing all or most of the digital records that have long-term value. At stage 2, known as ***Minimal,*** most of the long-term value digital records are at risk since the "preservation capability" is underdeveloped and are not complying with the ISO 14721 and ISO 16363 specifications. ***Intermediate*** is the name attached to stage 3, under which the digital preservation ad hoc initiatives and projects are supported by the enterprise and are not fully complying with ISO 14721 and ISO 16363 specifications. At this stage there are slight improvements in terms of digital preservation capability, but there is also a likelihood that some long-term value digital records might be exposed to risk. ***Advanced*** capability takes place at stage 4 of digital preservation, under which the organisational structure is robust. Framework or model is designed that comply with most of the compliance requirements for ISO 14721 and ISO 16363 specifications. This put only a few long-term value digital records at risk. Stage 5 is the highest level of DPCMM, called ***Optimal***. At this stage, the organisation conforms to almost all compliance requirements for ISO 14721 and ISO 16363 specifications and, in this instance, there is no long-term value digital records that are exposed to any risk at this capability level.

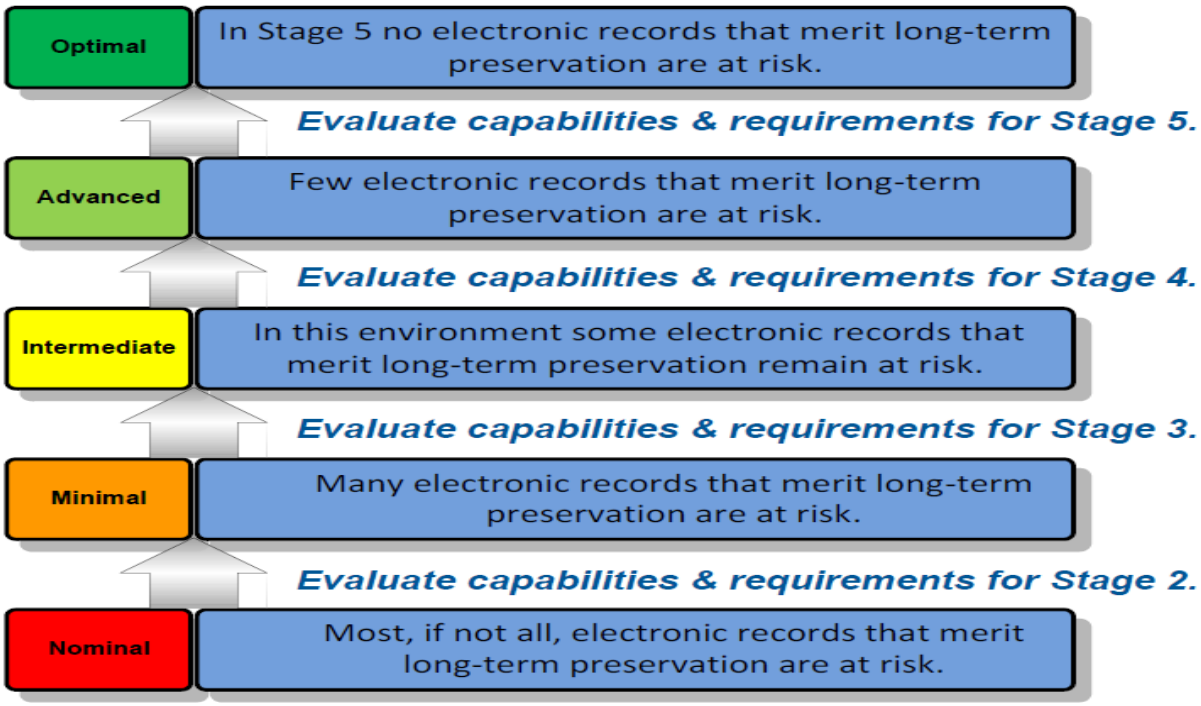

Figure 2.4: Digital Preservation Capability Maturity Model Stages (Dollar and Ashley 2013:3)

However, Dollar and Ashley (2013:4) developed the 15 components of the DPCMM attached to three digital preservation domains that are interdependent on each other. The DPCMM was developed from the ISO 14721 and ISO 16363 "standards and digital preservation best practices". Looking at Figure 2.5, it can be seen that the top domain of the model, called *Digital Preservation Infrastructure*, covers seven components numbered from one to seven. This domain indicates the need for digital preservation policy, strategy, governance, collaboration, technical expertise, open standard technology neural format and designated community. The middle domain is known as *Trustworthy Digital Repository*, which covers records donors or producers and records users as key stakeholders. These are the role players and they are dependent on each other. The *Digital Preservation Services* domain is located on the bottom and covers eight components numbered from eight to 15. This domain services are required for digital preservation such as electronic records survey, ingestion, device or media renewal, integrity improvement or maintenance, security improvement or maintenance and preservation metadata maintenance (Dollar and Ashley 2013:4-5). The component of electronic records survey is considered to be more critical as discussed below:

> The Electronic Records Survey component is a critical interface between Records Producers, the repository, and the Digital Services domain. The Electronic Records Survey addresses the need for an informed estimate of the volume, file formats, and types (e.g., images, text, and databases) of digital content that will be transferred to the digital repository or safeguarded by record producers in their own technology environments. The Electronic Records Survey

component is also dedicated to mitigating technological obsolescence at the time of records transfer to the trustworthy repository. Practitioners are encouraged to engage records producers to capture preservation-ready digital records at or near the time of their creation or receipt (Dollar and Ashley 2013:4-5).

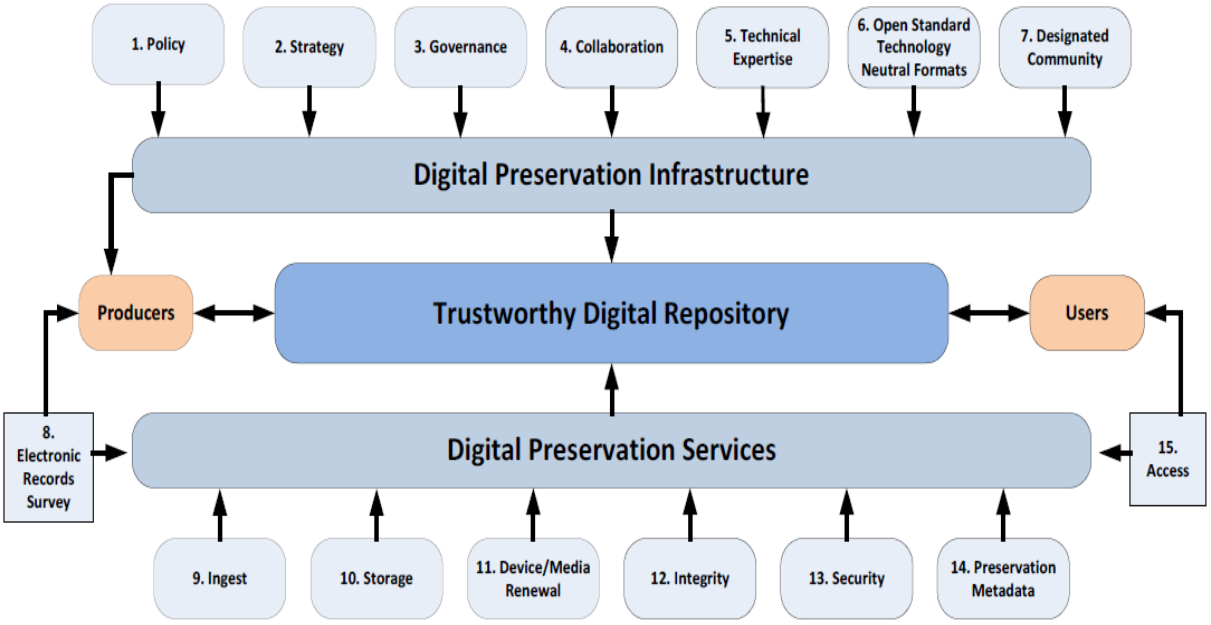

Figure 2.5: Digital Preservation Capability Maturity Model and its interdependent Components and domains (Dollar and Ashley 2013:4)

Furthermore, Dollar and Ashley (2013:7) also developed electronic records management performance metrics from the five maturity levels discussed in Figure 2.5. Self-assessment checklists should be developed for digital preservation components to measure the current state of digital preservation capability in compliance with the optimal capability level of the DPCMM. Figure 2.6 demonstrates performance metrics for electronic records management survey.

Level	Capability Description
0	The organization has little or no capability or resources to collect and analyze information about the volume, location, media, format types, and life cycle management requirements for electronic records.
1	The organization relies on existing retention schedules to identify electronic records of permanent historical, fiscal, and legal value in the custody of Records Producing units. It may also conduct ad hoc, one-time interviews and surveys to identify other electronic records of permanent historical, fiscal, and legal value.
2	The organization uses systematic interviews, surveys, and retrospective analysis of existing retention schedules to identify electronic records of permanent historical, fiscal, and legal value in the custody of **selected** records producing units. This may be enhanced by focusing on identifying "at risk" electronic records in the custody of selected Records Producing units.
3	The organization supplements analysis of "at risk" electronic records through collection of information about the volume and location (e.g., shared drives, databases, applications), media and format types of electronic records of long-term and permanent historical, fiscal and legal value in the custody of Records Producing units. The organization has identified preservation-ready and non preservation-ready electronic records in the custody of *most* records producing units.
4	The organization has identified preservation-ready and non preservation-ready permanent electronic records in the custody of *all* Records Producing units. It uses this information along with other information collected from Records Producing units to systematically manage the transfer and ingest of electronic records.

Figure 2.6: Performance metrics for electronic records management survey (Dollar and Ashley 2013:7)

On the other hand, Becker, Antunes, Barateiro and Vieira (2011:4) introduced a high-level capability model for digital preservation, which illustrates how different groups of capabilities depend on each other, inform each other and control each other. In this model, capabilities are categorised into three, as governance capabilities, business capabilities and support capabilities. As illustrated in Figure 2.7, business and support capabilities operate or function under the control of governance capabilities. On the other hand, governance capabilities are fed with the information by both support and business capability for effective governance. Support capabilities provide support to business capabilities; hence, they depend on them. In this model, the heart of business capability of digital preservation is "Preserve content". This is because digital preservation is concerned with maintenance of content for authenticity and usability by end-users. As a core capability, "Preserve content" is also made up of two capabilities known as preservation planning and preservation operation. Preservation planning monitors, steers and controls content preservation operation for appropriate accessibility, authenticity, usability and understandability of the content to end-users. Preservation operationalises goals and drivers as part of plans and decision implementation.

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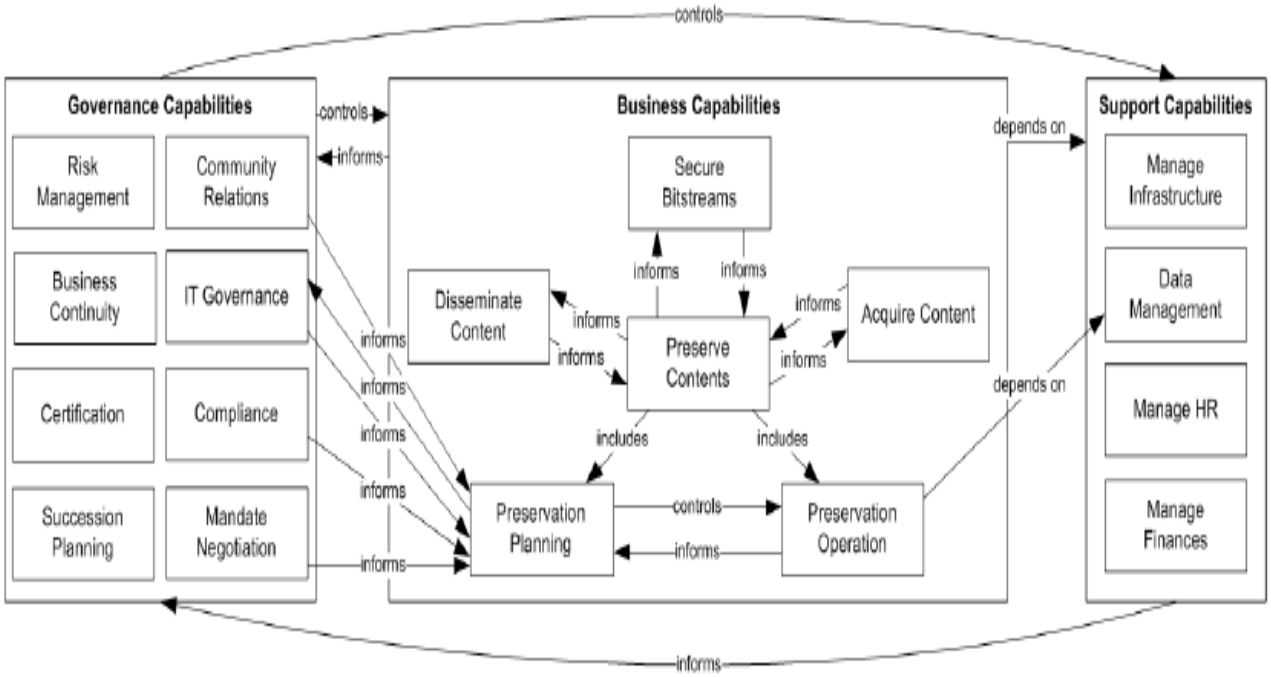

Figure 2.7: Content preservation capability relation (Becker, Antunes, Barateiro and Vieira 2011:4)

Furthermore, Becker, Antunes, Barateiro and Vieira (2011:7) discusses *Preservation operation capability maturity levels*. The maturity levels are discussed in five levels. Each maturity level is discussed in relation to six attributes, which are (1) awareness and communication; (2) policies, plans and procedures; (3) tools and automation; (4) skills and expertise; (5) responsibility and accountability and (6) goal-setting and measurement. The five maturity levels are discussed as follows, according to Becker, Antunes, Barateiro and Vieira (2011:7):

Level 1: Initial/Ad hoc

During this stage, the organisation is aware of and is communicating consistently and sporadically about operation of records preservation. The records management operational activities are being carried out without any documented records management policies and procedure. Some records management operational working tools are being randomly introduced by some employees without following any system. The organisation is not aware of the records management specific jobs requirements in terms of skills and expertise, responsibility and accountability, goals and operational measures (Becker, Antunes, Barateiro and Vieira 2011:7).

Level 2: Repeatable but intuitive

During this stage, the organisation is aware of the records management operational activities that can ensure records authenticity and can prove it. The records management operational activities reports are informally done by individual employees. Different informal and intuitive records management operational procedures are applied or followed by different employees within the organisation. Individual employees employ any available automated records management tools unsystematically and incoherently only when the need arises. Records management skills are gained by employees through hands-on experience, frequent techniques application and informal training conducted by fellow employees. There are existing undocumented records management operational responsibilities and undefined records management functional accountability. Individual employees are aware of the records management short-term operational goal, although the definition and measures of goals and measures are not consistent (Becker, Antunes, Barateiro and Vieira 2011:7).

Level 3: Defined

At this stage, the organisation recognises the role of records management operation in making records authentic. There are existing inconsistently enforced reporting procedure guidelines. The records management processes and rules of operation are defined in terms of existing components, services and skills; and are standardised as a plan. The existing records management operational plan is too manual, but is implemented as per specification. There is no records state and results tracking system. Through individual employees' initiatives, the organisation has an existing records management formal training plan based on different records management operational skills and roles. Employees are allocated different specific records management responsibilities and accountability is partially assigned to some of the operations. The organisation defines records management operational goals, but there is no definition of forma metrics. Measures are not applied in line with the goals. Achievements of goals are assessed in a subjective and inconsistent manner (Becker, Antunes, Barateiro and Vieira 2011:7).

Level 4: Managed and measurable

During this stage, the organisation fully recognises the records management operational roles to ensure records authenticity and provenance. They are also able to understand the records management relationship with the organisational business goal. There is full specifications for the records management reporting process and adherence or compliance with it. Records management operational plans are fully implemented and complied with in line with the set goal. All plans, policies and procedures implementations are fully monitored. Although the records management

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automated system is not fully integrated, it is developed with widespread components to control electronic operation. There are definitions for records management operational skills and expertise requirements and existing formal training. There are also clear definitions and enforcement of records management operational responsibilities and accountability. The system exists in the organisation to measure records management operational activities and results with the metrics aligned to operational goals. The compliance is also enforced at all operational activities and levels (Becker, Antunes, Barateiro and Vieira 2011:7).

Level 5: Optimised

This is the last stage during which records management operations improve from time to time. Communication and reporting systems are integrated, fully transparent and give real-time records management operation. Policies, plans and procedures are extensive utilisation of improved business operation in terms of analysis, actions, metadata and reports. The organisation attains fully integrated records management operations and real-time achievements. Employees are skilled and are experts in records management operational activities with all means required for operation. Skills and expertise are assessed continuously for systematic improvement. All organisation records management operational accountability and responsibility are clearly defined and traceable in a formal plan. Compliance with records management operational activities are automatically measured consistently at all operational levels. Techniques for measurements of operational activities are strengthened by continuous assessment (Becker, Antunes, Barateiro and Vieira 2011:7).

2.2.3.4 Records storage management

This section discusses literature about medical record archival processes, in line with records storage management with the intention to explore the appropriateness of records preservation storage management. Management of records storage is very important to ensure that records are secured and protected against any dangerous perils within the storage environment, and they must be accessible at all times, as required by the organisation. Proper management of records is mostly about "establishing physical and intellectual control over records that are entering the records system" (Chinyemba and Ngulube 2005). There are key aspects of this system that have to be considered, which include the appropriate storage environment, storage media and physical protective materials, records-handling procedure and records storage system itself. When deciding about the storage media, the organisation must consider for how long the records must be kept and maintained, that is, the records retention period. The organisation must also identify and mitigate

risks by making sure that there is a disaster recovery plan for the system. System disaster recovery must maintain records' integrity before and after the disaster recovery (ISO 15489-1 2001). This means the records must be accurate, trustworthy and reliable even after being recovered from disaster. In terms of the electronic records, the records file format and storage medium must also be safe and accessible at all the times when information contained is required. The storage medium must be selected in relation to the organisational or industrial standards (Ismail and Jamaludin 2009: 139).

However, in the public administration, cloud computing, with its infrastructure, is highly recommended due to its potential for developing and improving or its intention to develop or improve the records storage and preservation to digital mode. A centralised preservation repository prepares the organisation to improve in "digital document and record management processes". In this case, documents and records are preserved in an "intermediate storage site" for a short or a long term, depending on the value to end-users and, eventually, it will be destroyed or forwarded to an archive repository for permanent preservation. The major advantages of an intermediate storage site are that it is transparent and secured, and that records are centrally and securely accessed by all authorised or involved parties or institutions as controlled by policies (Decman and Vintar 2013:420).

> For public administration organisations a centralised repository could provide a solution for trusted storage of their documents, a push towards digitisation and e-business and optimisation of the processes for the whole public administration (Decman and Vintar 2013:420).

Furthermore, NARSSA (2006c:32) emphasises that government bodies need to save the records they create in a shared workspace for information sharing and re-usage. Cloud computing is ideal in this regard, since, in terms of the cloud computing strategy where records are stored centrally in digital format, access to any public record will be controlled by the record administrator who is also responsible for managing the user rights. Consideration should also be given to access to records for all relevant stakeholders and to security of records in order to comply with relevant prescripts. The organisation should also come up with appropriate security measures that are binding and that are enforced together with policy and relevant legislations. The records preserved in a trusted central repository will be reliable and authentic, and will contain the data with integrity and provenance. The central repository will maintain the quality of records, since there will be no records transfer from institution to institution and from requester to request (Decman and Vintar 2013:420).

On the other hand, the records system should be flexible to support different records location options. The physical records storage is usually kept with one organisation, but the creating organisation or authorised organisation always holds responsibility for the records if the legal and regulatory environment allows. This is because there is a need to differentiate between records storage, records ownership and responsibility for records. This will ensure successful management and maintenance of electronic records system. When deviations during the system existence occur, changes to any arrangement should be traced and documented (ISO 15489-1 2001). In preparation of digital records preservation, the public sector requires that the availability of computer hardware and software, as well as manageability and accessibility of preserved records be reconsidered (Decman and Vintar 2013:408). Digital preservation should be planned with the focus on technical and organisational challenges that can affect records' accessibility, authenticity, integrity and sustainability. The organisation should also consider the availability of records based on internet/intranet network processing speed, system performance in terms of data transfer, reliability of records based on the security and safety of the digital system and more importantly affordability of the hardware and software (Decman and Vintar 2013:410-411). Decman and Vintar (2013:420) also attest that a central records preservation repository "would also bind documents and their form and content in one place, even though they derive from different interactive and dynamic systems, generating an all documents linked in one repository solution, improving search-ability and accessibility".

2.2.4 Recordkeeping technology

The other objective of this study was to investigate recordkeeping technology in terms of management of electronic records systems and electronic system security. The intention was to study appropriate management of the system and application of system security measures. Like in many other administrative activities in different organisations, such as financial management and human resources management, technology is more advanced to the higher extent in case of records and document management. Although an electronic medical records management system is required for different benefits, the current state of medical records management in South Africa is in the form of handwritten papers from different healthcare institutions that are filed in isolation. Some of the benefits include interoperability and time-saving processes (Weeks 2013:140-141; Shaw, Aceti, Campbell-Scherer, Leyland, Mozgala, Patterson and Sunley 2011:357-358), quality of care, data extraction and information retrieval (Shaw et al. 2011:357-358).

However, nowadays "the culture of keeping and management of physical records is being taken over by records in electronic formats" (Asogwa 2012:200). These trends in technology that grows at an immense pace, might stem from the introduction and domination of microcomputers in the both government and the private enterprise market (Katuu 2015:139; Asogwa 2012:200). Management of records in an electronic format requires development of Local Area Networks (LAN) and the Large Area Network (LAN) (Wide Area Network (WAN)), installation of appropriate electronic information/records management system and connection of internet (Asogwa 2012:200; Katuu 2015:135-136). This may also change the way businesses are run, and the way records are created and managed for the better (Asogwa 2012:200). In other words, technology bring about changes in actions in business transactions, records production, records administering and management, preservation and access. The healthcare organisation needs to strategize and come up with a technology that will ensure that the medical records are available, reliable and authentic at all the times, especially electronic records in different electronic formats and media. The recordkeeping technology entails (a) management of electronic records systems and (b) electronic system security (Ismail and Jamaludin 2009: 139).

Furthermore, Lott (1997:vi) and Boonstra and Broekhuis (2010:2) attest that some of the healthcare professionals see computer technology as a solution for proper creation, sharing and retention of important healthcare records, while others disregard its existence and some are not sure whether to like it or not. In the healthcare facilities, regarding medical records management, computer technology is used for patients' admission, discharge and transfer. Computer technology can also be used for automated pharmacy records and services, accounting, investigations and procedure technology, financial management and nursing activities. Lott (1997:vi), Boonstra and Broekhuis (2010:2), Asogwa (2012:201) and Katuu (2015:135) further underscore that, in most instances, even if the healthcare facilities introduce a computer-technology solution, healthcare providers or professionals continue to generate paper-based records that also demand more efforts to be properly managed throughout their life cycle until they are disposed of. This was also discovered by Ndenje-Sichalwe, Ngulube and Stilwell (2011:269-270) in their study about records management in Tanzania. Asogwa (2012:201) attest that "Most offices use computers to assist in some portions of the organisation's recordkeeping and are still producing more and more paper documents that are stored as record copy".

2.2.4.1 Management of electronic records systems

This section discusses literature about recordkeeping technology in terms of the management of electronic records systems with the intention of studying appropriate management of the system as part of the study objectives. In healthcare institutions, the electronic records system is normally referred to by their various names, such as electronic medical records (EMR), computerised patient records (CPR), computerised medical records (CMR), electronic health records (EHR), Electronic Health Care Records (EHCRs) and automated medical records (AMR) (Weeks 2013:139; Boonstra and Broekhuis 2010:1-2). The Electronic health records (EHR) system was introduced as an improvement on traditional paper-based records management. This is due to the fact that with the EHR system, information about the patients such as demographics, medical histories and treatments is kept electronically and shared through a computer network system and the internet (Weeks 2013:138; Boonstra and Broekhuis2010:4; Shaw et al. 2011:354-355). Ismail and Jamaludin (2009: 139); Boonstra and Broekhuis (2010:1); MoReq2 (2008:10) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:272-273) attest that an electronic records system is used to capture and manage records, including the electronic records and electronic documents. MoReq2 (2008:10) and Katuu (2015:135-136) emphasise that the ERMs can also be used to manage the physical records, which includes paper-based, cassette, tapes and many more.

Although it is hard to adopt electronic records management because it has existed for such a long time, it is still every healthcare organisation's desire to move completely from paper-based records management to electronic medical records management. The key issues in adopting electronic medical records management is to ensure that information is generated, stored, shared and operated centrally. This also requires standardisation in records management operation (Weeks 2013:138; Boonstra and Broekhuis 2010:2). The records system must be comprehensive since a comprehensive records system will completely cover the entire scope of the organisational business activities or section of operation. That will depend on the scope it was planned and designed to cover (ISO 15489-1 2001). In other words, the system must cover a complete scope of business records. The records system should also be systematic in its operation. This means it should systematically create, maintain, and manage records (ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272-273). The records system and business systems should be designed and should operate in such a manner that the practice of creating and maintaining records is systematic, hence a system. The organisation must make sure the system have regard for proper management, accurately documented policies, assigned responsibilities and formal methodologies (ISO 15489-1 2001). These systems should comply with organisational or industrial legal

requirements to ensure that records are always trustworthy, complete, accessible, legally admissible and durable. The systems should also ensure appropriate security of the records it manages, whether paper-based or electronic. In terms of electronic records, e-mails about administrative communications and websites used to disseminate or provide access to the administrative records or transactions should also be properly managed for permanent authenticity (Ismail and Jamaludin 2009: 139-140).

However, it is a complex task to manage records electronically. This is because the EMRS needs to satisfy all the business needs in terms of functionalities. The organisation needs to come up with ERMS "specialised software" in line with their functional requirements specification from specialised business requirements (MoReq2 2008:10; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272-273). The records system must be capable of keeping complete and accurate records of all transactions that clearly relate to specific records of the business activity. That might be individual records of a particular process, which are stored as part of metadata associated with that specific record. In other words, the system must be capable of keeping records of all transactions relating to each and every specific user of the system as to who did what, when and why on the business system (ISO 15489-1 2001). For example, in the public health sector the records will cover patient name or all personal details, treatments, prescriptions received and details of the clinician.

Furthermore, records need very strict security to ensure its permanent reliability. A reliable records management system must be able to continuously and regularly operate in relation to the relevant organisational procedure. Records about system operation must be created and maintained to document system reliability (ISO 15489-1 2001). ISO15489-1 (2001) also states that reliable records system must satisfy the following requirements:

- Routinely capture all records within the scope of the business activities it covers,
- Organize the records in a way that reflects the business processes of the records' creators,
- Protect the records from unauthorized alteration or disposal,
- Routinely function as the primary source of information about actions that are documented in the records, and
- Provide ready access to the records and related metadata.

However, the system must be set up in such a way that characteristics of records stored in it are not affected when there is a need for system changes to be made. For instance, when records are transferred from one system to another (records migration) it must not have an impact on the

records characteristics (ISO 15489-1 2001). Chachage and Ngulube (2006:10) also feel that the system is more about the 'information integrity, privacy and records retention'. The health institutions need to identify and come up with the system with information integrity, privacy and retention schedules.

2.2.4.2 Electronic system security

This section discusses literature relating to the recordkeeping technology in accordance with electronic records system security with the intention to study the appropriate application of system security measures. The EMR assists in managing medical record information in a structured and unstructured way that ensures minimisation of incomplete charts, reduce patient waiting times and ensure compliance with clinical, legal and administrative requirements (Weeks 2013:139; Shaw et al. 2011:357-358). The main worry in EMR is patients' personal information privacy, confidentiality and security since the systems may be viewed to be 'cumbersome, unwieldy, unfriendly and opaque to the users and the patients' (Weeks 2013:139; Boonstra and Broekhuis 2010:11). Electronic system security has to do with safety and security of records and information as managed by a particular system. The system and its infrastructure need to be safeguarded against any hazards that may damage or destroy the records or classified information. The records system needs to be controlled and protected to avoid records "alterations and misinterpretations or loss" (Ismail and Jamaludin 2009:140; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272).

Hence, the integrity of records needs to be maintained through appropriate security measures. The system must also have in itself control measures to monitor access, verify users, authorised disposal and security. This will help to prevent unauthorized records access, destruction, alteration and removal. It is very important that the organisation should make sure that the records' integrity is not affected by the system malfunctioning, upgrading and regular maintenance (ISO 15489-1 2001; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272). Thurston (2005) emphasises that the organisation should focus on information integrity during the process of moving to an electronic records system.

Therefore, it is worth noting that "electronic records and information are constantly threatened and vulnerable to cyber-attack" (Ismail and Jamaludin 2009: 140). This is why organisations must also ensure safety and easy control of their records with the introduction and usage of a system that will track records movement. The tracking system may be in a form of "movement book, cards, electronic file tracking, spreadsheet, or database application software" (Chachage and Ngulube

2006:15). The researcher shares the same sentiment with Lott (1997:vi) and Boonstra and Broekhuis (2010:11) stressing that effective medical records system security has to ensure that unauthorised access to healthcare records is restricted to maintain records' integrity, records are securely maintained for as long as they are still required, records are always reliable and trustworthy even if they are accessed electronically by means of "keystroke or the touch of a pen or finger". Information stored in an electronic system medium needs to allow migration to the new technology as the situation requires, otherwise access will be difficult for the new generation in future (Lott 1997:vi).

Furthermore, since records management is more about indexing, retrieval and access, the records system must be set up in such a way that records are accessible and retrievable in time to support the ongoing business process and to meet accountability requirements for the organisation and employees (ISO 15489-1 2001; Klischewski 2006:36). For security purposes, access to records in the system also needs to be controlled through security policies by specifying employees or users to access certain records, based on their business functional role in a group or individually. Access may be managed per group of users or per individual. Individuals or groups of employees may be granted access to records in the ERMS based on the classification scheme of the records for proper management of access. Restrictions must also be based on the ability to conduct certain actions on the records, like inspecting their metadata or their content, modifying or deleting them. The permission must be removable when no longer necessary (MoReq2 2008:41).The system must be capable of preventing unauthorized access to records and must maintain and provide an audit trail (ISO 15489-1 2001; Cowan and Haslam 2006:268; Klischewski 2006:36).

However, an audit trail is one of the key security measures in records management, especially in electronic records management. An audit trail can be applied in either traditional records management or electronic records management, including electronic document management. Audit trail is a viewable list(s) or database(s) that are either generated by transitions on a computer system or by activities on a manual system (MoReq2 2008:163). MoReq2 (2008:163) defines audit trail as the "Information about transactions or other activities which have affected or changed entities (e.g. metadata elements), held in sufficient detail to allow the reconstruction of a previous activity". The researcher shares this view with MoReq2 (2008:45) that an audit trail keeps record about actions or transactions effected on every record by either a user or an administrator or by the system if records are managed by the ERMS. It also assists the organisation in establishing whether certain actions

were conducted in line with the business rules and whether these actions were performed by an authorised person. For instance, Asogwa (2012:207) accentuates that

> Databases containing personal financial and medical records, for instance, may be extremely useful to the individuals themselves, but without proper security protections, that information may also be accessed by others, thereby threatening the privacy of the owners. Today, people have an inherent right to privacy that can be violated, intentionally or by accident, in an electronic environment. For instance, the risk of identity theft is now very real in the electronic world. Some unscrupulous individuals and companies compile and sell personal information about people; this information has been gathered, usually illegally, from electronic sources such as credit databases, land title files, motor vehicle records or medical files. This information may be used to gain access to credit cards, bank accounts and even property title documents (Asogwa 2012:207).

Furthermore, Cowan and Haslam (2006:268); ISO 15489-1 (2001) and Klischewski (2006:36) state that the audit trail will indicate any use, misuse and abuse of the records system. It can indicate, who the person is that create, change or view, what data is entered or viewed, when it was entered or viewed, and the place at which it was entered or viewed. This will help the system manager and records manager to establish whether records were once altered, destroyed or accessed by an unauthorized person. MoReq2 (2008:45) states that, in electronic records management, the ERMS logs, keeps and maintains transactional information in an audit trail report. The online copies of the electronic records' audit trail need to be backed up periodically by moving them to offline storage. During disposal, both online and offline copies need to be disposed of. This has to be included in relevant policies and legislative prescripts to make it mandatory. The researcher can conclude that an audit trail facilitates accountability and assists in investigations.

On the other hand, a backup of records is also one of the fundamental records security measures. The researcher agrees with MoReq2 (2008:47) and Asogwa (2012:207) that the organisation has to develop a regular backup strategy for their records and metadata for in case the system fails, an accident or security breach occurs, the computer becomes infected by a virus, crash of storage devices and accidental deletion of data/records by employees. In the case of electronic records, the ERMS should provide full and regular control for records and metadata backup. The ERMS may be backed up by integrating it into the EDMS, ERMS database or other software (MoReq2 2008:47). Asogwa (2012:207) also elaborated further that

> There are some hazards that accompany backups which records managers and archivists in Africa should bear in mind. Often, backups are done on a general or wholesale basis in which

> all data in a computer system are copied all at once. While the backup process certainly copies records, it does not do so in a way that is relevant to the record-keeping needs of the business unit. Most of the time IT sections does not test their backups to ensure successful recovery, either because they do not have the staff to do so or their systems do not have the capacity to do so without interfering with the daily operations that the technology support (Asogwa 2012:207).

Nevertheless, all the records need effective security, but, more importantly, priority should be given to vital records to ensure business continuity even after a records disaster. However, in his study about records management models in South Africa, Ngoepe (2014:10) discovered that in most government bodies there are no vital records that were identified and secured against possible disaster. This implies that there was no disaster preparedness plan and vital records schedule and/or records inventory. MoReq2 (2008:48) attests that vital records are "considered absolutely essential to the organisation's ability to carry out its business functions, in the long term, in the short term or both". Vital records need to be identified in order to give them first priority during emergency or disaster and they need to be highly protected for "its long term financial and legal interest". Records may be vital to the entire organisation or sections of the organisation and should be defended or recovered first in case of disaster.

2.2.5 Capacity and competencies for records management

The other objective of this study was to establish staff capacity and competencies for the management of medical records with specific reference to records management, records archiving and other related records management skills and/or competencies. The intention was to explore the existence of skills and competencies relevant for records management, archiving and other related skills and competencies. It is deemed necessary that the records management staff should be given proper training to acquire the necessary skills that can enable them to manage the records properly (Ngoepe 2014:5; Boonstra and Broekhuis 2010:12; Nengomasha 2013:2-9). Ngoepe (2014:10); Nengomasha (2013:6) states that in South Africa records management skills and competencies are still a problem to the extent that there are still government bodies with no ability or knowledge to distinguish between archival value records and ephemeral records. In sub-Saharan Africa, records managers and archivist training and experience are still not adequate to face existing challenges such as poor or lack of records management policies and legislation, organisational framework, ICT skills and competencies (Asogwa 2012:208; Nengomasha 2013:2-4).

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Prior to the colonial regime in African countries, records management was very poor since there was no systematic archives and records management programme (Asogwa 2012:198; Ngoepe 2014:1; Nengomasha 2013:2). This may be due to a lack of interest to support the records management programme as organisational assets and that signifies a lack of competencies in records management officials during that period. This was also attested to by Asogwa (2012:198) if there was any official assigned to take responsibility. There was a lack of interest to invest in sound records management by the colonial regime until different African countries gain independent. This lack of interest by the organisations to develop sound records and archive management also led to people becoming discouraged to consider archive and records management as a career (Asogwa 2012:198).

However, after the independent African countries tried to establish records and archives management and due to a lack of competent and skilled staff, inexperienced personnel were promoted to manage records and archives. Records management deteriorated due to limited or no training and experience in managing records, which gave rise to low staff moral due to their lower status, which resulted from poor remuneration (Asogwa 2012:199; Boonstra and Broekhuis 2010:12). One of the key investments for sound records and archives management is identification of key training or skills gaps and funding for training and development. For instance, the Australian National Archive was successful in their implementation of sound records and archive management, since they prioritised records management in their budget planning to such an extent that 80% of their budget was dedicated to records management training for staff (Asogwa 2012:205), especially for electronic records management implementation. Looking at the African situation, Asogwa (2012:202) emphasises that

> The practical situation today is that there are few or no countries in sub-Saharan Africa where archivists and records managers have acquired all the basic skills and competences in readiness for electronic records management now. The reason was that while information technologies have brought enormous benefits to organisations, they have simultaneously introduced a number of challenges and difficulties and consequently increased the risks of losing data and records; risks to reliability and authenticity of e-records; loss of security and privacy, increased costs of managing record and decentralization of information; increased need for information technology specialists.

Hence, records management professionals and employees need to be trained continuously in order to be capable and competent at all times, even when recordkeeping technology changes. It is usually due to incapable and incompetent records management officials that most of the recordkeeping

systems collapse or become dysfunctional and complicated. The organisation may have a good and advanced recordkeeping system, but if not have the necessary skills/capacity and competencies of officials to operate and manage the records and system, the system will be as good as nothing (Asogwa 2012:203; Ismail and Jamaludin 2009: 140). The records management professionals and other officials need to acquire the (a) records and archives competencies and (b) related skills (Ismail and Jamaludin 2009: 140). NARSSA (2006b:21) and NARSSA (2007b) give guidance on what qualifications and experience the records managers for the government bodies should have. The records manager must possess the records management equivalent of a Bachelor's degree or a relevant technikon qualification in records management or information management, professional knowledge and experience of paper-based records management and electronic records management. The candidate must also have attained the NARSSA course/training certificate. Additional to this, the manager must also have a good understanding of the organisational functions, systems and structures.

Hence, the records manager must ensure that all records management officials are trained in records management and all the organisational staff are trained in records awareness. At the commencement of the training, records management practices need to be audited in accordance with legislative framework and records management policy. Skills and competency requirements for records management staff need to be identified to compile the competency framework in records management. Then the records manager must implement a training programme for records management, which must include records awareness, usage of the filing plan or referencing. If the registry procedure manual is compiled properly to cover the entire scope of records management, including electronic records, it can be used as a training manual (NARSSA 2006b:8-9).

2.2.5.1 Specific records management and archiving competency

This section discusses literature relating to staff capacity and competencies appropriate for the management of records, with specific reference to records management and records archiving as part of the objective of the study. Lack of skills and competency for records and archive management is still a big challenge in Africa. Most records managers and archivists in Africa were not trained professionally for records management, but were merely recruited although they only possessed secondary school-leaving certificates, and over time they were promoted to the position of records manager. Sound records management needs recruitment of qualified staff who are also experienced in records and archives management to establish and implement policies and infrastructure, and ensure adequate and regular training for personnel (Asogwa 2012:203; Ndenje-

Sichalwe, Ngulube and Stilwell 2011:274-276). For instance, in some of the African government bodies, records and archive management committees are established with members who lack training, knowledge and skills about archives and records management. The worst part is that these committees are also given the power to make decisions and enforce the implementation of key records management activities such as disposal (Asogwa 2012:202; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276). Training will ensure that the records management professionals are capable of rendering information and the records management service programme as required (Ismail and Jamaludin 2009: 140; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276). The officials are also required to have the capacity and competency in capturing information and records, organizing and describing information and records, providing access to information and records, storing and protecting information and records, disposing of information and records and providing electronic services (Ismail and Jamaludin 2009: 140).

Overall, the records manager must have an understanding of the business systems used for rendering business services, records creation and management, such as 'Transaction Processing Systems, Database Management Systems, Management Information Systems, Electronic Document Management Systems, Electronic Records Management Systems and Data Warehouses'. They also need to have a better understanding of metadata (National archives and records service of South Africa2006b:17). The records manager must also have practical knowledge of managing information and records, appropriate standards and legislative framework mandating the function of the government body and sound records management, which is still a scare skill in Africa (NARSSA 2006b:17; Asogwa 2012:202; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276). Nonetheless, international standards on records management need to be fully understood by the records and archives personnel (Asogwa 2012:199), especially the records manager as this can assist him/her in developing some of the policy guidelines and advising the top management in developing legislative framework for records management as required by parliament or the legislature.

However, the researcher's viewpoint is that the records manager is responsible for the training of the overall records management staff for basic understanding and knowledge of management and administration of records in different formats and medium. The records management personnel need to be properly trained in issues relating to records capturing and records management (NARSSA 2006c:32). They need to be trained in the electronic system and technology to understand its implementation and the impact it has on service delivery. Their skills level also has

to be assessed for their re-skilling and deployment (Asogwa 2012:202; NARSSA 2006c:50; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276), especially older employees because they experience technophobia (Asogwa 2012:202).

Hence, the researcher's view is that the records manager must have more advanced knowledge that will enable him/her to develop the records management employees for basic or intermediate competencies and skills. The records manager and personnel should have the knowledge and understanding of "database management, file/document tracking, imaging and scanning, electronic document management, workflow and electronic records management" (NARSSA 2006c: 52). All the records management staff need to be properly trained in effective records management (NARSSA 2006c:51-52), especially electronic records management as this is the modern way of managing records (Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276).

2.2.5.2 Other skills and competencies related to records management

This section discusses literature relating to staff capacity and competencies for the management of records, with specific reference to other related records management skills and/or competencies as part of the objective of the study. When the records managers plan to acquire new skills, they must understand that their focus should always be on records management. They should acquire skills that will enable them to understand issues related to or affecting records management, such as information technology, information systems, data and information management and basic business process description and modelling (NARSSA 2006b:2). The records professionals must also be capable of delivering their service using an electronic system. They must also be able to analyse and develop the records and information management system. The records management professionals also need to be developed and capacitated to be competent in terms of "business and management skills, interpersonal and personal skills" (Ismail and Jamaludin 2009:140). The government records manager and records personnel need to be equipped with the knowledge about the government environment, and the history and functions of the government body in question (NARSSA 2006b:17). The other skills required from the records management officials, especially the records manager, include but are not limited to communication skills; teamwork; planning and time management; performance management; people management; project management; change management; business systems analysis and process mapping; and information systems design and process (NARSSA 2006b:17, 21). In addition, officials, especially the records manager, must have training in presentation skills, public speaking, business systems analysis, knowledge management,

information strategy and policy, document management, information audits, management skills and supervisory skills (NARSSA 2006b:21).

However, in healthcare organisations, an EHR system like ECM is required to improve the management of medical records. The introduction of ICT in records management led to changes to the way in which people practice their records management work in organisations (Asogwa 2012:199; Boonstra and Broekhuis2010:2), since people will have to manage their records using computers and other electronic technologies like scanners and the internet, rather than written information on papers, which Asogwa (2012:199) refers to as automation. This is why EHR is complex to implement due to the complexity of the human mindset or traditional thinking and their working culture, and records system identification and implementation that need effective change management strategies. If there is no proper education or skills, this will result in healthcare organisations ignoring implementation of electronic patient records system. IT is the best solution in facing challenges relating to healthcare records management (Weeks 2013:135-136). Moreover, models such as the DPCMM could be incorporated into the training curriculum. For instance, in 2012, the Institute of Museums and Library Services (IMLS) awarded the Council of State Archivists (CoSA) a three-year, $500,000 grant to identify training needs and priorities for state archives, to organize and conduct training programs, and to benchmark the effectiveness of the program(Dollar and Ashley 2013:10).

2.2.6 Readiness for implementation of Enterprise Content Management

The other objective of this study was to assess the readiness for implementation of ECM in the hospitals as a modern electronic records management system. It has been recognised since many years ago in both public and private enterprises that records, especially digital records, need to be managed systematically with the application of an effective program or system (Katuu 2015:136; Dollar and Ashley 2013:1). The records management program or system will ensure timely access to digital records that are authentic and usable for the period for which it is required for reasons such as operational activities, regulatory and legal issues, and that it is kept as cultural memory of the organisation (Dollar and Ashley 2013:1). Nevertheless, like the management of other business activities that improve with the advancement of technology, records management techniques also change or improve as the technology advances. The latest record management technology seems to be ECM as illustrated by Katuu (2012a:39; 2012b:3 and 2015:136-138). This is illustrated in Figure 2.8. This figure illustrates the development of various concepts or systems that eventually fashioned into ECM in three phases. The figure shows that in the 1st phase, records were managed through the

two systems known as EDMS and ERMS, in the 2nd phase, records were managed using either IDRMS or EDRMS and in the 3rd phase, everything were combined into the ECM system. For instance, document management, records management, web content management, workflow or Business process management, collaboration, imaging, portals and knowledge management may be integrated into ECM (Katuu 2012a:39; Katuu 2012b:3; Katuu 2015:137).

Figure 2.8: The development of various concepts building into ECM (Katuu 2012a:39; 2012b:3)

Furthermore, Fanning (2013:1) and Kampffmeyer (2006:4) define ECM as "the technologies used to capture, manage, store, preserve, and deliver content and documents related to organisational processes". ECM is made up of a set of complex technologies integrated to function together, with the purpose of ensuring the improvement in managing organisational business content successfully. Successful ECM system implementation brings about business contents that are easy to access and retrieve; reduces contents management risks and ensures that the organisation meets regulatory requirements. ECM planning should be based on the organisational goals and priorities (Fanning 2013:1). Kampffmeyer (2004:7) and Kampffmeyer (2006:14) also discuss the ECM model in five categories of components and technologies and five traditional application areas as illustrated in Figure 2.9. The five categories are capture, manage, store, deliver and preserve. The traditional application areas include document management (DM), collaboration (Collab), web content management (WCM), records management (RM) and business process management (BPM)/workflow.

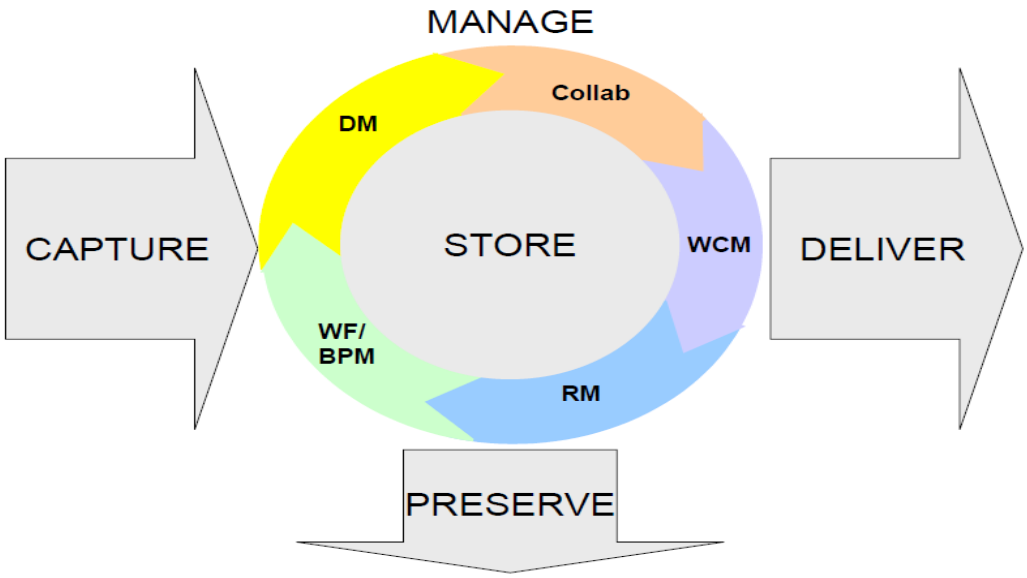

Figure 2.9: Categories of ECM components and technologies with the traditional application areas (Kampffmeyer 2004:7; 2006:14)

Nevertheless, the 'capture' category is about analog and electronic records generation, capturing, preparation and processing using automated classification at different levels of technology (Kampffmeyer 2006:30). The 'manage' category is applied for information management, processing and use through administration databases and access control system (Kampffmeyer 2006:38). The category 'document management' entails document control throughout the life by means of system functionalities such as search and navigation, check-in/-out, version management and visualization (Kampffmeyer 2006:40). The category 'collaboration' is about "working together", including sharing of information database, joint processing of information, information and communication integration (Kampffmeyer 2006:44). The category 'web content management' entails information provided through the internet, extranet and portals using storage and access authorization functionalities (Kampffmeyer 2006:46). The category 'records management' is about overall records administration by means of, among other activities, file plan imaging, information indexing as guided by the thesaurus, information protection and use of stored information metadata (Kampffmeyer 2006:48). The category 'workflow/BPM' is used for function connection, management and control (Kampffmeyer 2006:50). The 'store' component has to do with storage of content of non-archival value or short-term value content (Kampffmeyer 2006:54). 'Preserve' is a component of ECM that deals with archiving of long-term value content because it provides safe storage with backup that is static and keeps content unchanging and can also be used to temporarily keep short-term value records (Kampffmeyer 2006:62). The function of the 'deliver' component is to summarise and distribute the content to end-users in a controllable manner as an output tool that

uses transformation and security technologies (Kampffmeyer 2006:30-66; Kampffmeyer 2004:8-18).

Furthermore, ECM also covers content management strategies, methods and tools (AIIM 2010; Katuu 2012a:39 and 2012b:4). Kampffmeyer (2006:4),in support of the above, stresses that "enterprise content management is just a transformation of existing technologies". According to Katuu (2012b:5), there are many modules that can be covered in the ECM applications as also listed above, but that depends on the organisational business needs. The system should be capable of centrally processing content through records management and archiving activities in such a manner that it will, eventually, be accessed and used in an authentic condition (Katuu 2012b:7). Kampffmeyer (2004:27) states that the benefits of ECM include improving efficiency, managing risks, faster inquiries response, reducing costs and high revenue generation. In addition, Pelz-Sharpe, Durga, Smiegel, Hartman, Byrne and Jarrod (2010:7-8) list the following as the benefits of ECM to the organisation:

- Making the ever-increasing volumes of unstructured content (primarily documents) more accessible,
- Reducing storage requirements by consolidating single sources of content,
- Sharing and collaborating more effectively, and allowing for reuse of existing corporate content ,
- Meeting legal and compliance requirements,
- Reducing the amount of paper within the enterprise,
- Providing a more standardized way of gathering and distributing information (e.g. using forms),
- Improving business processes to become more efficient,
- Supporting business continuity requirements,
- Increasing value from investments in content technologies,
- Communicating in a more consistent manner with all stakeholders,
- Supporting knowledge management strategies, and
- Fulfilling many other business purposes.

However, in his summary and introduction, Katuu (2012b:1) underscores that "Organisations have a variety of business systems to help them manage their digital content" and that these contents are best managed using "network drives or other specialised business applications", unless they are not managed. These contents are managed from different business systems attached to different

business “functions and activities”. For instance, business systems such as payroll and recruitment for human resources and other systems for finance and marketing generate content that needs to be managed properly. For the purpose of permanent preservation of long-term value records, a digital curation system is necessary. This is because other numerous business application systems may not be capable to keep the business contents for such a long period as required by the organisation. This implies that digital contents need to be transferred from ECM application to digital curation system, which is a very challenging task (Katuu 2012b:1-3).

Furthermore, the digital curation is about information professionals engaging in the management of digital content in such a manner that the content is retrievable and accessed over a long period of time, despite technological changes. This implies that the business content is always provided in a condition expected and required by users due to its proper preservation. Digital repository is the central point of “digital curation activities”, which ranges in size and may be classified according to “open source or proprietary system”. The organisation needs to be careful when deciding to use ECM applications such as EDMS and ERMS, as the applications may change over time or become incompatible due to different functional requirements. Alternatively, organisations can use a digital curation system to centrally import digital records from different applications (Katuu 2012b:5-6).

Nevertheless, Fanning (2013: 1-11) discussed 14 steps that can be used to check the success in ECM planning and implementation. The 14 ECM success checking steps are discussed as follows:

1) ECM program and project management

In the case of an ECM program, during this step, a specific project must be identified that adds value to the business and that needs to be addressed using ECM. The identified projects must support business strategy. The business case needs to be produced separately for each program and a reason for ECM implementation must be identified. In managing a project, the project scope needs to be properly measured and clearly defined to be properly understandable. The project scope needs to be identified in terms of geographical location, organisational size, classes of information and timetables (Fanning 2013: 1).

2) Information governance framework (Protecting assets)

At this stage, access to and use of content will need to be identified. Access and security measures must be put in place. The policies and procedures will also need to be established to ensure effective content management. Business content management should best be planned based on the life cycle,

which needs to be identified beforehand. The disposition or appraisal of the content also needs to be planned (Fanning 2013: 2).

3) Management (Obtaining management to buy-in)

Business content management is a collective responsibility, rather than that of the records manager or program manager or program management officials per se. Everyone needs to be responsible and accountable for the business content that are within their control at a certain period of time. This requires management support for full implementation. For proper accountability and management buy-in, the organisation needs to appoint a chief information officer and establish an information governance board linked or reporting to the executive board. The information governance board also has to be represented by legal experts, records management experts and subject experts from relevant business functions. There must be assurance that the person accountable for the program or project to the executive board is identified or appointed (project manager). The definitions of the roles and responsibilities also need to be laid down (Fanning 2013: 2).

4) *Concept of operations (ConOps) (Communicating about the project is key to success)*

There is a need to ensure that there are effective communication and agreement about the vision and mode of operation for the ECM with the stakeholders and permission to cover management of the entire content and strategies of the business. The future changes also need to be identified in terms of the new vision, the governance structure and the business process, bearing in mind future needs for training, tools, applications and IT infrastructure (Fanning 2013: 3).

5) Information survey (Getting to know your content)

There will be a need to conduct an information survey with the intention of identifying the current state of information or content. The survey will identify kinds of business content that are produced by the organisation currently and its location. The retention period and disposal method will also need to be identified. Generally, appraisal and content rationalisation should be conducted for the business content covered on the project, including migration and duplication elimination. The survey needs to be structured to easily obtain relevant information (Fanning 2013:3; Yusuf and Chell 2005:72; Yusof and Chell 2000:69; Chaterera, Ngulube and Rodrigues 2014:366-367).

6) Business case (Making the project real)

During this step, the business case for ECM must be established. This will be used to convince management to give their support by describing the way in which the ECM project will support the

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organisational strategies and goals. It will bring about management support for the project resources and other requirements because it needs to cover the benefits resulting from ECM implementation (Fanning 2013: 5).

7) Business and system requirements (Knowing what you need)

All the requirements for ECM system development and design must be properly documented and the document must be used as a reference source to keep track of the required content management technology. This will ensure simple and focused appropriate technology implementation as required and approved by the organisation (Fanning 2013:6).

8) Business classification scheme (Making it easy to find the content)

The business classification scheme (BCS) must be established to ensure easy management, filing, retrieval and sharing of information or required content. The BCS may be structured in terms of the business documents and records classification activities and functions (Fanning 2013: 7).

9) Users and user involvement (Getting everyone on the same trail)

Information about the users and their involvement in the business must be captured into the ECM system. Some of the information to be captured into the system includes organisational structure responsible for information organising, retrieving, storing and management, business documents and records classification activities and functions, users roles and categories, users workgroups, users access control and contact details. Users for the system being planned must be fully involved throughout the process (Fanning 2013: 7).

10) IT infrastructure components (Aligning the technology pieces)

There must be an assurance that all aspects of ECM introduction or changing are taken into consideration and are addressed by applying a structured framework in planning, managing or operating an ECM IT infrastructure. IT components required for ECM system include but are not limited to desktop/laptop/smart phone/tablet, network, internet, server/data center, cloud/software and skilled human resources (Fanning 2013: 8).

11) Model offices and pilots (Ensuring the project will work)

The users, trainers, content managers and admin staff must be involved in the ECM model offices and pilots. This will be a way of creating and introducing new procedures of working and its environment. Comparison and selection of appropriate ECM software must also be done, while

functionality and user interface are also developed. The pilot study also needs to be conducted with the aim of testing functionality of the ECM system technology and infrastructure (Fanning 2013: 9).

12) Rollout (get ready, get set, go – implementing your project plan)

The ECM rollout plan has to be developed and implemented. The key role players or champions in the project need to be identified and communication needs to be strengthened as key factor at this stage. The rollout activities must include designing ECM and IT, system configuration and building, support and training development, data migration, system and user acceptance testing, local preparation, training and go live (Fanning 2013: 10).

13) Rollout fall-back plan (Be prepared for anything and everything to happen)

Potential risks must be identified and a contingency plan will have to be developed to deal with any shortfalls or malfunctions in the project as it is implemented or rolled out. This will assist in recovering from any risk that may occur during the process to recover and fall back to normal working condition (Fanning 2013: 10).

14) Post-implementation (What's next?)

During this stage, appropriately implemented or rolled out ECM projects need to be maintained and improved continuously with the necessary enhancements required from the process from time to time. The maintenance must be conducted in line with the implementation schedule (Fanning 2013: 11).

However, Katuu (2012b:9) emphasises that in implementing the ECM application, one should be guided by maturity models to ensure the improvement of the applications over time. He further discusses maturity levels of the ECM3 maturity model as the organisational target, since, at each level, the organisation can achieve business benefits as targeted and attract stakeholders' interests. This is because at certain maturity levels, ECM can be used for different purposes, including business audit, assessments, create knowledge about the current state of business operation and show the future successes of the business. Pelz-Sharpe et al. (2010:8) underscore that

> There are many ways to measure ECM maturity. "Maturity" could reflect: the expansion of a content management system from department to enterprise level; the completeness of the management lifecycle for business-critical documents; organisational awareness of the business value of unstructured information management; or the volume of content under successful management; among many other dimensions (Pelz-Sharpe et al. 2010:8).

The ECM3 maturity model consists of 13 dimensions linked to three categories, named human, information and system that may be applicable to any enterprise regardless of industry, size, technology and business objectives. Prioritisation is required for the three categories in line with their dimensions (Pelz-Sharpe et al. 2010:8). The human category is about employees' expertise in business, IT, processes and alignment of IT and other logistics. The information category has much to do with content and metadata analysis, its completeness, governance, re-use and accessibility. The system category covers the scope of ECM, the breadth of application access security and system and content usability (Pelz-Sharpe et al. 2010:8; Katuu 2012b:9-10). Figure 2.10 illustrates these three categories in line with its dimensions.

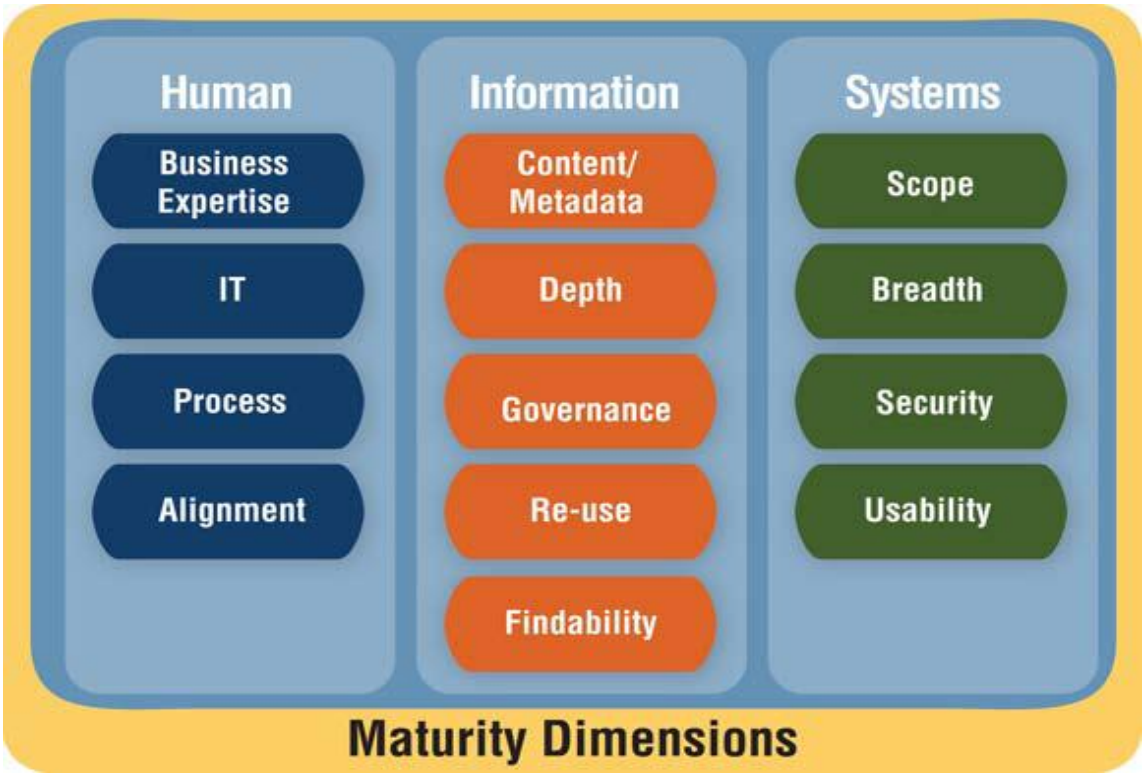

Figure 2.10: ECM maturity model in thirteen maturity dimensions across three categories (Pelz-Sharpe et al. 2010:8)

Pelz-Sharpe et al. (2010:11) further describe ECM maturity levels and their characteristics and divide them into five levels. The purpose of these levels is to "identify readiness to realise ECM strategies and deployments". The five ECM maturity levels are named according to the state of content management and discussed as follows:

LEVEL 1: Unmanaged

This level of maturity is characterised by the organisation that is not formally managing its content. The organisation uses distributed shared drives and local hard disks to store documents, which resulted "in redundant data, inability to find content and high levels of rework and end user frustration" (Pelz-Sharpe et al. 2010:11).

LEVEL 2: Incipient

Level 2 maturity is characterised by functional or project-driven approaches that emerge to manage some subsets of content. Various technologies (e.g. DM, collaboration) and competing/redundant products are deployed, but remain poorly used and insufficiently applied (Pelz-Sharpe et al. 2010:11).

LEVEL 3: Formative

This level of maturity is characterised by the organisation that "has inventoried content and put plans, policies, and procedures in place, but remains in the process of implementing them – likely over several years. Multiple projects are underway, but risk conflict and failure in the absence of a broader strategy. Notions of information lifecycle management begin to get incorporated" (Pelz-Sharpe et al. 2010:11).

LEVEL 4: Operational

The fourth level of maturity is characterised by content that "is managed pervasively throughout the enterprise – albeit in diverse systems. Applicable retention schedules have been applied to all critical electronic content. The enterprise has also figured out what content not to manage, and has made space for social/collaborative content management as well" (Pelz-Sharpe et al. 2010:11).

LEVEL 5: Pro-Active

The top level of ECM maturity is characterised by the extent to which in the organisation's "content management functionality is available broadly as a shared service and is viewed in the context of a broader services-oriented effort. The enterprise can procure and incorporate new content technologies (such as DAM) as needed, and plug into a flexible architecture to serve the business. Solid understanding of core information management issues and key business drivers allows the enterprise to be more agile in the roll-out of new services" (Pelz-Sharpe et al. 2010:11).

Table 2.1 summarises ECM3 maturity levels from 1 to 5 in line with the 13 dimensions under each of the three categories of maturity attributes as tabled and discussed by Pelz-Sharpe et al. (2010:16-29).

Table 2.1: Comparative of ECM3 maturity levels per categories and dimensions

CATEGORIES	DIMENSIONS	ECM MATURITY LEVELS AND CHARACTERISTICS				
		Level 1 Unmanaged	**Level 2 Incipient**	**Level 3 Formative**	**Level 4 Operationa**	**Level 5 Pro-Active**
1. HUMAN	**1) IT Expertise**	No experience in managing formal repository and workflow systems	Struggling in implementations of selected systems	More advanced in implementations of systems, with focus on business-critical documents	Managing repository and workflow systems is a core IT skill	Proactive experimentation and learning about emerging content technologies
	2) Business Expertise	Ignorance about value and role of ECM	Growing sense of awareness over lack of management services	Communication plans include updates to key stakeholders about ECM business value	Executive sponsorship of ECM as a practice; process and content analysis are core skills	Information management designated a core skill and part of HR reviews
	3) Process	Few or no standardised procedures around content	Basic process analysis leads to some ad hoc workflows	Initial modelling of inter-departmental processes to prepare for automation	Automated processes span systems and departments	Robust exception-handling and experimentation within framework
	4) Alignment	Key business drivers are not well understood by IT strategists, resulting in ECM gaps in IT portfolio	Gaps still exist between technology capabilities, information architectures and core business processes; IT-metrics not evaluated by business outcomes	IT and business both understand their information management roles and their respective strategies are no longer developed in a vacuum	Execution of IT and business strategies become more cohesive, but still follow push-pull model	Strategy development between IT and the business is done in collaborative and concurrent manner with frequent reviews using proper metrics
2. INFORMATION	**5) Content/ metadata**	No formal inventory; no formal classification	Departmental inventories and initial content tagging	Enterprise inventory underway; controlled vocabularies initiated	All new repositories and content types registered; global taxonomies created for critical content types	Ongoing ROT (Redundant, Outdated, Trivial) content elimination; Folksonomy development; Ongoing metadata reviews

CATEGORIES	DIMENSIONS	ECM MATURITY LEVELS AND CHARACTERISTICS				
		Level 1 Unmanaged	**Level 2 Incipient**	**Level 3 Formative**	**Level 4 Operationa**	**Level 5 Pro-Active**
	6) Depth	No life-cycle management.	Most content archived haphazardly; some departmental RM efforts.	Development of formal electronic retention, RM, and disposition schemes.	Implementatio n of electronic and paper-based RM across the enterprise.	All content types go through formal lifecycles.
	7) Governance	No policies and procedures.	Scattered policies; few or no formal procedures.	Development of governance structure and codification of procedures.	Policies and procedures widely disseminated; Enterprise ownership in place.	Active review and adaptation; Voice of Customer key to feedback process.
	8) Re-use	Content routinely duplicated.	Content still routinely duplicated, but staff aware of problem.	Initial content analysis and structuring.	Documents repurposed across systems and channels.	Content components re-used across systems and channels.
	9) Fundability	Employees spend excessive time searching using various internal search engines.	Search indexes tuned and basic metadata applied.	Rationalisation of search technology; analysis of search logs and further tuning.	Development of specific enterprise and/or federated search applications.	Search and classification become a central service, with business-driven variants.
3. SYSTEMS	**10) Scope**	No understanding of core content types.	Some basic DM implementations with ad hoc workflow.	Identification of core content types, locales; pilot projects for DAM, BPM, etc.	Business-critical information systems prioritized.	Broad availability of diverse management systems.
	11) Breadth	No systems.	Scattered departmental efforts.	Initial attempts to combine or integrate systems across departments.	Successful departmental initiatives have been scaled enterprise-wide.	Encourage and adopt innovations from departmental levels.
	12) Security	No security regime in place.	Dependent on individual systems.	Formal projects initiated to address gaps and redundancies due to multiple solutions.	Standardised policies and procedures exist and are system enabled.	Security is treated as a centralised shared service.
	13) Usability	Lack of systems make end user usability considerations moot.	Employee adoption rates measured, but dissatisfaction unanalysed.	Some initiatives use User Persona and Scenario Analysis techniques to guide designs.	User-centered design underpins all system designs, with formal collection of user feedback.	Usability is a guiding principle in all system activity.

Figure 2.11 illustrates how the enterprise ECM maturity level can be measured against or in accordance with the maturity dimensions using ABC Enterprise as an example (Pelz-Sharpe et al. 2010:14; Katuu 2012b:11).

← "Enterprise ABC" ECM Maturity Levels

	Level: / Dimension:	1) Unmanaged	2) Incipient	3) Formative	4) Operational	5) Proactive	
HUMAN	IT Expertise	No experience managing formal repository and workflow systems	Struggling 1.0 implementations of some systems	More advanced version 2.0+ implementations of systems, with focus on business-critical content	Managing repository and workflow systems is a core IT skill	Pro-active experimentation and learning about emerging content technologies	Measurement / Monitoring and Feedback Processes
	Business Expertise	Ignorance about value and role of ECM	Growing sense of awareness about lack of management services	Communication plans include updates to key stakeholders about ECM business value	Executive sponsorship of ECM as a practice; process and content analysis are core skills	Information management designated a core employee skill and part of their HR reviews	
	Process	Few or no standardized procedures around content	Basic process analysis leads to some ad-hoc workflows	Initial modeling of inter-departmental processes to prep for automation	Automated processes span systems and departments	Robust exception-handling and experimentation within framework	
	Alignment	Key business drivers are not well understood by IT strategists, resulting in ECM gaps in IT portfolio	Gaps still exist between technology and core business processes; IT-metrics not evaluated by business outcomes	IT and Business both understand their information management roles and their respective strategies are no longer developed in a vacuum	Execution of IT & Business strategies become more cohesive, but still follow push-pull model	Strategy development between IT and the Business is done in collaborative and concurrent manner with frequent reviews using proper metrics	
INFORMATION	Content/metadata	No formal inventory; no formal classification	Departmental inventories and initial content tagging	Enterprise inventory underway; controlled vocabularies (CVs) initiated	All new repositories and content types registered; global taxonomies created	Ongoing ROT elimination; Folksonomy development; Ongoing metadata reviews	
	Depth	No lifecycle management	Most content archived haphazardly; some departmental RM efforts	Development of formal electronic retention, RM, and disposition schemes	Implementation of electronic and paper-based RM across the enterprise	All content types go through formal lifecycles.	
	Governance	No policies and procedures	Scattered policies; few or no formal procedures	Development of information governance structure and codification of procedures	Policies and procedures widely disseminated; Enterprise ownership in place	Active review and adaptation; Voice of Customer key to feedback process	
	Re-use	Content routinely duplicated	Content still routinely duplicated, but staff aware of the problem	Initial content analysis and structuring	Documents repurposed across systems and channels	Content components re-used across systems and channels	
	Findability	Employees spend excessive time searching using various internal search engines	Search indexes tuned and basic metadata applied	Rationalization of search technology; analysis of search logs and further tuning, leveraging CV terms	Development of specific enterprise and/or federated search applications	Search and classification become a central service, with business-driven variants	
SYSTEMS	Scope	No understanding of core content types	Some basic DM implementations with ad hoc workflow	Identification of core content types, locales; pilot projects for DAM, BPM, etc.	Business-critical information systems prioritized	Broad availability of diverse management systems	
	Breadth	No systems	Scattered departmental efforts	Initial attempts to combine or integrate systems across departments	Successful departmental initiatives have been scaled enterprise-wide	Encourage and adopt innovations from departmental levels	
	Security	No security regime in place	Dependent on individual systems	Formal projects initiated to address gaps & redundancies due to multiple solutions	Standardized policies and procedures exist and are system enabled	Security is treated as a centralized shared service	
	Usability	Lack of systems make end user usability considerations moot	Employee adoption rates measured, but dissatisfaction unanalyzed	Some initiatives use Scenario Analysis and User Persona techniques to guide design	User-centered design underpins all system designs, with formal collection of user feedback	Usability is a guiding principle in all system activity	

Figure 2.11: Measuring ECM maturity level by dimensions on the maturity model (Pelz-Sharpe et al. 2010:14; Katuu 2012b:11)

The ECM system can assist healthcare service providers to minimise patient waiting time for the retrieval of records, because retrieval is done quickly with ECM records using a PC keyboard at the workstation within few seconds anytime, anywhere. This promotes a good relation between the doctors and the patients (Weeks 2013:143-144). Successful implementation of ECM needs a change management strategy that is structured properly. It also needs establishment of a team that is affected by the system to ensure collaborative efforts. The healthcare service-delivery ECM team is required to comprise, among others, system vendors, project manager, information technology member and healthcare practitioners' champion. The other needs for the successful implementation of the ECM system are staff training on system operation or use and technological issues. It also needs strong healthcare-practitioner leadership and involvement of the relevant staff, adequate

resources for all staff involved and more training (Weeks 2013:144). The ECM system has to be introduced in an overlapping way with the paper-based records management or whatever system is currently used as was also the case with the Western Cape Department of Health when introducing their ECM system at Tygerberg Hospital. This was done by ensuring that healthcare practitioners produce paper-based records while using ECM. Then paper records are also scanned, captured and indexed into the ECM system for easy access by end-users (Weeks 2013:143).

However, in most hospitals including the Western Cape, the current state of medical records management is that financial records are captured in both paper-based and electronic systems while the clinical information is kept only in paper-based format. They do this because maybe they find the paper-based records format more secured and user-friendly (Weeks 2013:145). The fear to adopt EHR emanates from system interference with the workflow by the new mode of operation, a delay in provision of service to patients, ineffective technical support, and lack of privacy and confidentiality of information, among other things. The other failure may emanate from system interoperability, computer availability and system reliability (Weeks 2013:146; Boonstra and Broekhuis 2010:1-16). There are several key issues that need serious attention when the implementation of an EMR system occurs, such as scope of work and time frames, privacy and security, expenses, effectiveness in service provision, interoperability, patients' clinicians interaction, competence and knowledge in system usage and change management to deal with resistance to change by users (Weeks 2013:142; Boonstra and Broekhuis 2010:4-12), lack of leadership, and interest to participate from other officials (Boonstra and Broekhuis2010:11-12).

2.2.7 Records management models

The last objective of this study was to propose a framework that can facilitate medical records management practice in public hospitals. The intention was to investigate, establish and recommend a framework to guide on embedding medical records management practice into the healthcare service delivery. In a simple definition, the records management framework or model refers to the organisational ways or approaches of records management implementation and maintenance (Ngoepe 2014:2). Ngoepe (2014:1) attests to the fact that "records management models play a significant role in the provision of records management services in organisations". He further elaborates that many governmental bodies do not consider appropriateness of the records management models when designing and implementing the records management programme (Ngoepe 2014:1; Ngoepe and Van der Walt 2010:83). In establishing the records management model, the records survey coupled with designing, developing, implementing, controlling and

reviewing of the records system is a fundamental tool for the records manager. This will enable the smooth establishment of a functional records management framework (Yusuf and Chell 2005:72; Yusof and Chell 2000:69). This is because the records survey or records audit will give the records manager all the information about what and how organisational records are created, kept, used and, eventually, disposed of. This is why the records surveys are considered "the primary mechanism for monitoring and improving records management activities" (Chaterera, Ngulube and Rodrigues 2014:366-367).

Furthermore, in order to improve the records management practice, the records manager has to ensure that all records produced by the organisation are identified, examined, monitored and inspected through the records survey or audit, for instance, identifying information about records such as "quantity, physical form, type, location, physical condition, storage facilities, use and rate of accumulation" (Chaterera, Ngulube and Rodrigues 2014:366-367). The records survey gives support to the public records management framework by influencing changes or improvements in the fundamental records management activities such as records appraisal, developing a vital records management programme and creating retention and disposal schedules (Chaterera, Ngulube and Rodrigues 2014:367; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271).

However, the records manager needs to be given full support and total commitment from the organisational top management (Ngoepe and Van der Walt 2010:84; Boonstra and Broekhuis 2010:11) and willingness from political leadership (Ngoepe and Ngulube 2015:2; Harris 2007:3) in his/her endeavour to improve or develop the records management programme framework. This implies that the framework or model should be adopted as part of the overall organisational objectives to improve service delivery (Ngoepe and Van der Walt 2010:84; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271). Hence, organisational leadership needs to consider a sound records management model as a necessity in the organisation. That will assist in ensuring that records are properly managed and preserved through the deployment of well-trained staff, appropriate governance tools, appropriate system and technology from creation to disposal (Ngoepe and Vander Walt 2010:83-84). There are several aspects to consider in developing the records management programme model. For instance, before engaging in the records management programme model the organisation should consider issues around records survey, system design, development, implementation, control and review (Ngoepe 2014:3; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271). Organisations must also develop strategy, policy, procedures, classification systems,

retention schedule, vital records schedule, disaster preparedness and recovery plan prior to the introduction of the records management programme model (Ngoepe 2014:4).

However, the National Archives of Australia (2003:26) discusses four models of records management programmes in relation to the geographical location, control tools such as policies, staff and reporting (structural) techniques. The four records management models are also discussed in detail by Ngoepe (2014:4). These four models are centralised, decentralised, devolved and combination. The first model is *centralised*, in which records are managed in one central location, controlled using a single policy, one group of records management staff and are controlled by one records manager in the organisation. The second model is *decentralised*, where many different records management sub-units are established at many different, scattered geographical locations as channelled by organisational branches or regions or service areas. In this model, different teams of records management are structured and allocated to manage records at the specific geographical area with their area records manager reporting to the overall or corporate records manager at their head office (National Archives of Australia 2003:26;Ngoepe 2014:4).

The third model is *devolved*, which is more similar to the model *decentralised* with all the other details, except one. The only difference is the fact that the corporate records manager only takes part during policy and standards development and does not play a supervisory role for records management staff at their different respective branches or regions. The fourth model is *combination*, in which aspects of other models are combined. For instance, central records management staff may be established and headed by corporate records manager who develop policies, procedure and standards to ensure that the records manager and staff at the regional offices take full responsibility for managing their records at their own geographical area or branch (National Archives of Australia 2003:26; Ngoepe 2014:4).

Ngoepe (2014:4-5) elaborates that each type of the records management models has its own advantages and disadvantages. This means that a specific organisation may adopt a specific kind of model based on its specific organisational environmental and operational suitability. For instance, for the organisation where records are accessed through their central head office, the centralised model may be best suitable. Alternatively, for those who provide access through the regions' or branches' decentralised or combined models may be best suitable for the organisation. The records management model is a fundamental necessity in the organisation because "As long as records management functions operate like an unguided missile without proper planning and models to

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guide implementation, all the initiatives that are already in place are bound to fail" (Ngoepe 2014:11).

Generally, it is deemed necessary that government bodies should 'map their processes and define the models appropriate for implementation of records management' (Ngoepe 2014:2; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271). When designing the model, the organisation must also consider existence of the business information system in the organisation. The system must consist of, among other things, processes, policies, procedures, software and hardware for the purpose of capturing organisational business transactions that produce records in different formats and media. For instance, paper-based records, electronic documents, electronic records and web-based transactional records integrated into a single records management system (National Archives of Australia 2003:27; Ndenje-Sichalwe, Ngulube and Stilwell 2011:276). Moreover, development and implementation of records management models in South Africa are still problematic. For instance, in his study about records management models in South Africa, Ngoepe (2014:10) discovered that in most government bodies there were no mapped records management processes and no determined models for implementation of records management programmes; a finding that was also reiterated by Ndenje-Sichalwe, Ngulube and Stilwell (2011:271) in their study about managing records as a strategic resource in the government ministries.

2.2.8 Relationship between medical records management and healthcare services delivery

One of the objectives of this study was to assess understanding of the relationship between medical records management and the provision of healthcare services. The purpose was to determine the understanding of the population about how management of healthcare records and healthcare service delivery impact on each other. Looking at the healthcare service delivery setting, qualified healthcare professionals such as doctors and nurses are responsible for treating the patients in hospitals. During this process, they produce records that contain important information to be used in the near future for further treatment and care of the same patients (International Records Management Trust (IRMT) 1999:1; Boonstra and Broekhuis 2010:2; Sinha and Shenoy 2013:330). The records produced need to be properly managed to ensure that they are accurate, comprehensive, up to date and accessible at all the times. This is because proper recordkeeping assists in ensuring good medical care to patients. If records are not properly managed, healthcare services may be negatively affected (IRMT 1999:1; Sinha and Shenoy 2013:330; Dang, Francois, Batailler, Seigneurin, Vittoz, Sellier and Labarere 2014:538). For instance, the result of that may be poor treatment, diagnosis and even prescriptions. Among others, the records that need proper care

include patients' case notes or files, X-rays, specimens, drug records and registers (IRMT 1999:1). Properly managed records assist the hospital management and healthcare providers or workers with the smooth running of hospital administration, regular disposal of unwanted records, tidy records storage, and proper access to records and timely retrieval of required records, which save time and other resources for the hospital (Boonstra and Broekhuis 2010:2; IRMT 1999:1; Sinha and Shenoy 2013:343). The healthcare records are also used by healthcare workers and management for accountability about previous healthcare actions they performed to collect and compile statistical reports and provide data for research (IRMT 1999:1). Medical records are also used by clinicians and nurses to make decisions during their future process of healthcare service (Marutha 2011:67). Effective hospital records management requires, among others, policy, precedents, legal rights and obligations, personnel, finance, buildings, equipment and other resources (IRMT 1999:1) as also supported by Sinha and Shenoy (2013:330); Marutha (2011:67); Chinyemba and Ngulube (2005).

Hence, medical records management has a significant relationship with healthcare service delivery. This is why medical records may either negatively or positively impact on the healthcare service delivery. This depends on how it is being managed, that is, whether it is managed properly or incorrectly. Medical records usually get lost, destroyed or retained unnecessarily if not properly managed. This usually results in the government failing to produce evidence about what they were doing and to support their healthcare business continuity (Shepherd 2006:7; Sinha and Shenoy 2013:343). For instance, in supporting the above statement, outpatients at the Mankweng Hospital raised a complaint to the public protector that they have to wait in queues for a long time before they receive healthcare service because records management employees take long to retrieve their medical records files in the storage; some files are not available at all (Monama 2013:5). This signifies a negative impact of improperly managed records.

Furthermore, the absence of medical records could lead to limited or no healthcare service delivery. Other healthcare services are not possible at all due to ineffective medical records management. Failure to create complete and authentic records or to maintain them may have more serious consequences for healthcare service (Shepherd 2006:7; Sinha and Shenoy 2013:330; Dang et al. 2014:538). A good example is the situation reported by Maponya (2013:6) as discussed in detail in the introduction of this study about the failure of the oncologist at the Polokwane Hospital to treat a patient due to the missing medical file.

Nevertheless, the process of improving the quality of healthcare service delivery also depends on improved medical records management that brings about availability of authentic medical records. For instance, the process of rendering proper healthcare services depends on the availability of authentic information about previous business transactions that is to also be used for regular improvement of performance or proper rendering of the healthcare service (Bordoloi and Islam 2012:110; Sinha and Shenoy 2013:330). Information is compiled from the record created during the business transaction activities. If information in the records created is not complete, valid and accurate it may produce misleading knowledge. This is because some information may just be estimations due to a lack of proper recordkeeping framework. This misleading knowledge may be used by the healthcare institutions during decision-making, problem-solving and reporting to different levels of healthcare services (Wright and Odama 2012:147-149). Proper records management will provide quality data for creating knowledge to support organisational decision-making and problem-solving (Anova Health Institute 2012).

Moreover, medical records management approaches also impact on the way in which healthcare professionals render their healthcare service. This is why for the healthcare professionals to change from the paper-based records management to the electronic way of managing records appears to be a paradigm shift affecting the way in which they used to render their business. The healthcare professionals see the move from paper-based to electronic records management as a serious barrier for them to render healthcare service easily. Their challenge is a change in their working culture rather than the financial implications of the introduction of EMR per se; hence, they resist changing to EMR (Weeks 2013:141-142; Boonstra and Broekhuis 2010:2). This is why healthcare professionals in healthcare institutions still keep the medical history information such as diagnoses and medication prescriptions in a paper-based format of records system and only use EHRs or EMRs for capturing information about patients' administrative and financial information or for billing purposes (Weeks 2013:143-145; Marutha 2013:206).

2.3 SUMMARY

In summary, this chapter reviewed and discussed the literature relating to the study's problem statement and objectives in particular. As also guided by Creswell (2014: 28-29; 2003:30) the literature was reviewed by integrating a series of literature of related topics from general to specific and, eventually, summarizing them into key issues. Relevant literature was identified, integrated, comprehended, analysed, synthesised, evaluated and produced as new knowledge. The subject fields covered for review that relate to the objectives of the study were recordkeeping system,

records management governance, recordkeeping technology, records archiving, records management capacity and competencies; healthcare service delivery versus medical records management and ECM readiness. The literature reviewed in relation to the recordkeeping system was about records management operation, recordkeeping functional requirements and metadata requirements. In the case of records management governance, the literature reviewed was about legal and regulatory infrastructure, organisational policy, and recordkeeping responsibility and accountability. Literature for records archiving focused on records appraisal, electronic records retention, records preservation strategy and storage management. Recordkeeping technology literature related to electronic records systems and electronic system security. The literature on the records management competency and skills was based on the records and archive competencies and related skills. The literature about ECM readiness and models was also reviewed and discussed by looking at the required fundamental records management training needs and supporting skills such as ICT, information systems, project management, training and communication skills. However, the next chapter will focus on the research methodology to be applied in conducting this study. The chapter will cover, among other issues, research method, research design, research approaches, population of the study, sampling method, data collection techniques, ethical consideration and thesis outline.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter discussed the literature relating to the records management and models, with specific focus on records management governance practices, recordkeeping systems, records archival processes, recordkeeping technology, records management capacity and competencies. More importantly, certain discussions were specifically related to organisational readiness for enterprise content management as the latest records management system framework. However, this chapter focuses on the research methodology applied in conducting this study. This is because "knowledge that is produced in any scientific field primarily depends on the methodology that is used" (Ngulube 2015: 125). This chapter covers, among other issues, research paradigm, research approaches, research design, survey research, triangulation, population of the study, research method, sampling method, data collection techniques and ethical consideration.

The worldviews or paradigm applied by the researcher in this study was a positivist paradigm. The positivist paradigm informed the application of the quantitative approach in this study as its focus was on the measurements of respondents' attitudes and feedback or results, based on the objectives and problem statement. Generally, the focus was on assessing causes and effects to eventually recommend solutions (Babbie and Mouton 2001:49; Creswell 2009:8). The main research approach used in this study was the quantitative approach, which was supported with the triangulation of a limited scope of qualitative data-collection methods to close some gaps or answer some questions. Figure 3.1 illustrates the map of the research methodology.

Nevertheless, the research design, survey research, emanated from the quantitative approach as applied by the researcher. There were four techniques that were used to collect data, which were questionnaire, interviews, observation and documents/system analysis. The questionnaire was mostly used to collect quantitative data. Interviews, observation and document analysis were used to collect qualitative data that was to be used for clarifying questions in quantitative data gaps. Hence, the qualitative data was used to understand the quantitative data during analysis and interpretation. The data was also triangulated after collection to support the main technique, which was a questionnaire for the quantitative method. This was to ensure that gaps are closed or

minimised to a reasonable or acceptable level. All the collection tools were tested and reviewed for validity and reliability.

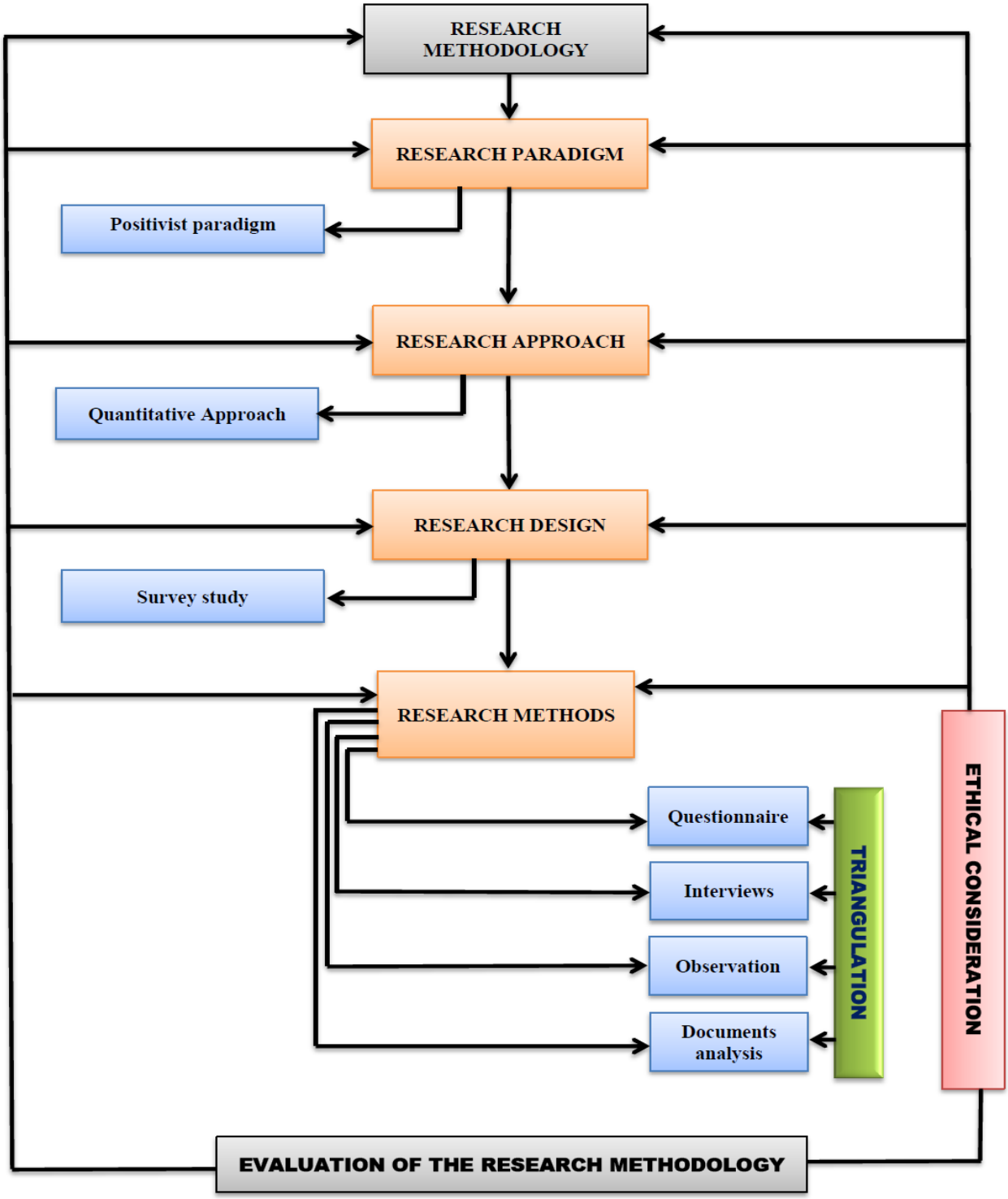

Figure 3.1: The map of the research methodology

Moreover, the study was conducted under the ethical consideration of the UNISA research ethical guidelines. The following UNISA documents were also used, namely: *Procedures for studies for*

master's and doctoral degrees – Part 1 of 2011, *Policy on research ethics of 2007*, *Policy for master's and doctoral degrees* of 2008, *Policy for copyright infringement and plagiarism* of 2005, and *Language policy* of 2010". The study was also cleared by UNISA with the issuing of an ethical clearance certification. The researcher requested permission to conduct the study in the Limpopo Department of Health and the head of the department granted permission as requested. This means that ethical implications were observed throughout the process of research methodology. Finally, the researcher evaluated challenges and/or barriers relating to conducting the research methodology, which also includes application of the research paradigms, approaches, design and methods. For instance, barriers relating to accessing the population, applying some data collection techniques and meeting certain research needs like participants' interests and permission by the organisation of the study, and eventually remedial actions to deal with these barriers and challenges.

3.2 RESEARCH PARADIGM

Paradigm refers to "philosophical worldview" and is also called "epistemologies and ontologies or broadly conceived research methodologies" (Creswell 2014:6) or "interpretive frameworks" (Creswell 2013:23) or "metatheoretical traditions" (Babbie and Mouton 2001:20). Creswell (2014:23) states that there are still some contradictions and controversies by different theorists and researchers about whether paradigm, epistemology and ontology are synonymous or mean the same or different things or whether they are just related. For instance, Bryman (2012:630) sees the three concepts at different levels as he stresses that paradigm guides the researcher with the foundation of their investigation based on different epistemologies and ontology. He further describes paradigm as a "cluster of beliefs and dictates", which scientifically guides the researcher to what they must research on in their field of study, influences the approaches for researching and analysing the data. Brewerton and Millward (2001:197) define paradigm as "a world view underlying the theories and methodologies of a particular scientific subject, leading to a particular way of looking at a given phenomenon".

Although Gerring (2012:421-430) does not discuss the concepts ontology and epistemology in relation to paradigm as to whether they are synonymous or can be used interchangeably, but he defines ontology as "a vision of reality… and also as a branch of metaphysics concerned with the nature of existence" (Gerring 2012:4430), and epistemology as "the study of the nature and origin of knowledge" (Gerring 2012:421). Ngulube (2015:127) describes ontology as "the nature and existence of social reality" and epistemology as "what constitutes knowledge and the ways of knowing". Bryman (2012:27) supports the statements of Gerring (2012:421-430) and Ngulube

(2015:127) when he confirms that epistemology considers the need for the answer to the question of "what is or should be regarded as acceptable knowledge in a discipline" and Ontology considers "the nature of social entities... whether social entities can and should be considered objective entities that have reality external to social actor, or whether they can and should be considered social constructions build up from the perception and action of social actors" (Bryman 2012:32). Bernard (2013:7) also attests that epistemology is the research method "at the most general level or the study of how we know things". Krathwohl (2009:693) underscores that epistemology is "the branch of philosophy that studies the nature of knowledge, its assumption and its validity".

However, the researcher's interpretation from the above definitions and descriptions is that epistemologies and ontologies appear to be two main categories of paradigms or worldviews. For instance, Bryman (2012:27-33) points out and discusses positivism and interpretivism as two "epistemological positions" and he further describes objectivism and constructionism as "ontological positions". Some of these assumptions such as positivism, constructivism and interpretivism are generally discussed by Creswell (2014:5-19) as worldviews, which, according to him, are also called paradigms. Although Bernard (2013:7) never discusses the ontological part, he supports the statement that 'rationalism or empiricism philosophical principles, positivism assumption and humanism or interpretivism competing methods' are part of epistemological applications or positions. Krathwohl (2009:242) addresses positivist as positivist epistemological position. He elaborates that it entails the assumption that "there is a real world out there to be plumbed and discovered", because knowledge is created through "social process of corroboration and judgment that something is true". Social science research can be used to examine the relationships among issues and link that to the causes (Krathwohl 2009:242).

Furthermore, Creswell (2014:6) indicates that paradigm as a worldview is usually influenced by "discipline orientation, students advisors/mentors inclinations, and past research experience". Bryman (2012:630) further highlights that paradigms are not commensurate, which means that when the researcher applies both questionnaire and observation in his data collection, it does not warrant the use of the mixed method research approach or a combination of qualitative and quantitative research methods (Bryman 2012:629). "MMR combines the strength of qualitative and quantitative methodology to produce a comprehensive and broad-based research" (Ngulube 2015:127). Babbie (2007:31) refers to paradigm as the "fundamental frames of reference" that are used to shape what is researched and its interpretations. He further states that paradigm underlines different theories and explanations. Creswell (2003:6) explains that paradigm is a "knowledge

claim" in which the researcher has a certain assumption in mind about their learning outcomes when using certain research approaches. The researcher needs to identify the research paradigm since they are hidden within his view of the world of his study. Hence, it impacts on the research practice as a reason for adopting a certain kind of research approach (Creswell 2009:5). Babbie (2007:33) supports Creswell (2009:5) by saying that the paradigm is used as an assumption about reality in social life and is not always true, and it is either useful or not useful. This is why different kinds of paradigms influence different kinds of research approaches (Babbie 2007:33). This is why it is critical for the researcher to apply the correct type of paradigm. For instance, Creswell (2014:6-11; 2009:10; 2003:4-12) mentions four types of research paradigms named positivist/ postpositivism, transformative/ advocacy/ participatory, constructivism and pragmatism.

Furthermore, the postpositivism worldview, also known as positivist/postpositivist or postpositivism is associated with the quantitative research approach (Creswell 2014:7; Bryman 2012:650) and as a worldview for this study it was discussed in detail in the next section of this chapter. In postpositivism, the probability is that "causes determine effects" (Creswell 2014:7). The transformative worldview, also called advocacy or the participatory worldview, supports or associates with any approach since "there is no uniform body of literature characterising this worldview" (Creswell 2014:9). The constructivism worldview, which is in most cases combined with the interpretivism worldview, is associated with the qualitative research approach (Richie and Lewis 2003:23; Creswell 2014:8; Bryman 2012:650). This implies that, with the interpretivism worldview, "all versions of the truth are shaped by the viewers' perceptions and understanding of their world" (Roth and Mehta 2002:132), which is also supported by Leitch, Hill and Harrison (2010:69); Richie and Lewis (2003:7). Creswell (2003:8; 2009:8; 2013:24-25; 2014:8); Richie and Lewis (2003:7) underscore that interpretivism provided for the population with the understanding of the situation in the world or environment they inhibit and work. The pragmatism worldview is associated with the mixed method approach since it "arises out of actions, situations and consequences rather than antecedent conditions" (Creswell 2014:10; Bryman 2012:650).

In addition to the above, Bryman (2012:27-35) also discusses interpretivism, realism (which is divided into empirical and critical realisms) and objectivism. The other interpretative frameworks include hermeneutics, feminisms, racialised discourses, critical theory, Marxist models, cultural studies models, queer theory, post-colonialism, postmodernism and disability approaches (Creswell 2013:23). Babbie (2007:34-37) only highlights conflict and feminist paradigms. This study is based on the positivist/postpositivism paradigms since it is central to the quantitative approach. The

researcher required the positivist approach to get the answers about the cause of the situation or the problems being studied (Roth and Mehta 2002:133). This worldview strives to strategize on improving or changing the situation or problem being studied (Leitch, Hill and Harrison 2010:69). Positivist is "characterised by integrity and trustworthiness" (Leitch, Hill and Harrison 2010:68). They further argue that the positivist or empiricist usually depends on the observational technique of the situation, or issues or facts being studied (Leitch, Hill and Harrison 2010:68). The positivist worldviews are discussed in detail in the next sections of this chapter as a key paradigm of this study.

3.2.1 The positivist worldview

The positivist paradigm can be defined as "the interpretative perspective that has the elements of reductionistic, logical, empirical, cause-and-effects oriented and deterministic based on a priori theories" (Creswell 2013:299). Krathwohl (2009:628) argues that in this worldview names or concepts have been succeeding each other based on cultural, racial, gender and other influential factors or background. He further states that positivist worldview was replaced by post-positivism or postmodernism (Krathwohl 2009:628). Other philosophers consider the name or concept positivist synonymous with the other related concepts, such as positivist/post-positivist, positivism and many more (Creswell 2014:7). This is why other philosophers also call the positivist paradigm "the positivist/post-positivist research" (Creswell 2014:7), or "positivism" (Bryman 2012:27), "empirical science" or "scientific method" (Creswell 2003:6; 2009:6; 2014:7), **"**positivist/postpositivist research or quantitative research and postpositivism" or "doing science" (Creswell 2003:6). The view of the researcher is that most of the philosophers maintain all the concepts rather than replace the old concepts with the latest concepts and that is why the concepts are applied or used interchangeably. Generally, positivism can be described as "Belief that the only true knowledge is based on sensory experience- positive facts-thus avoiding metaphysical speculation concerning causes and normative purposes" (Gerring 2012:431).

Furthermore, the positivism paradigm was applied in this study since the main focus of the study was on the causes or outcomes on the problem using observation and measurement against objectives, testing theories and laws governing the population of the study (Bryman 2012:29-30; Creswell 2003:7; 2009:7; 2013:24; 2014:7; Richie and Lewis 2003:23; Roth and Mehta 2002:133). Bryman (2012:28); Brewerton and Millward (2001:197) and Creswell (2014:245) see positivism as

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"an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond" (Bryman 2012:28). It is a

> system of thinking which assumes that any proposed theory or law can be scientifically verified or is capable of mathematical or logical proof (Brewerton and Millward 2001:197).
>
> Deterministic philosophy about research in which causes probably determine effects and outcome. The problem studied by postpositivist reflects issues that need to identify and assess the causes that influence the outcomes (Creswell 2014:245).

However, the position of positivism is both inductive and deductive (Bryman 2012:27). It is inductive in the sense that knowledge is created by means of gathering information to be used as facts to develop a foundation for creation of law, and it is deductive with the principle that theory is only used to establish hypotheses and/or research questions to which answers and/or confirmations are investigated to understand and explain the law under the study (Bryman 2012:28). "Positivism is based on a realist ontology" (Leitch, Hill and Harrison 2010:69), which is also supported by Bryman (2012:28) when he attests that it is the "study of social reality". Realism is based on the understanding or belief that there is an external reality from independent participants' beliefs and understanding (Bryman 2012:29; Creswell 2013:299).

Furthermore, Bryman (2012:29) underscores that, like positivism, realism is of the idea that natural science and social science are not supposed to differ when it comes to data collection and presentation of the study findings, and should share the belief that "there is an external reality to which scientists direct their attention". There are two types of realism: empirical and critical realism. Empirical realism is of the fact that if scientists use the correct methods for the study it can be possible for them to understand reality. The critical realism's viewpoint is that, if the scientists are able to realise the structure responsible for the generation of "events and discourse" at the work environment, then they will understand and effect changes to the social world (Bryman 2012:29).

Moreover, in the positivist worldview, effects or outcomes of the problems are determined by means of the causes (Creswell 2003:7; 2009:7; 2013:24; 2014:7; Roth and Mehta 2002:133). "The positivist approach maintains that a true explanation or cause of an events or social pattern can be found and tested by scientific standard" (Roth and Mehta 2002:132). The positivist paradigm is based on the fact or assumption that there is a real world that needs to be discovered and knowledge can also emanate from the true judgment of this world's social process (Krathwahl 2009:242). The study for this kind of worldview is conducted in the form of quantitative approach, using numeric

measures to study the behaviour of the population. Collected data was used to confirm whether a certain theory or law was supported or not for ultimate intervention or review or revision by relevant authorities. For instance, functionality of the law, theories or procedures were also studied to identify gaps and to establish improvements based on this worldview (Creswell 2003:7; 2009:7; 2013:24; 2014:7; Richie and Lewis 2003:17).

3.3 RESEARCH APPROACH

Babbie and Mouton (2001:20) refer to research approaches as the methodological approaches; hence, this is a research methodology chapter. Research approach entails the direction which the study followed. Research approach is "plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation" (Creswell 2014:3). In the scientific research, several research approaches are used, such as quantitative and qualitative approaches. The other approach is the mixed method research approach in which more than one approach are mixed or integrated (Creswell 1994:176; 2014:3; Fidel 2008: 265; Johnson and Christensen 2008:280; Ngulube 2013: 5-7). Babbie and Mouton (2001:20,63) also mention the Participatory Action Research (PAR) approach, which they say it entails "diagnosing the situation, planning action steps, implementing and evaluating outcomes". Babbie and Mouton (2001:20) underscore that research approaches are strategies of inquiry.

However, the approach assisted the researcher in the provision of a clear direction about procedures to be used in the research design (Creswell 2009:11). For the purpose of this study, the researcher used the quantitative research approach with the triangulation of qualitative methods during data collection, analysis and interpretation to confirm the quantitative results, as well as during reporting (Bryman 2012:392, 635; Creswell 2014:201; Ngulube 2013:6). In other words, the researcher corroborated evidence from different sources and from more than one kind of source or technique of data with theories (Creswell 2013:251). In applying the triangulation approach, the researcher designed data collection tools with quantitative questions and a bit of qualitative questions to collect, converge or mix, or combine or integrate and analyse data of both qualitative and quantitative form (Bryman 2012:635; Christensen, Johnson and Turner 2011:380; Ngulube 2013:6). Creswell (2003:15), Fidel (2008:265-169), Johnson and Christensen (2008:280), Matveev (2002) and Ngulube (2013:5-7) underscore that by using more than one research approach the researcher minimises biases, limitations and weaknesses. In so doing, the researcher improves the quality of the research as the advantages of one method closed the disadvantages of the other.

3.3.1 Quantitative approach

The quantitative approach is described by Leedy and Ormrod (2013:95) as the kind of approach "involving looking at amount, or quantities, of one or more variables of interest" and this is supported by Babbie and Mouton (2001:49). The quantitative approach is defined by Gerring (2012:362) as "any inference based on large number of dataset observation, that is, statistical analysis". Quantitative approaches are characterised by quantification of data during collection and analysis (Babbie and Mouton 2001:49; Bryman 2012:35; Creswell 2014:247). It is also used to test "objective theories by examining relationship among variables" (Creswell 2014:247). The quantitative approach was the key approach in this study and was used to explore and measure the situation based on statistical information. For example, the number of people supporting or not supporting certain statements or the number of people agreeing or not agreeing with a certain statement, the number of people responding with no or yes to a certain question and, eventually, the researcher interpreting the results (Creswell 1994:2; Fidel 2008:269; Leedy and Ormrod 2013:95; Matveev 2002). This is because the quantitative approach usually employs measurements for measuring the theory in and can be distinguished from the qualitative approach based on its "epistemological and ontological consideration" (Bryman 2012:35). Leedy and Ormrod (2013:95) add that the quantitative approach normally measures variables numerically. Brewerton and Millward (2001:199) describe quantitative research as the approach

> Contrasting with qualitative research approaches, this type of research is concerned with the measurements and quantification of data, often deriving from underlying hypothetico-deductive approach to a research question, i.e. attempting to test out an established theoretical viewpoint.

The researcher was influenced by the positivist worldview in choosing the quantitative approach for the purpose of this study, as it is commonly associated with it (Babbie and Mouton 2001:20,49; Creswell 2014:12). This kind of approach is characterized by the use of closed-ended questions in data collection techniques and numbers or numeric figures in data analysis or presentation (Creswell 2014:4). The other characteristics entail the "deductive approach" in testing theory by research, integrating natural science model practices and norms with positivism, and considering social reality ideas considered to be a reality that is objective and external (Bryman 2012:36).

This kind of approach was mostly associated with and was influenced by the post-positivists worldview, which is discussed in detail in Section 3.1.1. The quantitative approach was used for survey strategy of inquiry. Survey research was used to collect quantitative data for description of

the population trends, attitudes or opinions after studying the sampled participants of the study. The interpretations and descriptions of the meaning out of the data collected from the sampled participants were generalised for the entire population (Babbie and Mouton 2001:49; Creswell 2003:13; 2009:12; 2014:155). This is because survey research "provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell 2014:13).

3.4 RESEARCH DESIGN

Babbie and Mouton (2001:74) define research design as "a plan or blueprint of how you intend conducting the research". To Bless and Smith (1995:63) it is "the planning of any scientific research from the first to the last step". Babbie and Mouton (2001:72) emphasise that research design is the scientific inquiry strategy planning process under which the research strategy is designed to investigate certain issues. It involves the process of establishing and outlining clearly the target issue or issues to be studied and determining the best way to conduct the study on those issues. For instance, the researcher needs to plan or identify what, why and how he is going to collect, or observe and analyse the data from the participants (Babbie and Mouton 2001:72).

Furthermore, research design is "the selection and arrangement of relevant evidence with an eye to setting up an appropriate empirical test" (Gerring 2012:78). The research design are forms of research inquiry within a particular research approach such as quantitative, qualitative and mixed methods as a way of providing research study directional procedure (Creswell 2014:247). Bless, Smith and Kagee (2006:71) define a research design as "the specification of the most adequate operations" used to answer the research questions. The research design entails the population or sample to be studied, designed, data collection duration and reliability and validity of threats. Examples of the design type include exploratory, correlational, experimental or descriptive (Babbie 2007:88-90; Hernon and Schwartz 2009b:1). Research design is an action plan for the research (Hernon and Schwartz 2009b:1). Babbie (2007:112) sees research design as "the process of focusing your perspective for the purpose of a particular study".

However, this study was conducted in the form of explanatory survey, which entails explanations of things relating to or for answering research question about the what, where, when, how and why of certain cases (Babbie 2007:89-90; Babbie and Mouton 2001:81). Bless and Smith (1995:3) further elaborate that explanatory study gives an explanation of the relationship of the facts described in the study, especially in relation to or as stipulated by the law. In applying the survey, the researcher

fundamentally applied the quantitative method in a bigger scope and added a limited scope of qualitative methods to support the explanation of the quantitative data during analysis, interpretation and presentation of research results (Creswell 2014:15-16). The design assisted the researcher to identify a simple and affordable way of conducting the study (Terre Blanche, Durrheim and Painter 2006: 34).

3.4.1 Survey research design

The survey research design "generally refers to the overall structure or plan of a study" (Singleton and Straits 2010:265). Survey has been used as a major research data collection tool by many countries for different reasons or projects over the past two decades (Bernard 2013:216) and it is popularly used in South Africa (Babbie and Mouton 2001:231) and the whole world (Singleton and Straits 2010:263). Babbie and Mouton (2001:232) elaborate that survey is normally used for 'descriptive, explanatory and exploratory' study purposes and is the best method that can be used for original data collection in a very big population, to 'measure attitudes and orientations'. Fink (2013:2) describes survey as the method of collecting information or data about the knowledge, feelings, values, preferences and behaviour of a particular society or individuals with the aim to compare, describe or explain it. The survey also uses a questionnaire for data collection, which is either self-administered by participants or assisted by the researcher through interview (Fink 2013:2; Singleton and Straits 2010:265).

However, survey questions appear in different ways such as open ended, in which the respondent uses his or her own words to explain, or closed ended, in which respondents choose answers from a list of alternative answers (Fink 2013:32). The survey research design is the best method for the study aiming to attain original data for understanding of the population that is huge through generalisation based on common characteristics and/or beliefs or experience (Babbie 2007:244). The survey is usually used to analyse, interpret and describe the population trends, opinions and attitudes in a numerical or quantitative manner through data collected from the sample of that population for the study, to which the researcher generalises for the entire population (Babbie and Mouton 2001:233; Creswell 2014:155). This is supported by Leedy and Ormrod (2013:189) underscoring that survey is used to "collect information about group of people by asking questions and tabulating answers". Leedy and Ormrod (2013:189-190) further support the view that the survey is usually used to learn the behaviour of a large population by using a few elements out of all to draw a conclusion and generalise the findings. In the case of the explanatory study, it is also used

to “investigate the relationship between two or more variables and attempt to explain these in cause and effects terms” (Singleton and Straits 2010:267).

Furthermore, Creswell (2014:13) and Bernard (2013:245) emphasise that survey research ‘includes cross-sectional and longitudinal studies’. Survey research design for this study is cross-sectional design (Bryman 2012:59). In a cross-sectional survey, the collection of data is done at ‘one or single point in time’ and longitudinal survey is used to collect data ‘over time’ (Bernard 2013:245; Creswell 2014:157; Fink 2013:101-103; Singleton and Straits 2010:272-273). Cross-sectional study is the “studies of change that compare current individuals at different stages on the variable of interest” (Krathwohl 2009:692). Survey study may be used by most researchers for the purpose of describing, explaining and exploring things or issues relating to their study (Babbie 2007:244; Leedy and Ormrod 2013:109). For the purpose of this study, the survey questionnaire was used as the main tool of the study while, on the other hand, it was triangulated with observation, interviews and document analysis. This is because during data collection, the survey study normally applies questionnaires and structured interviews (Bryman: 2012:59; Creswell 2014:13), as well as the structured observation (Bryman 2012:59). The survey is done in such a way for determining and describing the population trends, perceptions, actions, intentions, attitudes or opinions using the numeric information or quantitative data collected from the sample of the population under the study. Eventually, the findings of the study are generalised for the entire population of the study although only a sample or a few participants out of all were studied (Creswell 2014:13; Krathwohl 2009:568). Babbie (2007:244) supports the above idea that survey can be used as an excellent tool in a very large population for “measuring attitudes and orientation”. In the survey study, the researcher’s interest is on the question of how common, different, close and related are the responses of participant variables in terms of their responses demographically, socially, politically or psychologically (Krathwohl 2009:568).

However, Bryman (2012:59) and Bernard (2013:216) explain further that the survey research can be applied in different situations for different purposes. Krathwohl (2009:567-568) and Bernard (2013:216-217) add that surveys are also used to gather information in different ways such as ‘face-to-face interviews, group interviews, focused groups, telephone interviews, web-based interview/internet interview/online interview, e-mail survey, self-administered questionnaire and internet ‘from a carefully selected sample of the population’, which is considered informants. For instance, looking at several examples of computer-assisted surveys, Bernard (2013:216) discusses several methods such as Computer Assisted Telephone Interviewing (CATI), Computer Assisted

Self-Administered Interview (CASI), Computer Assisted Personal Interviewing (CAPI) and Mobile Computer Assisted Personal Interviewing (M-CAPI) (Babbie and Mouton 2001:259; Bernard 2013:216-217). Bernard (2013:216-217) goes on by saying that CATI software automatically dials telephone numbers of the participants with a set of research questions captured by the researcher and the interviewer types the text at his workstation while listening to participants responding orally by means of using headphones. With regard to CASI, the respondents access and read questions on the computer screen and type or capture the answers on the screen as prepared and structured by the researcher, just like with a normal paper questionnaire. These are then sent to participants in different ways such as e-mail, web, flash drive, and many more (Bernard 2013:216-217). Bryman (2012:59) attests that the survey may also be applied in a situation where the researcher faces more than one case, in order to establish variation in relations to the organisation, government, families or any other group of people to distinguish between cases.

Moreover, in establishing cases variation through "systematic and standardised method", Bryman (2012:59) mentions that the survey study prefers quantifiable data and also caters for the idea of collecting data "more or less simultaneously" or same time. The survey study also assists the researcher with variables relationship examination which Bryman (2012:59) refers to it as "pattern of association". Bryman (2012:58-59) attests that

> survey research comprises a cross-sectional design in relation to which data are collected predominantly by questionnaire or by structured interview on more than one case (usually quite a lot more than one) and at a single point in time in order to collect a body of quantitative or quantifiable data in connection with two or more variables (usually many more than two), which are then examined to detect pattern of association (Bryman 2012:59).

3.4.1.1 Triangulation

Triangulation is defined as the process through which the researcher uses more than one research method that are different from each other with the intention to confirm the conclusion on the findings. This is attested by Singleton and Straits (2010:432) and Ngulube (2015:129). Triangulation is defined as "the use of several different research methods to test the same findings" (Babbie 2007:113), which was the same case in this study. Bryman (2012:717) defines triangulation as "the use of more than one method or source of data in the study of social phenomena so that findings may be cross-checked". Triangulation is also known as 'the use of multiple methods' (Babbie and Mouton 2001:275; Singleton and Straits 2010:431-432). Brewerton and Millward (2001:200) describe triangulation as

> The use of different research methods (e.g. qualitative and quantitative) within the same study to collect data from alternative sources. These data can be used to assess the validity of findings from alternative sources, and can enrich and inform findings collected using a single research approach (Brewerton and Millward 2001:200).

However, based on the above definitions, the researcher regards triangulation as the process through which the researcher uses more than one research method that are different from each other with the intention to confirm the conclusions on the findings. This is supported by Ngulube (2015:129) when he states that triangulation ensures enhanced study validity and strength in study conclusions. During triangulation "multiple sources of data are collected with the hope that they will all converge to support a particular hypothesis or theory" (Leedy and Ormrod 202013:102). The integrated methods of data collection should not share the same weaknesses or errors or biasness in order to serve the purpose of increasing confidence on the results (Singleton and Straits 2010:432). Babbie and Mouton (2001:275) underscore that triangulation can be applied at different levels of the research process such as paradigm, methodologies, methods, researchers and many more, which was also supported by Ngulube (2015:137). It is the researcher's understanding that the levels of the study where triangulation can be applied depend much on the researcher's requirements to validate the study findings, since Babbie and Mouton (2001:275) and Ngulube (2015:137) also attest that triangulation assists in reliability and validity enhancement, particularly in a quantitative study (Ngulube 2015:137).

According to Bryman (2012:635), in most instances, the researcher makes an aggregate comparison of data from both qualitative and quantitative techniques with the aim of comparing whether they line up or support each other. He further highlights that the need for triangulation may arise during or after the research planning, since some gaps may be realised at the end or towards the end of the study or during data collection, and may seek for additional techniques to cross-check the findings of the planned or already applied techniques. For instance, triangulation was also practiced for the purpose of this study in which the researcher applied methods such as questionnaires, interviews, observation and documents analysis to cross-check data from different sources such as organisational employees, organisational documents containing data about working procedures and recorded transactions and decisions as well as observed procedural activities and actions, which to the research, represent the usage of multi-methods study.

Furthermore, Krathwohl (2009:285) underscores that, in using triangulation, data validity and biasness are determined by means of applying purposive sampling, and triangulation was mostly used in the survey. He further elaborates that triangulation may be applied in three different ways, which are data triangulation entailing the use of more than one data source to ensure data accuracy, investigators triangulation about obtaining data from different investigators on the same phenomenon, and methods triangulation about collecting data for assessment of the same phenomenon using more than one different methods. Triangulation is used as a means of enforcing provision of "additional data to reinforce findings where the new data is independent of the original set" (Krathwohl 2009:285).

However, Bryman (2012:635) and Ngulube (2015:137) are of the opinion that triangulation can be used as a good strategy to enhance quantitative data. This was helpful since quantitative data is more statistical and narratives data from other sources/techniques may assist in clarifying the numeric data (Bryman 2012:635). Babbie (2007:113) attests that this is necessary to ensure that the methods resolve or correct each other's weaknesses. Creswell (2014:201) underscores that triangulation contributes much to the improvement of the validity of the study, since data from different sources was used to examine evidence that will eventually assist the researcher to build coherent themes justification.

3.4.1.2 Population

Population is "the theoretically specified aggregation of study elements" (Babbie 2007:190). He further elaborates that the population of the study is used to select the sample for direct participation in the study (Babbie 2007:190). To Bless and Smith (1995:87), population is "the set of elements that the research focuses upon and to which the results obtained by testing the sample should be generalised". It can also be defined as "the universe of cases and observation to which an argument refers" (Gerring 2012:431). Population is the collection of all elements of inquiry suitable or relevant for the study, based on the research questions such as individual employees, organisations or teams (Brewerton and Millward 2001:197). Babbie, Haley and Zaino (2003:112); Black (1999:111); Ngulube (2005a:129) and Welman and Kruger (2001:46) underscore that population is a group of elements that shares the same feeling or behaviour. It is a total group of elements from which a few is drawn and used as a study sample. The findings from the sample is eventually generalised as if it is from the entire group of population. Even if the study is about the institution or organisation, the researcher was focused on its population. The population may be in the form of an

object, a group, an organisation and/or human products affected by a common problem (Ngulube 2005a:129; Welman and Kruger 2001:46).

However, Ngulube (2005a:46) and Bless and Smith (1995:87) argue that the researcher has to define the population clearly before collecting data. In this study, the target population was the nursing service unit, clinical services unit and records management unit in the 40 public hospitals of the Limpopo province of South Africa. The 40 public hospitals were rendering or delivering healthcare services to the citizen or patients. These units were identified because the nursing service unit and the clinical services unit were creating and using medical records daily when rendering healthcare services, and medical records were affecting their healthcare service work on a daily basis. The records management unit was assigned with the duty and responsibility of managing records and making sure the records are available, accessible, protected, reliable and authentic at all the times.

3.4.1.3 Sampling frame

Sample frame is a list of population elements on which each element is listed once (Welman and Kruger 2001:47-48). It is a list of all the elements of the population from which the researcher has drawn his sample of participants as also defined by (Brewerton and Millward 2001:197). It refers to "the list or quasi list of elements from which a probability sample is selected" (Babbie 2007:199). Babbie (2007:199) highlights that the sample frame must list all or nearly all population members. The sampling frame improved the validity of the research results (Bryman 2012:187; Christensen, Johnson and Turner 2011:151; Johnson and Christensen 2008:224; Ritchie and Lewis 2003:88). In framing the sampling of this study for the questionnaire data collection, the researcher arranged a list of all categories of the identified population of the study. All records management officials for post levels 4 to 12 were listed from the staff establishment spreadsheet according to their districts, hospitals and posts levels. The HR staff establishment was used as a source of the population listed. This facilitated a random selection of individual participants (Leedy and Ormond 2005:183). The sample frame was used to stratify and randomly select employees from different post levels in the records management unit of each hospital per district, who eventually participated in this study (Powell and Connaway 2004: 100). The interview data collection was focused on the nursing service unit head and clinical service unit heads of hospitals in each district of Limpopo.

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3.4.1.4 Sample size

Krathwahl (2009:574) underscores that the key question in sampling of the population is "how much is enough to be sampled out of the entire population". He goes further to say the size of the sample does not matter, but what matters is how well the sample is mixed for appropriate representation of the entire population (Krathwahl 2009:574). The sample size served an important role in determining whether the research conclusions were valid and reliable. A large sample was not easily affordable, but it assisted in giving the reader confidence in the results. It is unlike the small sample, which discourages the reader from reading the report and/or using the recommendations (Ngulube 2005a:132-134; Terre Blanche, Durrheim and Painter 2006:49). Sample size is the amount of participants sampled or drawn from the rest of the population to directly participate in the study (Bless and Higson-Smith 2000:84; Nachmias and Nachmias 1996:201; Ngulube 2005a:130).

Furthermore, as also alluded to by Ngulube (2005a:130), the researcher did not have any standard regulatory rules that could guide him in drawing the sample size from the total study population. However, in the absence of the standard or formal rules the researcher followed assumptions and beliefs from different theorists and/or other researchers. For instance, in sampling the population the researcher followed the idea of Leedy and Ormrod (2013:216); Onwuegbuzie, Jiao and Bostick (2004:107) and Welman and Kruger 2001:64) that if the total population is small, the sample percentages should be more and if the total population is large, the sample percentages will be little to obtain reliable and valid findings and recommendations.

However, the fact is that the sample must be larger in number to be representative of the entire population (Leedy and Ormrod 2013:215). Leedy (1997:211) and Leedy and Ormrod (2013:215) also consider the fact that in a situation where the total population of the study is less than 100, there is no need for sampling and the researcher must study the whole population because the population is too little. This is because sampling is actually meant to avoid studying a large population, which is time-consuming, and costly to administer in terms of money and energy (Nachmias and Nachmias 1996:201; Punch 2006:50). In a scientific study, a minimum sample of 10% drawn from a large population is acceptable (Creswell 2014:159; Krathwahl 2009:574; Ngulube 2005a:134).

Furthermore, Leedy and Ormrod's (2013:216) idea as part of an attempt to guide researchers is that, for a population size of around 500, 50% should be sampled, for 1 500 a population of 20% should

be sampled and if the number is higher than 5 000, 400 participants out of the entire population would be adequate. This is because the larger the sample, the lower the sampling error, especially in random sampling, as also mentioned by Fink (2013:88-89). However, it is the researcher's assumption that a large population may be above 300 and this means that for a population that is less than 300, the researcher may sample more than 10% of the total population, depending on the researcher's capacity to handle the workload. For instance, a quarter (25% or 75 out of the 300) of participants or a half (50% or 150 out of the 300) of participants or even more than half of the population may be a better sample for a total population of 300.

Furthermore, even though the population of the study was too large, the researcher decided to sample more than 10% of the population as recommended by Creswell (2014:159); Krathwahl (2009:574) and Ngulube (2005a:134), and was guided by the Raosoft calculator. This was to ensure a better response rate in case some participants did not give feedback or return the questionnaires and to ensure that the study yielded reliable and dependable results. In conducting this study, the total population identified was 622, from which a sample of 49% (306) was drawn as guided by the Raosoft sample calculator and by Leedy and Ormrod (2013:216). To draw this total sample, the records management officials from each hospital in different districts were stratified according to their post levels using the human resource management staff establishment compiled in a MS Office Excel spreadsheet.

Furthermore, the stratum was sampled as in Table 3.1. In this study, 49% of the total population was accounted for by 306 participants out of a total population of 622. As also illustrated in Figure 3.2, the sample size's confidential level was confirmed to be 95% and the margin of error was 4%, according to the Raosoft sample size calculator. The Raosoft sample size calculator, as also supported by Krathwohl (2009:436-437), recommends that an acceptable margin of error should not be more than 5%. The confidence level or interval is normally at 90%, 95% or 99%. This confidence level and margin of error are also supported in a discussion by Babbie (2007:197-198); Creswell (2014:159) and Fink (2013:89). Creswell (2014:242) describes confidence interval as "An estimate in quantitative research of the range of upper and lower statistical values that are consistent with the observed data and are likely to contain the actual population mean".

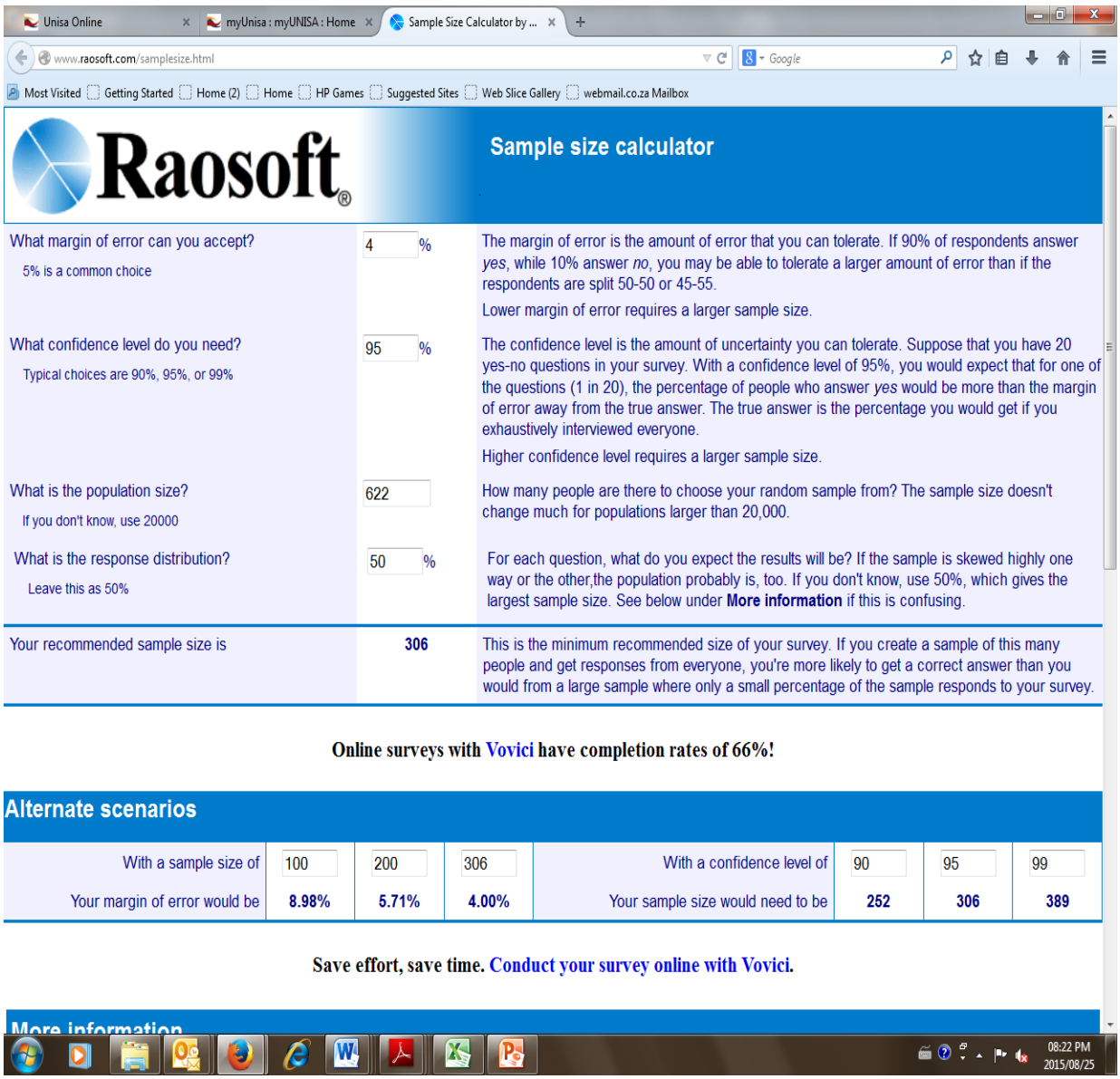

Figure 3.2: The Raosoft sample size calculator snapshot for sample size confidence level and margin of error

Table 3.1: Sample size per stratum per district

POPULATION GROUPS/STRATAS		POPULATION PER POST LEVELS							TOTALS
DISTRICTS	**NUMBER OF HOSPITALS PER DISTRICT**	**LEVEL 4**	**LEVEL 5**	**LEVEL 6**	**LEVEL 7**	**LEVEL 8**	**LEVEL 9-10**	**LEVEL 11-12**	
Mopani	8	65	20	4	21	1	1	1	**113**
Capricorn	9	95	28	4	28	8	1	0	**164**
Sekhukhune	**7**	64	22	10	9	3	1	0	**109**
Vhembe	**8**	66	33	3	23	2	0	0	**127**
Waterberg	**8**	64	11	7	26	1	0	0	**109**
GRAND TOTAL	**40**	***354***	***114***	***28***	***107***	***15***	***3***	***1***	***622***
% FROM GRAND TOTAL		***57%***	***18%***	***5%***	***17%***	***2.4%***	***0.5%***	***0.1%***	***100%***
SAMPLING		**SAMPLE PER POSTS LEVELS**							**TOTALS**
SAMPLE FROM GRAND TOTAL		***149***	***58***	***28***	***52***	***15***	***3***	***1***	***306***
% OF SAMPLE FROM STRATUM *GRAND TOTAL*		***42%***	***51%***	***100%***	***49%***	***100%***	***100%***	***100%***	***306X100 ÷622 = 49%***
% OF STRATUM SAMPLE FROM TOTAL SAMPLE OF 306		***149 X 100 ÷306 =*** **48.7%**	***58 X 100 ÷306 =*** **19%**	***28 X 100 ÷306 =*** **9%**	***52 X 100 ÷306 =*** **17%**	***15 X100 ÷306 =*** **5%**	***3 X 100 ÷306 =*** **1%**	***1 X 100 ÷306 =*** **0.3%**	***306 X 100 ÷306 =*** **100%**
NOTE: % = PERCENTAGES									

Although the nature of this study was quantitative and not MMR, the researcher also applied the qualitative data collection methods with the intention to "enhance the validity of the study and strengthen their conclusions" (Ngulube 2015:129). Hence, for the qualitative data collection, the sample size does not have to be too large and the size is not predetermined (Punch 2006:51). This is because with MMR both qualitative and quantitative methods should carry the same or equal weight or strength (Ngulube 2015:129). For the purpose of this study, qualitative data was collected using the purposive sampling discussed in detail in the next section. The interview sample drawn was six heads of clinical services or clinical managers and six heads of nursing services or nursing managers per district, which totalled 15 heads of clinical services and 15 heads of nursing services, making a total of 30 interview participants. This is because the head of nursing services and the head of clinical services are supervising and mentoring the nursing healthcare service provision of nursing services and clinical services, respectively. Medical records are therefore imperative for successful rendering of healthcare services and it is deemed necessary to enquire about the extent to which the medical records management problems impact on their services and what their views about improvement of the current alarming situation were.

3.4.1.5 Sampling procedures

Terre Blanche, Durrheim and Painter (2006:49) underscore that sampling is the stage of the research whereby the researcher selects a few components out of all the elements of the bigger population to take part in the study after having identified which people, setting, events, behaviour and/or social process to study. The selected participants contributed as representatives of the whole population. At this stage, the population was clearly defined and drawing of the sample was done systematically (Hernon and Schwartz 2009b:1; Mouton 2002:110). This assisted the researcher in avoiding studying the entire population, which was large and geographically scattered and far apart (Nachmias and Nachmias 1996:201; Punch 2006:50). At the end of the process, the researcher generalised the findings of the study for the entire population (Hernon and Schwartz 2009b:1; Mouton 2002:110; Terre Blanche, Durrheim and Painter 2006:49).

Furthermore, the researcher used two different sampling methods in this study. The two sampling methods are the stratified simple random sampling method and the purposive sampling method. Stratified random sampling is a probability sampling method that was used to collect quantitative data. Stratified random sampling reduces standard errors by controlling variance proportions (Sapsford 1999:70). This is because it covers all categories of the population (Fuller 1993:1). The stratified random sampling was applied by separating participants into groups that are not overlapping according to their districts and post levels (see table 3.2). The researcher then selected participants randomly as grouped from different institutions of each district (Bless and Smith 1995:91; Burton, Croce, Masri, Bartholomew and Yefremian 2005:104; Fink 2013:82; Fuller 1993:1; Johnson and Christensen 2008:230; Krathwohl 2009:703). Bless and Smith (1995:91) and Fink (2013:82) also attest that in stratified random sampling, the sample is drawn by selecting a certain number of participants from each group of the population and these participants are then divided into subgroups or strata. Stratified random sampling is a probability sampling method as it provides equal opportunity for all population members to be included in the sample of participants as also attested by Oppenheim (1992:39). This kind of sampling methods enhances representativeness or balance of the sampled elements from different stratus (Babbie 2007:206-207; Brewerton and Millward (2001:116).

On the other hand, purposive sampling method is a probability sampling method used to collect qualitative data. The researcher used the purposive sampling method to collect qualitative data by selecting participants based on the purpose for which he would obtain the data or based on the presupposition that the sample has the data (Bryman 2012: 417-418; Wamundila 2008:25). Babbie

(2007:184) and Bless and Smith (1995:95) underscore that purposive sampling is also called judgmental sampling, and is used based on the researcher's judgment that the sample or participants selected will provide representative information or data (Babbie 2007:184; Krathwohl 2009:700). In this sampling method, the researcher targeted to sample people with more knowledge, understanding and information about issues being studied to which the researcher must know better (Brewerton and Millward 2001:117; Johnson and Christensen 2008:239; Kumar 2005:179; Richie and Lewis 2003:97). The researcher identified clinical heads and nursing heads and/or any official overall heading these units in the institutions as a key source of information, because their job requires medical records and is affected by medical records every time the healthcare service is rendered.

3.5 RESEARCH METHODS

It is vital for the researcher to apply appropriate research methods to give effect to conceptualisation of the research problem and prescription to the phenomenon being investigated (Ngulube 2015:125). Research methods are described by Creswell (2014:247) as the process under which the researcher proposes the mode of "data collection, analysis and interpretation" for their studies. Research methods are all about the data collection tools to be utilised by the researcher in conducting the research study. Data collection methods entail procedures, techniques and tools applied in collecting the desired data from the participants as sampled. The most popularly known and utilised data collection methods are qualitative and quantitative methods. In the quantitative method, data is collected using statistical and mathematical techniques (Creswell 2009:4; Ngulube 2005a:130; Ngulube 2015:129), because it is done by counting and scaling (Punch 2006:52). In the qualitative method, participants or small groups of population are studied thoroughly and deeply (Ngulube 2005a:130) by asking them questions using interview or questionnaires, and watching them using observation, or a combination of some of the three activities (Punch 2006: 52). This study used a methodological triangulation in which both qualitative and quantitative data collection techniques were applied in collecting data (Cameron 2009:142; Odera-Kwach 2011:75). In this study, triangulation was used to integrate multi-methods in an attempt to minimise biases and limitations to the study weaknesses (Fidel 2008:265). Data was collected using the questionnaires, interviews, document assessment (e.g. policies and procedures) and observation of the state of records management and records management systems (Mouton 2002:110; Ngulube 2015:127), to accomplish empirical and epistemological outcomes by ensuring that these techniques close each other's weaknesses from its disadvantages by its diverse advantages (Mouton 2002:110).

3.5.1 Questionnaires

Questionnaires are easy to create and this is why they are being used by most researchers (Black 1999:37; Bless and Smith 1995:114). The term ‘questionnaire’ can be defined as a research tool used to collect data in the form of statistics, in most instances, although it is also used to ask some open-ended questions or questions that need some explanation to participants. In a simple definition, questionnaire is “a collection of questions” (Babbie 2007:246). Mavodza (2010:110) also attests that by using a questionnaire, statistical information about sampled participants are studied and questions covered include information such as age, income, opinions and other aspects of people's lives. The questionnaires are normally used by the researcher to collect data in a survey study.

However, Marshall and Rossman (2006:125) state that questions in the questionnaire are normally structured. It can also contain some open-ended questions to collect data about the population’s characteristics, attitudes and beliefs. The content of the questionnaire also has to be examined and tested. This is with the purpose of checking the quality of the questions for minimising or correcting or improving biasness, sequential order, validity, usefulness and reliability. This was also achieved by conducting a questionnaire pre-test to ensure reliable results (Babbie 2007:257; Leedy and Ormrod 2005:191). This is very important since the questionnaire pre-test enhances understanding of respondents to the questions, question layout, font, arrangement and flow, which also improve the response rate due to its validity and reliability to participants (Mavodza 2010:111-112). Response rate is very important in questionnaires from participants. Babbie (2007:262) and Babbie and Mouton (2001: 261) suggest that the adequate response rate for a questionnaire is 50%, 60% is considered to be good and 70% is accepted as very good. They further emphasise that an acceptable response rate assists in ensuring that the total population is represented in the responses from a few participants since the results are to be generalised eventually.

In addition to the above, Bernard (2013:230-236) provides guidelines on what he titled “fifteen rules for question working and format”, which the researcher considered in constructing the survey questionnaire. The rules discussed include the fact that questions should be unambiguous to avoid different interpretations by different respondents. The other rule is that the questionnaire should be distributed to relevantly knowledgeable respondents who have the information required by the questions. The research surveyor should ‘make sure all the questions are important or useful for the survey and also provide for contingencies and filter questions to clarify certain responses’. The

rules also stipulate that the researcher should make sure that the scales are clear, and should package the self-administered questionnaire to quickly and easily get much data and to avoid boring respondents. The researcher should also 'ensure that the questions are exhaustive and mutually exclusive'.

Furthermore, the questionnaire survey questions must also be not long. The survey questionnaire must also provide alternative answers for each question. The researcher must avoid loaded questions in the questionnaire to avoid leading respondents and to avoid the so-called double-barrel questions. The researcher must avoid constructing questions that show emotion, and for controversial issues, the researcher should try to specify the referent situation to ensure that respondents check as many circumstances as they think are appropriate. Lastly, the research surveyor must avoid putting false premises on the questions (Bernard 2013:230-236). Most, if not all, of these rules were also discussed and supported by Babbie and Mouton (2001: 234-238). Bless and Smith (1995:115) add that before constructing the questionnaire, the researcher must consider listing specific issues or problems of the study to be investigated, analysing the nature of data to be collected for investigating the problem of the study and, eventually, formulating the questions that will specifically yield answers to the research question or prove hypothesis.

However, the above was also considered with regard to this study. Babbie and Mouton (2001:239) and Brewerton and Millward (2001:106-108) underscore that aesthetics and layout of the questionnaire need to be carefully considered with the aim of making the tool attractive to respondents. They further guide that careful consideration should be given to questionnaire instructions and the covering letter to participants in terms of is the tool too long or too short, is the order of questions correct, are there spelling mistakes or grammatical errors, is it set in a readable font type and size, is the density in the layout and is there sufficient space for the responses (Babbie and Mouton 2001: 243-244; Brewerton and Millward 2001:107-108).

Furthermore, this study followed most, if not all, of these guidelines in constructing the survey questionnaire. In order to make the questionnaire simple to the respondents, the researcher started smoothly with the introductory information and guidance to the respondents as to how they should go about completing their responses to the questionnaire questions and which category of people (like gender and age) they fall in, in order to establish their nature as also guided by Babbie (2007:256) and Babbie and Mouton (2001: 243-244). The researcher also ensured that the questions in the questionnaires were not too long to ensure that participants provided accurate feedback by

reading all the questions thoroughly (Mavodza 2010:115). On the other hand, questions were spread out and uncluttered and the researcher avoided squeezing questions into one line and abbreviating questions, to avoid the situation whereby respondents get demoralised and also neglect to answer certain questions properly (Babbie 2007:252). In addition, questions were short, simple, clear and not ambiguous to the respondents. The questionnaire looks so professional and attractive with a guiding instruction in the beginning of the questions (Babbie and Mouton 2001:234; Babbie 2007: 247; Mavodza 2010:112-114).

However, for the sake of this study, open-ended questions and closed-ended questions were structured together, although closed-ended questions were central or dominant since this was mostly a quantitative study. The open-ended questions required respondents to explain their ideas in their own words or understanding. The closed-ended questions required respondents to answer questions by choosing answers from the provided lists of alternative answers (Babbie and Mouton 2001:233-234; Babbie 2007:246-247; Mavodza 2010: 112-114). For instance, some questions were answered by choosing "YES" or "NO" and others by choosing from multiple answers listed (Mavodza 2010: 112-114).

Furthermore, Babbie (2007:247) and Babbie and Mouton (2001: 234) also attest that the survey researcher must consider two structural requirements when constructing closed-ended questions for the questionnaire, which are exhaustive response category and mutually exclusive answers category. The exhaustive response category entails the idea that questions must have a room to accommodate all the relevant answers or responses from the respondents. For instance, some questionnaires provide space for more responses by putting the last option of answers as "Others, please specify_____", and the mutually exclusive answers category has to do with the fact that options of answers to the questions must be structured in such a way that respondents are not compelled to select all of them to ensure easy analysis (Babbie 2007:247; Babbie and Mouton 2001: 240). Babbie and Mouton (2001: 240) refer to these kinds of questions as "contingency questions". The closed-ended questions assist the survey researcher with the provision of uniform responses that are also very easy to analyse (Babbie 2007:246; Babbie and Mouton 2001: 239).

Likewise, Bernard (2013:281-305) discusses scales of questions in survey questionnaire, some of which the researcher applied to the study. The scales discussed entails simple scale with single indicator, complex scales with multiple indicators, index (cumulative index), Guttman scales and Likert scales which the researcher applied for this study. The simple scale normally used to scale

things such as people's ages, e.g. "How old are you?". In applying the complex scales, a single question is asked with many indicators to measure complex variables. An index is used for listing several answers that count the same as certain questions for researchers. The Guttman scale is used to measure the respondents' knowledge or competencies or skills about certain things, issues or tasks (Bernard 2013:281-305).A s also supported or recommended by Babbie and Mouton (2001:233), Babbie (2007:246), Kumar (2005:144), and Powell and Connaway (2004), some questions were designed using a Likert scale frame to measure respondents' attitudes. The Likert scale was formalised by Rensis Likert (Babbie and Mouton 2001: 233). For instance, the Likert scale frame requires respondents to choose whether they strongly agree, agree, are neutral, disagree or strongly disagree with a specific statement (Babbie and Mouton 2001:233; Babbie 2007:246; Bernard 2013:289; Mavodza 2010:117). The open-ended questions were not biased and did not limit answers from respondents as they were allowed to elaborate as much as possible to the best of their knowledge in their responses (Powell and Connaway 2004:128; Mavodza 2010:113). This is because respondents used their own words without limitation (Marutha 2013:114).

However, the good part of the questionnaire was that it gave participants time to plan and think about their answers, it contained valid and consistence information for further reference during data analysis, it was used in the absence of participants, and respondents completed questions independently without interference from the researcher (Bless and Smith 2000:108). Bernard (2013:221) adds that the questionnaire eliminates the researcher's biasness because questions are answered in his absence and respondents all have similar questions to answer. In a self-administered questionnaire, respondents were not attempting to impress anyone since they were alone and anonymity was strengthened (Bernard 2013:222). The questionnaire was not costly; it required few resources and was used to cover a larger sample of participants (Brewerton and Millward 2001:99; Leedy and Ormrod 2013:191). The questionnaire saved travelling costs and the respondents became more truthful and were sure about their answers (Leedy and Ormrod 2013:191). Bernard (2013:220) emphasises that the researcher is either distributing the questionnaire by the simple way of delivering it to respondents and collecting it the other day, or posting the questionnaires by mail to participants or the organisation of the study. This means that the researcher is indirectly assisted by the post office or the organisation of the study, depending on the method of distribution. For the purpose of this study, questionnaires were collected by respondents as they visit their provincial office and some also were delivered by the researcher when visiting the participants' institutions for records management inspections and training. Eventually, respondents submitted the questionnaires to the provincial office as they visit for collection of hospital circulars or posts.

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Moreover, some negative points of a questionnaire as a data collection tool are that a questionnaire requires much time to compile, distribute and collect from participants, illiterate participants were not able to respond to a questionnaire and it was expensive to develop. For instance, the researcher needs a computer or typewriter, printer and papers to complete the project (Bless and Smith 2000:108; Fink 2013:58). Bernard (2013:222) underscores that with the self-administered questionnaire, the researcher has no control over how respondents interpret the questions and/or respond to them. Furthermore, usually, the response rate is very low at approximately 20% to 30%, because respondents know that the researcher does not know who responded and who did not. The other disadvantage is that the researcher may not be so sure whether the questionnaire recipient is the person who completed it or whether he/she delegated someone to complete on their behalf, or whether he/she completed it with understanding of the questions or completed it without reading the questions, especially the multiple-choice questions (Bernard 2013:222). The questionnaires usually expose illiterate participants, which may also affect the response rate by pushing it lower (Leedy and Ormrod 2013:191).

3.5.2 Interviews

Interview survey is one of the alternative methods of collecting survey data (Babbie 2007:264). Krathwahl (2009:295) finds interview or interviewing to be a straightforward process of exchanging questions and answers between the interviewer and interviewee(s), during which the interviewer is the controller or the driver of the process. The interview may also be defined as the process whereby the researcher or interviewer arranges or initiates direct personal contact with the interviewee or participants, with the arrangement that the interviewee will answer questions posed by the interviewer during the data collection interaction (Bless and Smith 1995:106). Usually, in a large population sample, the researcher resorts to appointing assistant interviewers to which he delegates activities. In most instances, the researcher using an interview receives a very high response rate ranging from 80% to 85%, as compared to the questionnaire (Babbie 2007:264). The researcher developed, pretested and used the interview data collection technique (interview schedule) to collect qualitative data by interviewing heads of clinical and nursing services as the key people affected by medical records on a daily basis when rendering healthcare services to patients. This means they were capable of providing quality information to the researcher (Creswell 2009:181; Bernard 2013:219; Leedy and Ormrod 2005; Wamundila 2008).

Furthermore, the interview was used to yield important information relating to facts such as participants' biography, participants' feelings, motives, current and past behavior, behavioural standards and conscious reasons for feelings and actions (Leedy and Ormrod (2013:153). However, Leedy and Ormrod (2013:194-195) also provide a guideline on conducting the interviews for a quantitative study. They state that the researcher must identify his interview questions in time and identify participants' cultural background influence to the study. Participants must be balanced in terms of representativity of the population, rapport must be established and maintained, a suitable interview meeting place must be identified. Furthermore, the researcher must avoid putting words into participants' mouth during the exchange of questions and answers, s/he must capture responses verbatim during the interview, consider that facts are not necessarily obtained, think about quantification of responses and modification of questions as they proceed with the interviews, ask questions that can reveal qualitative data, pilot test the questions, each question must be restricted to a single idea, clarify some responses, where necessary, and consider how the data will be best analysed as they go (Leedy and Ormrod 2013:194-195).

However, the semi-structured interview schedule was used to ask open-ended questions to allow provision of more information by the participants. This was with the purpose of avoiding restricting participants from providing detailed information (Brewerton and Millward 2001:70). In applying the semi-structured interview, the research was not holistically open ended, but he followed "the standard questions with one or more individually tailored questions to get clarification or probe a person's reasoning" (Leedy and Ormrod 2013:190). According to Brewerton and Millward (2001:70) "semi-structured interviews incorporate elements of both quantifiable, fixed choice responding and facility to explore, and probe in more depth, certain areas of interest". The interviews were conducted in different ways based on the proximity of the hospital or participant. Some participants were interviewed face to face, others telephonically and others were interviewed in groups, as guided by Creswell (2009:181). The other specific method used was focused group interview. The focused group interviews "involve the simultaneous use of multiple respondents to generate data" (Brewerton and Millward 2001:80). In applying this interview method, the researcher depended on the availability of participants. The number of participants involved in focused group interviews usually range from a minimum of four participants to a maximum of at least 10 participants, as recommended by Ritchie and Lewis (2003: 35). The researcher used the text recording method by making notes as the participants responded, since most participants did not prefer voice recording.

However, the interview technique, as also supported by Creswell (2009:179), has several advantages. According to Creswell (2009:179), the first advantage of the interview is that the respondents are able to participate without any personal or physical availability of the researcher or interviewer. For instance, telephonic interview or computer-assisted interview can be used. Interview makes it easier for the researcher to collect information relating to respondents' or participants' historical backgrounds, since immediate probing is possible and the researcher is also able to channel the mode of questioning (Creswell 2009:179). Babbie (2007:265); Bless and Smith (1995:107) and Bless and Smith (2000:108) state that with an interview, participants or respondents have the opportunity to ask immediately for further explanations from the interviewer, should they not clearly understand the questions properly. In doing this, the respondents would not give irrelevant answers based on the reason that they did not understand the questions properly, because incorrect interpretation of the questions will be clarified before any question is responded to. During an interview, there is no room for participants to plan or justify wrong answers or hide the correct or true answers due to its immediate demand for answers. It also allows participants to elaborate on their answers due to its unlimited space to provide information. The interviewer also took the opportunity to ask respondents to repeat responses where it is not clear and to state those answers clearly or in an understandable way, which enabled proper recording of responses and immediate understanding of the information provided (Bless and Smith 2000:108). It provided for the elimination of irrelevant questions and correction of ambiguous questions. The researcher also has the opportunity through the interview to realise new aspects of the problem from participants' responses. The interview also enabled data collection to illiterate participants who were not able to read and write properly. Eventually, it enabled the researcher to include questions that can collect data that was missing or not collected by using other collection tools such as questionnaires and observation and the researcher also had an opportunity to encourage participation to provide more information than required (Babbie and Mouton 2001:249-251; Bless and Smith 2000:108; Leedy and Ormrod 2013:190).

The other advantages are that, unlike with distributed questionnaires, it is never easy for the participants to reject participation in the interview in front of his interviewer's eyes, as the interviewer may observe some characters based on the study as respondents participate or talk, and has the opportunity to probe for answers immediately (Babbie 2007:265; Leedy and Ormrod 2013:190; Bernard 2013:219). Brewerton and Millward (2001:73-74) underscore that an interview provides for 'rich data' since the researcher obtains the exact meaning from the respondents, it is flexible to the extent that it can be utilised at any stage of the study and can be applied in multi-

methods with other techniques such as observation and related techniques (Brewerton and Millward 2001:73-74). They further elaborate that an interview gives the advantage that the interviewer is available to probe more relevant answers, clarify complex instructions or questions to interviewees and ensure 'co-operations, rapport and confidence-building' (Brewerton and Millward 2001:73-74; Leedy and Ormrod 2013:190-191). Babbie and Mouton (2001: 249-251) and Bernard (2013:219) emphasise that with an interview survey, respondents who are illiterate or non-literate, blind, bedridden, or very old are also able to participate without any barriers. The researcher may cover or pose both open-ended and closed-ended questions in the same interview survey for each respondent. During an interview, the researcher can see who is responding, although he has to keep anonymity and respondents can see or hear one question at a time, because they do not have the opportunity to see or read through all the questions before starting with the responses, one question at a time (Bernard 2013:219).

Nevertheless, interviews, like other data collection techniques, have several disadvantages. Creswell (2009:179) states that disadvantages of an interview technique are that it may be biased as it is based on the presence of the researcher, participants may not equally express their perceptions and participants may also give information according to their views, rather than the real situation in the field. Bless and Smith (2000:108) underscore that participants may feel discouraged or shameful to express the real situation or their feelings. Bias may emanate from the researcher's poor recording of responses since incorrect information may be recorded due to misinterpretation and misunderstanding. The interviewee may not feel anonymity and privacy in terms of identification since they will be in direct contact with the interviewer. Some questions, especially those that touch on private and confidential issues, may embarrass respondents (Bless and Smith 2000:108). In some instances, participants can always avoid the interview by claiming to be too busy all the time (Leedy and Ormrod 2013:190). An interview is also time-, energy- and money-consuming, since participants may be interviewed one by one at different geographical locations unless (Bless and Smith 2000:108; Oppenheim 1992:83),. These costs can be minimised with telephonic interviews (Bless and Smith 2000:108; Oppenheim 1992:97).

Brewerton and Millward (2001:74) underscore that the other disadvantages include that an interview is expensive since interviewers need to be trained, it needs more logistical equipment and travelling, it needs more time for analysis of descriptive data and conducting it, accessibility of participants is not always easy due to scattered geographical locations, it may lead to biased responses due to the interviewers' presence, and data may not be reliable due to bias incurred.

Bernard (2013:220) underscores that a face-to-face interview is “intrusive and reactive” and it can be very costly and time-consuming if the researcher does not have assistants interviewers.

3.5.3 Observation

Observation is the data-collection technique in which the researcher is personally seeing the events, actions and experience without any interference from the population or institution of the study (Ritchie and Lewis 2003: 35). Bless and Smith (1995:106) underscore that observation as a data-collection tool needs systematic planning that involve the question of what issues should be observed and how to observe them. The observation data recording should also be systematic, objective and standardised, through maintenance of proper control and recording skills (Bless and Smith 1995:106).

Furthermore, this observation technique is divided into participatory or participant observation, during which the observer forms part of the observed team by participating in their activities with them (Bernard 2013:310; Brewerton and Millward 2001:73-74) and non-participatory observation, also known as simple observation (Bless and Smith 1995:105), during which the observer sits back, observes and takes notes of what is happening or what participants are doing (Bless and Smith 1995:105; Brewerton and Millward 2001:73-74). Bernard (2013:313) and Bless and Smith (1995:105-106) state that the researcher may approach the observation task as a participant where s/he acts like a participant and not like a researcher in his/her interaction with the people involved, or as participant observer where the researcher follows participants, observing what they are doing and recording.

Nevertheless, Bless and Smith (1995:105-106) attest that both methods of observation have advantages and disadvantages. In applying simple observation, participants may change their bad behaviour and try to be smart, realising that they are observed. In this case, the information collected may not be realistic. Participant observation may result in the researcher acting emotional or sympathising with participants and becoming biased towards the outcomes of the study. Furthermore, recording was done secretly during this process (Bless and Smith 1995:105-106).

However, for the purpose of this study, the researcher used non-participatory observation. This technique is usually used as a last step where the researcher looks at the research environment while measuring what is happening (Babbie 2007:45). The observation data collection technique was used to collect qualitative data by way of observing the state and the mode of records management

operation in different hospitals in Limpopo (Creswell 2009:181), but also quantifying the behaviour observed by counting occurrence, and rating the accuracy, intensity, maturity and other dimensions (Leedy and Ormrod 2013:184).The semi-structured observation schedule was created and used as a reference source for the researcher to remember which observations are important to note. Creswell (2009:179) states that the advantages of this technique are that first-hand experience is acquired by the researcher, real information is recorded immediately and the researcher can, eventually, detect topics suitable to discuss with participants. However, the disadvantage of this technique is that the researcher may be denied access as intruder, some information may be restricted from reporting and observation skills may be lacking from the researcher's point of view.

3.5.4 Documents assessment/analysis

Documents analysis is about studying the created documents of the organisation that are available with the main purpose of understanding the content or details/information covered (Ritchie and Lewis 2003: 35). Bernard (2013:385) refers to document analysis as archival research in which archived records are studied. He also feels that this kind of data-collection technique is not reactive. The document analysis techniques were used to assess information in the policies, procedures, standards, reports and other relevant documents (Creswell 2009:181). The researcher share the same sentiment with Ritchie and Lewis (2003: 35) that this kind of data-collection technique may also be used to collect data from documents such as reports, government papers and materials as well as procedural documents. This information was used to determine the quality of the guiding documents for medical records management in the hospitals and the state of records management as also reflecting in the reports, and this was also supported by Ritchie and Lewis (2003: 35). Creswell (2009:180) states that document-assessment techniques have the advantage of being performed in a convenient time and providing thoughtful data and written evidence. Nevertheless, the disadvantage is that documents may be protected or denied access, the researcher hardly has to search for the documents, and documents may not be complete and accurate.

3.5.5 Validity and reliability of the data collection tools

Validity is one of the key factors in research, especially for a qualitative study. It is important to ensure trustworthiness, authenticity and credibility (Creswell 2014:201). Validity has to be checked in both qualitative and quantitative data, especially for data-collection instruments (Creswell 2014:227). The data collection tools, especially the questionnaires must always be pre-tested to rectify errors or mistakes, ambiguous questions that may not be easy to understand by participants or respondents (Babbie 2007:257). Brewerton and Millward (2001:199-200) underscore that

validity is concerned with issues related to content, construct, and criterion, and reliability is more focused on data consistency. Mavodza (2010:94) and Brewerton and Millward (2001:90-91) underscore that the findings of the study should be valid in order for it to be believed and it should be credible by eliminating any error. In order to ensure the quality above, validity and reliability were tested in both qualitative and quantitative data-collection tools before they were practically used for data collection. This is because research results that are not valid do not have any value to the improvement of knowledge in the community (Babbie and Mouton 2001:119; Hernon and Schwartz 2009a:73; Ngulube 2005a:135; 2005b:48). Credibility, transferability, dependability and conformability were also tested in terms of the quantitative data-collection tools (US General Accounting Office 1990:76). Pre-testing was important to ensure that the data-collection tools' content were valid (Ngulube 2005a:136). However, a validity and reliability check was done by distributing collection tools to some participants in the population, requesting their comments and inputs for further improvement of the collection tools. Pre-testing of the data-collection tools can be done by making use of at least 10 relevant participants (Babbie 2007:257) and for the purpose of this study, 30 participants were used. It is important for the researcher to bear in mind that "no matter how much you do to prepare a culturally appropriate questionnaire, it is absolutely guaranteed that you will have forgotten something important or that you will have poorly worded one or more vital elements" (Bernard 2013:236).

3.5.6 Data analysis and presentation

Data analysis is the process of identifying the patterns and themes from the data, after which the researcher comes to a particular conclusion regarding the study findings (Bernard 2013:394; Mouton 2002:111). When the researcher analysed data, he searched for data patterns and ideas about the existence and state of data collected (Bernard 2013:394). During this stage of the research, data was interpreted to ensure that it makes sense to the reader (Creswell 2013: 187), particularly after it was edited, summarised, captured and error checked to eliminate or correct abnormalities and other weaknesses (Singleton and Straits 2010:498). This assisted the researcher in obtaining the true meaning from the data analysis, as accurate data provides the true meaning from respondents. Data analysis assists the researcher in determining the meaning of the data collected from participants (Johnson and Christensen 2008:37), by converting the information or data collected into the answers to the questions of the study (Creswell 2009:4; Terre Blanche, Durrheim and Painter 2006:52).

Furthermore, during data analysis, data was reduced, displayed, transformed, correlated, consolidated, compared and integrated. The data was also logically arranged, examined, synthesised and, lastly, generalised for the entire population of the study (Bryne 2001; Wamundila 2008:105). Analysing data also assisted the researcher in comparing the data collected with related theory, especially theory discussed in the background and literature review to test the hypothesis or answer research questions (Singleton and Straits 2010:497). This brings about a better understanding in terms of social process operations to certainly interpret, conclude and recommend solutions or improvements at the end of the study (Ngulube 2005a:138). Data analysis also assisted the researcher in detecting respondents' consistency on the data pattern, like variables covariance consistency (Bless and Smith 2000:137). The data analysis was conducted and presented using tables, charts, graphs and statistical summaries as supported by Ngulube (2005a:138); Bernard (2013:400) and used in the findings of Ngulube (2005b:48). The researcher arrived at this by using two data analysis matrices such as profile matrices to analyse the relationship of variables and proximity matrices to analyse proximity within variables like similarity and dissimilarity (Bernard 2013:394-398).

Furthermore, this study used a triangulation of multi-methods in analysing the data. This implies that the researcher incorporated, consolidated, compared and integrated both qualitative and quantitative data (Creswell 2003: 217). Among other things, the multi-methods enabled the researcher to ensure that data is clean and that reviewed responses were valid (Greene 2007:144; Mavodza 2010:240-250). As alluded to by Terre Blanche, Durrheim and Painter (2006:52), the qualitative method assisted the researcher in realising ideas and arguments relating to the study problem. The quantitative data was analysed using the descriptive and inferential statistics (Bless and Smith 2000:137; Creswell 2009:12). "The end-product of the qualitative method is text that includes image and drawing, while a quantitative method output numbers as outcomes of analysis" (Fidel 2008:269; Punch 2006:54). Babbie (2007:405) and Bernard (2013:394) add that in quantitative data analysis data is converted into a numeric arrangement and analysed in a statistical way. The qualitative methods were more focused on the nature and interpretation of the understanding of the situation in the study, like population values, decisions, beliefs and actions (Ritchie and Lewis 2003:3). The researcher differs from Bernard (2013:394) who says that in qualitative data analysis, words are converted to numbers, while the researcher agrees with him by saying that in quantitative data analysis, the process of analysis is statistical and mathematical dealing with data of a numeric nature.

However, according to Babbie and Mouton (2001:410-419), data analysis is usually preceded by activities such as capturing of data into the computer, installed with relevant data analysis software, cleaning and categorising or coding the data in line with the data capturing system or database. Creswell (2014:195) recommends that the researcher should specify the kind of data analysis tools and whether he used a manual or electronic (software) mode of data analysis. In many scientific research studies, researchers popularly use software such as SPSS® data analysis software to analyse quantitative data (Babbie 2007:405; Babbie and Mouton 2001:411; Leedy and Ormrod 2013:342), as was the case with the study conducted by Jayasundara (2009:194); Makhura (2005:80) and Wamundila (2008:106). The other statistical data analysis software mentioned by Leedy and Ormrod (2013:302) in their discussion about quantitative data analysis includes what is called SAS, SYSTAT, Minitab and Statistica. The word-processing software such as Microsoft Word ® is normally used to analyse qualitative data, which includes organising and interpreting the data (Leedy and Ormrod 2013:159-160).

Furthermore, Leedy and Ormrod (2013:159) underscore that for complex qualitative data, software such as Atlas.ti, Ethnograph, SuperHyperRESEARCH, Kwalitan, MAXQDA and NVivo may be applied for deep analysis, which includes storing, segmenting and organising the data. In addition to the above, Babbie and Mouton (2001:411) list other types of data analysis software such as ABtab, AIDA, A.STAT, BMDP, DAISY, DataDesk, CRISP, DATA-X, Dynacomp, INTER-STAT, MASS, MicroCase, Microquest, Microstat, Micro-SURVEY, Ministab, POINTFIVE, P-STAT, SAM, SAS, SNAP, STATA, STAT80, Statgraf, Statpak, StatPro, STATS PLUS, Statview, Survey mate, SURVTAB, SYSTAT, and TEGPACS, to give only a few.

However, Leedy and Ormrod (2013:274) recommend that the researcher can also use one of the most important electronic spreadsheets, such as the MS Office Excel spreadsheet software or sphygmic software spreadsheet, simple spreadsheet, spread32 and many more that are available on the internet for download free of charge. They elaborate that a spreadsheet also has significant advantages since it can help the researcher to sort data in rows and columns. A spreadsheet assists the researcher in sorting data in many different ways within rows and columns, recode data by creating new columns or rows as required for analysis, create formulas for the auto-calculation of captured data and creating graphical reports from the data automatically (Leedy and Ormrod 2013:274-276). Leedy and Ormrod (2013:334-347) further elaborate on how the Excel spreadsheet can best be utilised to keep track of literature resources, record and recode data, data reorganising, simple statistical analysis, create data set, descriptive statistics and inferential statistics computing.

Furthermore, Creswell (2014:160) supports the above statement stating that the quantitative data can also be captured into the spreadsheet or database for analysis. In this study, the researcher used Microsoft Office software such as Microsoft Word® and Microsoft Excel®. Microsoft Word was used to develop a tally sheet that was designed from the questionnaire design and questions. Using the tally sheet, every questionnaire returned from the participants was tallied into the tally sheet immediately. The tally sheet was flexible to be used electronically or manually as a printout using a pen to tally. The researcher had chosen to use both manual and electronic tally sheets to back up the data, in case the other tool gets lost. In capturing completed questionnaires electronically, the researcher merely increased the numbers in the relevant block of the sheet as the questionnaire was returned from participants and on the manual sheet he put a tally using a pen; he crossed the tallies after every five tallies to simplify counting of the tallies at the end. On the other hand, the Microsoft Excel spreadsheet was used to develop a database for capturing data after counting of the tallies from the tally sheet at the end of data collection and tallying.

Furthermore, the database was also designed in relation to the questionnaire design and questions to simplify analysis. The spreadsheet database was also programmed to automatically calculate the percentage for each response and give the percentage figure; and automatically give a table or graphical illustration of the figures in different designs as preferred and programmed by the researcher. For instance, graphs may be in a form of a histogram and pie-chart. Eventually, the researcher copied the graphs and tables into chapter four where the data was presented, described and explained with the support of the qualitative data. This is because the qualitative data was also triangulated into the relevant questions to support the figures or numeric information as presented in Chapter Four under the table or graph. Generally, quantitative data was captured, cleaned, validated and analysed using an MS Office Word tally sheet and MS Office Excel spreadsheet, presented using tables and graphs; and qualitative data was captured and analysed using MS Office Word and presented in the form of narratives, explanations and descriptions (Babbie 2007:112) in relation to the quantitative information presented.

In doing this, the researcher was also reporting on "how the results answered the research questions" and drew conclusion and inferences from the results or findings of the study (Bernard 2013:501; Creswell 2014:165; Fink 2013:141-157). Regarding the qualitative information or comments, analysis was carefully done by reading through the results to identify certain behaviours, attitudes and beliefs (Fink 2013:131). This is because the researcher had to attempt to get the

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resolution of the research problem and sub-problems by enquiring into data intrinsic meaning (Leedy and Ormrod 2013:314). As also attested by Singleton and Straits (2010:498), in survey research, the data-analysis process includes data editing and summarizing, which includes coding, data entry or capturing and error checking and is generally called data cleaning. This approach was used in this study. The data was eventually presented in the form of percentages based on the total sample or number of responses (feedback/returned questionnaire) because percentages "provide explicit comparative framework for interpreting the distribution" of data (Singleton and Straits (2010:511). Looking at the data analysis "In general, the intent is to make sense out of text and image data. It involve segmenting and taking apart the data (like peeling back the layer of an onion) as well as putting it back together" (Creswell 2014:194-195).

3.6 ETHICAL CONSIDERATIONS

Ethical issues needed to be observed by researcher at all levels and stages of the research (Ngulube 2015:128). This is illustrated in Figure 3.1. The researcher has to devise the plan to address ethical issues as they occur at any stage of the study (Creswell 2013:56; Brewerton and Millward 2001:61). This is because "social scientists are expected to observe the highest level of scientific and professional integrity" (Terre Blanche, Durrheim and Painter 2006:76-77). Like many other scientific researchers, this study was guided by research ethics. This was because the researcher needed to be professional in order to produce quality outcomes of the study. The information and data collected for this study were handled with privacy and confidentiality. The researcher kept the names of the participants confidential, by using pseudonyms for participants (Babbie 2007:64-66; Bless and Smith 1995:102-103; Creswell 2009:89; Esterberg 2002:53-54; Fink 2013:17; Leedy and Ormrod 2013:104-108; UNISA 2007:4-5). Assurance is given that research participants were protected, trust was also developed with participants, and authenticity and credibility were maintained for the report (Creswell 2009:87; Fink 2013:17; Oppenheim 1992:84; Leedy and Ormrod 2013:104-105; UNISA 2007:2; Ngulube 2015:128).

Furthermore, the researcher also made sure that participation in the study was voluntary and ensured protection for participants throughout the process, especially during data collection. No participants were pressurised or forced to take part in the study and they were all treated with respect (Babbie 2007:62-63; Fink 2013:18; Leedy and Ormrod 2013:105; Oppenheim 1992:83-84). Permission to conduct the study about the departmental hospitals' medical records management was requested from and granted by the Head of the Limpopo Department of Health as the highest authority and participants signed consent forms that would they take part in the study, as

recommended by Brewerton and Millward (2001:48), Leedy and Ormrod (2013:105), and Babbie (2007:64), Creswell (2014:96), Fink (2013:18) and Leedy and Ormrod (2013:104-108).

Likewise, Brewerton and Millward (2001:61-65) and Leedy and Ormrod (2013:104-109) further stated that unethical conduct in scientific research includes involvement of participants in the study without their consent or knowledge, participants being coerced to take part in the study, participants not being informed about the true nature of the study, participants being deceived by researcher, participants being led to self-diminishing behaviour or action, participants being exposed to distress (physically and/or psychologically) and participants' privacy being invaded. Generally, Leedy and Ormrod (2013:104-108) listed the four key categories of ethical issues in scientific study as "protection from harm, voluntary and informed participation, right to privacy, and honesty with professional colleagues". This is why the researcher avoided compromising the objectivity of the study by using the advantage of the research to abuse study participants. The researcher respected participants and avoided adding anxiety to participants and placing them under personal risk (Creswell 2009:89; Terre Blanche, Durrheim and Painter 2006:76-77; UNISA 2007:2).

Furthermore, the researcher was careful when citing sources to avoid falsifying and/or plagiarising the information obtained from different sources (Terre Blanche, Durrheim and Painter 2006:76-77; UNISA 2007:4) because information plagiarism, falsification and/or fabrication characterise unethical conduct (Coetzee 2003:119; Ngulube 2005b:49; UNISA 2007:5). This study was guided by the UNISA research ethics policy and other related guiding documents such as the UNISA General Information Calendar of Master's and Doctoral Degrees. As per the obligation from the above calendar, the researcher declared his research report as his "own work and that all the sources that he have used or quoted have been indicated and acknowledged by means of complete references" before submitting the thesis for examination.

Hence, in this study the researcher applied his mind to avoid committing plagiarism to ensure authenticity in the study outcomes and give quality academic output as this is a dishonest practice (UNISA 2005:1) and is unethical and discouraged by UNISA (2007:2). As also guided by UNISA (2005:1-3), this was done, among other things, to avoid the following:

- Failure to acknowledge the author where phrases or passages are taken verbatim (word-for-word) from a published or unpublished text,

- Use of a summary of work which contains the ideas of others and presents the essence of an argument in language that condenses and compresses the original language of the source without acknowledging the author of the work,
- Using the patch-writing (cut-and-paste) method, where pieces of another person's works, including those taken from the internet, are blended with one's own words and phrases without acknowledging the author of the source work,
- Failure to indicate clearly (e.g. with quotation marks or indent and different font) phrases or passages taken verbatim (word-for-word) from a published or unpublished text without crediting the original text and author, and
- Paraphrasing of an article, a book or an electronic text without acknowledging the source(s) and the author of the work.

Moreover, language usage was also one of the critical issues in research ethics. Though the research or thesis is permitted to be written in any of the South African official languages with the provision of writing two abstracts including one in English, in case the research is presented in other official language, the researcher decided to use English as the language of tuition for postgraduate level at UNISA as guided by UNISA (2010:3-4).

3.7 EVALUATION OF THE RESEARCH METHODOLOGY

This study was conducted based on the positivist worldview using the quantitative approach and multi-methods, which include survey questionnaire, interview, observation and documents analysis. The positivist worldview resulted in the use of the quantitative approach and this is the kind of approach that was conducted using a survey strategy. Then the quantitative data was eventually triangulated with a lesser amount of data collected through the qualitative approach to support data with explanatory information.

Nevertheless, several problems were experienced during the study. Firstly, problems were experienced with the distribution of the questionnaire and the signing of consent forms by the participants during interviews and questionnaire distribution. This was because research participants attached to the 40 hospitals who needed to participate in the study were geographically scattered and very far apart from each other within the entire province of Limpopo. In an attempt to solve this problem, the researcher took advantage of his work and colleagues who do inspections, offer training and make support visits to hospitals, and gave them the questionnaires and consent forms to distribute to sampled participants. When the researcher visited other hospitals in the performance of

his work he also distributed questionnaires and consent forms while, on the other hand, he made appointments with the clinical and nursing managers for the interviews. Generally, working for the organisation of the study made it easier for the researcher to collect the data. Another challenge was that most of the participants interviewed were never allowed or did not agree to be voice recorded. The solution to this problem was for the researcher to take notes during the discussions. Some of the interview participants were not always available during the day of the interview or they just did the so-called indirect pull out of participation and to solve this problem, the researcher applied what Bernard (2013:220) calls "sampling by convenient replacement technique" by finding a replacement for these participants who were hard to get hold of, by considering another participant with similar qualities and position of work.

One more challenge was that questionnaires were mostly not completed fully as participants did not answer some questions, which was indicative of records management literacy level. Some of the participants refused to participate due to their low level of competence and understanding/knowledge of records management principles and requirements as well as the English language. This was because most of their reasons for refusal were that they did not understand the questions, even though the data-collections tools were tested for validity and reliability through a small sample of the population. Some of the interested records management members who were not literate were assisted by the coordinator, the researcher assistant or the institutional records manager explaining the questions to them. Many records managers or heads of records management divisions volunteered to assist the researcher with the coordination of questionnaire data-collection tools within their institutions. This made it easier for the researcher because his task was then only to do telephonic follow-ups of the questionnaire return or response with coordinators, rather than with individual participants in each hospital. Some of the coordinators agreed to assist but were not committed in their assistance, which resulted in the researcher having to contact participants directly or telephonically through the hospital switchboard.

3.8 SUMMARY

In brief, this chapter outlined the roadmap towards completion or performance of this study. The chapter discussed the steps and activities performed during the study. In other words, it told the reader who has done what, when and how? It is through this chapter that the researcher identified and discussed the research paradigm, research methodology, research design, population of the study, sampling methods, frame and size, data collection techniques, data analysis as well as the ethical consideration of the study. Research methodology is a centre of success for any scientific

research, since the way in which you conduct your study determines the possibility of validity and reliability on the results or findings. For instance, the scientific study with a non-representative sample may not be reliable or valid to readers and end-users of the report or findings and recommendations. The population of the study also had to be relevant to the problem of the study and the sampling technique had to be appropriate to the kind of population sampled. The ethical issues also had to be applied to avoid unethical study results, bearing in mind issues relating to proper referencing and citations to avoid plagiarism, informed consent from participants and approval from the organisation under the study. The next chapter present the findings of the study based on the data collected using questionnaire, observation, interviews and documents analysis and triangulated during analysis. The data was presented in a form of graphs, tables and descriptions.

CHAPTER 4

PRESENTATION OF THE FINDINGS OF THE STUDY

4.1 INTRODUCTION

The previous chapter provided a guideline on the methodology applied in this study. These includes methodological issues, research approach applied, sampling procedure followed, sampling frame implied, sampling size drawn from the entire population of the study, research design and data-collection methods. It also covered an evaluation of the research methodology, validity and reliability of the data collection techniques as well as the ethical consideration of the study.

This chapter presents the findings of the study with the purpose of providing the reader with the results of the study. Graphs and tables are used to present the findings of this study. In analysing and presenting the data in this study, the researcher used the multi-methods approach to triangulate data collected through questionnaire, interview, observation and document analysis in this chapter. The researcher used the four data collection techniques to collect, integrate and analyse data in a qualitative and quantitative form with the key focus being to support the quantitative questionnaire data (Bryman 2012:635; Christensen, Johnson and Turner 2011:380; Ngulube 2013:6). According to Babbie (2004:490) "presentation of data analyses should provide a maximum of details without being cluttered". This will give the reader enough information to make their own interpretation of the data presented (Babbie 2004:490).

4.2 RESPONSE RATE AND PARTICIPANTS PROFILE

In collecting data presented in this chapter, a questionnaire was applied as the main data-collection technique since the nature of the study was mostly quantitative. The other techniques such as interview, observation and document analysis were applied in a limited way to clarify issues on the questionnaire data. In other words, other data-collection tools were used to augment questionnaire data. The observation activity was also coupled with some informal interviews to clarify issues and conditions observed, sometimes, to clarify the documents analysed like policies and procedures. The questionnaire and the rest of the other data-collection tools were designed in line with the objectives and questions of the study.

Furthermore, in collecting the data, a total of 306 questionnaires were distributed as from May 2014 to records management officials in different post levels as participants of the study in different 40

hospitals stratified per districts. Looking at the distribution of the questionnaire per district, 58 (19%) questionnaires were distributed to hospital records management staff in the Mopani district, 81 (26.5%) in the Capricorn district, 60 (19.6%) in the Sekhukhune district, 58 (19%) in the Vhembe district and 49 (16%) in the Waterberg district. A total of 217 questionnaires were returned to the researcher, giving a 71% response rate for the entire study. This implies that a total of 89 questionnaires (29%) were not returned to the researcher. Some of the questionnaires were returned, but were not completed fully and some questionnaires were returned with only a few questions (fewer than 10% of the questions) having been answered. Such questionnaires were considered or counted as unreturned or invalid to be used for the study.

Furthermore, the quantitative data was analysed using an MS Word tally sheet for counting responses and an MS Office Excel spreadsheet to convert tallies into percentages and to present data in a tabular and graphical form. Upon return, the questionnaires were captured into the tally sheet and after quantification; this information was transferred to an MS Office Excel spreadsheet. After capturing the quantified tally figures into the Excel spreadsheet, the figures were auto-converted to percentages in a separate column and from this graphs were automatically created by means of programming done by the researcher. The qualitative data from some of the questionnaire open-ended questions, interviews, observation and document analysis was outlined and assessed in MS Office Word documents in order to assess or analyse which quantitative data or figures it is clarifying or which interpretation it is supporting. The documents assessed include medical records management policy, medical records management procedure manual, Provincial Health Information System (Phis)/electronic Health Information System (eHIS) and its procedure manuals. The details are discussed in detail in Chapter Three.

However, the questionnaire and other data-collection techniques were structured in 10 main sections or headings that were formulated in line with the research objectives and questions. The main headings of the formulation strategy of the data-collection tools aimed to provide guidelines for the collection of data in line with objectives and questions of the study about respondents' personal details, medical records management governance practice, proposed framework to facilitate medical records management practice, ECM readiness, staff capacity, skill and competencies, recordkeeping technology, medical records archiving and the nature of medical recordkeeping system.

4.3 PERSONAL DATA

In this section, the study wanted to establish the age groups of the respondents, their gender, post levels, and their work positions. This assisted the researcher to identify whether respondents were balanced in terms of these categories. This was to make sure the study sample is representative of the entire population based on those common differences.

4.3.1 Respondents age group

The researcher asked respondents to provide their age groups on the scales provided, with the aim of providing age group ranges among respondents. The findings were the following for the entire population: 7.8% (17) of respondents were between 18 and 24 years old, 14.7% (32) were 25 to 30 years, 9.7% (21) were 31 to 35 years, 22.1%(48) were 36 to 40 years, 24.4% (53) were 41 to 45 years, 17.5% (38) were 46 to 50 years, 2.8% (6) were 51 to 55 years, 0.9% (2) were 56 to 60 years and no respondents were between 60 and 65 years. The reason for 0 respondents may be due to the fact that the majority of employees usually retire before 60 years of age. The respondents' age groups are illustrated in Table 4.1.

Table 4.1: Respondents per age group (N=217)

AGE GROUPS	NUMBER	PERCENTAGE
• **18- 24**	17	7.8
• **25- 30**	32	14.7
• **31- 35**	21	9.7
• **36 to 40**	48	22.1
• **41 to 45**	53	24.4
• **46 to 50**	38	17.5
• **51 to 55**	6	2.8
• **56 to 60**	2	0.9

4.3.2 Respondents per gender

The researcher also established the number of respondents per gender with the intention of identifying the gender balances among respondents. The finding of the study was that the male respondents were 37.3% (81) and females were 62.7% (136). Table 4.2 illustrates the report or findings as discussed.

Table 4.2: Respondents per gender (N=217).

GENDER	NUMBER	PERCENTAGE
Male	81	37.3
Female	136	62.7

4.3.3 Respondents per post level

The study also identified the number of respondents per post level with the intention of identifying whether respondents were also balanced according to their post levels. However, the key intention was to ensure representativeness as the findings were eventually to be generalised. The study report as per Figure 4.1 was that respondents who were at level 4 were 37.3% (81), level 5 were 21.2% (46), level 6 were 10.6% (23), level 7 were 23.5% (51), level 8 were 5.5% (12), levels 9-10 were 1.4% (3), and levels 11-12 were 0.5% (1).

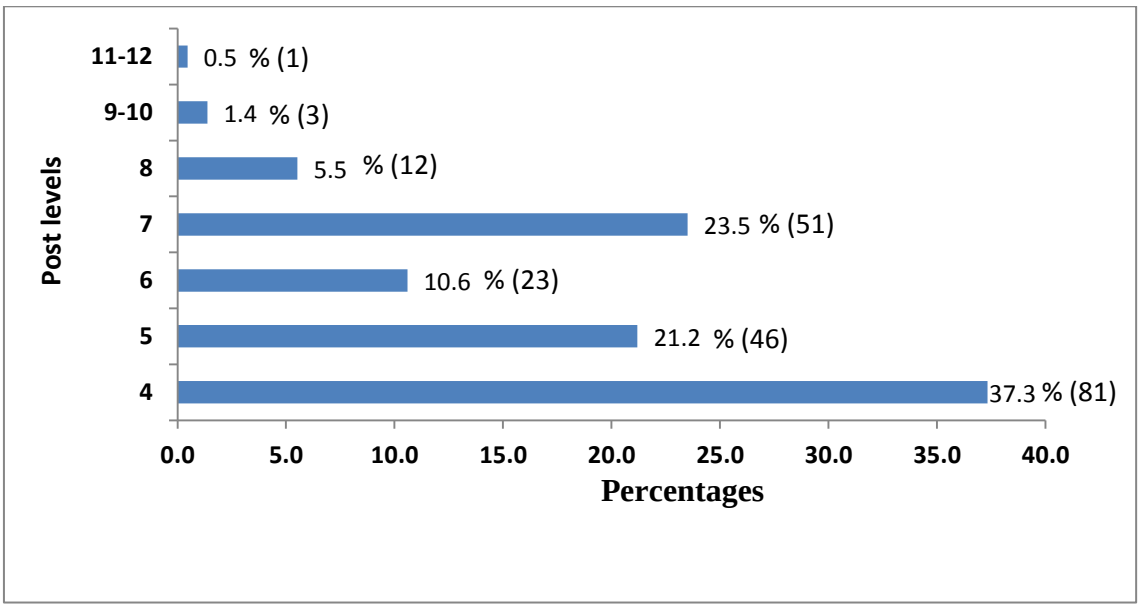

Figure 4.1: Respondents per posts levels (N=217)

4.3.4 Respondents per work positions

The study made provision for the establishment of respondents per job or work positions, which the findings reported that 0.5% (1) were managers, 3.2% (7) were deputy managers, 5.5% (12) were senior administrative officers, 6.9% (15) were administrative officers, 10.1% (22) were chief registry clerks, 6.5% (14) were senior registry clerks, 37.3% (81) were registry clerks and 30% (65) were specified as other positions such as patients admin clerks. Figure 4.2 gives a graphical illustration of the report.

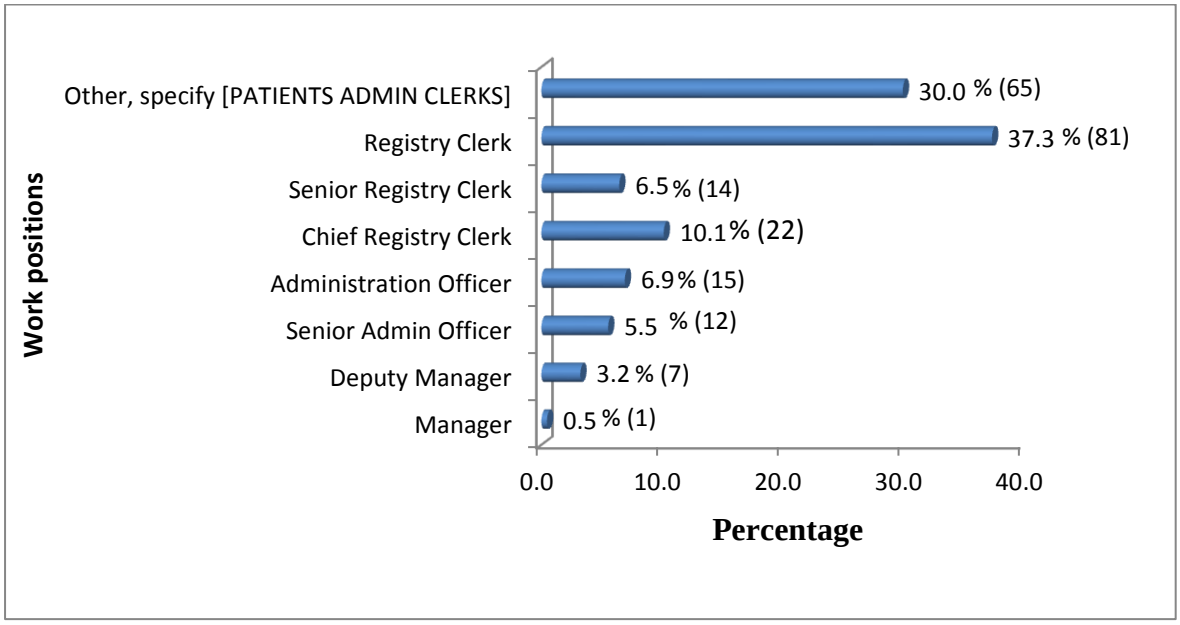

Figure 4.2: Respondents per work positions (N=217)

4.4 DATA PRESENTATION

In this study, results are presented through written descriptions, numerical summations, tables and figures. The results are presented according to research objectives formulated.

4.4.1 MEDICAL RECORDS MANAGEMENT GOVERNANCE PRACTICE

One of the objectives of this study was to assess medical records management governance practices in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. Several questions were posed to respondents through different data-collection techniques to answer the research question and to reach this objective.

4.4.1.1 Records management infrastructure in the healthcare institutions

The respondents were requested to answer whether the records management infrastructure was developed in line with the South African legal and regulatory frameworks. According to the findings, 34.1% (74) of the respondents responded that records management infrastructure was not in line with the legislative framework guidelines and 60.4% (131) said that it was, while 5.5% (12) did not answer the question. The observation confirmed that the RM infrastructure was not constructed in line with the South African legal and regulatory frameworks governing records management because there were several non-compliance issues such as storages with water tabs and pipes crossing some records storages, no security measures such as water and smoke detectors,

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inadequate fire-fighting precautionary measures, no ventilation control tools like air conditioners in most records preservation custodies, and buildings or storage places seemed to be not recordkeeping purpose built. The legislative frameworks consulted were also listed as a form of acknowledgement inside the document. Although different Interview participants gave different responses one of the participants stated that "sometimes when we create policies and procedures in the task team we refer to the acts including NARSSA to get guidance".

Furthermore, the researcher also requested the respondents to rate the state of records management conditions, equipment and facilities in their institutions. The purpose of this was to establish the state and availability of relevantly effective records management enabling equipment and facilities. Respondents were requested to state whether certain equipment or facilities were very good, good, unsure, poor or very poor as also illustrated in Table 4.3. Responding to the state of storage capacity, 5.1% (11) stated it was very good, 14.3% (31) good, 12.9% (28) unsure, 38.7% (84) poor and 29% (63) very poor. According to observation, the records storage capacity for paper-based medical records was not adequate at all the healthcare institutions. This resulted in other records being filed on the floor between shelves, which was also confirmed by respondents in their elaborations to the question and some raised it during the interviews. One of the interview participants also said "this situation of not enough filing space was affecting turnaround time for records retrieval because we have to check all files on the floor and some are just mixed up".

In the case of shelving equipment, 1.8% (4) of the respondents stated that it was very good, 20.3% (44) good, 7.8% (17) unsure, 44.7% (97) poor and 25.3% (55) very poor. This is why the observation reported that due to a shortage of storage the shelving equipment were also not adequate to accommodate all medical records files; hence, some files were kept on the floor between the shelves. Respondents had proven through elaborations on their answers and by interviews that shelving equipment was not adequate. Interview participants responded differently but one participant claimed that shelving equipment were inadequate when stated that "sometimes we are just forced even if is against the policy to keep some of the files on the floor because shelves are not enough to accommodate all the records".

However, respondents were also requested to rate administration resources, funds and stationery, disaster-prevention measures, medical records backup system, and the electronic recordkeeping technology. For the records administration resources, funds and stationery, 3.2 % (7) respondents stated that they were very good, 10.1% (22) good, 12.9% (28) unsure, 45.2% (98) poor and 28.6%

(62) very poor. Different interview participants responded differently but one participant stated that "shortage of stationery and funds is one of the stumbling blocks for us to implement the medical records management policy requirements".

Looking at the state of the disaster preventive measures, 11.5% (25) replied that it was very good, 12.4% (27) good, 12.9% (28) unsure, 36.9% (80) poor and 26.3% (57) very poor. The observation and document analysis established that the organisation had a very good disaster management plan document that covers all areas of the disaster management, including disaster preparedness, disaster fighting and disaster recovery for a number of kinds of disasters like fire, water, and pests and rodents. Observation also revealed that although the disaster management plan was available, the institutions were not prepared to face the disaster. This is because key precautionary measures for disaster management as also required by the plan were not available. For instance, in most, if not all, of the institutions it was observed that there were no fire or smoke detectors and water detectors. Different responses were received from different interview participants though one participant stated that "the condition is bad here because even baiting and fumigation of pests and rodents are also not done regularly". The fire extinguishers were mostly filled with powder, instead of carbon dioxide (CO_2), as required by the NARSSA policy manual (2007), and were also not installed inside the filing storages as expected, but mostly in the corridors as it was observed.

The researcher checked the availability and state of medical records backup systems, under which 0.5%(1) respondents replied it was very good, 1.4% (3) good, 12.9% (28) unsure, 60.4% (131) poor and 24.9% (54) very poor. The observation and the electronic medical records system (Phis/eHIS) assessment or analysis confirmed that there were no backup for patients' records, specifically the medical history entailing treatments, prescriptions, diagnosis and many more. The only part of the record that was backed up through the electronic system was personal details of the patients and billing or financial information for the patients because they were covered in both electronic system and paper-based records files.

When rating the state of the electronic recordkeeping technology, 12.9% (28) of respondents stated that it was very good, 8.8% (19) good, 15.7% (34) unsure, 30.9% (67) poor and 31.8% (69) very poor. The report is presented through Table 4.3. The system analysis and observation revealed that the system covered almost all the records management requirements for medical records management, except paper-based records imaging and/or scanning, but the institutions only implemented the two modules known as patient administration module, meant for capturing

patients' personal/demographic details, and the billing module, which covered the patients' billing and healthcare service payments information. The system also had modules that were not used or were not active for use such as patient appointment, visit registration, queue management, billing, pre-admission admission, history examination, assessment plan (order entry), nursing care, laboratory/blood bank, radiology, pharmacy/inventory, operation theatre dietary, patient billing, invoice and/receipt, insurance claims, general ledger integration.

Furthermore, through responses from respondents the researcher assessed ventilation systems in records storage buildings, record access control measures, record movement tracking systems and record safety and security measures to detect any reasons for long turnaround times of file retrieval and missing files. When assessing the records storage ventilation system, 5.5% (12) stated they were very good, 7.4% (16) good, 19.4% (42) unsure, 37.3% (81) poor and 30.4% (66) very poor. As the respondents confirmed that there was a shortage of resources and equipment for records management, observation also confirmed a shortage of fire extinguishers to control the ventilation of records storage areas. In some institutions, air conditioners were available but not functional or were not utilised effectively. Some of the available air conditioners were not always set to the required temperature levels of between 18°C and 20°C as officials were working inside the filing rooms due to a shortage of registry working space. This was confirmed through both interviews and observation. All interview participants gave different responses, but one participant stated that "we cannot keep the air conditioner temperature cold since we are working inside the records storage we may get sick from cold" said one of the interview participants.

The records access control and measures were very poor as stated by 23% (50), poor as stated by 40.1% (87), 3.7% (8) of respondents were not sure, 13.8 %(30) stated it was good and 19.4% (42) stated that it was very good. The interviews and observation confirm that there was no medical records access control against the revenue officials who were not working as records management officials and, in some institutions, the revenue office were also playing the rule of controlling or providing access to the public medical records requesters. The patients were also observed carrying their own personal medical files in the queue or healthcare service workflow in all the hospitals, which is not safe for the records.

The records safety and security measures were very poor as stated by 21.7% (47) respondents, poor as stated by 34.6% (75), with 6.5% (14) respondents who were not sure, 22.1% (48) stated they were good and 15.2% (33) stated that they were very good. The observation has shown that there

were no adequate safety and security measures for medical records since different patients with different illnesses carried their own files in the queue or workflow. Other units like the revenue collection unit also had free access to the records storage. The observation has also shown that, in most institutions, medical records storages had no burglar doors and windows, blinds on the windows to prevent ultraviolet rays, functional air conditioners to control temperature, adequate filing space to prevent damage, fire/smoke and water detectors and performance of regular baiting and fumigation for rodents and pests. In some of the institutions, records were filed or kept in small storages spaces with leaking water tabs and pipes due to lack of adequate filing space. The report for this section is presented in Table 4.3.

Table 4.3: The Rate of the organisational infrastructure for medical records management (N=217)

MEDICAL RECORDS MANAGEMENT INFRASTRUCTURE ITEMS	RATINGS									
	VERY GOOD		GOOD		UNSURE		POOR		VERY POOR	
	NO	%	NO	%	NO	%	NO	%	NO	%
1) Storage capacity	11	5.1	31	14.3	28	12.9	84	38.7	63	29.0
2) Shelving equipment	4	1.8	44	20.3	17	7.8	97	44.7	55	25.3
3) Records administration resources, funds and stationery	7	3.2	22	10.1	28	12.9	98	45.2	62	28.6
4) Disaster preventive measures	25	11.5	27	12.4	28	12.9	80	36.9	57	26.3
5) Records backup system	1	0.5	3	1.4	28	12.9	131	60.4	54	24.9
6) Electronic recordkeeping technology	28	12.9	19	8.8	34	15.7	67	30.9	69	31.8
7) Records storage ventilation system	12	5.5	16	7.4	42	19.4	81	37.3	66	30.4
8) Records access control and measures	42	19.4	30	13.8	8	3.7	87	40.1	50	23.0
9) Records movement tracking system	18	8.3	29	13.4	12	5.5	92	42.4	66	30.4

MEDICAL RECORDS MANAGEMENT INFRASTRUCTURE ITEMS	RATINGS									
	VERY GOOD		GOOD		UNSURE		POOR		VERY POOR	
	NO	%	NO	%	NO	%	NO	%	NO	%
10) Records safety and security measures	33	15.2	48	22.1	14	6.5	75	34.6	47	21.7

NOTE: NO = Number % = Percentage

4.4.1.2 South African legal and regulatory frameworks used to guide management of medical records in the healthcare institutions

In order to check the relevance of the legal and regulatory frameworks used to guide the establishment of the records management infrastructure, the researcher posed a follow-up question to respondents. This was especially directed at respondents who responded with the option of "YES the records management infrastructure was in line with the South African legal and regulatory frameworks". This was to check the kinds and relevance of legal and regulatory frameworks used to guide the establishment of the records management infrastructure by requesting respondents to identify and/or state those kinds of South African legal and regulatory frameworks. The respondents answered as follows:

- The Constitution of the Republic Of South Africa (Act No. 108 of 1996) (56,7%(123)),
- The National Health Act (Act No. 61 of 2003) (39,6%(86)),
- The Northern Province Health Services Act (Act No. 1998) (26,3%(57)),
- The National Archives and Records Service of South Africa Act (Act No. 43 of 1996) (79,3%(172)),
- The Northern Province Archives Act (Act No. 5 of 2001) (36,4%(79)),
- The Promotion of Access to Information Act (Act No. 2 of 2000) (63,1%(137)),
- The Promotion of Administrative Justice Act (Act No.3 of 2000) (42,9%(93)),
- The Public Service Act (Act No. 103 of 1994) (17,5%(38)),
- The Public Service Regulation 2001 (15,2%(33)),
- The Basic Conditions of Employment Act (Act No. 75 of 1997) (19,4%(42)),
- Skills development Act (Act No. 31 of 2003) (7,8%(17)),
- The Employment Equity Act (Act No. 55 of 1998) (16,6%(36)),
- The Health Act (Act No. 55 of 1997) (28,6%(62)),
- The Public Finance Management Act (Act No. 1 of 1999 as amended) (19,4%(42)),

- Protection of Information Act (Act No. 84 of 1984) (35,9%(78)),
- Protection of Personal Information Act (Act No. 4 of 2013) (31,8%(69)),
- Limpopo Information Security policy (12,4%(27)),
- Electronic Communication and Transactions Act (Act No. 25 of 2005) (32,7%(71)),
- Minimum Information Security Standards (65,4%(142)),
- Labour Relations Act (Act No. 42 of 1995) (5,5%(12)).

4.4.1.3 Effectiveness of the current medical records management infrastructure in terms of legal and regulatory requirements

The respondents were requested to state whether they strongly agree, agree, are unsure, strongly disagree or disagree with specific statements about the condition of records management in their institutions. The purpose was to study the current fundamental records management affairs in the healthcare institutions. Asking about the medical records storage capacity, 7.8% (17) of respondents strongly agreed that it was adequate, 6% (13) agreed, 11.1% (24) were unsure, 40.6% (88) disagreed and 34.6% (75) strongly disagreed. It was also observed that there was a great shortage of recordkeeping space.

A total of 6.5% (14) respondents strongly agreed that the shelving equipment and facilities were adequate and 8.3% (18) agreed, 10.1% (22) were unsure, 31.3% (68) disagreed and 43.8% (95) strongly disagreed. According to observation, some files were kept on the floor between shelves due to shortage of space for more shelves. In assessing records administration resources, 12% (26) strongly agree with the statement that they were adequate, 14.3% (31) agreed, 1.8% (4) was unsure, 45.2% (98) disagreed and 26.7% (58) strongly disagreed. The interview and observation reported a great shortage of records management related resources in the majority of hospitals such as boxes, file covers, markers and other related resources that were resulted from limited budget allocated for medical records management. Interview participants gave different responses but one participant stated that “there are many things that are not possible to achieve since we lack basic working resources including stationery, boxes and markers”. See details about summarised findings presented in Table 4.4.

However, the other assessment was based on whether the disaster preventive measures were in place and effective, with which 2.3% (5) strongly agreed that they were in place and were effective, 7.8% (17) agreed, 19.4% (42) were unsure, 41.9% (91) disagreed and 28.6% (62) strongly

disagreed. The researcher also observed a shortage of the key records security measures such as burglar-proofing equipment, fire-fighting equipment that were situated in the corridors, tabs and pipes crossing the records storages, lack of smoke and water detectors, non-functional or non-existent ventilation control equipment, including air-conditioners and irregular fumigation and baiting. Looking at the availability of the records backup system, 2.8% (6) respondents strongly agreed that it was available, 3.7% (8) agreed, 22.1% (48) was unsure, 40.1% (87) disagreed and 31.3% (68) strongly disagreed. Observation and interviews also confirmed a lack of backup system for medical records. All participants gave different responses in the interview though one participant stated that "our medical records are not duplicated and this means if they get damaged they will not be replaced".

Still, for the electronic recordkeeping technology, 8.8% (19) strongly agreed that it was adequate and effective, 7.4% (16) agreed, 16.1% (35) was unsure, 38.7% (84) disagreed and 29% (63) strongly disagreed. System analysis revealed that the system was only used to capture demographic and billing data of patients, and not prescriptions, treatments, diagnosis and many more. Regarding the statement that records storage ventilation system was effective, 2.8% (6) respondents strongly agreed, 9.7% (21) agreed, 10.6% (23) was unsure, 44.7% (97) disagreed and 32.3% (70) strongly disagreed. Observation revealed that in most of, if not all, the institutions air conditioners were either not available or were not functional or not set to the standard temperature level, since officials sit and do their registry administrative work inside the records storages due to a shortage of working offices or working space. For more summarised details see Table 4.4.

Furthermore, regarding the statement that records access control measures were effective, 14.3% (31) respondents strongly agreed, 12.4% (27) agreed, 6.5% (14) was unsure, 35.5% (77) disagreed and 31.3% (68) strongly disagreed. It was also observed that access control was not effective as patients were able to move around carrying their files on the healthcare service workflow and revenue people billing patients were able to access the storage space and issue files to external clients such as lawyers. Out of all respondents, 10.1% (22) strongly agreed and 8.3% (18) agreed with the statement that records movement tracking system was effective, 5.1% (11) were unsure, 42.9% (93) disagreed and 33.6% (73) strongly disagreed. The records movement tracking system was not effective, as found through the observation and explained through interviews. All interview participants reported that their records tracking system was not effective and that led to missing files struggle. "Our institution experienced cases of missing files too frequently and, sometimes, we experience difficulty in locating certain files of records" said one interview participant. When

checking whether records safety and security measures were adequate and effective, 17.5% (38) strongly agreed, 19.4% (42) agreed, 1.8% (4) were unsure, 33.6% (73) disagreed and 27.6% (60) strongly disagreed. As found during observation and interviews, safety and security measures were not adequate, since there was lack of fundamental resources for records security. The details are presented in Table 4.4.

Table 4.4: Effectiveness of the current medical records management infrastructure in terms of legal and regulatory requirements (N=217)

CURRENT MEDICAL RECORDS MANAGEMENT INFRASTRUCTURE EFFECTIVENESS		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The medical records storage capacity is adequate	NO	17	13	24	88	75
	%	7.8	6.0	11.1	40.6	34.6
2) Shelving equipment and facilities are adequate.	NO	14	18	22	68	95
	%	6.5	8.3	10.1	31.3	43.8
3) Records administration resources are adequate.	NO	26	31	4	98	58
	%	12.0	14.3	1.8	45.2	26.7
4) Disaster preventive measures are in place and effective.	NO	5	17	42	91	62
	%	2.3	7.8	19.4	41.9	28.6
5) Records backup system is available.	NO	6	8	48	87	68
	%	2.8	3.7	22.1	40.1	31.3
6) Electronic recordkeeping technology is adequate and effective.	NO	19	16	35	84	63
	%	8.8	7.4	16.1	38.7	29.0
7) Records storage ventilation system is effective.	NO	6	21	23	97	70
	%	2.8	9.7	10.6	44.7	32.3
8) Records access control measures are effective.	NO	31	27	14	77	68
	%	14.3	12.4	6.5	35.5	31.3
9) Records movement tracking system is effective.	NO	22	18	11	93	73
	%	10.1	8.3	5.1	42.9	33.6
10) Records safety and security measures are adequate and effective.	NO	38	42	4	73	60
	%	17.5	19.4	1.8	33.6	27.6

NOTE: NO = Number % = Percentage

4.4.1.4 Knowledge of the legislative framework governing records management in South Africa

In order to understand competencies, the researcher checked whether respondents knew and understood relevant legislative framework governing records management and in response to the

question, 76.5% (166) of respondents said yes, 14.7% (32) said no and 8.8% (19) did not respond to the question and, therefore, the researcher concluded they did not know. Documents analysis revealed through inspection reports that institutions had records management related legislative framework, policies and procedures available in their institutions. All interview participants gave different responses but one participant stated that "most of the officials in the institutions have not mastered the contents of the legislative framework and do not understand them". Figure 4.3 illustrates a full report.

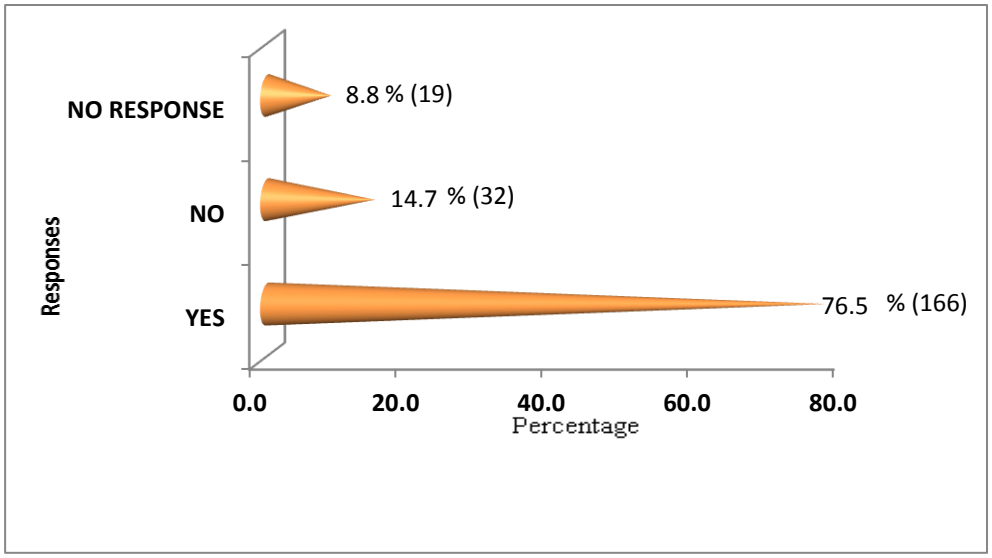

Figure 4.3: Knowledge of the legislative framework governing medical records management in South Africa (N=217)

4.4.1.5 Application of the legislative framework in governing medical records management

The researcher also checked from respondents the use of legislative framework in governing medical records management with the purpose of understanding that their significance was known in ensuring proper medical records management. The responses were that legislative framework was used for policy development (70% (152)), decision-making and problem-solving (74.2% (161)), adopting records management framework and e-system (59% (128)), referencing during policy implementation (65.4% (142)), training staff in records management (72.4% (157)) and 0% (0) specified any other reason. The interviews revealed that records management officials did not understand the content or stipulations of the records management related legislative framework, but, instead, they studied the names of such acts and regulations. This report is illustrated using Figure 4.4.

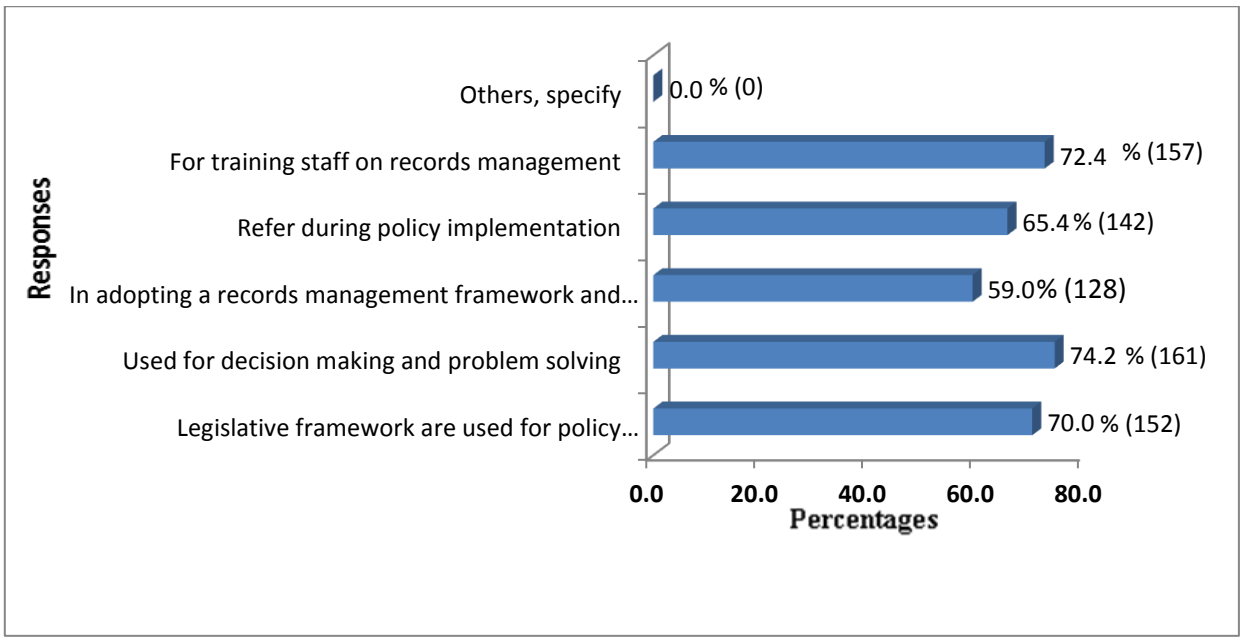

Figure 4.4: Application of the legislative framework in governing medical records management (N=217)

4.4.1.6 The institution had policy for management of medical records

The study also checked whether the institutions had a policy specifically for the management of medical records with the purpose of identifying whether they had some sort of document to guide their medical records management activities. In responding to the question of whether the institutions had the medical records management policy, 58.5 % (127) respondents said yes, 24% (52) said no and 17.5% (38) did not reply to the question and to the researcher this signified that they were not sure. See Table 4.5 for illustrations. The observation and document analysis (policy was analysed) revealed that the policy specifically addressing medical records management issues was available and was created during the year 2012. Different interview participants gave different responses but one participant stated that "the medical records policy is available but we are not yet trained about it".

Table 4.5: The institution had the policy for management of medical records (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	127	58.5
No	52	24
No response	38	17.5

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4.4.1.7 Policy scope covering all records management functional requirements

The study also checked from respondents whether the policy scope covered all records management functional requirements as guided by the NARSSA Act, Limpopo Provincial Archives Act and records management models (life cycle and continuum model). Out of all respondents, 35.5% (77) responded yes, 14.7% (32) no and 49.8% (108) did not respond. The respondents who responded might have included those who said there was no policy in place at the institution and those who were not sure about the policy existence. Table 4.6 illustrates the report. Document analysis on the medical records management policy revealed that the policy scope covered almost all functions of records management as required by the NARSSA Act, but observation showed that the policy requirements were not implemented as required. All interview participants gave different responses but one of the interviewees stated that "the policy is good but the department is just lacking the resources to implement it, if we can get support we can improve many things".

Table 4.6: The records management policy covered the whole scope of records management functional requirements as guided by NARSSA Act and records management models (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	77	35.5
No	32	14.7
No response	108	49.8

4.4.1.8 The records management functionalities covered by the policy as guided by NARSSA Act, LPA Act and records management models

The researcher researched about the records management functionalities covered by the policy as guided by the NARSSA Act and records management models (life cycle and continuum model). To this question, 12.9% (28) replied that records receiving was covered, 77.4% (168) records preservation and conservation, 68.7% (149) records maintenance and use, 92.6% (201) records disposal and 0.0% (0) other functionalities. This question was asked with the purpose of detecting whether the policy covered every records management functional activity. Figure 4.5 illustrates the report. The document assessment revealed that the policy covers all records management functionalities as required by the NARSSA Act.

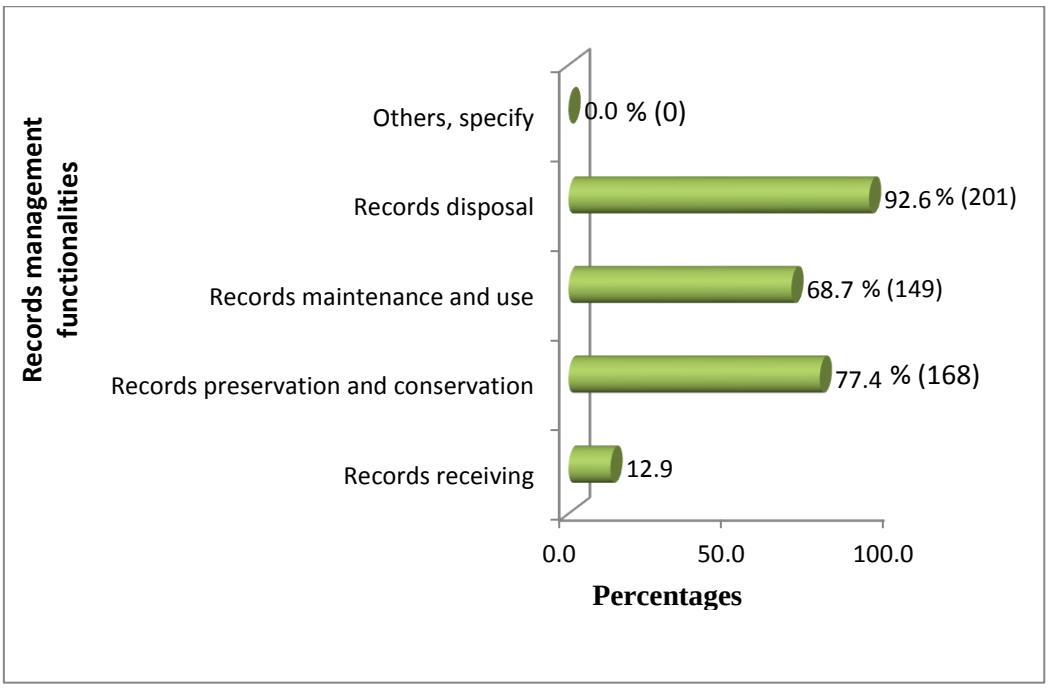

Figure 4.5: The records management functionalities covered by the policy as guided by NARSSA Act and records management models (life cycle and continuum model) (N=217)

4.4.1.9 The institution have the medical records management procedure manual

When the researcher checked with respondents about availability of the medical records management procedure manual as a policy regulator, 12.9% (28) of respondents stated yes, it was available, 77.4% (168) said no, it was not available and 9.7% (21) did not respond to the question. Table 4.7 illustrates the report. As also revealed from the document assessment, although all interview participants gave different responses one interviews participant stated that "the medical records management procedure manual was created and available, but has not yet been distributed from the provincial office records management unit and implemented fully, and it was not popular as most of the officials in the institutions were not aware of its existence".

Table 4.7: The institution have the medical records management procedure manual (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	28	12.9
No	168	77.4
No response	21	9.7

4.4.1.10 Medical records management procedure manual alignment to the medical records management policy and NARSSA Act

Respondents were also requested whether the medical records management procedure manual was aligned to the medical records management policy and the NARSSA Act, and 8.8% (19) of respondents said yes, 4.1% (9) said no and 87.1% (189) did not respond. The researcher suspected or assumed that most of respondents who did not reply to this question were those who said there was no procedure manual, and those who did not reply whether there was a procedure manual did not reply because they were not sure of its existence, as it was not yet implemented. The document analysis confirmed that the medical records management procedure manual was aligned properly to the medical records management policy.

4.4.1.11 Medical records management procedure manual cover the entire medical records management functionalities and procedures

When asking whether the medical records management procedure manual covered the entire medical records management functionalities and procedures with the purpose of checking whether it covered the entire scope of records management, 7.8%(17) respondents said yes, 5.1% (11) said no and 87.1% (189) did not reply. The majority of respondents who did not respond were those who did not respond to the question of whether it is in existence and alignment to the medical records management policy and NARSSA Act. Figure 4.6 illustrates the full report. The document analysis confirmed that the medical records management procedure manual covered the entire medical records management functionalities and procedures.

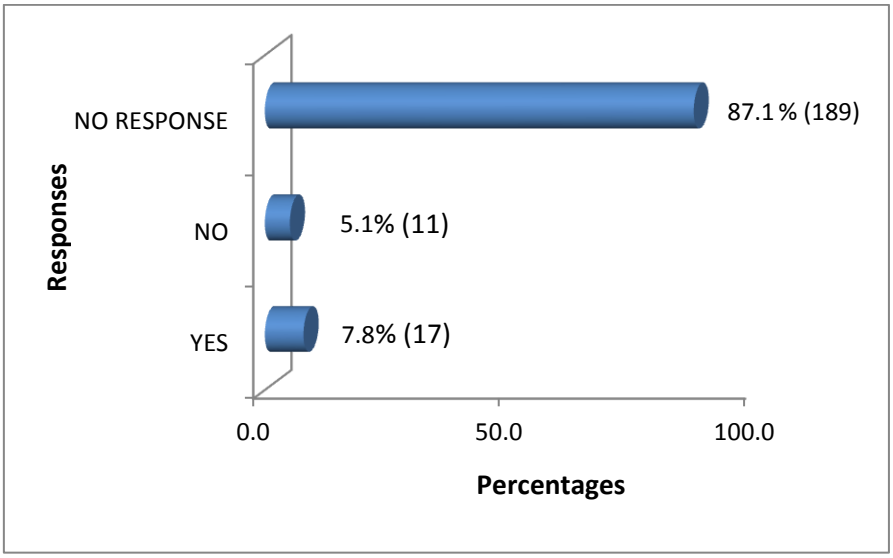

Figure 4.6: Medical records management procedure manual covered the entire medical records management functionalities and procedures (N=217)

4.4.1.12 Implementation and compliance to the medical records management policies and procedure

The respondents were also requested whether there was compliance with and/or implementation of the medical records management policies and procedure and to that 30.9% (67) replied yes, 63.6% (138) replied no and 5.5% (12) did not respond to the question. Table 4.8 illustrates full report. The interview and observation revealed that the records management policy and procedure manual on medical records are not fully implemented. All interview participants gave different responses but one participant mentioned that "lack of resources and funds are the main reason for not fully implementing medical records management policy".

Table 4.8: Implementation of and compliance with the medical records management policies and procedure (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	67	30.9
No	138	63.6
No response	12	5.5

4.4.1.13 Management of medical records at all stages of the life cycle, from creation to disposal

The respondents were also requested to state whether the medical records management is effective during all the stages of records management from creation to disposal. The responses by 29.5% (64) were yes, the management of medical records was effective during all stages of the life cycle, 56.2% (122) replied no and 14.3% (31) did not respond, possibly because they did not know. Figure 4.7 illustrates the report. The observation tells that medical records were not managed properly during the creation stage, because there was no system in place to detect and monitor when records are created and, according to respondents, they only became aware of newly created medical records when the record was received at registry for filing or requested that it was created, but was no longer available.

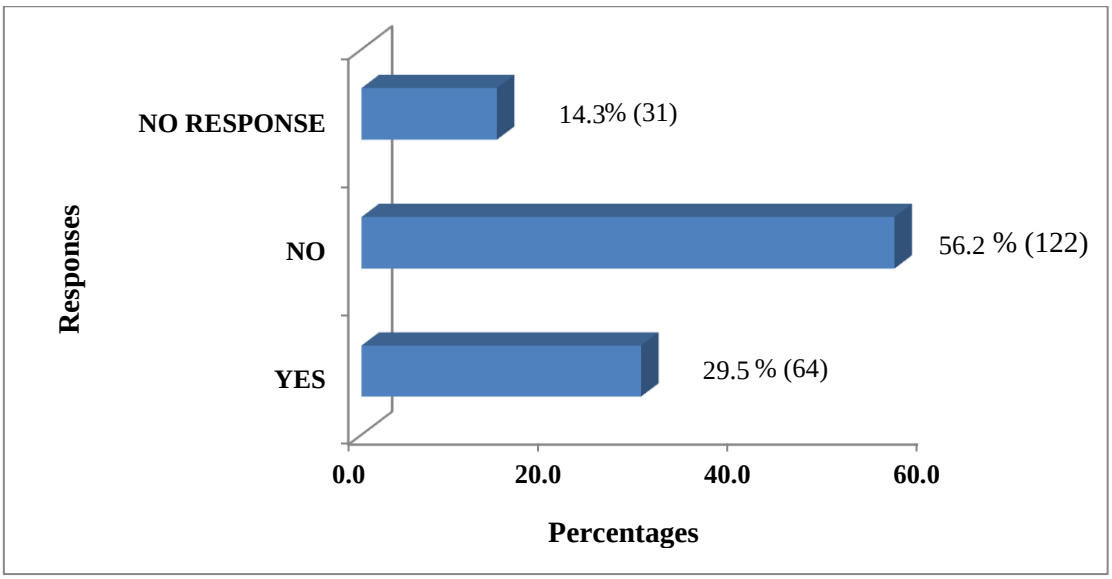

Figure 4.7: Management of medical records at all stages of the life cycle, from creation to disposal (N=217)

4.4.1.14 Hospital unit responsible for management of medical records during each stage of the records life cycle

The respondents were also requested to specify the responsible unit for records management during each stage of records management in their institutions. During the stage of records creation and receipt, responsibility for medical records management lies with the clinical unit according to 28.6% (62) respondents, the nursing unit according to 41% (89), the records management unit according to 24.9% (54) and 5.5% (12) did not reply to the question. For the records maintenance and use stage, 5.1% (11) specified that the responsibility lies with the clinical unit, 15.2% (33) with the nursing unit, 74.7% (162) with the records management unit and 5.1%(11) did not reply to the question. In assessing responsibility at the disposal stage of the life cycle, 3.2% (7) specified the clinical unit as a responsible unit, 5.5% (12) the nursing unit, 84.8% (184) the records management unit and 6.5% (14) did not respond to this question. Table 4.9 illustrates the report. Observation confirmed that during the creation and receipt of medical records, these records were entirely with the healthcare professionals (nurses and doctors) and, in some instances, records management officials did not even realise that the records were created. All interview participants gave different views but one participant stated that “as records management official we only manage records once they are submitted to us for filing. During the maintenance and use of medical records, safety and security is sacrificed since the billing official from revenue had access to records storage and patients carry their files containing records about their medical history on the healthcare workflow”.

Table 4.9: Hospital unit responsible for management of medical records during each stage of the records life cycle (N=217)

RESPONSIBLE UNITS	STAGES OF THE RECORDS LIFE CYCLE					
	Records Creation & receipt		Maintenance & Use		Disposal	
	NO	%	NO	%	NO	%
Clinical unit	62	28.6	11	5.1	7	3.2
Nursing unit	89	41.0	33	15.2	12	5.5
Records management unit	54	24.9	162	74.7	184	84.8
No response	12	5.5	11	5.1	14	6.5

NOTE: NO = Number % = Percentage

4.4.1.15 Relevant unit for taking responsibility of managing medical records at each stage of the life cycle

The researcher also wanted to establish the relevance of each unit given the responsibility for records management at each stage of the record's life cycle. In attempting to answer the question of which unit must take responsibility for the management of medical records at the stage of creation and receipt of the record, 14.7% (32) said was the clinical unit, 22.1% (48) said the nursing unit, 60.4% (131) replied the records management unit was relevant and 2.8% (6) did not reply to the question. The relevant unit for management of medical records at the records maintenance and use stage is the clinical unit according to 11.1% (24) of respondents, the nursing unit according to 12% (26) of respondents, the records management unit as replied by 71%(154) of respondents and 6% (13) did not respond to the question for this stage. The unit responsible for medical records management at the disposal stage was the clinical unit as stated by 8.8% (19) of respondents, the nursing unit as per 12.9% (28) of respondents, the records management unit as per 75.1% (163) of respondents and 3.2% (7) never responded. Table 4.10 illustrates the findings. According to observation the records management unit was not performing any activity or was not involved during the first stage of records creation and receipt, only the records creators took the lead and control over the records. All interview participants gave different responses but one participant stated that "it is only during the second and third stages where the records are fully managed and controlled by the records management officials".

Table 4.10: Relevant unit for taking responsibility of managing medical records at each stage of the life cycle (N=217)

RELEVANTLY RESPONSIBLE UNITS	STAGES OF THE RECORDS LIFE CYCLE					
	Records Creation & receipt		Maintenance & use		Disposal	
	NO	%	NO	%	NO	%
Clinical unit	32	14.7	24	11.1	19	8.8
Nursing unit	48	22.1	26	12.0	28	12.9
Records management unit	131	60.4	154	71.0	163	75.1
No response	6	2.8	13	6.0	7	3.2

NOTE: NO = Number % = Percentage

4.4.1.16 Accountable unit for management of medical records during each of the three stages of the records life cycle

It was the intention of the study to establish the unit responsible for the management of records at each stage of the record's life cycle. According to 14.7% (32) of respondents, accountability during the creation and receipt stage rested with the clinical unit, 21.7% (47) said the nursing unit was accountable, 61.3% (133) state that the records management unit was fully accountable and 2.3% (5) did not respond. During the stage of records maintenance and use, 5.5% (12) state that the clinical unit was accountable, 14.3% (31) stated that the nursing unit was accountable, 75.6% (164) specified the records management unit as fully accountable and there was no reply from 4.6% (10) respondents. The accountability during the medical records disposal was with the clinical unit (10.1% (22)), the nursing unit (15.2% (33)), the records management (70% (152)) and 4.6% (10) did not provide any response, as Table 4.11 illustrates. The observation and interviews revealed that, institutionally, the records management section took full accountability for management of medical records during each stage of the record's life cycle, because the policies and procedures were also developed by the records management unit to direct every employee on how to handle records. All interview participants gave different responses but one participant stated that "policies and procedures are developed by the head office records managers using the task team comprising of some of the hospital staff and implemented at the institution through training and support visit".

Table 4.11: Accountable unit for management of medical records during each of the three stages of the records life cycle (N=217)

ACCOUNTABLE UNITS	STAGES OF THE RECORDS LIFE CYCLE					
	Records Creation and receipt		Maintenance and Use		Disposal	
	NO	%	NO	%	NO	%
Clinical unit	32	14.7	12	5.5	22	10.1
Nursing unit	47	21.7	31	14.3	33	15.2
Records management unit	133	61.3	164	75.6	152	70.0
No response	5	2.3	10	4.6	10	4.6

NOTE: NO = Number % = Percentage

4.4.1.17 Relevant accountable unit for management of medical records at each stage of the life cycle

Respondents were requested to state which unit was accountable at each stage of the life cycle were responsible for accountability at each stage. Assessing the first stage of records creation and receipt, 13.4% (29) of respondents stated that the clinical unit was relevant, 16.1% (35) stated the nursing unit as relevant, 67.7% (147) stated that the records management unit were relevant and no response was received from 2.8% (6). The unit relevant for taking accountability for records maintenance and use was the clinical unit according to 10.6% (23) of respondents, the nursing unit according to 17.1% (37), the records management unit as confirmed by 71.4% (155) and 0.9% (2) did not reply. Looking at the issue of the medical records disposal stage, 7.4% (16) stated that the clinical unit was accountable, 10.1% (22) said the nursing service unit was accountable, 81.1% (176) said the records management unit was more relevant to take accountability for records disposal and 1.4% (3) did not reply, as Table 4.12 illustrates. Overall, records management was observed to be relevant for overall accountability and should make the end-users and creators accountable during records creation and use. The end-users and creator needed to account for the deviation from policies and procedures created by the records management unit for sound records management and handling. During document analysis the medical records management policy emphasises issues of compliance with policy directives and that disciplinary action may be taken against non-compliers with the policy.

Table 4.12: Relevancy of the accountable units to manage medical records at each stage of the life cycle (N=217)

RELEVANTLY ACCOUNTABLE UNITS	STAGES OF THE RECORDS LIFE CYCLE					
	Records Creation & receipt		Maintenance & Use		Disposal	
	NO	%	NO	%	NO	%
Clinical unit	29	13.4	23	10.6	16	7.4
Nursing unit	35	16.1	37	17.1	22	10.1
Records management unit	147	67.7	155	71.4	176	81.1
No response	6	2.8	2	0.9	3	1.4

NOTE: NO = Number % = Percentage

4.4.1.18 Security of medical records during each stage of the life cycle

The respondents were also requested to state whether records were secured at each stage of records management or not. Looking at the first stage of the life cycle, records creation and receipt, 28.1% (61) stated that, yes, medical records were safe and secured, 55.8% (121) stated, no, they were not safe and secured, and 15.2% (33) did not answer the question. For the second stage of records maintenance, use, 63.1% (137) stated that medical records were secured and safe at that stage, 31.3% (68) said they were not safe and secured and 5.5%(12) did not answer. Assessing the third stage of the records life cycle, disposal, 37.8% (82) stated that records were secured and safe during disposal, 53.9% (117) stated that they were not safe and secured during disposal stage and 8.3% (18) did not. Table 4.13 illustrates the report.

Overall observation found no effective records security at the creation stage, since there was no system that made it possible to detect when new records were created by nurses and doctors during healthcare service delivery, but the records management unit only knew about the new records once they were returned for filing. It was also observed that the records management unit had no means of managing the file content, which means that they could not detect missing records or documents inside the file when the end-users returned the records for filing. The missing records inside the file were only found when it was needed for a particular purpose. The file contents were not structured and indexed for the purpose of detecting records that were missing from inside the file. The electronic system was not used for file movement tracking and back-up of all the patients' records. The patients were also observed carrying their files containing records about their medical history on the healthcare service delivery workflow. This posed the risk of records being destroyed, stolen, damaged and/or improperly handled due to different reasons. During the second stage of

maintenance and use, the security threat observed was based on the registry and records storage access control. In most of the institutions, the records storage spaces had no burglars on the doors and windows, some had no counter to prevent customers from entering registry where many records were being processed, water pipes were crossing in some records custodies, there were no air-conditioners for proper control of ventilation, there was a lack of fire-fighting and prevention equipment like smoke and water detectors and adequate fire extinguishers.

Table 4.13: Security of medical records during each stage of the life cycle (N=217)

RELEVANTLY ACCOUNTABLE UNITS	STAGES OF THE RECORDS LIFE CYCLE					
	Records Creation & receipt		Maintenance & Use		Disposal	
	NO	%	NO	%	NO	%
SECURED AND SAFE	61	28.1	137	63.1	82	37.8
NOT SECURED AND SAFE	121	55.8	68	31.3	117	53.9
NO RESPONSE	33	15.2	12	5.5	18	8.3

NOTE: NO = Number % = Percentage

4.4.1.19 Availability of designated medical records management unit

The researcher established from respondents the availability of the designated medical records management unit was, to which 53% (115) of respondents replied it was available, 40.1% (87) stated was not available and 6.9% (15) did not respond. The document assessment to the organisational structure showed that the medical records management unit was a sub-structure/sub-division to the overall records management division and it was headed by the senior administrative officer who was reporting to the records manager, and the records manager was responsible for all the records management sub-divisions in the institution, including the personnel records management subdivision and general records management subdivision.

4.4.1.20 Availability of designated records manager for medical records management unit structure

The researcher also followed up to check if the medical records management unit existed and had its own designated records manager, to which 33.6% (73) said yes, 60.8% (132) said no and 5.5% (12) did not respond to the question, as also illustrated in Table 4.14. The document analysis on the organisational structure and interviews revealed that the manager of medical records management was the person responsible for all sub-divisions of records management in the institution who delegated responsibilities for medical records management to the head of medical records management sub-division positioned as senior administrative officer. All interview participants

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gave different responses but one participant stated that "records management is not directly represented in the management meeting since we report to Human resource corporate service unit".

Table 4.14: Availability of designated records manager for medical records management unit structure (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	73	33.6
No	132	60.8
No response	12	5.5

4.4.1.21 Staff structure under the medical records manager

When the researcher asked whether the staff under the medical records manager were well structured, 63.1% (137) stated yes, 29.5% (64) said no and 7.4% (16) did not respond. Figure 4.8 illustrates the report. The interview participant also said that "the structure of staff in the institutions is functional".

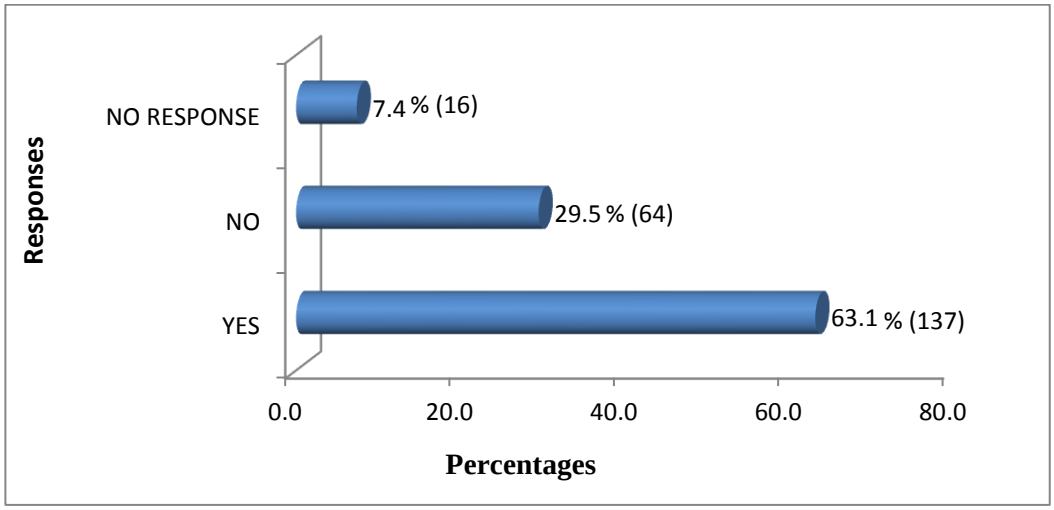

Figure 4.8: Availability of well-structured staff under medical records manager (N=217)

4.4.1.22 Responsibility for medical records management in the institution

The researcher also established information about the responsible person for medical records management in the institution. In response, 25.8% (56) said it was the chief executive officer, 11.1% (24) said the clinical manager, 8.3% (18) said the nursing manager, 53.9% (117) said the records manager and 0.9% (2) did not reply to the question, as Figure 4.9 also illustrates. According to the staff structure (organogram) and medical records management policy analysis, the records manager was overall responsible for sound medical records management and all other hospital

officials took responsibility during the stage of creation and use as also supported by the interview participants.

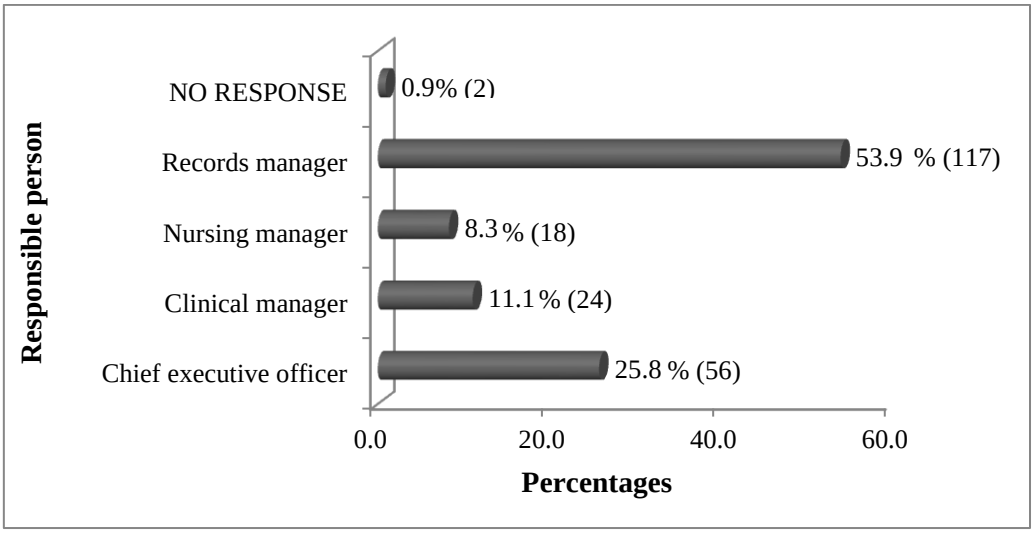

Figure 4.9: Overall responsible person for medical records management in the institution (N=217)

4.4.1.23 Accountability for medical records management in the institution

The researcher wanted to identify accountable person for the medical records management in the hospital, to which 38.2% (83) replied that it was the chief executive Officer, 9.7% (21) the clinical manager, 14.3% (31) the nursing manager, 35.5% (77) stated it was the records manager and 2.3% (5) did not answer the question. Table 4.10 illustrates the results. According to the organisational structure and the policy on medical records management, the records manager was accountable to the chief executive officer for any records management related issues and the chief executive officer was accountable to the provincial Department of Health for overall hospital issues, including records management.

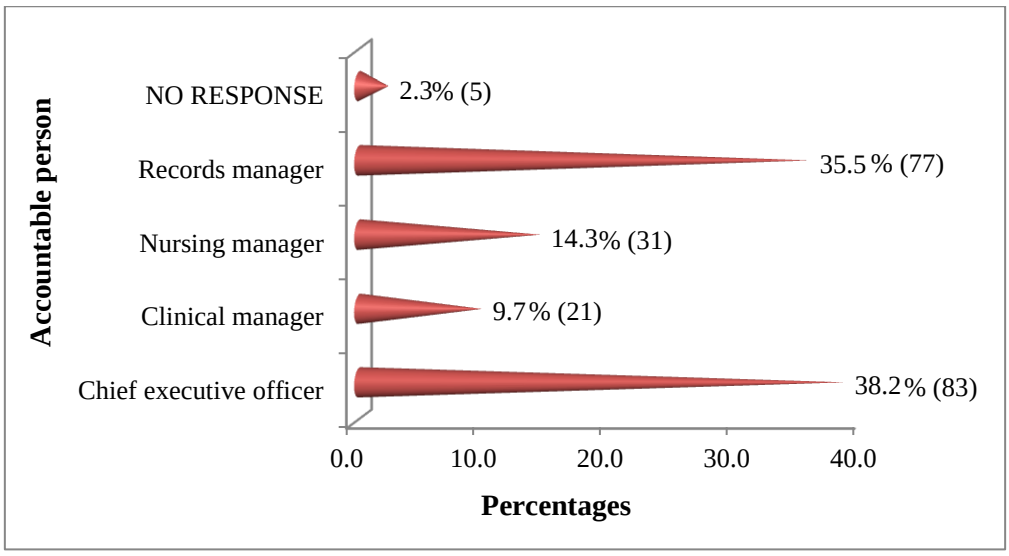

Figure 4.10: Overall accountable person for medical records management in the institution (N=217)

4.4.1.24 Missing medical record files

The study also found whether the institutions were not struggling with the problem of missing files or records during the healthcare service delivery. When asked whether or not they frequently experienced missing files, 67.3% (146) of respondents said, yes, they did experience missing files too often, 26.7% (58) said no and 6% (13) did not reply. Different interview participants gave different responses but one participant confirmed that "missing files on medical records were experienced frequently when the doctors wanted to attend to chronic patients and when files were requested through PAIA". Respondents also believed that one of the contributing factors were congested or inadequate filing space and too much of paper and manual work.

4.4.1.25 The impact of missing files on the organisational business continuity

The study also required from respondents to answer whether they were aware of the negative impacts of missing files on the healthcare service business continuity. When requested to specify the negative impacts, 33.2% (72) specified inability to monitor and evaluate compliance and administrative improvement, 81.6% (177) inability to provide access to records, 88.5% (192) inability to respond to litigation, the Auditor-General and legal information requirements, 40.1% (87) inability to comply with legislative framework, 95.4% (207) inability to respond to the Auditor-General and internal audit request, and 0% (0) specified other negative impacts. Figure 4.15 illustrates the results.

Table 4.15: Negatively impact of missing files on the organisational business continuity (N=217)

NEGATIVE IMPACTS	RESPONSES	
	NUMBER	PERCENTAGES
• Inability to monitor and evaluate compliance and administrative improvement	72	33.2
• Inability to provide access to records	177	81.6
• Inability to respond to litigation	192	88.5
• Inability to comply with legislative framework	87	40.1
• Inability to respond to Auditor General and internal audit request	207	95.4

4.4.1.26 Resolutions to the problem of missing files

The researcher also tried to establish what the respondents could identify as resolutions to the problem of missing files. In answering the question respondents specified:

- Introduction and adoption of effective records management framework/model as a resolution (93.1% (202)),
- Adoption of electronic system that is collaborative to the business process (84.8% (184)), and
- Involvement of the records manager in the system, building and administration planning (37.8% (82)).

4.4.1.27 Experience of incomplete records and/or inaccurate, unreliable and untrustworthy data

The researcher wanted to establish whether the institutions experienced the challenge of incomplete file content or data inside the file, to which 33.2% (72) replied with yes, 54.4% (118) replied no and 12.4% (27) did not reply to the question. Different interview participants gave different responses but one participant stated that “there were situations where the doctors and nurses complained about missing records inside the files”.

4.4.1.28 The causes of incomplete records or inaccurate, unreliable and untrustworthy data

The study went further to establish the causes of incomplete records or data in the file that the respondents have. In attempting to respond to the question, 79.3% (172) specified the cause as ineffective records management framework, 83.4% (181) specified lack of records management

resources, 76.5% (166) specified lack of records management skills and competencies, 90.8% (197) specified shortage of staff, 95.4% (207) specified shortage of filing space, 41.9% (91) specified high records demand and 52.1% (113) specified lack of the records manager involvement and consultation during system, building and administration planning as the major cause of missing or incomplete records inside the files and no respondents specified any other causes. Table 4.16 gives the information. Different interview participants gave different responses but one participant stated that "we suspected that because patients carry files with them on the workflow due to various reasons, they might remove file content and go home with it or destroy it. Other patients may not like what is written in the file and temper with it. Others may steal the records to avoid following the proper, lengthy procedure to request a copy".

Table 4.16: The causes of incomplete records or data that is not accurate, reliable or trustworthy (N=217)

THE CAUSES	RESPONSES	
	NUMBER	PERCENTAGES
• Ineffective records management framework	172	79.3
• Lack of records management resources	181	83.4
• Lack of records management skills and competencies	166	76.5
• Shortage of staff	197	90.8
• Shortage of filing space	207	95.4
• High records demand	91	41.9
• Lack of the records manager involvement and consultation during system, building and administration planning	113	52.1

4.4.2 THE NATURE OF MEDICAL RECORDKEEPING SYSTEM

The second objective of this study was to investigate the nature of the medical recordkeeping system in line with records management operations, recordkeeping functional requirements and metadata requirements. Several questions were constructed to collect data for the purpose of reaching this objective.

4.4.2.1 Medical records management functional operations

The researcher established whether the medical records management functional operations were established at all the levels of the records life cycle with the purpose of identifying gaps for records

safety and security on the system. To this question, 40.1% (87) replied yes, 56.2% (122) said no and 3.7% (8) did not reply, as also shown in Figure 4.11. The observation reported that the records management functional operations were not clear during the first stage of creation and receipt, since records creation could not be tracked during healthcare service delivery. Different interview participants gave different responses but one participant stated that "it is difficult to detect which records were created when and by whom until they are submitted to registry for filing".

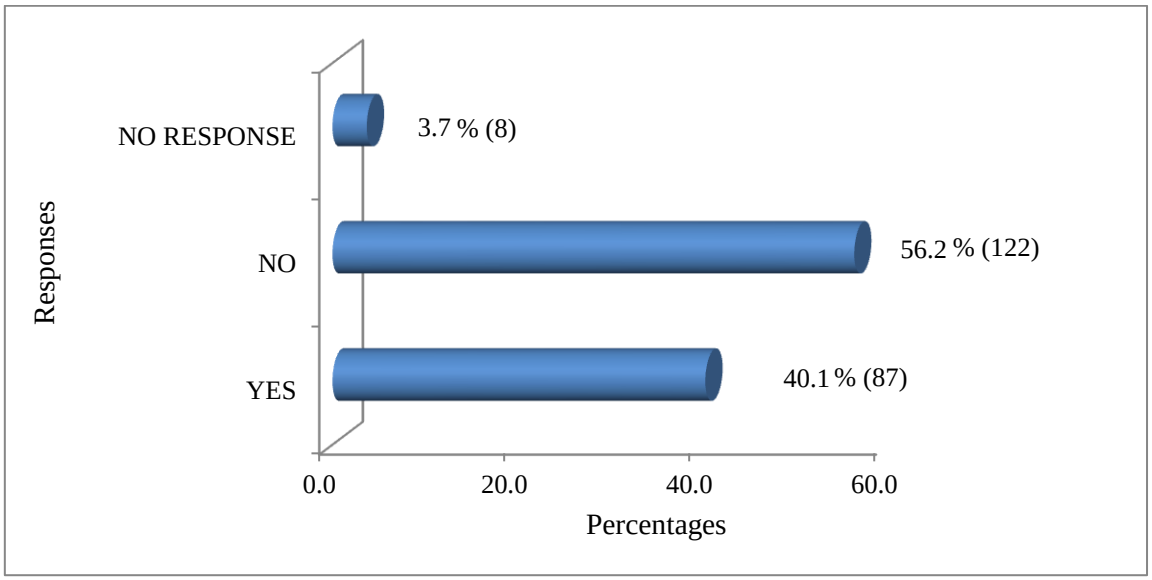

Figure 4.11: Medical records management functional operations establishment (N=217)

4.4.2.2 Conduction of medical records management functional operation

When establishing whether the medical records management functional operation is conducted at all levels of the life cycle to identify sound records management gaps 35.5% (77) said yes, 62.2% (135) said no and 2.3% (5) did not respond, as also illustrated in Table 4.17. It was observed that at the first stage, during creation and receipt, there was no visible activity for records management that was conducted during the workflow.

Table 4.17: Conduction of medical records management functional operation at all levels of the life cycle (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	77	35.5
No	135	62.2
No response	5	2.3

4.4.2.3 Medical records management functional operation during each stage of the life cycle

The researcher also attempted to find out from respondents about the kind of medical records management functional operations at each stage of the life cycle to check records management activities involved or conducted during each stage and establish the gaps. The full report is presented under the next three sub-sections named records creation and receipt, records maintenance and use and records disposal.

4.4.2.3.1 Records creation and receipt

The respondents were requested to specify medical records management functional operations at the life cycle stage number one, known as Records creation and receipt. In responding to the question, 80.2% (174) specified that files were opened for records to be created as the patient arrived, 63.1% (137) said records were received from creators, 52.1% (113) said records were recorded in the new files received register, 10.1% (22) stated that records were captured in the system as new files receipt, 41% (89) said records were classified according to system filing plan, 5.5% (12) said records were appraised and 88.5% (192) specified that records were filed in accordance with the system file plan. There was no one specifying any other functional operations, as also illustrated in Figure 4.12. As was also observed there were no records management activity discharged during records creation. Different interview participants gave different responses but one participant stated that “during records creation no activity is performed about records management but at least during records receiving the records are properly arranged for filing, classified, captured in the relevant control register and filed accordingly”.

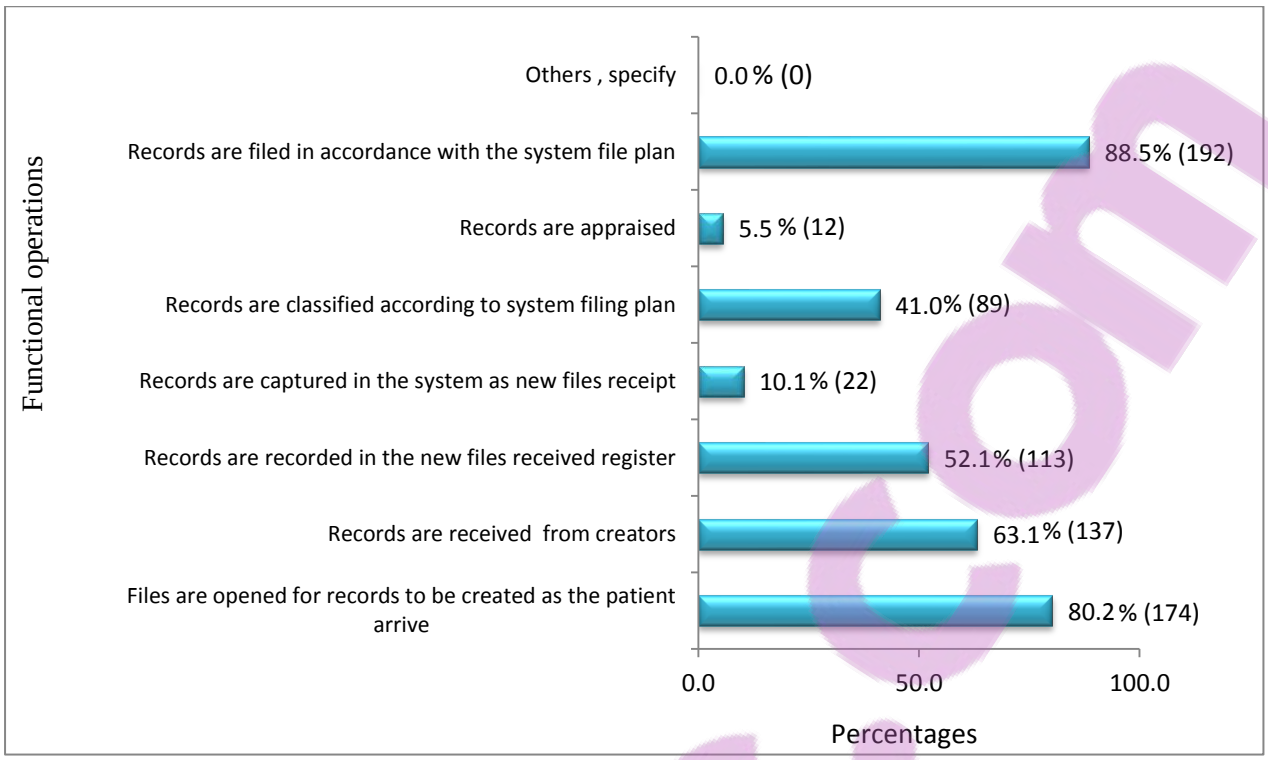

Figure 4.12: Medical records management functional operations during records creation and receipt stage of records life cycle (N=217)

4.4.2.3.2 Records maintenance and use

The study also established functional operational functions during the second stage of the life cycle, called records maintenance and use. As also illustrated in Table 4.18, 24% (52) of respondents specified that during this stage, the quality of records was maintained with appropriate ventilation, e.g. air-conditioned, 32.7% (71) said that records were protected against any disaster, e.g. water, fire, pests and rodents, 92.6% (201) said that access to records custodies and registry office was controlled, 89.9% (195) said that records' movement was controlled through registers or systems, 96.3% (209) said that files were issued to and returned from authorised records requesters, and 19.8% (43) said that records were terminated to semi-active records custody when no longer active; no one specified the other activities. The observation revealed that during this stage, records are properly filed in appropriate medical records storage and there was controlled access to end-users using manual control registers. During this stage, when patients came back to the institution for follow-up visits or another illness, they were provided with their files and sent to the consulting rooms through different queues at different healthcare service points.

Table 4.18: Medical records management functional operation during records maintenance and use (N=217)

RECORDS MAINTENANCE AND USE FUNCTIONAL OPERATIONS	RESPONSES	
	NUMBER	PERCENTAGE
• Records quality is maintained with appropriate ventilation	52	24
• Records are protected against any disaster	71	32.7
• Access to records custodies and registry office is controlled	201	92.6
• Records movement is controlled through registers or system	195	89.9
• Files are issued to and returned from authorised requesters	209	96.3
• Records are terminated to semi-active records custody when no longer active	43	19.8

4.4.2.3.3 Records disposal

The researcher also established medical records management functional operation conducted at the records disposal stage of the life cycle. When responding to the question, as illustrated in Table 4.19, 8% (174) replied that records were identified for disposal at this stage, 36.4% (79)that records were separated according to archival and ephemeral value, 54.4% (118) that records were properly sorted and registered for disposal, 74.7% (162) that disposal permission was applied from the archivist, 72.8% (158) stated that if disposal authority were granted, records were disposed of in line with the authority, 49.8% (108) said that a disposal certificate was issued by the records manager, 42.9% (93) that the disposal register was created and kept safe for future use and accountability; and no respondent specified other activities.

Table 4.19: Medical records management functional operation during records disposal (N=217)

RECORDS DISPOSAL FUNCTIONAL OPERATIONS	RESPONSES	
	NUMBER	PERCENTAGE
• Records are identified for disposal	174	8
• Records are separated per archival and ephemeral value	79	36.4
• Records are properly sorted and registered for disposal	118	54.4
• Disposal permission is applied from the Archivist	162	74.7
• If disposal authority is granted, records are disposed off	158	72.8
• Disposal certificate is issued by the records manager	108	49.8

RECORDS DISPOSAL FUNCTIONAL OPERATIONS	RESPONSES	
	NUMBER	PERCENTAGE
• Disposal register is created and kept safe for future reference and accountability	93	42.9

4.4.2.4 Manual and electronic records management

The researcher also checked with respondents whether their records were managed electronically or manually in order to establish the reasons for the problems experienced. The answer from 18% (39) respondents was that, yes, medical records were managed electronically and 75.6% (164) said, no, they were not managed electronically, whereas 6.5% (14) did not respond to the question. This report is illustrated by Figure 4.13. The observation also revealed that medical records were not being managed electronically, but manually since the only information captured on the system was patients' personal details and billing information. The system was not used for capturing, scanning or tracking the medical files movement.

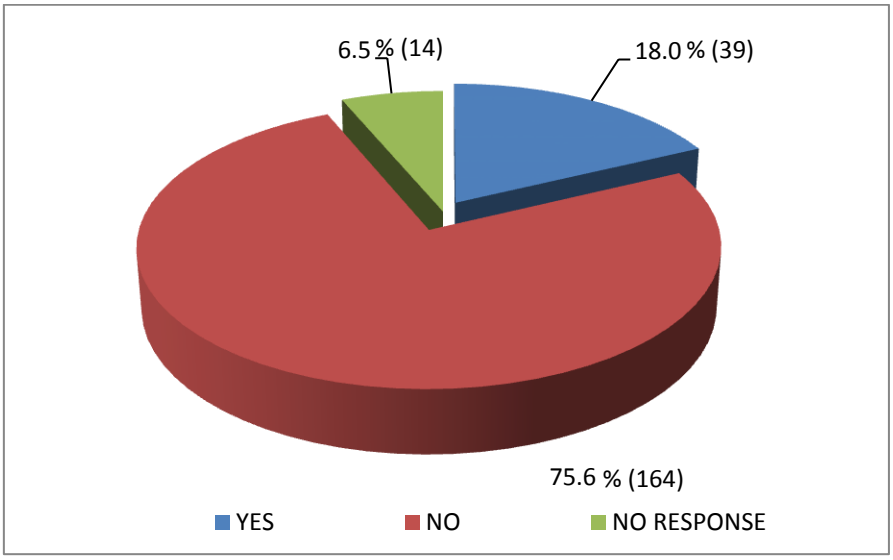

Figure 4.13: Usage of electronic records management system (N=217)

4.4.2.5 Effectiveness of electronic medical records management

Respondents were also requested to answer if the electronic medical records management was effective and efficient, if it was in use. Out of all respondents, only 6% (13) said yes and 12% (26) said no, the electronic medical records management system was not effective. Out of all respondents, 82% (178) did not reply to the question and the researcher assumed that this included those who said their medical records were not managed electronically in their institution. Different

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interview participants gave different responses but one participant stated that "the system is not effective enough for medical records management since it could not be used for any records management activity other than only confirming the file number, but could not even confirm whether the file was out to the end-user or in the storage. Generally, it could not track file movement and/or capture records electronically".

4.4.2.6 Electronic records management in line with dimensions of the records continuum model

The researcher also established whether electronic records management, if at all was performed, was done in line with all dimensions of the records continuum model. As also illustrated by Figure 4.14, responses from 82% (178) were no electronic records management was not done in line with all dimensions of the records continuum model, 12.9% (28) responses were yes and 5.1% (11) did not reply. The observation revealed that the continuum model dimensions were not applied for medical records management since the electronic system was not functional for records management and only the manual system was applied fully.

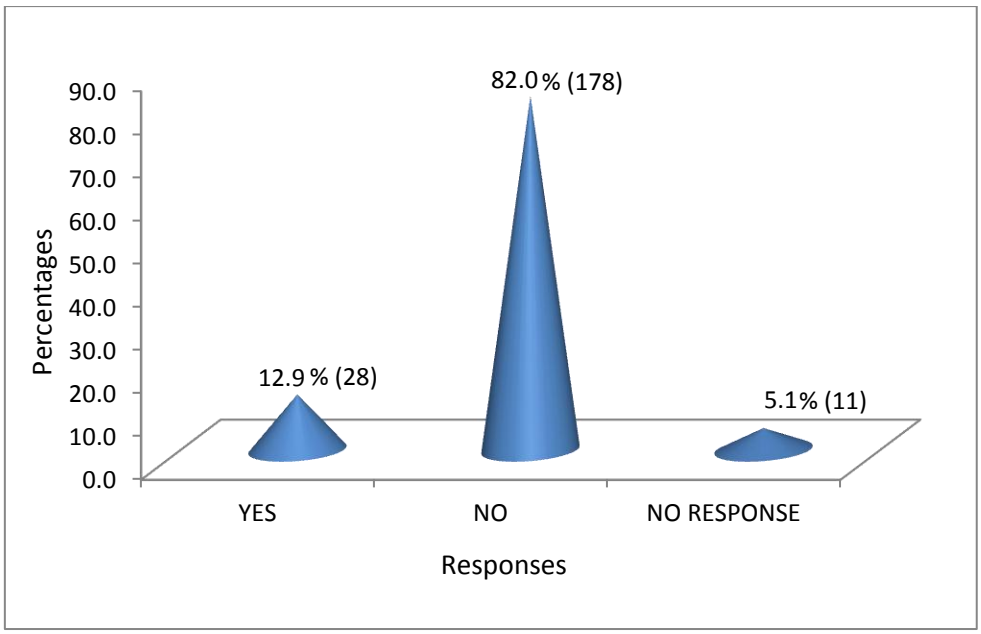

Figure 4.14: Electronic records management in line with dimensions of the records continuum model (N=217)

4.4.2.7 Organisational recordkeeping functional requirements

The respondents were also requested to identify their organisational recordkeeping functional requirements. According to Table 4.20, 45.6% (99) of respondents specified functional requirement of identifying and documenting different categories of medical records, e.g. chronic patients'

records, 74.2% (161) specified keeping evidence of medical business activities, 41% (89) specified designing and developing systems to facilitate medical records management processes, 80.6% (175) specified developing policies and procedures to guide creation and management of records, 88.5% (192) specified maintenance of medical records, 95.9%(208) specified disposal of medical records, 98.6% (214) specified ensuring easy retrieval and access, and 94% (204) specified keeping confidentiality and safety of information contained by medical records; and no one specified other functional requirements.

Table 4.20: Organisational recordkeeping functional requirements (N=217)

RECORDKEEPING FUNCTIONAL REQUIREMENTS	RESPONSES	
	NUMBER	PERCENTAGE
• Identifying and documenting different categories of medical records	99	45.6
• Keeping evidence of medical business activities	161	74.2
• Designing and developing systems to facilitate medical records management processes	89	41%
• Developing policies and procedures to guide creation and management of records	175	80.6
• Maintain medical records	192	88.5
• Dispose medical records	208	95.9
• Ensure easy retrieval and access	214	98.6
• Keeping confidentiality and safety of information contained by medical records	204	94

4.4.2.8 Compliance to the recordkeeping functional requirements

When the researcher asked respondents whether the institution was also complying with the recordkeeping functional requirements in an attempt to identify medical records management functional requirements gaps, 44.7% (97) said yes, 51.6% (112) said no and 3.7% (8) did not reply to the question. This is also illustrated by Figure 4.15. As confirmed by the medical policy document assessment there was no compliance to medical records management functional requirements in their institutions. Different interview participants gave different responses but one

participant stated that "in our hospital there is no full compliance to recordkeeping functional requirements due to a lack of resources".

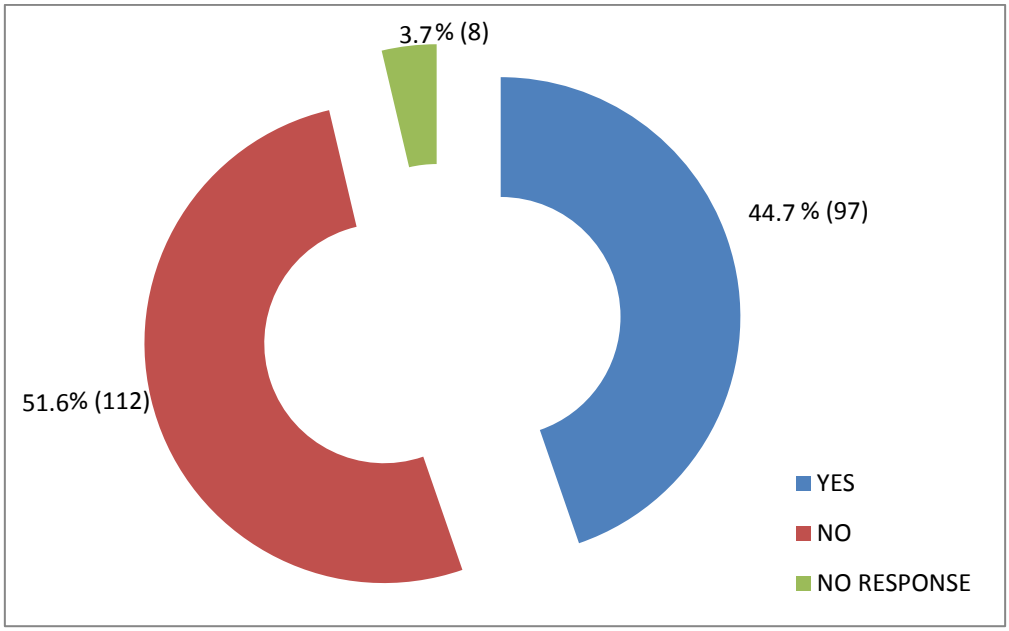

Figure 4.15: Compliance with the recordkeeping functional requirements (N=217)

4.4.2.9 Understanding of the record metadata

The study also established respondents' understanding of the metadata concept. As also illustrated in Figure 4.16, 51.2% (111) replied that metadata is information captured, along with electronic records, describing the identity, authenticity, content, structure and management requirements of records, 88% (191) said is the information used to search or identify the record out of the mass of records, 35.5% (77) saw metadata as a computer system used to capture the records and data, and 15.7% (34) defined it as the shelves used to keep records containing the data.

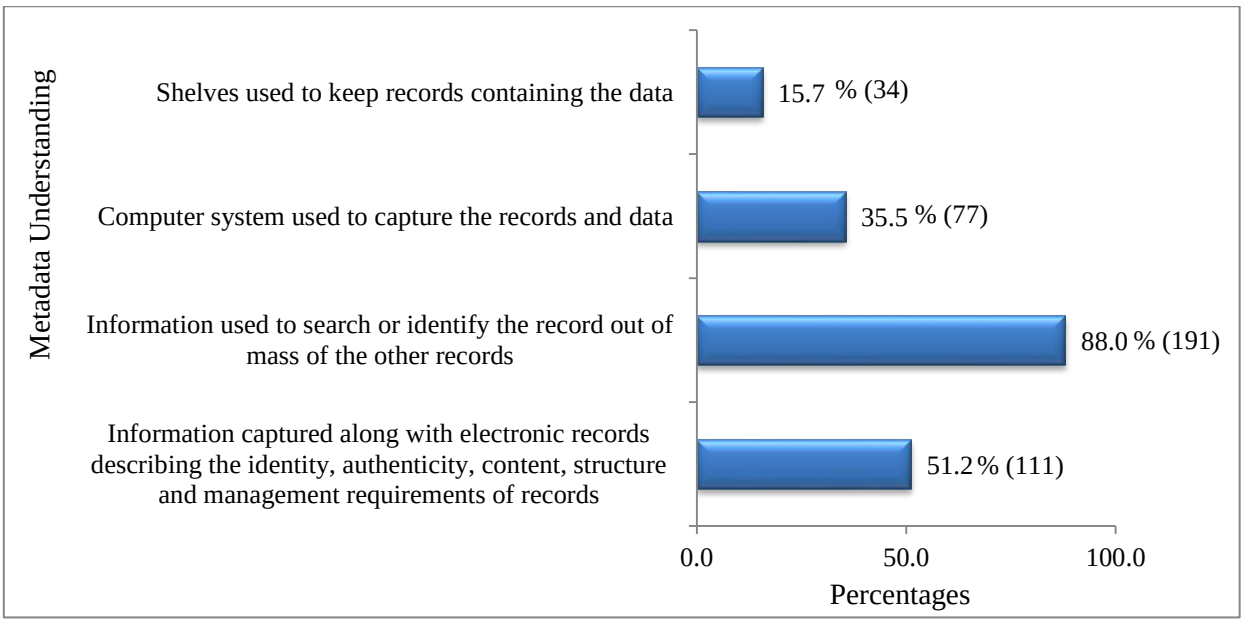

Figure 4.16: Understanding of the record metadata (N=217)

4.4.2.10 The metadata requirements for organisational recordkeeping

The researcher also requested the respondents to specify metadata requirements to establish their understanding of the concept thoroughly. As also illustrated by Table 4.21, 28.6% (62) of respondents specified records creator as one type of metadata requirements, 50.2% (109) record capturer/processor, 74.7% (162) records business transaction, 91.7% (199) patient personal details such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions, 18.9% (41) records retention or disposal period/year; and no one specified any other metadata requirements.

Table 4.21: Organizational recordkeeping metadata requirements (N=217)

RECORDKEEPING METADATA REQUIREMENTS	RESPONSES	
	NUMBER	PERCENTAGE
• respondents specified Records creator as one type of metadata requirements	62	28.6
• Record capturer/processor	109	50.2
• Records business transaction	162	74.7
• Patient personal details such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions	199	91.7
• Records retention or disposal period/year	41	18.9

4.4.2.11 The metadata requirements compliance for organisational recordkeeping

Figure 4.17 illustrates responses when the researcher tried to establish whether there was compliance with records metadata requirements in the institutions, to which 56.2% (122) said, yes, they comply, 33.6% (73) replied, no, they did not comply and 10.1% (22) did not respond to the question. The observation, medical records management system analysis and paper-based medical records file analysis reported that the medical records metadata was mostly captured in the paper-based records and partially on the electronic system, since in the paper-based file you also get the information about the healthcare professionals who assisted the patients. Different interview participants gave different responses but one participant stated that "in the system there are no data about the nurses, doctors and other specialists treated or even the medicine prescribed to the patients".

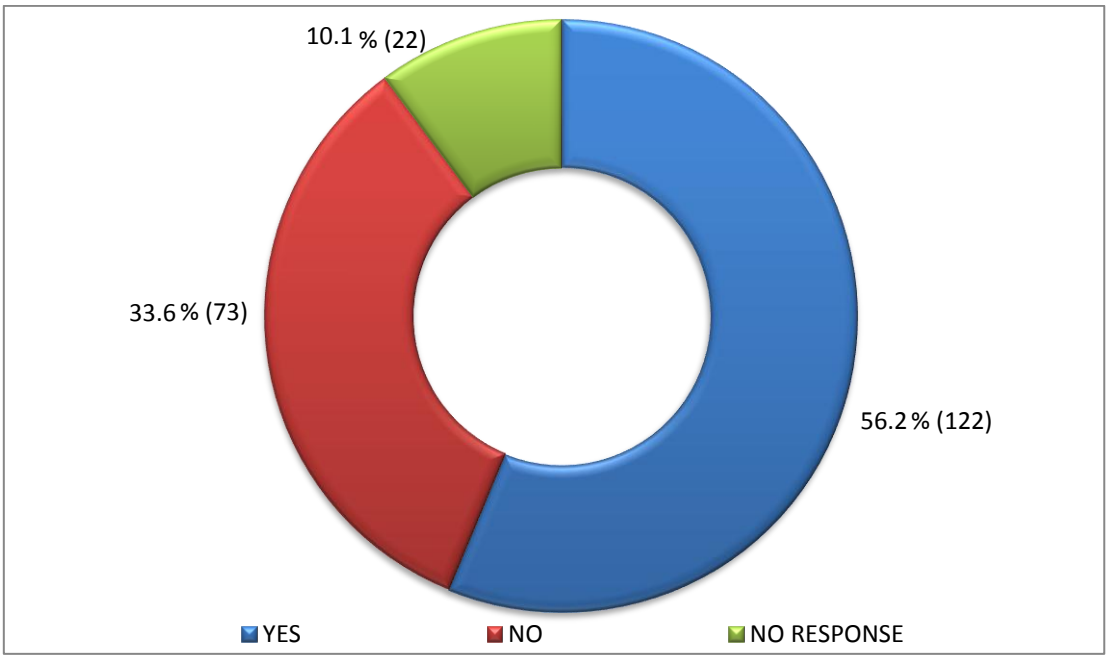

Figure 4.17: Organisational compliance with recordkeeping metadata requirements (N=217)

4.4.3 THE MEDICAL RECORD ARCHIVAL PROCESSES

The third objective of this study was to establish medical record archival processes in the healthcare institutions, which include records appraisal, retention, preservation strategies and storage management. In order to reach this objective, data was collected from participants at different healthcare institutions.

4.4.3.1 Understanding of the concept appraisal

In order to establish respondents' understanding of the concept appraisal the researcher requested them to identify the definition. Table 4.22 illustrates that 24.9% (54) specified that appraisal is the act of making decisions on what records are to be created and how long they need to be kept to meet organizational accountability, 79.7% (173) stated it is the process of evaluating an organization's business activities to determine which records need to be created, captured into the recordkeeping systems and how long the records need to be kept, 92.6% (201) said it is the process of determining the records retention period according to their values, 20.3%(44) specified that it is the process of destroying the records and nobody specified any other definition or description of appraisal concept.

Table 4.22: Understanding of the appraisal concept (N=217)

UNDERSTANDING OF APPRAISAL CONCEPT	RESPONSES	
	NUMBER	PERCENTAGE
• Appraisal is the act of making decisions on what records are to be created and how long they need to be kept to meet organizational accountability	54	24.9
• Appraisal is the process of evaluating an organization's business activities to determine which records need to be created, captured into the recordkeeping systems and how long the records need to be kept	173	79.7
• It is the process of determining the records retention period according to their values	201	92.6
• it is the process of destroying the records	44	20.3

4.4.3.2 Medical records are appraised in the institutions

When the researcher enquired whether the medical records appraisal was being conducted in their institutions, 34.1% (74) said yes, 60.8% (132) said no and 5.1% (11) did not reply. The policy documents analysis shows that records appraisal was conducted during or before the creation of the medical records policy, since the policy also outlined the retention period for different categories of medical records.

4.4.3.3 Method of medical records appraisal in the institution

The respondents were also requested to identify on the list the methods of medical records appraisal. According to Figure 4.18, 37.8% (126) of respondents specified that when appraising records, the institution identified categories of medical records to be kept, 58.1% (126) said that during appraisal, records retention periods were determined for each category of medical records, 30.9% (67) specified that electronic records to be captured into the recordkeeping systems were identified with the retention period, 74.7% (162) said that records of long-term value and short-term value were identified, 26.7% (58) stated that ephemeral records were destroyed and archival value records were transferred to an archive repository; and no respondent specified any other activity not listed.

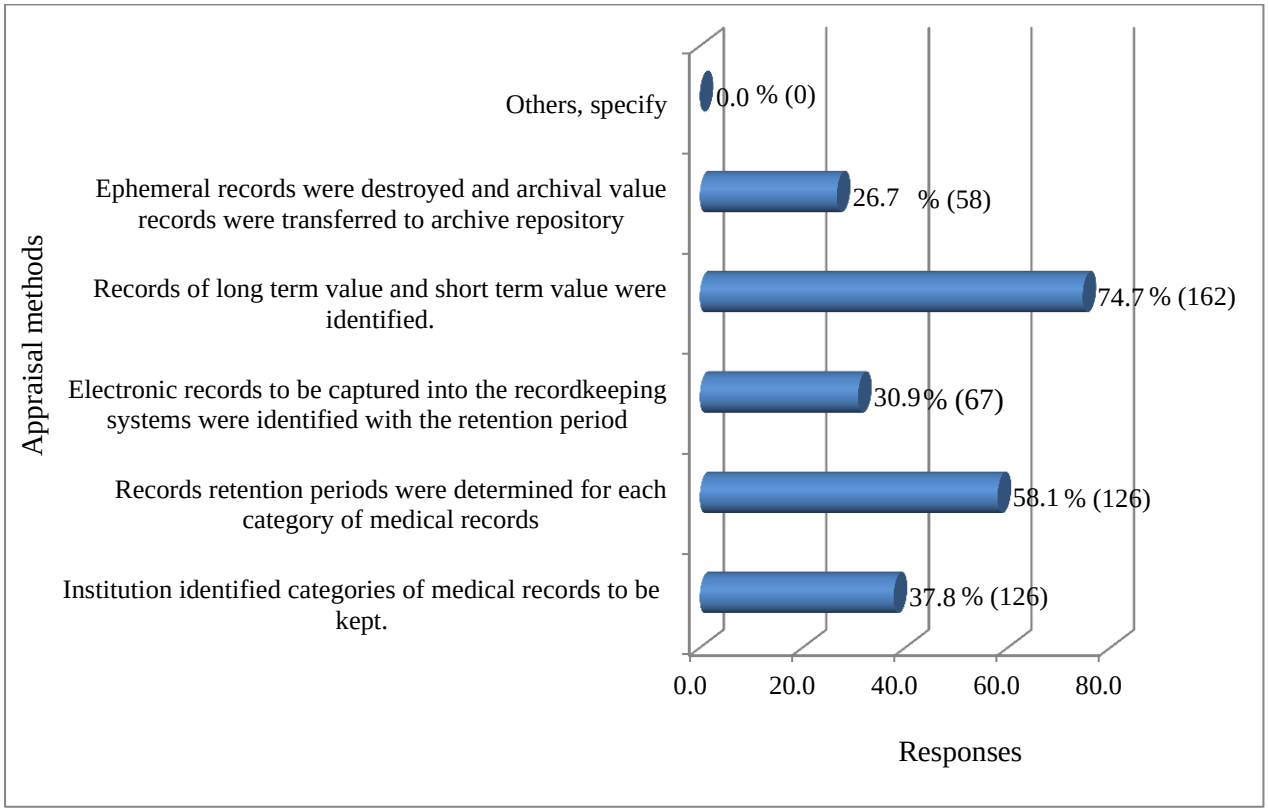

Figure 4.18: Appraisal methods for medical records (N=217)

4.4.3.4 The assignment of the retention period for all categories of medical records

Respondents were also requested to specify whether the institution has already assigned the retention period for all categories of medical records to establish the current affairs in terms of records appraisal. Out of all respondents, 24.9% (54) replied yes, 62.2% (135) replied no and 12.9% (28) did not reply to the question. Document analysis on medical records management policy

revealed that retention period was assigned for different categories of medical records as also confirmed through interview respondents.

4.4.3.5 Rating of medical records storage management and preservation

The respondents were also requested to rate medical records storages and preservation in their institutions by specifying whether they strongly agree, agree, unsure, disagree or strongly disagree with each of the statements listed in Table 4.24. To the statement that the medical records are well arranged and filed on the shelves according to the file numbers, 8.3% (18) strongly agreed, 22.6% (49) agreed, 11.1% (24) were unsure, 38.7% 84 disagreed and 19.4% (42) strongly disagreed. The observation in the records custody has shown that the records contained in the files that were also arranged in boxes, are well arranged on the shelves, except for the massive records files that were kept on the floor between shelves or filing cabinets due to inadequate filing space as also confirmed by the interview respondents. The statement that the temperature in the filing storages is controlled for the safety of the records was strongly agreed with by 3.7%(8), agreed with by 17.5% (38), disagreed with by 42.4% (92), strongly disagreed with by 33.2% (72), and 3.2% (7) were unsure of the answer. The observation showed that the temperature in the records storages was not properly or effectively controlled, because most of the institutions did not have air conditioners in their records custodies and those who had air conditioners were either not utilising them as required by the national archives policy because they were also working inside filing storages and their bodies needed a warm temperature during winter or, alternatively, air conditioners were not functional due to a lack of maintenance, as also confirmed through interview respondents.

However, the researcher also went further to establish whether all the paper records were kept inside folders/covers and boxes to avoid misfiling, to which 29% (63) strongly agreed, 44.2% (96) agreed, 3.7% (8) unsure, 15.2% (33) disagreed and 7.8% (17) strongly disagreed. The observation reported that medical records were best kept inside files/folders/covers and filed inside boxes, which were arranged on the shelves according to file numbers. The majority of hospitals used mobile filing cabinets, except for a few that were using static filing cabinets. Looking at the statement that the medical records files contents are well structured and arranged for easy monitoring and control of missing records (indexing and folio-numbering), 1.4% (3) strongly agreed, 7.8% (17) agreed, 0.9% (2) unsure, 53.9% (117) disagreed and 35.9% (78) strongly disagreed. The observation and medical records files analysis reported that the file contents were not visibly structured and were also not indexed and page numbered to ensure proper management of the file content. Different interview participants gave different responses but one participant

stated that “lack of file content structuring, indexing and numbering of pages was due to huge backlog and shortage of staff or high vacancy rate”.

Furthermore, 0.9% (2) strongly agreed, 7.8% (17) agreed, 11.1% (24) unsure, 56.2% (122) and 24% (52) strongly disagreed that the medical records are backed up with electronic records system for any disaster recovery. As also realised through system analysis electronic medical records management system did not provide backup for medical records for future recovery after disaster or file loss. Different interview participants gave different responses but one participant stated that “the records management system does not effectively back up the medical records, because although they had almost all required modules for proper paper-based records backup, it is only used to capture patients’ demographic data and billing information. Information relating to diagnosis, treatments, prescriptions and other related medical history is only captured in paper-based medical records”. Out of all respondents, 0.9% (2) strongly agreed, 7.4% (16) agreed, 5.1% (11) was unsure, 66.4% (144) disagreed and 20.3% (44) strongly disagreed with the statement that the electronic recordkeeping technology makes it easier to manage the records in their institution. As also realised from the workflow and medical records management activities observation, the records management system was not helpful in managing and/or tracking the file movement. Different interview participants gave different responses but one participant stated that “electronic recordkeeping technology is not making it easy for officials to manage the medical records in their institution since the system did not have the file tracking module applied or functional, but, instead, we use manual or paper-based medical records control registers”.

The other statement respondents responded to was that the medical recordkeeping buildings are purposely built for recordkeeping, to which 5.5% (12) strongly agreed, 9.7% (21) agreed, 6.5% (14) was unsure, 48.4% (105) disagreed and 30% (65) strongly disagreed. Medical recordkeeping buildings were not observed as looking like they were purpose-built, since some had water tabs and pipes crossing the storages and some, if not all, were too small in size to accommodate all the records generated every day as patients receive healthcare services. The most looked like they used to be used for something else in the past like consulting rooms, pharmacy or staff residence. When looking at the fact that the medical recordkeeping buildings are suitable for records custody, 1.4% (3) strongly agreed, 12.9% (28) agreed, 15.2% (33) unsure, 40.1% (87) disagreed and 30.4% (66) strongly disagreed. Due to the size, water taps and pipes crossing the storage, as well as the capacity, the storage was observed as not suitable for recordkeeping. Different interview

participants gave different responses but one participant stated that "we are not satisfied about the size or capacity of the medical records filing storages as well as the condition inside the storage".

On the other hand, 28.6% (62) respondents strongly agreed and 37.3% (81) agreed with the statement that the records custody is not easily accessible by unauthorised people, 2.8% (6) respondents was unsure, 19.4%(42) disagreed and 12%(26) strongly disagreed. As also observed, institutions had minimum safety and security measure for protection of records against thieves. Different interview participants gave different responses but one participant stated that "most of the medical records custodies had counters and some had glass partitions to assist patients or any other clients, and the doors had signs with "*Unauthorised access prohibited" or "Only records management staff allowed entry*". The only problem that could have made it possible for information thieves to break in was a lack of burglar-proofing at doors and windows in some institutions observed. The other statement replied to by respondents was that it is easy to retrieve records in custody, to which 8.8% (19) strongly agreed, 15.2% (33) agreed, 11.5% (25) were unsure, 34.6% (75) disagreed and 30% (65) strongly disagreed. The observation to the filing custodies was that due to congested filing custody it was not always easy for records management officials to retrieve or locate files in time as they struggled to locate whether the file was on the floor or in shelves.

When respondents rated the statement that there are registers or system to track when records are removed from the records custody, 12.4% (27) strongly agreed, 25.8% (56) agreed, 5.1% (11) was unsure, 33.2% (72) disagreed and 23.5% (51) strongly disagreed. The observation on the workflow reported that records were only tracked using a manual register when they were collected from the pharmacy for outpatients who collected medication and left the hospital and for patients wards who were discharged inpatients and taken back to filing custody .

The last statement responded to was that there are effective security measures for records in custody, to which 6.5% (14) strongly agreed, 14.3% (31) agreed, 3.7% (8) was unsure, 40.6% (88) disagreed and 35% (76) strongly disagreed. The observation reported that the security measures in the records custody was not effective due to a lack of the necessary security measures like burglar-proofing at windows and doors, inappropriate bating and fumigation, lack of disaster preventive, fighting and recovery measures like adequate fire extinguishers, water and smoke detectors and ventilation control equipment. A full report for this section is presented in Table 4.23.

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Table 4.23: Rating of management of the medical records storage and preservation of medical records (N=217)

MEDICAL RECORDS STORAGE AND PRESERVATION		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The medical records are well arranged and filed on the shelves according to the file numbers.	NO	18	49	24	84	42
	%	8.3	22.6	11.1	38.7	19.4
2) The temperature in the filing storages is controlled for safety of the records.	NO	8	38	7	92	72
	%	3.7	17.5	3.2	42.4	33.2
3) All the record are kept inside folders/covers and boxes to avoid misfiling.	NO	63	96	8	33	17
	%	29.0	44.2	3.7	15.2	7.8
4) The medical records files contents are well structured and arranged for easy monitoring and control of missing records (indexing and folio-numbering).	NO	3	17	2	117	78
	%	1.4	7.8	0.9	53.9	35.9
5) The medical records are backed up with electronic records system for any disaster recovery.	NO	2	17	24	122	52
	%	0.9	7.8	11.1	56.2	24.0
6) The electronic recordkeeping technology makes it easy to manage the records.	NO	2	16	11	144	44
	%	0.9	7.4	5.1	66.4	20.3
7) The medical recordkeeping buildings are purposely built for recordkeeping.	NO	12	21	14	105	65
	%	5.5	9.7	6.5	48.4	30.0
8) The medical recordkeeping buildings are suitable for records custody.	NO	3	28	33	87	66
	%	1.4	12.9	15.2	40.1	30.4
9) The records custody is not easily accessible for unauthorised people.	NO	62	81	6	42	26
	%	28.6	37.3	2.8	19.4	12.0
10) It is easy to retrieve records in the custody.	NO	19	33	25	75	65
	%	8.8	15.2	11.5	34.6	30.0
11) There are registers or system to track when records are removed from the records custody.	NO	27	56	11	72	51
	%	12.4	25.8	5.1	33.2	23.5
12) There are effective security measures for records in the custody.	NO	14	31	8	88	76
	%	6.5	14.3	3.7	40.6	35.0

NOTE: NO = Number % = Percentage

4.4.4 THE RECORDKEEPING TECHNOLOGY

The fourth objective of this study was to investigate the recordkeeping technology in the healthcare service delivery in terms of the management of electronic records systems and electronic system security. The findings from data collected based on this objectives are presented in this section.

4.4.4.1 Technology to manage medical records

The researcher also checked with respondents whether the institutions had any technology that was used in managing their medical records, to which 28.1% (61) said yes, 66.4% (144) said no and 5.5% (12) did not reply. According to observation and all interview participants, the only available system was used to capture patients' personal details and billing information rather than patients' file movement tracking and other records management related functional activities.

4.4.4.2 Electronic and manual medical records management technology

The study followed up to check whether the technology applied was manual or electronic and 3.7% (8) said electronic, 24.4% (53) said manual and 71.9% (156) did not reply. The majority of non-respondents seemed to be those who said there was no technology for medical records management in their institutions. Figure 4.19 illustrates the report. The observation showed that the records were mostly managed manually, except for the e-system used for billing and patients' personal information capturing and verifying the patients' number, which was also used as file unique number for filing of individual patients' files.

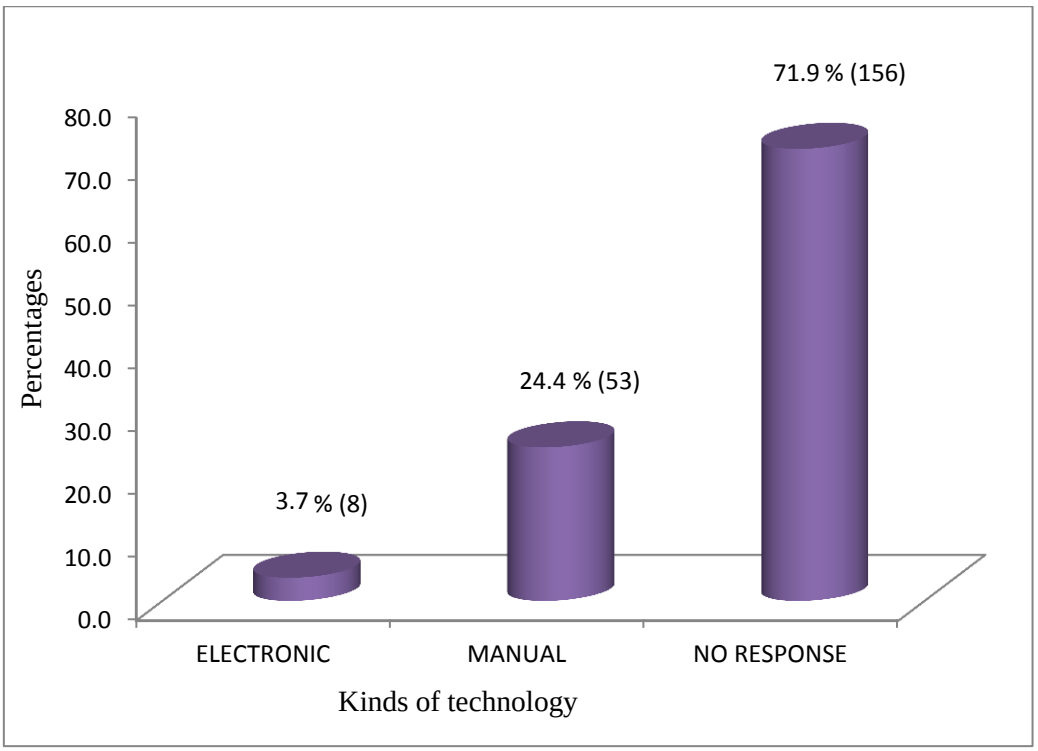

Figure 4.19: Usage of electronic or manual technology for management of medical records (N=217)

4.4.4.3 Contribution of electronic technology towards effective management of medical records

The respondents responded to the question of whether their current electronic technology contributed towards effective management of medical records in relation to records management operational and functional requirements throughout the record's life span. The response from 2.8% (6) was yes, 6% (13) no and 91.2% (198) did not reply. It is the researcher's assumption that the majority of those who did not reply were those who said there was no system for medical records management under sections 4.6.1 and 4.6.2. According to observation on the healthcare workflow, the electronic system did not help the institutions with the records management activities since records management functionalities or modules were never utilised. Different interview participants gave different responses but one participant stated that "the system does not backup the medical history of the patients, instead, only the paper-based records contained the patients' medical history". The report for this section is illustrated in Table 4.24.

Table 4.24: Electronic technology contribution towards effective management of medical records (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	6	2.8
No	13	6
No response	198	91.2

4.4.4.4 The system functionalities in relation to the records management operational and functional requirements

The respondents also replied to the fact that the medical records management system did not have functionalities to meet all records management operational and functional requirements throughout the life span (18% (39)), while 75.1% (163) said the system did have such functionalities and 6.9% (15) did not reply. The system analysis also showed that the system had almost all the records management functionalities, except for the scanning of the records created in a paper-based format.

4.4.4.5 Utilisation of records management system functionalities

The researcher also established whether all the records management system functionalities were being utilised effectively, to which 22.1% (48) said yes, 73.7% (160) said no and 4.1% (9) did not reply. The system analysis and observation reported that the system was not used effectively since there were other important e-system modules or functionalities for records management that were not active or implemented.

4.4.4.6 The rating of the electronic system

The researcher also requested the respondents to agree or disagree with the statements about the electronic records system used in their institution. The information is given in Table 4.25. To the statement that the system records storage capacity was adequate, 1.8% (4) strongly agreed, 8.8% (19) agreed, 6% (13) was unsure, 44.2% (96) disagreed and 39.2% (85) strongly disagreed. For the statement that the system has complete metadata required for records management, identification and retrieval, 5.5% (12) strongly agreed, 12.9% (28) agreed, 2.8% (6) was unsure, 42.4% (92) disagreed and 36.4% (79) strongly disagreed.

Furthermore, 3.2% (7) strongly agreed and 12.9% (28) agreed with the statement that the system metadata for records retrieval was adequate and user-friendly, while 0.9% (2) was unsure, 49.8%

(108) disagreed and 33.2% (72) strongly disagreed. On the other hand, 24% (52) respondents strongly agreed and 33.6% (73) agreed with the statement that the system has functionalities for records capturing, about which 7.4% (16) was unsure, 22.6% (49) disagreed and 12.4% (27) strongly disagreed. System analysis also reported that the system had functionality for records capturing, but it was not used or was inactive. The other statement that 10.1% (22) strongly agreed with, 12.9% (28) agreed with, 20.3% (44) was unsure about, 33.2% (72) disagreed with and 23.5% (51) strongly disagreed with was that the system has functionalities for records issuing and returning (circulation). Records circulation functionality was also available, but non-functional as per the system analysis results. Out of all respondents, 2.3% (5) strongly agreed and 0.9% (2) agreed to the statement that the system has functionalities for records disposal, 18.9% (41) was unsure, 61.8% (134) disagreed and 16.1% (35) strongly disagreed. Table 4.28 illustrates the report. The researcher never detected this functionality during the system analysis, except the functionality for deleting the records on the system.

When requested about whether the system had functionalities for scanning and capturing electronic documents that were created in paper-based format, 0.9% (2) strongly agreed, 0.5% (1) agreed, 3.2% (7) was unsure, 44.7% disagreed and 50.7% (110) strongly disagreed. The system analysis reported that there were no functionalities for scanning and imaging of the paper-based records in the system used. The other statement was to check whether the system had a functionality to create electronic records directly on the system, to which 8.3% (18) strongly agreed, 11.5% (25) agreed, 16.6% (36) was unsure, 41% (89) disagreed and 22.6% (49) strongly disagreed. The other statement was that the system had the ability to produce an audit trail for each record, to which 6.9% (15) strongly agreed, 10.1% (22) agreed, 11.1% (24) was unsure, 41.9% (91) disagreed and 30% (65) strongly disagreed. Table 4.25 illustrate the report.

The respondents were requested to also respond to the fact that the system functionalities were used effectively and out of all respondents, 5.1% (11) strongly agreed, 6.5% (14) agreed, 17.1% (37) was unsure, 42.9% (93) disagreed and 28.6% (62) strongly disagreed. The statement that records in the electronic system can be used as a backup for paper-based records was strongly agreed to by 8.3% (18) of respondents, 18% (39) agreed, 7.8% (17) unsure, 55.8% (121) disagreed and 10.1%(22) strongly disagreed. According to the system analysis results, if all the modules and functionalities can be activated and functional, the system may effectively backup the paper-based records but then they could not backup with most of the functionalities being inactive. Checking whether the electronic system was used to capture every piece of information about the administration and

treatment of the patients, 3.7% (8) strongly agreed, 10.1% (22) agreed, 18% (39) was unsure, 50.2% (109) disagreed and 18% (39) strongly disagreed. Table 4.25 illustrates the report. The system as analysed was only used for billing and capturing patients' personal information.

Looking at the statement that access to records in the system is effectively controlled 15.7% (34) strongly agreed, 37.8% (82) agreed, 14.3% (31) was unsure, 26.3% (57) disagreed and 6% (13) strongly disagreed. The system analysis reported that access to information in the system was protected through user password and username through which every system user was assigned a username and password, which they used to login to the system before using the system or accessing the information. Out of all respondents, 6% (13) respondents strongly agreed and 8.8% (19) agreed with the statement that the system is protected against any disaster, about which 23.5% (51) was unsure, 40.1% (87) disagreed and 21.7% (47) strongly disagreed. The statement that the records in the system are protected against any perils such as virus and spyware was strongly agreed to by 23% (50), 32.7% (71) agreed, 8.3% (18) was unsure, 24.4% (53) disagreed and 11.5% (25) strongly disagreed. Table 4.25 illustrates the report. The computers used and the server were installed with the System Center 2012 Endpoint Protection, Symantec™ Endpoint Protection and Symantec Network Access Control.

Table 4.25: The rating of the electronic system in the institution (N=217)

ELECTRONIC SYSTEM STATEMENTS		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1. The system records storage capacity is adequate.	NO	4	19	13	96	85
	%	1.8	8.8	6.0	44.2	39.2
2. The system has a complete metadata required for records management, identification and retrieval.	NO	12	28	6	92	79
	%	5.5	12.9	2.8	42.4	36.4
3. The system metadata for records retrieval is adequate and user friendly.	NO	7	28	2	108	72
	%	3.2	12.9	0.9	49.8	33.2
4. The system has functionalities for records capturing.	NO	52	73	16	49	27
	%	24.0	33.6	7.4	22.6	12.4
5. The system has functionalities for records issuing and returning (circulation).	NO	22	28	44	72	51
	%	10.1	12.9	20.3	33.2	23.5
6. The system has functionalities for records disposal.	NO	5	2	41	134	35
	%	2.3	0.9	18.9	61.8	16.1

ELECTRONIC SYSTEM STATEMENTS		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
7. The system has functionalities for scanning and capturing electronic documents that were created in a paper-based format.	NO	2	1	7	97	110
	%	0.9	0.5	3.2	44.7	50.7
8. The system has a functionality to create electronic records directly into the system.	NO	18	25	36	89	49
	%	8.3	11.5	16.6	41.0	22.6
9. System has the ability to produce audit trail for each record.	NO	15	22	24	91	65
	%	6.9	10.1	11.1	41.9	30.0
10. The system functionalities are effectively utilised.	NO	11	14	37	93	62
	%	5.1	6.5	17.1	42.9	28.6
11. Records in the electronic system can be used as a backup for paper-based records.	NO	18	39	17	121	22
	%	8.3	18.0	7.8	55.8	10.1
12. Electronic system is used to capture every piece of information about administration and treatment of the patients.	NO	8	22	39	109	39
	%	3.7	10.1	18.0	50.2	18.0
13. Access to records in the system is effectively controlled.	NO	34	82	31	57	13
	%	15.7	37.8	14.3	26.3	6.0
14. The system is protected against any disaster.	NO	13	19	51	87	47
	%	6.0	8.8	23.5	40.1	21.7
15. The records in the system are protected against any perils such as virus and spyware.	NO	50	71	18	53	25
	%	23.0	32.7	8.3	24.4	11.5

NOTE: NO = Number % = Percentage

4.4.4.7 The electronic records management system versus the records management functional requirements

The respondents were also asked whether the electronic records management system effectively met/served the records management functional requirements and 21.2% (46) replied yes, 62.7% (136) said no and 16.1% (35) did not reply to the question. The electronic records management system did not assist effectively in managing medical records since, according to observation, most of the key functionalities for records management were not covered.

4.4.5 THE STAFF CAPACITY, SKILLS AND COMPETENCIES FOR MANAGEMENT OF MEDICAL RECORDS

The fifth objective of this study was to establish staff capacity and competencies for management of medical records in the healthcare service delivery. Data was collected in the healthcare institutions and the relevant findings about staff capacity, skills and competencies are presented in this section.

4.4.5.1 The staff complement for records management

The researcher also established issues relating to the staff complement in the institution to identify shortage to cover medical records management functional activities. According to the findings, 26.7% (58) said yes the staff complement in the institution was adequate, 66.8% (145) said no and 6.5% (14) never responded. Figure 4.20 confirms the results.

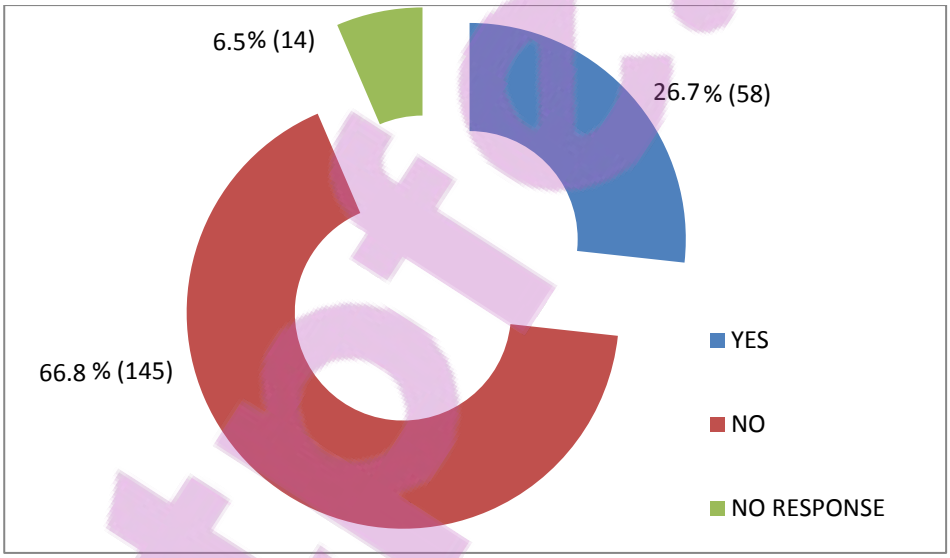

Figure 4.20: Records management staff complement is adequate (N=217)

4.4.5.2 The records management unit structure

The researcher established whether the records management unit was well structured in terms of the unit and reporting channels for further understanding. A total of 35.9% (78) replied yes, 57.1% (124) no and 6.9% (15) did not reply. According to the organisational organogram analysis, medical records management was headed by the administrative officer in the district hospitals and specialised hospitals who report to the records management deputy manager, supervised by the hospital CEO. In regional hospitals, the medical records management sub-unit was headed by the senior administrative officer reporting to the records deputy manager who was supervised by the

records manager under the CEO's supervision. In the provincial hospitals, the medical records management sub-unit was headed by the records deputy manager reporting to the records manager who was headed by the senior manager: corporate services under the CEO's supervision.

4.4.5.3 The records management unit placement on the organisational structure

The researcher also checked with respondents whether the records management unit was well placed in terms of the unit and reporting channels, to which 31.3% (68) said yes, 60.8% (132) stated no and 7.8% (17) did not reply, as also illustrated by Table 4.26. Different interview participants gave different responses but one participant stated that "we are using different staff structures from institution to institution. Therefore, some of the records management structures are mixed or merged with the information management sub-unit at management level and some are merged with the corporate services unit at management level". The other interview participant stated that " this create bias when it comes to budget and other resource allocation and prioritisation during planning, because records management is always treated as the last priority and allocated little or no resources. This is because some of the institutions are still using the old staff structure, which is integrating information and records management at executive management level, simply because the manager or deputy manager is heading both information management and records management as sub-units".

Table 4.26: Records management unit is well placed in terms of the unit and reporting channels (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	68	31.3
No	132	60.8
No response	17	7.8

4.4.5.4 The highest level of general educational qualification

The study established that, in terms of general highest level of qualifications, 34.1% (74) of respondents attained a certificate as the highest qualification, 17.5% (38) a higher certificate, 19.8% (43) a diploma, 12% (26) an undergraduate degree, 3.2% (7) an honours degree, 1.4% (3) a master's degree, 0% (0) a doctoral degree and 12% (26) did not reply to the question. Figure 4.21 presents the findings.

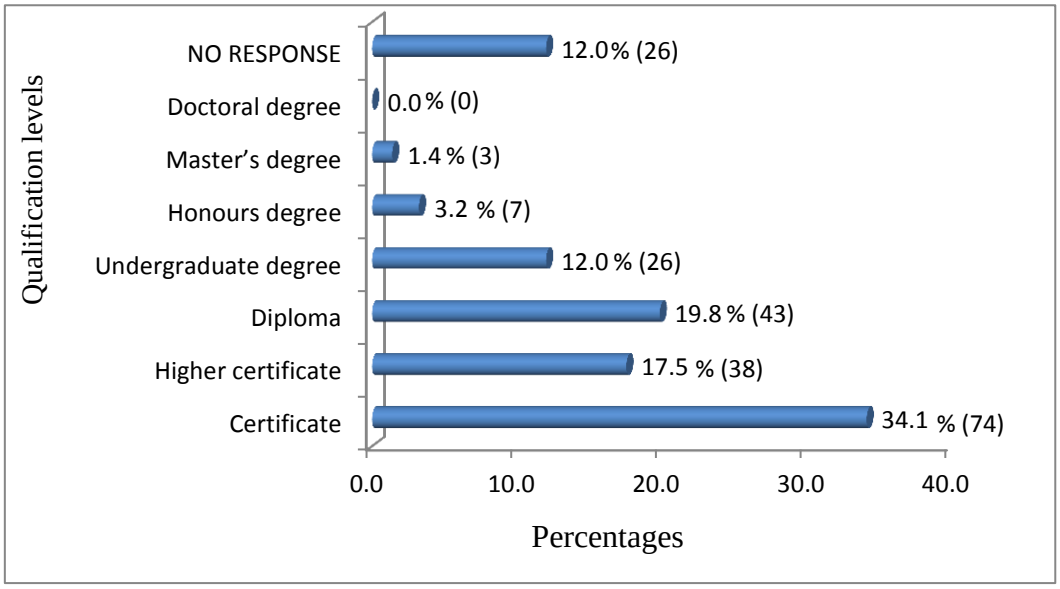

Figure 4.21: Respondents' highest level of general educational qualifications (N=217)

4.4.5.5 The highest levels of records management qualifications achieved

In terms of the highest level of records management qualifications achieved, 61.3% (133) said they attained a certificate, 12.4% (27) a higher certificate, 3.7% (8) a diploma, 6.5% (14) an undergraduate degree, 0.5% (1) an honours degree, 0% (0) a master's degree, 0% (0) a doctoral degree and 15.7% (34) did not answer the question. This is illustrated in Table 4.27.

Table 4.27: Respondents' highest level of records management qualifications achieved (N=217)

HIGHEST LEVEL OF RECORDS MANAGEMENT QUALIFICATIONS ACHIEVED	RESPONSES	
	NUMBER	PERCENTAGE
• Certificate	133	61.3
• Higher certificate	27	12.4
• Diploma	8	3.7
• Undergraduate degree	14	6.5
• Honours degree	1	0.5
• Master's degree	0	0
• Doctoral degree	0	0
• No Response	34	15.7

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4.4.5.6 The highest level of certificate qualification in records management achieved

Looking at the highest level of certificate qualification in records management achieved, 79.3% (172) achieved basic, 16.1% (35) intermediate, 2.8% (6) advanced and 1.8% (4) did not reply to the question. The report is consolidated in Figure 4.22.

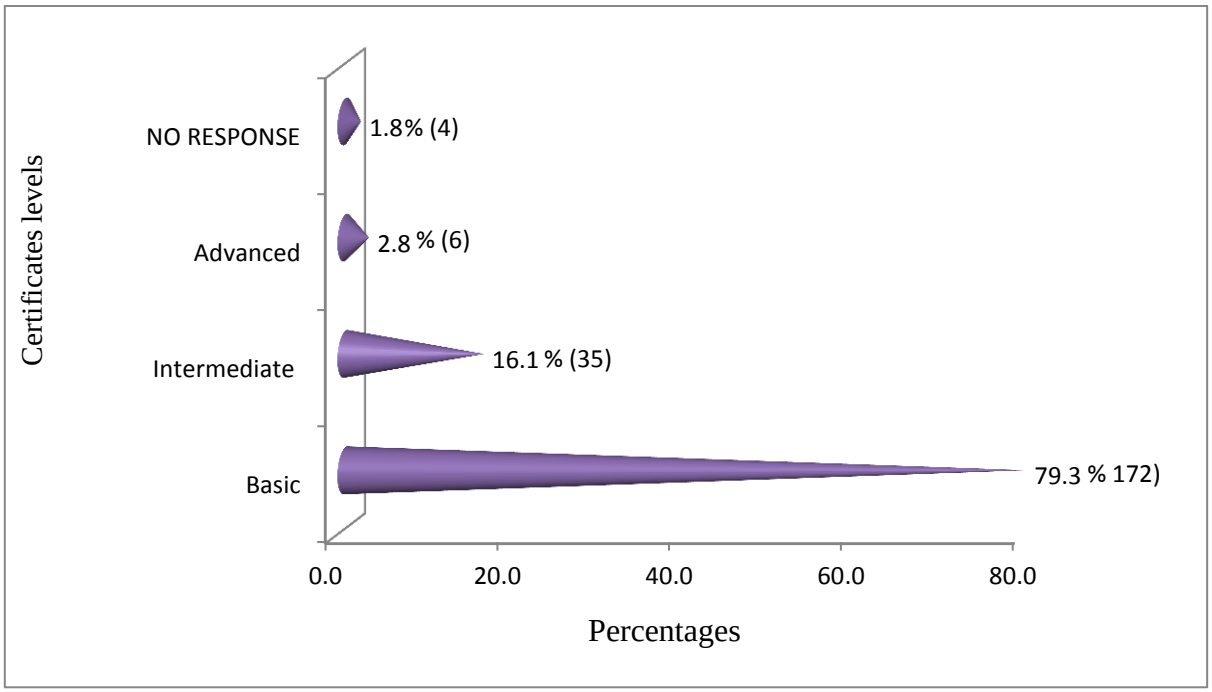

Figure 4.22: Respondents' highest level certificate qualifications in records management (N=217)

4.4.5.7 The in-house records management training and workshops

The researcher also established whether the institutions were conducting in-house records management training and workshops. Out of all respondents 35.9% (78) said yes, 56.7% (123) said no and 7.4% (16) did not reply.

4.4.5.8 The in-house records awareness workshop

When the researcher established whether the institution was conducting in-house records awareness workshop to all staff in the institution, 22.1% (48) answered yes, 70% (152) no and 7.8% (17) did not answer. According to the document analysis on records management inspection reports most, if not all of the hospitals, were not conducting in-house records awareness workshop in their institution.

4.4.5.9 The in-house records awareness training and workshops are conducted regularly

The researcher also established whether the in-house records awareness training and workshops are conducted regularly and, to that, 2.8% (6) said yes, 32.3% (70) said no and 65% (141) did not reply. Those who did not reply possibly included respondents who said in-house records awareness training and workshops were not being conducted. This report is illustrated in Figure Table 4.28.

Table 4.28: The in-house records awareness training and workshops are conducted regularly (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	6	2.8
No	70	32.3
No response	141	65

4.4.5.10 Medical records management experience

Looking at medical records management work experience, 3.7% (8) said they had Less than 1 years' experience, 14.7% (32) had 1 to 2 years' experience, 46.1% (100) had 3 to 5 years' experience, 25.3% (55) had more than 5 years' experience, whereas 10.1% (22) did not answer the question. Figure 4.23 illustrates the report.

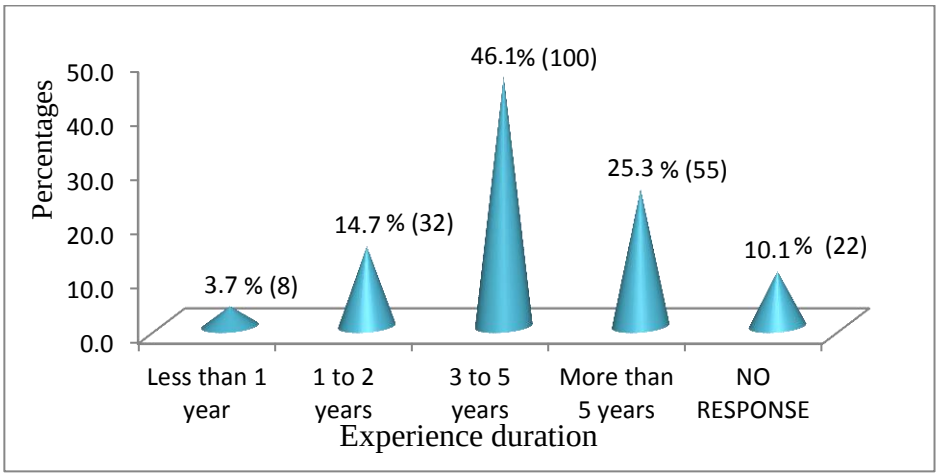

Figure 4.23: Respondents' medical records management experience (N=217)

4.4.5.11 Records management work experience in general

The records management experience in general was also established, to which 5.1% (11) respondents responded that they have less than 1 years' experience, 18% (39) said they had 1 to 2

years' experience, 48.8% (106) stated that they had 3 to 5 years' experience, 26.3% (57) had more than 5 years' experience and 1.8% (4) did not answer the question. Table 4.29 illustrates.

Table 4.29: Respondents records management experience in general (N=217)

RECORDS MANAGEMENT EXPERIENCE IN GENERAL	RESPONSES	
	NUMBER	PERCENTAGE
• Less than 1 year	11	5.1
• 1 to 2 years	39	18
• 3 to 5 years	106	48.8
• More than 5 years	57	26.3
• No Response	4	1.8

4.4.5.12 Electronic records management work experience

Looking at the electronic records management work experience, 85.7% (186) stated they did not have any experience in electronic records management, 1.8% (4) stated they had less than 1 years' experience, 1.4% (3) stated 1 to 2 years' experience, 0.5% (1) said 3 to 5 years' experience, 0% (0) said more than 5 years' experience and 10.6% (23) did not answer the question. Figure 4.24 illustrates the report in full.

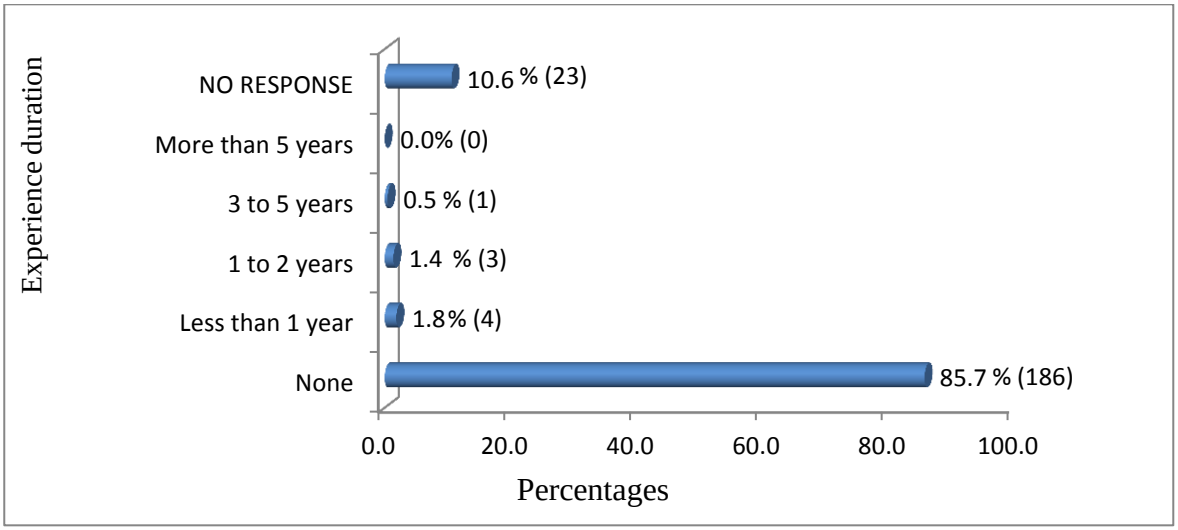

Figure 2.24: Respondents' electronic records management experience (N=217)

4.4.5.13 Rating of skills and competencies

Respondents were also requested to state whether they strongly agreed, agreed, were unsure, disagreed or strongly disagreed with certain statements about their skills and competencies. Out of all respondents 7.8%, (17) strongly agreed that they were familiar with and can implement the principles of records management, 24% (52) agreed, 6% (13) was unsure, 35.5% (77) disagreed and 26.7% (58) strongly disagreed. To the statement that they can manage medical records throughout its life span 17.5% (38) strongly agreed, 19.4% (42) agreed, 5.1% (11) was unsure, 31.3% (68) disagreed and 26.7% (58) strongly disagreed. When asked whether they can effectively manage medical records electronically throughout its life span 3.7% (8) strongly agreed, 14.3% (31) agreed, 18.4% (40) was unsure, 34.1% (74) disagreed and 29.5% (64) strongly disagreed. The respondents were also asked if they have adequate experience in electronic records management, to which 2.8% (6) stated strongly agree, 15.7% (34) agree, 13.8% (30) was unsure, 33.2%(33.2) disagreed and 34.6% (75) strongly disagreed. The last statement responded to by respondents was that they were competent and skilled for all records management operational and functional requirements, to which 13.4% (29) strongly agreed, 24% (52) agreed, 5.5% (12) was unsure, 29% (63) disagreed and 28.1% (61) strongly disagreed. The report is illustrated in Table 4.35.

Table 4.30: Rating of skills and competencies (N=217)

SKILLS AND COMPETENCIES		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) I am familiar with and can implement the principles of records management.	NO	17	52	13	77	58
	%	7.8	24.0	6.0	35.5	26.7
2) I can manage medical records throughout its life span.	NO	38	42	11	68	58
	%	17.5	19.4	5.1	31.3	26.7
3) I can effectively manage medical records electronically throughout its life span.	NO	8	31	40	74	64
	%	3.7	14.3	18.4	34.1	29.5
4) I have adequate experience in electronic records management.	NO	6	34	30	72	75
	%	2.8	15.7	13.8	33.2	34.6
5) I am competent and skilled for all records management operational and functional requirements.	NO	29	52	12	63	61
	%	13.4	24.0	5.5	29.0	28.1

NOTE: NO = Number % = Percentage

4.4.6 READINESS FOR IMPLEMENTATION OF ENTERPRISE CONTENT MANAGEMENT

The sixth objective of this study was to assess the healthcare institutions' readiness for implementation of ECM as a modern electronic records management system. Findings from respondents' feedback on this objective are presented in this section.

4.4.6.1 The meaning of ECM

Respondents were also tested on whether they understood the meaning of the acronym ECM, with the purpose of ensuring that they respond based on the correct knowledge and understanding. Out of all the respondents 12.9% (28), replied that ECM is a collaborative electronic system, 24% (52) said is the electronic system that integrates other business activities into the business process, 63.1% (137) said it is a strategy that is made up with a set of software products to manage all types of enterprise content throughout its entire life cycle; and none of the respondents specified any other meaning. The report is fully illustrated by Figure 4.25.

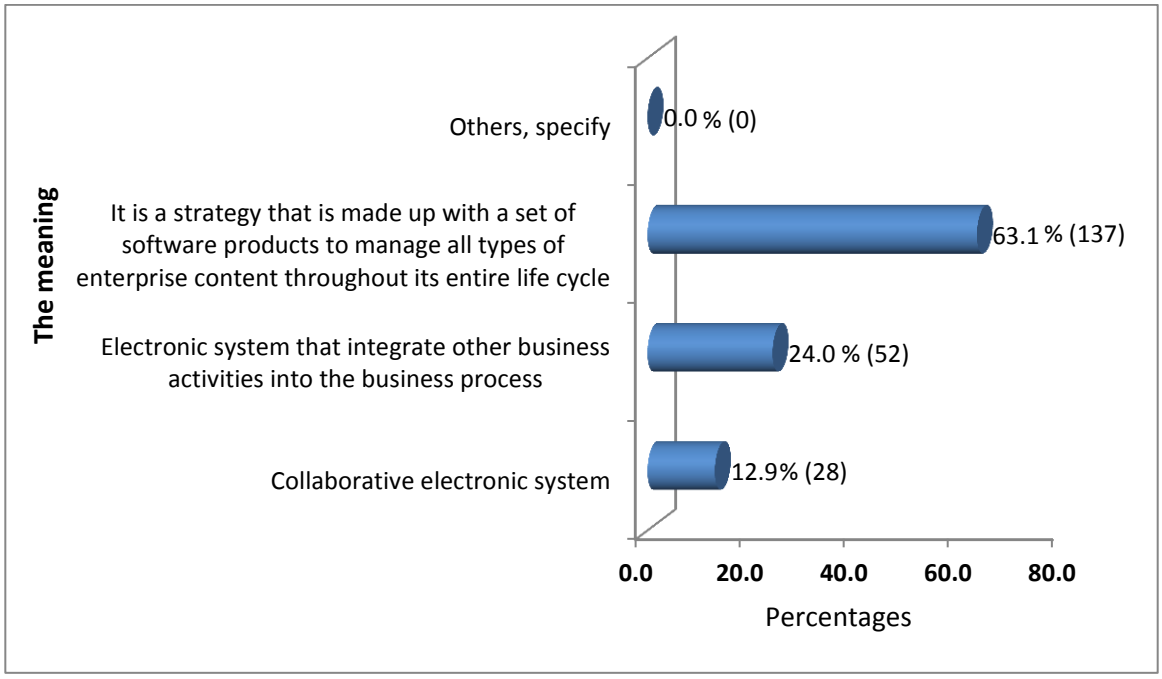

Figure 4.25: The meaning of ECM (N=217)

4.4.6.2 The indicators of ECM readiness

Respondents were further requested to identify the indicators of ECM, and responses from 51.2% (111) were migration of ERDMS to the web content, 28.6% (62) said it is the introduction of improved add-ons such as web content management tools, e-mail integration and

workflow/business process management to cover the application and development of EDRMS, 9.7% (21) a collective business processes management approach, 15.2% (33) said it covers many other components including knowledge management and no one specified other indicators. Table 4.31 illustrates the report in full.

Table 4.31: The indicators of ECM readiness (N=217)

INDICATORS OF ECM READINESS	RESPONSES	
	NUMBER	PERCENTAGE
• Migration of ERDMS to the web content	111	51.2
• The introduction of improved add-ons such as web content management tools, e-mail integration and workflow/business process management to cover the application and development of EDRMS	62	28.6
• A collective business processes management approach	21	9.7
• Covers many other components including knowledge management	33	15.2

4.4.6.3 The implementation of ECM as a modern e-records management system in the institution

When checking whether the institutions are already implementing ECM as a modern e-records management system, 4.1% (9) replied yes, 83.4% (181) said no and 12.4% (27) did not respond to the question. According to observation, the only system used for medical records management is called PHIS or eHIS and no ECM system existed in the institution.

4.4.6.4 The institutional readiness for the implementation of ECM

Respondents were also requested to specify whether the institution was ready for the implementation of ECM if it was not yet implemented, and to that 58.1% (126) said yes, 26.7% (58) said no and 15.2% (33) did not reply to the question, as indicated in Figure 4.26. The researcher observed that there were several computers at the patients' administrative helpdesks, but in some institutions' consulting rooms, helpdesks and other stations it was observed that there were no computers.

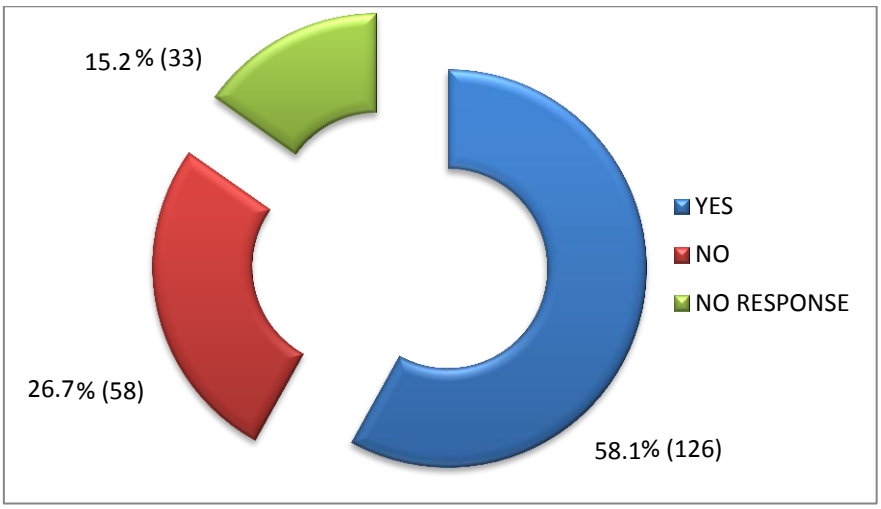

Figure 4.26: The institutions' readiness for the implementation of ECM (N=217)

4.4.6.5 ECM necessity and relevance for the institution

The study sought to ascertain whether respondents found the ECM necessary and relevant for the institution and, to that, 75.1% (163) said yes, 14.3% (31) said no and 10.6% (23) did not reply. Table 4.32 illustrates the findings.

Table 4.32: ECM is necessary and relevant for the institution (N=217)

RESPONSES	NUMBER	PERCENTAGE
Yes	163	75.1
No	31	14.3
No response	23	10.6

4.4.6.6 Improvements that ECM can bring to the institutions if properly implemented

The respondents were also requested to state what they considered the improvements that ECM can bring to the institution if properly implemented. The following were identified by respondents:

- Easy retrieval of records 74.7% (162),
- Electronic usage of records online 60.8% (132),
- One record can be accessed by many people at the same time 68.7% (149),
- Easy business continuity 57.1% (124),
- Provision of timely, accurate, trustworthy and complete records84.8% (184),
- Effective records security throughout the life span 54.4% (118),
- Access to quality data and information 60.8% (132),

- Compliance with legislative framework 49.3% (107), and
- Creation of reliable knowledge at all stages of the life span 37.3% (81).

4.4.6.7 Availability of the electronic records management requirements for ECM system implementation

Respondents were also requested to rate availability of relevant electronic records management requirements for effective implementation of the ECM system from very good to very poor, with the purpose of confirming the readiness. When checking availability of computers, 5.5% (12) said it is very good, 14.3% (31) good, 1.8% (4) was unsure, 45.2% (98) poor and 33.2% (72) very poor. According to observation, there seemed to be several computers in almost all the hospitals but interview participant confirmed that "we do not have enough IT equipment like computers and printers in the hospital". Availability of computer equipment such as printers was rated very good by 4.1% (9), good by 9.2% (20), 2.8% (6) was unsure, poor by 60.4% (131) and very poor by 23.5% (51). The computer printers were also available, but not enough, and some resources like toners were not adequate. Looking at the issues relating to availability of servers, 22.1% (48) said was very good, 46.5% (101) good, 6.5% (14) unsure, 15.2% (33) poor and 9.7% (21) very poor. Each institution had at least one server for the medical records management system, PHIS, although interviews participant stated that "the system capacity was not enough as it was frequently down". For availability of computer networks, 10.1% (22) of respondents said was very good, 18.9% (41) good, 12.9% (28) unsure, 41.0% (89) poor and 17.1% (37) very poor. The network was observed to be inadequate since not all computers were connected in some institutions and some service points did not have network points. Table 4.33 presents the entire report.

Furthermore, the study looked at the availability of the internet connection and 5.5% (12) of respondents said was very good, 8.8% (19) good, 9.7% (21) unsure, 48.8% (106) poor, and 27.2% (59) very poor. As also observed Interview participant reported that "the internet is not effective since it is frequently down and continuously processing slow". The internet website availability was very good according to 20.3% (44), good to 37.8% (82), poor to 26.3% (57), very poor to 12% (26), and 3.7% (8) respondents was unsure. Table 4.33 presents the entire report.

According to the website analysis, the website looks to be well designed and well structured, but the information and structure of the website seem to be centralised at the provincial Department of Health and there are no links to promote the institutions and their services. Instead, the website just listed the names of the institutions with the contact details and addresses. Interview participants

gave different responses but one participant also reported that "the website is frequently down, freezing and responding slow during browsing and documents downloading", which was also the researcher's experience when he tested the website.

According to 17.1% (37) respondents, the budget availability was very poor, poor to 63.6% (138), good to 9.7% (21), very good to 0.9% (2) and 8.8% (19) was unsure of the status. No respondent specified any other kind of elements to rate availability as also illustrated in Table 4.33.

Table 4.33: Rating of availability of the electronic records management requirements for effective implementation of ECM system (N=217)

ELECTRONIC RECORDS MANAGEMENT REQUIREMENTS FOR ECM	AVAILABILITY RATINGS									
	VERY GOOD		GOOD		UNSURE		POOR		VERY POOR	
	76-100%		51-75%				21-50%		Less than 25%	
	NO	%	NO	%	NO	%	NO	%	NO	%
1) Computers	12	5.5	31	14.3	4	1.8	98	45.2	72	33.2
2) Computer equipment, e.g. Printers	9	4.1	20	9.2	6	2.8	131	60.4	51	23.5
3) Servers	48	22.1	101	46.5	14	6.5	33	15.2	21	9.7
4) Networks	22	10.1	41	18.9	28	12.9	89	41.0	37	17.1
5) Internet connection	12	5.5	19	8.8	21	9.7	106	48.8	59	27.2
6) Internet website	44	20.3	82	37.8	8	3.7	57	26.3	26	12.0
7) Budget/funds	2	0.9	21	9.7	19	8.8	138	63.6	37	17.1

NOTE: NO = Number % = Percentage

4.4.6.8 Responsible person for implementation of ECM

Respondents also attended to the question seeking provision of the relevant responsible person for implementation of ECM, as also reported in Figure 4.27. To that question 50.2% (109) said the records manager, 88% (191) said the chief executive officer, 93.1% (202) said the head of department and 44.7% (97) said the MEC was the relevant responsible person for implementation of the ECM.

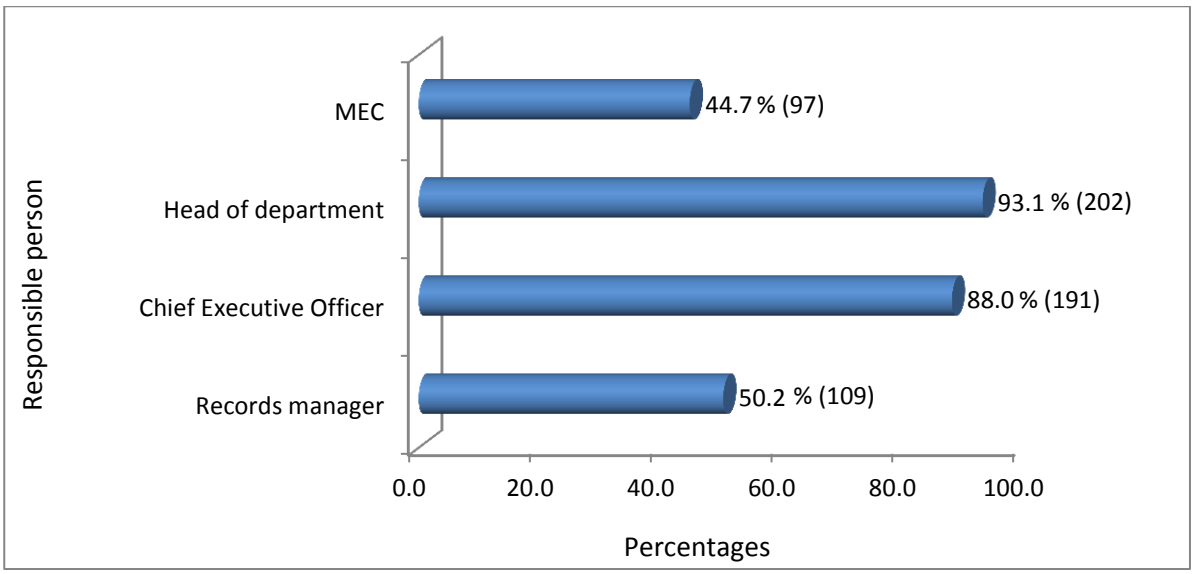

Figure 4.27: Responsible person for implementation of ECM (N=217)

4.4.7 PROPOSED FRAMEWORK TO FACILITATE MEDICAL RECORDS MANAGEMENT PRACTICE IN THE PUBLIC HOSPITALS

The seventh objective of this study was to propose a framework that can facilitate medical records management practice in the public hospitals. Findings from respondents' feedback about this objective are presented in this section.

4.4.7.1 The medical record management framework as an enabler for properly management of medical records

The study established from the respondents whether the current medical record management framework is effectively enabling the institution to manage medical records properly. Out of all respondents, 18% (39) replied yes, the current medical record management framework is effectively enabling the institution to manage medical records properly, 71.9% (156) said no and 10.1% (22) did not answer the question. The observation reported that the current medical records management framework was not effectively enabling the institution to manage medical records properly since there were no effective tracking system and not all records management functionalities were implemented fully. The electronic system was also not in place and, among other challenges; patients were carrying their files on the workflow, which sacrifices the security of records. Patients' queue control was also chaos in the hospitals since patients always complained about long waiting times and some people being assisted before the others.

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According to the observation and staff structure document analysis report, the Limpopo Department of Health used the combined model of records management since every hospital had their own records management structures headed by either a manager or a deputy manager for records management, depending on the size or type of hospital. For instance, district hospitals and specialised hospitals were headed by the deputy managers reporting to the chief executive officer (CEO), while regional hospitals and provincial hospitals were headed by the managers reporting to the senior manager for corporate services. The other records management structures were based at the provincial office headed by the senior manager for records management reporting to the general manager of information communication technology (ICT)/government information technology officer (GITO), and at the district office they were headed by the manager reporting to the district executive manager. However, only the day-to-day records management activities were decentralised to the hospital, and the provincial office centralised tasks such as development and implementation of policies, procedures, norms and standards. Head office also monitored and evaluated performance of institutions, in line with these policies and procedure. They also conducted training of records management staff who must in turn train their co-workers at the hospitals. The districts also play a role of training and monitoring their respective healthcare institutions, although they are also in charge of the records produced by the district and the clinics.

4.4.7.2 Rating of the current medical records management system framework

Respondents were also requested to rate the current medical records management system framework at their institutions as in Table 4.34. The statement that the framework enables records safety and security from creation to disposal in its life cycle was strongly disagreed to by 34.1% (74), disagreed to by 44.7% (97), agreed to by 6.5% (14), strongly agreed to by 3.2% (7) and 11.5% (25) was unsure. The observation reported that the framework lacked a records backup and file tracking function, especially at the records creation stage. On the other hand, 65% (141) disagreed to the statement that the framework system detected when records were created, 9.2% (20) strongly disagreed, 15.2% (33) was unsure, 9.7% (21) agreed, and 0.9% (2) strongly agreed. The system analysis and framework observation reported that the system framework did not detect record creation since records were created manually in the absence of the records management officials to control the recording of the newly created records. Looking at the statement that the framework system gives the records manager an audit trail about the records from the date of creation to the current date, 65% (141) disagreed, 21.7% (47) strongly disagreed, 7.4% (16) was unsure, 4.1% (9) agreed and 1.8% (4) strongly agreed. The system was not able to give a records audit trail since it

was incapable of tracking medical files movement, creation, disposal and any other records management functional activity.

Furthermore, 6% (13) strongly agreed to the statement that the medical records management framework was collaborated or integrated into the workflow, 14.3% (31) agreed, 43.8% (95) disagreed, 23% (50) strong disagreed and 12.9% (28) was not sure whether to agree or disagree. As also observed, the medical records management framework was not integrated to the healthcare service delivery workflow. Interview participants gave different responses but one participant also reported that "there is no medical records management technique on the workflow because, during the business process, medical records are moved through the hands of the patient from one healthcare service station to the other". The other participant stated that "again, in the consulting rooms and wards records management staff is not sure about what might be happening with the records since they are handled in their absence and there is no electronic system to track and inform them regularly as required about new records created and type of records contained in the files". The fact that the medical records management framework uses an electronic system in the institution was disagreed to by 50.7% (110), strongly disagreed to by 34.6% (75), agreed to by 5.1%(11), strongly disagreed by 2.8% (6) and 6.9% (15) was unsure. The observation was that the medical records management framework was not using the e-system since the system was not able to track file movements and/or cover many other records management functionalities and was also not capable of capturing records metadata and/or records scanned images. This was the reason why the system could not provide the records' audit trail.

Nevertheless, 5.5% (12) strongly agreed, 9.7% (21) agreed, 6.5%(14) was unsure, 59% (128) disagreed and 19.4%(42) strongly disagreed with the statement that medical records on the framework were managed using the business administration system. The observation reported that the business electronic system was not being used for medical records management, but instead to capture the personal details and billing of patients. Respondents also strongly agreed (3.2% (7)), agreed (7.4% (16)), were unsure (1.8% (4)), disagreed (49.8% (108)) and strongly disagreed (37.8% (82)) with the statement that records were only handled by officials rendering a business service on the framework, but not the clients. The observation reported that on the workflow, patients' moved with their medical records from service point to service point during healthcare service delivery.

Furthermore, out of all respondents, 0.9% (2) strongly agreed, 7.8% (17) agreed, 3.7%(8) was unsure, 52.1% (113) disagreed and 35.5% (77) strong disagreed with the statement that records

were created and managed electronically on the business process. As also observed, medical records were not created or managed electronically in their healthcare institutions. Interview participants gave different responses but one participant also reported that "medical records are not managed electronically in the healthcare institutions, besides the fact that the system is used to capture personal information and billing data per se, instead not to track paper records' movement and provide an audit trail". Looking at the statement that records were created manually and managed using the business administration system, 12.9% (28) strongly agreed, 10.6% (23) agreed, 9.7% (21) was unsure, 40.6% (88) disagreed and 26.3% (57) strongly disagreed. As also observed records were not created manually and managed using the business administration system. Interview participants gave different responses but one interview participant confirmed that "the only aid provided by the system for medical records management is the patient's unique number that is also generated or created automatically by the system during first visit of the patient to the healthcare facility. This number is also used as a filing number for medical records and is usually verified through the system before records practitioners go to the shelves for files retrieval". According to the observation, records were created manually and were also managed manually. Moreover, 22.1% (48) strongly agreed, 49.8% (108) agreed, 6.9% (15) was unsure, 14.3% (31) disagreed and 6.9% (15) strongly disagreed to the statement that records were created manually and were managed using a manual system on the business process. The report is presented in Table 4.34. The observation supported the statement that medical records were created manually and managed using a manual system on the business process. Different Interview participants gave different responses but one participant also reported that "everything is still done following paper manual process here, no computer is used for any of our records management activities".

Table 4.34: Rating of the current medical records management system framework (N=217)

MEDICAL RECORDS MANAGEMENT SYSTEM FRAMEWORK		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The framework enables records safety and security from creation to disposal in its life cycle	NO	7	14	25	97	74
	%	3.2	6.5	11.5	44.7	34.1
2) The framework system detect when records are created	NO	2	21	33	141	20
	%	0.9	9.7	15.2	65.0	9.2
3) The framework system gives the records manager an audit trail about the records from the date of creation to the current date	NO	4	9	16	141	47
	%	1.8	4.1	7.4	65.0	21.7

MEDICAL RECORDS MANAGEMENT SYSTEM FRAMEWORK		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
4) The medical records management framework is collaborated or integrated into the workflow	NO	13	31	28	95	50
	%	6.0	14.3	12.9	43.8	23.0
5) The medical records management framework utilise electronic system	NO	6	11	15	110	75
	%	2.8	5.1	6.9	50.7	34.6
6) Medical records on the framework are managed using the business administration system	NO	12	21	14	128	42
	%	5.5	9.7	6.5	59.0	19.4
7) Records are only handled by business rendering officials on the framework, but not the clients	NO	7	16	4	108	82
	%	3.2	7.4	1.8	49.8	37.8
8) Records are created and managed electronically on the business process	NO	2	17	8	113	77
	%	0.9	7.8	3.7	52.1	35.5
9) Records are created manually and managed using the business administration system	NO	28	23	21	88	57
	%	12.9	10.6	9.7	40.6	26.3
10) Records are created manually and managed using a manual system	NO	48	108	15	31	15
	%	22.1	49.8	6.9	14.3	6.9

NOTE: NO = Number % = Percentage

4.4.8 UNDERSTANDING OF THE RELATIONSHIP BETWEEN MEDICAL RECORDS MANAGEMENT AND HEALTHCARE SERVICE DELIVERY

The eighth objective of this study was to assess the understanding of the relationship between medical records management and provision of healthcare service. Answers to questions relating to this objective are presented in this section.

4.4.8.1 Relationship between medical records management and provision of healthcare service

It was also confirmed by 73.3% (159) respondents who said that there was a relationship between medical records management and provision of healthcare service, 18.9% (41) said no and 7.8% (17) did not reply. Figure 4.28 illustrates the report. Interview participants gave different responses but one participant also reported that “there is indeed a relationship between medical records management and healthcare service delivery since medical records always have to be utilised by the

healthcare service providers for both reference to previous medical history and/or recording of the current medical condition observed, treatments, prescriptions and diagnosis without which healthcare may not be rendered to patients".

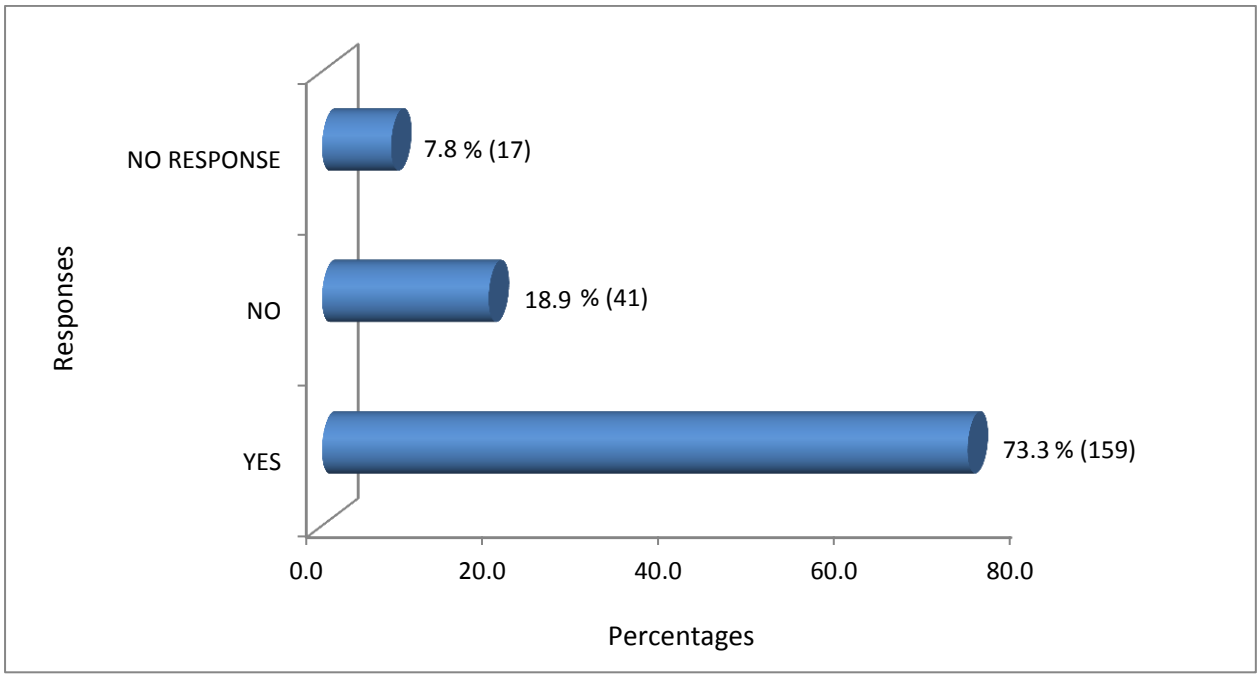

Figure 4.28: Existence of the relationship between medical records management and provision of healthcare service (N=217)

4.4.8.2 Medical records management negative impact on healthcare service delivery

The study also checked with respondents as to whether medical records management impacted negatively on healthcare service delivery, to which 60.8% (132) said yes, 27.2% (59) no and 12% (26) did not answer. Interview participants gave different responses but one participant also reported that "frequent cases of missing files due to inadequate filing space in records custodies negatively affected healthcare services since, in some instances, doctors are not able to help the patients with healthcare service without medical background contained in the missing files".

4.4.8.3 The causes of the negative impact of medical records management on service delivery

Respondents were also requested to give an idea about what they consider to be the causes of the negative impact of medical records management on service delivery and the following were their answers:

- Ineffective electronic system (63.6% (138)),
- Inappropriate medical records management (74.7% (162)),

- Shortage of filing space (94.9% (206)),
- Improper medical records filing due to lack of space (91.2% (198)),
- Lack of appropriate records management resources (67.7% (147)),
- Ineffective records management framework (66.4% (144)),
- Long turnaround time for file retrieval (86.6% (188)), and
- Missing or lost files (93.5% (203)).

4.4.8.4 The rate of the impact of medical records management on the healthcare service delivery

The respondents were also requested to rate the impact of medical records management on the healthcare service delivery by agreeing or disagreeing with certain statements relating to the impact of medical records management on the healthcare service delivery. The first statement was that poor medical records management may cause the medical professional to render the wrong or poor healthcare service, to which 40.1% (87) strongly agreed, 41.9% (91) agreed, 7.8% (17) was unsure, 8.3% (18) disagreed and 1.8% (4) strongly disagreed. The other statement was that inaccessibility or unavailability of medical records may disable the medical professional from continuing to render a healthcare service, to which 35.9% (78) strongly agreed, 48.8% (106) agreed, 6% (13) was unsure, 6% (13) disagreed and 3.2% (7) strongly disagreed.

Furthermore, 51.6% (112) strongly agreed, 43.3% (94) agreed, 2.8% (6) was unsure, 1.8% (4) disagreed and 0.5% (1) strongly disagreed with the statement that medical records help the healthcare professionals with the information about the patient medical history. On the other hand, 26.7% (58) strongly agreed, 44.2% (96) agreed, 7.4% (16) was unsure, 13.4% (29) disagreed and 8.3% (18) strongly disagreed to the statement that medical records contain information that ensures smooth healthcare business continuity. With the statement that medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward, 26.3% (57) strongly agreed, 45.2% (98) agreed, 12.4% (27) was unsure, 9.7% (21) disagreed and 6.5% (14) strongly disagreed. Moreover, 23.5% (51) strongly agreed and 49.3% (107) agreed to the statement that medical records assist healthcare professionals with information for accountability, openness and transparency to which 12.0% (26) was unsure, 11.1%(24) disagreed and 4.1%(9) strongly disagreed. No one mentioned any other statement for further rating. Table 4.35 illustrates the findings to this regard.

Table 4.35: The rating of the impact of medical records management on the healthcare service delivery (N=217)

THE IMPACT OF MEDICAL RECORDS MANAGEMENT ON THE HEALTHCARE SERVICE DELIVERY		RATINGS				
		STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) Poor medical records management may cause the medical professional to render wrong or poor healthcare service.	NO	87	91	17	18	4
	%	40.1	41.9	7.8	8.3	1.8
2) Inaccessibility or unavailability of medical records may disable the medical professional from continuing rendering healthcare service	NO	78	106	13	13	7
	%	35.9	48.8	6.0	6.0	3.2
3) Medical records help the healthcare professionals with the information about the patient medical history	NO	112	94	6	4	1
	%	51.6	43.3	2.8	1.8	0.5
4) Medical records contain information that ensures a smooth healthcare business continuity	NO	58	96	16	29	18
	%	26.7	44.2	7.4	13.4	8.3
5) Medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward	NO	57	98	27	21	14
	%	26.3	45.2	12.4	9.7	6.5
6) Medical records assist healthcare professionals with information for accountability, openness and transparency	NO	51	107	26	24	9
	%	23.5	49.3	12.0	11.1	4.1

NOTE: NO = Number % = Percentage

4.5 SUMMARY

This chapter presented the findings of the study from the data collected using four different techniques, namely questionnaire, interviews, observation and data/system analysis. The findings presented were mainly from the data collected via the questionnaire, which was triangulated with some data collected through the other data-collection techniques such as interview, observation and documents/system analysis. The purpose was to augment the statistical data presented by figures and tables from the quantitative report of the questionnaire. The data collected and presented was based on the objectives of the study. The findings of this study focused on medical records

management governance practice, nature of medical recordkeeping system, medical record archival processes, recordkeeping technology, medical records management staff capacity and competencies, ECM implementation readiness, proposed medical records management framework, and medical records management and healthcare service provision relationship. However, the next chapter gives the interpretation of the study findings as reported in this chapter with a little support from the literature review.

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CHAPTER 5

INTERPRETATIONS OF THE FINDINGS OF THE STUDY

5.1 INTRODUCTION

The previous chapter presented the findings of the study based on the objectives of the study. The data presented was collected through questionnaire, interview, observation and documents/system analysis. The findings presented were interpreted and discussed in this chapter for deeper or cleared understanding by the reader. Generally, this chapter has to do with the interpretations and descriptions of the meaning of the data collected from the sampled participants (Babbie and Mouton 2001:49; Creswell 2003:13; 2009:12; 2014:155). For instance, the researcher analysed, interpreted and described the population trends, opinions and attitudes in a numerical or quantitative manner through data collected from the sample (Babbie and Mouton 2001:233; Creswell 2014:155).

5.2 MEDICAL RECORDS MANAGEMENT GOVERNANCE PRACTICE

This section has to do with the interpretations of the findings based on medical records management governance practice in the public healthcare institutions as one of the objectives. The medical records management governance entails the legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities.

5.2.1 Records management (RM) infrastructure in line with the South African legal and regulatory frameworks

Legislation plays an important role in any organisational activity, therefore also in records management activities. According to the literature reviewed in Chapter Two, the laws are supposed to be made available to ensure mandatory establishment of a sound organisational records management framework for any organisational business transaction. The records management and archive law should give directive on how records must be created, kept and maintained for future organisational and individual employees accountability (Ismail and Jamaludin 2009:136-137; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). The manner in which records are captured, created, transmitted, used, stored, indexed, retrieved, controlled, retained and preserved has to be conducted in compliance with legislation and standards (Chachage and Ngulube 2006:10; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). Although the legislative framework was available in South Africa, the records management infrastructure in the Limpopo healthcare institutions was not

fully in line with the South African legal and regulatory frameworks requirements. Although 60.4% (131) of the respondents responded that records management infrastructure were in line with the legislative framework governing records management, it was not in line as observed and confirmed by interview respondents. The signs of non-compliance observed and confirmed through interview included water taps and pipes crossing some records storages, no security measures like water and smoke detectors, fire-fighting precautionary measures, ventilation control tools like air conditioners in most records preservation custodies, and buildings or storages seemed to be not recordkeeping purpose built. Although the medical records management policy and procedure manual gave a proper mandate and guidelines in line with the legislative framework governing records management, the healthcare institutions did not yet comply with most of the requirements as stipulated in the guidelines.

5.2.2 South African legal and regulatory frameworks used to guide the establishment of the records management infrastructure

The literature shows that legislative framework assists in guiding healthcare processes and that implies that it needs to be developed by any country for that purpose. This is not exclusive to archiving and management of healthcare records (Katuu 2015:94; Cullinan 2006:4). According to the literature reviewed, even though the colonial regime failed to establish effective archives and records management legislative framework (Asogwa 2012:199), up to now, South Africa had developed many such frameworks for use by government bodies and private bodies. This is why the healthcare institutions in Limpopo used several legal and regulatory frameworks as a guide for the establishment of the records management infrastructure. The policies and procedures were developed in line with legal and regulatory frameworks, but were not properly implemented due to a lack of resources, such as financial and human resources.

5.2.3 The organisational infrastructure for medical records management

The literature reviewed shows that a lack of establishment of adequate infrastructure for proper archive and records management by the colonial regime is still a burden in African countries (Asogwa 2012:199; Boonstra and Broekhuis 2010:11). This was also applicable to the Limpopo healthcare institutions since the records storage capacity for paper-based medical records was not adequate in all the healthcare institutions, to such an extent that other files containing records were filed or kept on the floor between shelves. This was also confirmed by 38.7% (84) respondents who rated the state of records management conditions, equipment and facilities in their institutions as poor. This had a negative impact on turnaround times for records retrieval during healthcare service

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delivery. According to literature reviewed in Chapter Two, if records were managed properly, it was to assist with the timely retrieval of required records, which save time and other resources for the hospitals (Boonstra and Broekhuis 2010:2; IRMT 1999:1; Sinha and Shenoy 2013:343).

However, the literature also shows that effective hospital records management requires, among others, personnel, finance, buildings, equipment and other resources (IRMT 1999:1; Sinha and Shenoy 2013:330; Marutha 2011:67; Chinyemba and Ngulube 2005). This is to enable the head of the healthcare establishment to ensure that health records are created and maintained within the healthcare establishment as required by the NARSSA Act, PAIA and the National Health Act. The National Archives and Records Service of South Africa (2007b) also added that the heads of government bodies should provide sufficient budget, allocate the necessary human and technological resources to support the records management functions and provide access to recorded information. Instead, the healthcare institutions had poor records administration resources, funds and stationery as confirmed by the majority of respondents (45.2% (98)) and this indicates a lack of support to the records management programme. This normally led to inability to implement most of the medical records management policy requirements. Lack of financial and human resources resulted in many records management plans failed even if such plans were available. This situation was also made worse by poor shelving equipment as confirmed by 44.7% (97) respondents.

Furthermore, the literature reviewed in Chapter Two also indicates that records maintenance requires the organisation to identify and mitigate risks by making sure that there is a disaster recovery plan for records in place. System disaster recovery must maintain records' integrity before and after the disaster recovery (ISO 15489-1 2001). Looking at the Limpopo healthcare institutions, the state of disaster-prevention measures in the institutions was also poor, as confirmed by the majority of respondents (36.9% (80)) and more than one quarter of the respondents rated it as very poor (26.3 % (57)). Nevertheless, the organisation had a very good disaster management plan document since it covered all phases of the disaster management such as disaster preparedness, disaster fighting and disaster recovery. The plan also provided guidance based on several kinds of disasters like fire, water, and also pests and rodents. Although the disaster management plan was available, the institutions were not prepared or ready to face the disaster in terms of fighting the disaster and recovery after the disaster, since the key precautionary measures for disaster management were not available as required by the plan. The good example includes a lack of fire or smoke detectors, water detectors, and baiting and fumigation of pests and rodents that was not

regularly conducted. The powder fire extinguishers were utilised instead of carbon dioxide (CO_2) as mandated by the NARSSA policy manual (2007). Furthermore, the fire extinguishers were situated in the corridors rather than inside the filing storages and registry offices, which poses a proximity problem.

Furthermore, records backup is one of the fundamental records security measures. The literature recommends that the organisation needs to develop a regular backup strategy for their records and metadata (MoReq2 2008:47; Asogwa 2012:207). This did not happen in the healthcare institutions as there were no backup for patients' records, specifically for the medical history entailing treatments, prescriptions, diagnosis and many more. The only part of the record that was backed up through the electronic system was the personal details and the billing or financial information of the patients because they were covered in both the electronic system and paper-based records files. This was confirmed by 60.4 % (131) of the respondents who rated the medical records management backup system as poor. The state of the electronic recordkeeping technology was also not good since the institutions only implemented two modules – the billing module and the patient administration module. The patient administration module was used for capturing patients' personal/demographic details and billing module covered the patients' billing and healthcare service payments information. This resulted from poor electronic recordkeeping technology as confirmed by 31.8% (69) of the respondents. The healthcare service delivery system had modules covering almost all the records management functional requirements for medical records management, except paper-based records imaging and/or scanning. The system also had modules that were not used or were inactive for use, such as patient appointment, visit registration, queue management, billing, pre-admission admission, history examination, assessment plan (order entry), nursing care, laboratory/blood bank, radiology, pharmacy/inventory, operation theatre, dietary, patient billing, invoice and/receipt, insurance claims, general ledger integration. These modules may improve the state of medical records management if fully implemented.

The literature reviewed states that the records need to be stored in a relevant storage medium in such a way that it could not be altered and will be easy to maintain for permanent authenticity and reliability (Horsman 2001:14). Instead, the records storage ventilation system in the hospitals of Limpopo was also not in a good condition, as required by policies, procedures and other mandatory documents or prescripts. For instance, 37.3% (81) stated that the records storage ventilation system in the hospital was poor. This was the result of a shortage of fundamental resources such as air conditioner to control the ventilation of records storage areas. In some institutions, air conditioners

were available but not functional or not utilised effectively. Some of the available air conditioners were not always set to the required temperature levels of between 18°C and 20°C, because officials were working inside the filing rooms due to shortage of registry working space.

The literature reviewed in Chapter Two also attests that records access control is supposed to be done as part of the business needs and regulatory requirements to both internal and external users (ISO 15489-1 2001). This was not the case in the hospitals of Limpopo where there were no medical records access control against officials from other units, such as the revenue officials, who were not working as records management officials. In some healthcare institutions, the revenue office also played the role of controlling or providing access to the public medical records requesters. Overall, the medical records access control and measures were poor as stated by 40.1% (87) respondents.

Furthermore, as alluded to by the literature reviewed, Section 17(1) of the National Health Act (No.v61 of 2003) stipulates that the head of health institution must establish security measures to ensure that no unauthorised person accesses the health records or the health records storage facility or a health records management system. Instead, hospitals had no adequate safety and security measures for medical records as also confirmed by 34.6% (75) who stated that records safety and security measures were poor. For instance, in the healthcare institutions, different patients with different illnesses carried their own files on the queue or workflow while moving from one healthcare service point to the other as they were served. Other units like the revenue collection unit also had free access to the records storage. In most institutions, medical records storages had no burglar-proofing at the doors and windows, no blinds on the windows to prevent ultraviolet rays, no functional air conditioners to control temperature, not adequate filing space to prevent damage, fire/smoke and water detectors, no performance of regular baiting and fumigation for rodents and pests. In some of the institutions, due to a lack of adequate filing space, records were filed or kept in small storages with leaking water tabs and pipes.

5.2.4 The current medical records management infrastructure in terms of legal and regulatory requirements

The literature reviewed alludes to the fact that the organisation has to use the records storage media that will maintain the records' usability, reliability, authenticity and preservation for their entire life span (ISO 15489-1 2001; Asogwa 2012:206; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). However, the paper-based medical records storage capacity in the Limpopo hospitals was not

adequate, as confirmed by 40.6% (88) of the respondents. The records storage was also not in a good condition, in terms of the shortage of shelving equipment and facilities, as confirmed by 43.8% (95) of the respondents. For instance, some files were kept on the floor between the shelves due to a shortage of space for more shelves.

Furthermore, the implementation of an effective records management system needs adequate resources for all staff involved (Weeks 2013:144). However, the hospitals had no adequate records management administration resources, as also confirmed by 45.2% (98) of respondents. For instance, there was a shortage of records management related resources in the hospitals such as boxes, file covers, markers and other related resources. This resulted from a limited budget allocation for medical records management. Heads of government bodies are responsible for providing sufficient budget for the records management function, allocation of the necessary human and technological resources. This may bring about support to the records management function and easy access to information (NARSSA 2007b).

Furthermore, literature reviewed states that records also need safety and security and proper preservation and filing for easy access and usability (Ngoepe 2014:6). Focusing on the Limpopo hospitals, there were also a shortage of key records security measures such as burglar-proofing, smoke detectors and water detectors. Due to a lack of resources, the disaster preventive measures were also not in place and some of the existing measures like fire extinguishers were not effective, as confirmed by 41.9% (91) respondents. In most hospitals, ventilation control equipment, including air-conditioners was non-functional or did not exist. Fumigation and baiting for pests and rodents were not done regularly. Fire-fighting equipment like fire extinguishers were only installed in the corridors. There were water taps in some storages and water pipes crossing the records storages, which could be dangerous to the records.

The literature recommends that the organisation also needs to develop a regular backup strategy for their records and metadata, for in case the system fails, an accident or security breach occurs, the computer is infected by a virus, there is a crash in storage devices and accidental deletion of data/records by employees (MoReq2 2008:47; Asogwa 2012:207). This is not the same in the Limpopo hospitals, as a medical records management backup system was not available due to a lack of funds and this was also confirmed by 40.1% (87) of the respondents. For instance, the electronic recordkeeping technology was not adequate and effective, as stated by 38.7% (84) of respondents. One of the reasons for this was that the system was only used to capture demographic and billing

data of patients, and not prescriptions, treatments, diagnosis and many more. It was also confirmed by 44.7% (97) of respondents that the records storage ventilation system was not effective. This was because, in most of, if not all, the institutions air conditioners were either not available, not functional or not set to the standard temperature level.

Furthermore, literature reviewed states that records access control is supposed to be done in relation to the business needs and regulatory requirements to both internal and external users (ISO 15489-1 2001). Looking at the Limpopo hospitals, the records access control measures were ineffective as supported by 35.5% (77) of respondents. For instance, patients were able to move around carrying their files on the healthcare service delivery workflow and revenue unit officials responsible for billing patients were also able to access the storages and issue files to external clients such as lawyers. The worst part was that records movement tracking system was also ineffective as also confirmed by 42.9% (93) of respondents. Hence, institutions experienced cases of missing files too frequently and sometimes they had trouble locating the whereabouts certain files of records. These put records safety and security at risk, which was also supported by 33.6% (73) of respondents who rated records safety and security measures as not adequate and effective. Safety and security measures were not adequate since there was lack of fundamental resources for records security.

5.2.5 Knowledge of the legislative framework governing records management in South Africa

According to the literature, in most government bodies, records management strategies, policies and procedure either did not exist or were not implemented (Ngoepe 2014:10). It is imperative for any country to develop and implement a legislative framework that will assist in guiding healthcare processes (Katuu 2015:94; Cullinan 2006:4) such as archiving and health records management. South Africa developed much legislative framework guiding proper records management. The officials in the institutions knew about the existence of this framework and this was confirmed by 76.5% (166) of respondents. To support that, institutions had records management related legislative framework, policies and procedures available in their institutions. Yet, some of the officials in the institutions did not know or understand the contents of these legislative frameworks.

5.2.6 Application of the legislative framework in governing medical records management

The literature states that, in African countries, relevant and proper records management was not enforced for proper records management, which was a sign of poor planning or lack of planning in records management programme implementation (Abbot 2007:7; Ngoepe 2014:1; Asogwa 2012:

201-202). In the Limpopo hospitals, the legislative frameworks were used for different purposes, such as development of policies, making decisions and solving problems, adoption of records management frameworks and e-systems, reference during policy implementation and staff training on records management. Nevertheless, the majority of records management officials does not understand the content or stipulations of each of the records management related legislative framework, but, instead, they learn the names of such acts and regulations, which is not effective.

5.2.7 Institutional policy for management of medical records

According to the literature reviewed, the organisational records manager must formulate the records management policy as one of his or her key duties (NARSSA 2007b; Ngoepe 2014:7). The policy must assist the organisation to categorise or classify their records in terms of their context and metadata as to the creator, type of business process transaction and their relation to the rest of the other records (Ismail and Jamaludin 2009:137; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268). The records management programme also needs policy that will give guidance in terms of formal organisational records management principles, best practices and procedures, records classification, disaster recovery or management (Ismail and Jamaludin 2009:137; Ngoepe 2014:10; Sinha and Shenoy 2013:330; Ndenje-Sichalwe, Ngulube and Stilwell 2011:268-272). Similarly, the healthcare institutions of the Limpopo province had the medical records management policy for the purpose of managing medical records in the hospitals, as also confirmed by 58.5% (127) of respondents. The existing policy was created during 2012 and specifically addresses medical records management issues. The policy scope was to cover all records management functional requirements as guided by the NARSSA Act and records management models (life cycle and continuum model) and this was also confirmed by 35.5% (77) of respondents. In fact, the medical records management policy scope covered almost all functions of records management as required by the NARSSA Act, but the policy requirements were not implemented as required. The policy was not fully implemented because of a lack of other resources, including the funds. The records management policy covered many records management functionalities as guided by the NARSSA Act and records management models (life cycle and continuum model). Those functionalities included records preservation and conservation (77.4% (168)), records maintenance and use (68.7% (149)) and records disposal (92.6% (201)). The policy covered all records management functionalities as required by the NARSSA Act.

5.2.8 The institution has the medical records management procedure manual

The literature reviewed from Ismail and Jamaludin (2009: 138) spells out that it is crucial that the records management procedure manual must be developed to guide officials on how records management activities should be done. In the healthcare institutions of Limpopo, the medical records management procedure manual were created and available, but were not yet distributed from the provincial office records management unit and implemented fully, and most of the officials in the institutions were not aware of its existence. This was the reason why 77.4% (168) of respondents reported that it was not available. The medical records management procedure manual was aligned properly to the medical records management policy, therefore, it indeed covered the entire scope of records management in the healthcare institutions. This is an advantage since the registry procedure manual, if properly compiled to cover the entire scope of records management, including electronic records, can also be used as a training manual (NARSSA 2006b:8-9). The health institutions had a very good medical records management procedure manual since it covered all the medical records management functionalities and procedures. This means that it covered the entire scope of records management. The most disappointing part for both the medical records management policy and procedure manual was compliance and implementation. There was no compliance and/or implementation of the medical records management policies and procedure, which was confirmed by 63.6 % (138) of respondents. Lack of resources and funds were the main cause of non-fully implementation of medical records management policy.

5.2.9 Management of medical records at all stages of the life cycle, from creation to disposal

According to the literature reviewed, records need to be managed effectively throughout its life cycle, from creation to disposal (Ismail and Jamaludin 2009: 138; Ngoepe 2014:2). The records life cycle stages discuss how records must be handled or operated at each stage. These stages cover operational activities during records creation and receipt, maintenance and use, and disposal (Bantin 2009:3; NARSSA 2004: 44; Katuu 2015:133; Yusof and Chell 2000:135-136). The researcher mapped out a typical record's life cycle with unpacked activities through Figure 5.1 which illustrates the extent of records management in the stages of the record's life cycle in the public healthcare institutions of Limpopo. At each stage of Figure 5.1, there is an indication about whether the records were managed and/or manageable. According to the illustration, records should be created first, then received for maintenance in the records storage under which records are distributed and circulated to end-users from time to time as they demand information. As time goes by, the records become outdated and less useful to the organisational officials, resulting in them

being terminated. After termination, the records are disposed of in the form of destruction or transfer to an archive repository, based on its value. In short, during the first stage, records were entirely not managed and not manageable due to a lack of effective technology to track file movement and give an audit trail. In the second stage, records were partially managed and manageable since records were kept in custody and access was controlled, although security against disaster was lacking as a result of lack of financial and human resources. During the third stage, records were not managed and were partially not manageable because there was no control over unauthorised disposal of records and, during this stage, records were mostly just dumped in unlocked, dilapidated, untidy and unclean storage spaces.

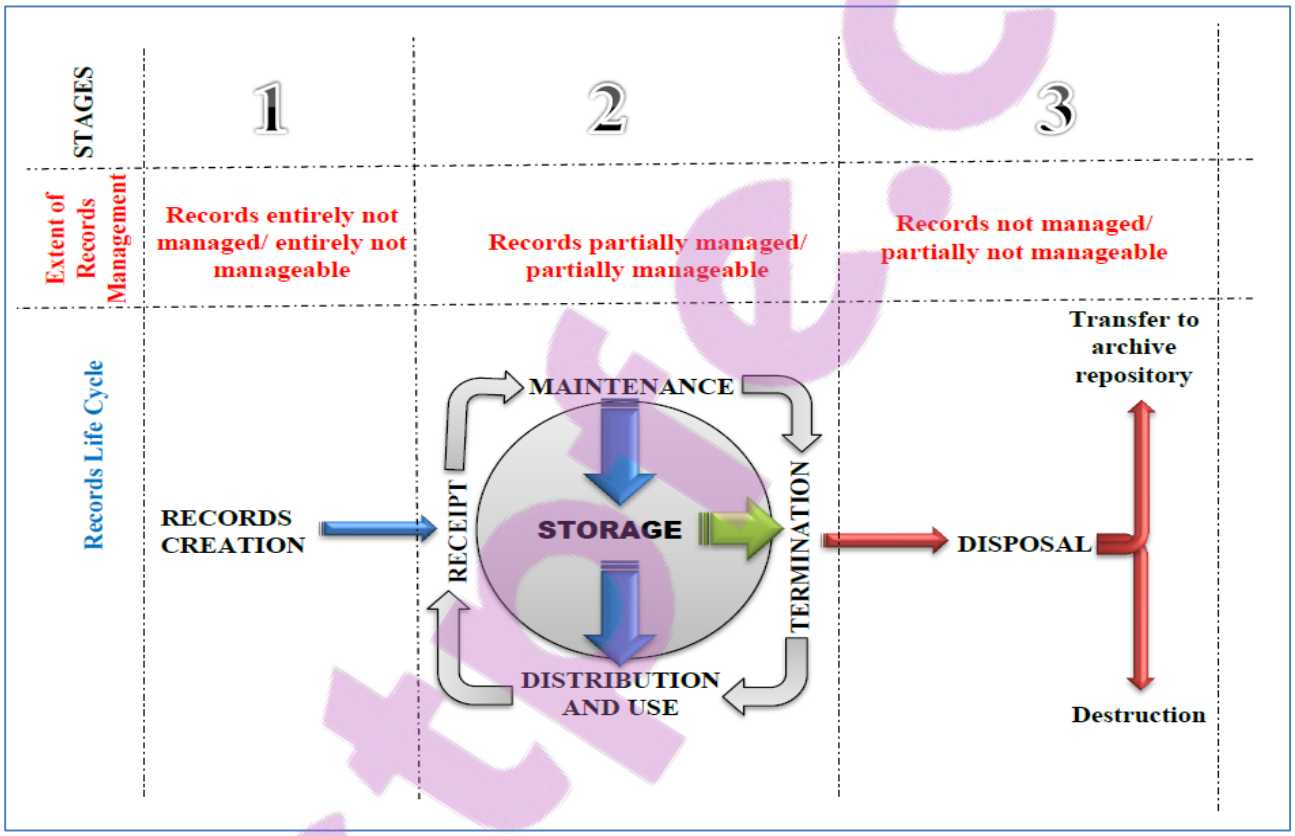

Figure 5.1: Management and manageability of medical records throughout the life cycle in the healthcare institutions

Furthermore, literature reviewed from Lott (1997:vi), Boonstra and Broekhuis (2010:2), Asogwa (2012:201) and Katuu (2015:135) underscores that, in most instances, even if the healthcare facilities introduce a computer technology solution, healthcare providers or professionals continue to generate paper-based records that also demand more efforts to be properly managed throughout their life cycle until they are disposed of. Similarly, the management of medical records in the Limpopo hospitals was not effective at all the stages of records management, from creation to

disposal, and this was confirmed by 56.2% (122) respondents. For instance, medical records were not managed properly at the records creation stage because there was no system to detect and monitor when records are created and medical records management officials only become aware of the existence of newly created medical records when the record is received at registry for filing. There were several shortcomings relating to records management that need to be resolved, such as patients moving around with their files.

Furthermore, during the records creation stage, complete medical records containing information recorded at all service points during healthcare service delivery, were created in a paper-based format. This included information recorded at the helpdesk, cashier billing, patients' administration, doctors' consulting rooms, admission in the wards, clinics within hospital and pharmacy prescriptions. The electronic healthcare system named Phis (Provincial Healthcare System) was only used to capture information about cashier billing and patients' administration (personal/demographic information). The electronic system was not utilised for tracking paper-based records movement, scanning and capturing paper-based records into the system as a backup and simplifying retrieval and sharing. There was also no backup server for the electronic information and the paper-based records were not backed up, for in case a disaster occurs. The semi-active paper-based records were not separated from active records or terminated. The medical records management life cycle stage ends at the maintenance and use stage of the life cycle, because the disposal phase was never implemented, whether destruction or transfer to archive repository.

5.2.10 Hospital unit responsible for management of medical records during each stage of the records life cycle

The literature shown that business content management is a collective responsibility rather than the records manager or program manager or program management officials per se. Everyone needs to be responsible and accountable over the business content that are within their control at a certain period of time (Fanning 2013: 2). Ngoepe (2014:6-7) also supported that records management is an organisational collective responsibility and many organisational officials need to be partnered and be involved to play their role in ensuring the permanent authenticity of the records. Looking at the responsibilities in different stages of the record's life cycle, the responsibility for the management of medical records in the healthcare institutions during the records creation and receipt stage lied with the nursing unit, as also confirmed by 41% (89) of respondents, because the records managers were not available when the healthcare service was being rendered to the patients, which was the stage during which records were created. For instance, during medical records creation and receipt,

records were entirely with the healthcare professionals (nurses and doctors) and, in some instances, records management officials did not even realise that the records were created. The records management unit only manages records once they were submitted to them for filing. This includes patients' personal information in terms of confidentiality and privacy rights for which the rule was that only the medical practitioner and the nurses should be with the patients.

However, the literature reviewed emphasised that "the responsibility for records management must also be defined and assigned" for different staff members, including the records manager, ICT manager and many more (Ngoepe 2008:53). The records manager is responsible for ensuring that records are safe through proper management until such time as they are disposed of or are no longer useful to the organisation (Lott 1997:iv; Ngoepe 2014:7; Chaterera, Ngulube and Rodrigues 2014:368). In the Limpopo hospitals, the intensive responsibilities of the records management unit started with the records maintenance and use stage as confirmed by 74.7% (162) of respondents. During this stage, the records management unit should take care of the records in the storage by ensuring proper preservation and safety and security of such records as they were borrowed out and returned by the end-users and creators. However, during the maintenance and use of medical records, safety and security were sacrifice because the billing official from revenue had access to records storage and patients also had their files containing records about their medical history. The records management unit was also responsible for managing medical records at the disposal stage and this was supported by 84.8% (184) of respondents.

5.2.11 Relevant unit for taking responsibility of managing medical records at each stage of the life cycle

According to the literature reviewed, in some governmental bodies, records management responsibilities are assigned to managers responsible for other services or units like cleaning and facilities management, and this impact negatively on the proper management of records since records management is always under-prioritised. Some records managers are appointed orally and not through an official letter (Ngoepe 2014:6-10). In the hospitals of Limpopo, the unit that is more relevant for management of medical records at the creation and receipts stage of the life cycle is the records management unit, as supported by 60.4% (131) of respondents; however, they need more technology to assist them in tracking the file existence during creation and tracking its movement from one user and/or further creators to the other until such time as records/files are returned to registry for filing. This will make it possible for officials to demand files that are not submitted for filing after creation. The medical records management relevant responsibility during the records

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maintenance and use is the records management unit, as 71% (154) of respondents responded. The unit records management was also responsible for medical records management disposal, to which 75.1% (163) of respondents attested. Nevertheless, the current situation during the study was that the records management unit was not conducting any activity or were not involved during the first stage of records creation and receipt, but only the records creators took control over the records. It was only during the second and third stages where the records were fully managed and controlled by the records management officials.

5.2.12 Accountable unit for management of medical records during each of the three stages of the records life cycle

The literature reviewed underpins that the records manager must be assigned the responsibility and accountability for leadership in records management, including electronic records (NARSSA 2006c:52; Yusuf and Chell 2005:80). For the Limpopo hospitals, the majority of respondents stated that records management is accountable for medical records management during all the stages of the record's life cycle, namely creation and receipt (61.3% (133)), maintenance and use (75.6% (164)) and disposal (70% (152)). For instance, this was because, institutionally, the records management unit took full accountability for the management of medical records during each stage of the record's life cycle. This is the reason why policies and procedures were also developed by the records management unit to direct every employee on how to handle records. Nevertheless, the records management unit is responsible for taking accountability for medical records management at all stages of the record's life cycle. This was also supported by the majority of respondents who stated that the records management unit is accountable for the management of medical records at medical records creation and receipt (67.7% (147)), medical records maintenance and use (71.4% (155)) and medical records disposal (81.1% (176)). The records management was relevant for overall accountability and should make the end-users and creators accountable during records creation and use. The end-users and creators need to account for the deviation from policies and procedures created by the records management unit for sound records management and handling. During document analysis, the medical records management policy also emphasises issues of compliance with policy directives and that disciplinary action may be taken against non-compliers.

5.2.13 Security of medical records during each stage of the life cycle

The literature reviewed also support the fact that, in records management, consideration should also be given to access and security of records to all relevant stakeholders to comply with the relevant prescripts. The organisation should come up with appropriate security measures that are binding and

are enforced by policy and relevant legislation (NARSSA 2006c:32; Decman and Vintar 2013:420). Ismail and Jamaludin (2009: 139-140) also support that the records management systems should ensure appropriate security to the records it manages, whether paper based or electronic. For the Limpopo hospitals, the majority of respondents ascertained that safety and security of medical records were not good during the creation and receipts stage of the life cycle (55.8% (121)), good during the maintenance and use stage (63.1% (137)) and not good during disposal stage (53.9% (117)). For instance, there was no effective records security at the creation stage as there was no system to detect when new records were created by nurses and doctors during healthcare service delivery, but the records management unit only became aware of the existence of new records once the records are submitted for filing. Furthermore, records management unit also had no means of managing the file content and that means they could not detect missing records or documents inside the file when end user returned for filing. The missing records inside the file was only realised when it was needed for a particular purpose. The file contents were not structured and indexed for the purpose of detecting missing records inside the file. The electronic system was not being utilised for file movement tracking and back-up of all the patients' records. During the second stage of maintenance and use, the security threat was based at the registry and records storage access control. In most of the institutions, the records storage had no burglar-proofing on the doors and windows, some had no counter to prevent customers from entering registry where many records were being processed, water pipes were crossing in some records custodies, there was no air-conditioners for proper control of ventilation, lack of fire-fighting and prevention equipment like smoke and water detectors and adequate fire extinguishers.

5.2.14 Availability of designated medical records management unit

It was also revealed by the literature reviewed that in every formal and well-established organisation, every function, key performance area and activity are assigned as responsibilities and accountabilities to a specific unit/section and officials to pursue different sectional missions that support achievement of the overall organisational mission.. This is very important as "this will establish a clear line of authority for records management in the organisation" (Ismail and Jamaludin 2009: 137). In the case of Limpopo hospitals, the majority of respondents (40.1% (87)) stated that there was no designated medical records management unit in the institutions. These responses were not in correlation with the document assessment to the organisational structure which showed that the medical records management was a sub-structure/sub-division of the overall records management division. This subdivision was headed by the senior administrative officer. The senior administrative officer heading the medical records management subdivision reported to the

records manager. The records manager was responsible for all the records management sub-divisions in the institution, including personnel records management subdivision and general records management subdivision.

5.2.15 Availability of designated medical records manager

According to the reviewed literature, a competent and skilled records manager is necessary to ensure the promotion of "effective, efficient and accountable" records management through inspections and other management strategies in compliance with the NARSSA Act and related legislative prescripts (NARSSA 2007b; Ngoepe 2014:7). "The records manager is responsible for all aspects of records management" (NARSSA 2006b:1). In the Limpopo hospitals, as the majority of respondents (60.8% (132)) concluded, there was no designated records manager for medical records management unit. However, according to the organisational structure, the manager for medical records management was the person responsible for the management of all sub-divisions for records management in the institution who delegated his responsibilities for medical records management to the head of medical records management sub-division, whose position was senior administrative officer. The fact of the matter may be that the position was not filled.

5.2.16 Staff structure under the medical records manager

The literature spells out that the lack of appropriate records management structure may lead to a risk of records or authenticity loss or damage (Ngoepe 2014:8-9). In the case of Limpopo hospitals, many respondents stated that the staff complement under the medical records manager was well structured, and this was confirmed by 63.1% (137) of respondents. This implies that the structure was functional.

5.2.17 Responsibility for medical records management in the institution

According to the literature reviewed, records management is a collective responsibility for all staff members or units in the organisation although the records manager leads as the champion or expert (Ngoepe 2014:6-7; NARSSA 2006b:2). For the Limpopo hospitals, all people and heads of different divisions in the institutions were responsible for proper medical records management; however, the responsible person or employee was the records manager, as confirmed by the majority of respondents (53.9% (117)). According to the medical records management policy for the Limpopo Department of Health, the records manager was the overall responsible person for sound medical

records management and all other hospital officials took responsibility during creation and use as also supported by the interview respondents.

5.2.18 Accountability for medical records management in the institution

The literature reviewed attests that the records manager is not the only employee responsible and accountable for records management issues. The accountability for the implementation of records management is assigned to the head of government bodies creating the records (NARSSA Act 1996). In the Limpopo hospitals, the majority of respondents stated that the overall accountable officials for medical records management in the institution was the records manager (35.5% (77)) and the chief executive officer (38.2% (83)). According to the organisational structure and the policy on medical records management, the records manager was accountable to the chief executive officer for any records management related issues and the chief executive officer was accountable to the provincial Department of Health for overall hospital issues, including records management.

5.2.19 Missing medical record files

The literature reviewed shows that medical records usually are lost, destroyed or retained unnecessarily if not properly managed. This usually results in government failing to produce evidence about what they were doing and to support their healthcare business continuity (Shepherd 2006:7; Sinha and Shenoy 2013:343). The study also found that the healthcare institutions in the Limpopo were struggling with the problem of missing files or records during the healthcare service delivery. This was also attested by 67.3% (146) of respondents. Cases of missing files on medical records were experienced frequently when the doctors wanted to attend to chronic patients and when files were requested through PAIA. The contributing factors included congested or inadequate filing space and too much of paper and manual work.

However, the literature reviewed also underscores that if records are not properly managed, healthcare services may be negatively affected (IRMT 1999:1; Sinha and Shenoy 2013:330; Dang et al. 2014:538). In the Limpopo hospitals, the respondents were aware of the negative impact of missing files on the healthcare service business continuity. According to respondents, the negative impacts of missing files on the healthcare service business continuity include inability to monitor and evaluate compliance and administrative improvement, inability to provide access to records, inability to respond to litigation, Auditor-General and legal information requirements, inability to comply with legislative framework and inability to respond to Auditor-General requests and

internal audit requests. Besides, the respondents were also aware of the resolutions that may be applied in an endeavour to resolve the problem of missing files. The respondents confirmed that, in order to resolve the problem of missing files, the institution should introduce and adopt an effective records management framework/model, adopt an electronic system that is collaborative to the business process and involve the records manager during the system, building and administration planning.

The literature also attests that an oncologist at the Polokwane Hospital failed to treat a patient due to a missing medical file (Maponya 2013:6). Even though the healthcare institutions in Limpopo suffered from missing medical files, there was no frequent experience of missing documents or records inside the files in the institutions, which was confirmed by 54.4% (118) of respondents. It was also stated by the minority of respondents (33.2% (72)) that cases of missing documents or records inside the files have been experienced. This implies that missing records of documents inside the files did occur, but not frequently. The respondents had an idea about what might be the causes of missing documents or records inside the files. The reasons for missing documents or records inside the files include ineffective records management framework, lack of records management resources, lack of records management skills and competencies, shortage of staff, shortage of filing space, high records demand and lack of the records manager involvement and consultation during system, building and administration planning. Another reason for missing documents or records inside the files, as also mentioned by interview respondents, was that the patients carry their files with them on the healthcare service workflow and may remove file content and go home with it or destroy. Other patients may not like what is written inside the file and tamper with it. Others may take the records without authority to avoid following the proper lengthy procedure for requesting a copy for personal use.

5.3 THE NATURE OF MEDICAL RECORDKEEPING SYSTEM

The researcher also interpreted data based on the nature of the medical recordkeeping system in line with records management operations, recordkeeping functional requirements and metadata requirements.

5.3.1 Medical records management functional operations

According to the reviewed literature, records management operations are simply the process of managing records and it involve all the activities discharged in managing the records throughout the life cycle (Ismail and Jamaludin 2009: 138; Ngoepe 2014:2). In the Limpopo hospitals, this was not

the case because the medical records management functional operations were not properly established at all levels of the record's life cycle, as confirmed by 56.2% (122) of respondents. For instance, the records management functional operations were not clear during the first stage of creation and receipt since records creation could not be tracked during healthcare service delivery. This makes it difficult to detect which records were created when and by whom until they were submitted for filing.

5.3.2 Conduction of medical records management functional operation

The literature underscores that the absence of the operational activities in an organisation is a sign of non-records management compliance in the organisation. In most organisations, some activities are performed while others are not discharged (Ngoepe 2014:3; Ngoepe and Van der Walt 2009:130). The same applied to Limpopo, since the medical records' management functional operation was not conducted at all levels of the life cycle, as attested by 62.2% (135) of respondents. For instance, during the first stage of creation and receipt, there was no visible activity for records management that was conducted during the workflow.

5.3.3 Medical records management functional operation during each stage of the life cycle

The literature reviewed confirms that the organisation needs to identify the functions of recordkeeping, and they must document these functions in the form of a policy or procedure manual. They must identify which activities should be involved in keeping the records and how these activities are going to be conducted by whom, to ensure proper keeping of the business transaction. The recordkeeping functional requirements include activities such as records creation, maintenance and disposition (Ismail and Jamaludin 2009: 138). Records management operational activities need to be established at all the stages of the record's life cycle, because records need to be managed throughout its life, from creation to disposal when it is destructed or transferred to archive repository based on its value (Bantin 2009:3; NARSSA 2004:44; NARSSA 2007a: 51-52; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266-270). For the Limpopo hospitals, the researcher also attempted to enquire from respondents about the kind of medical records management functional operations at each stage of the life cycle to check records management activities involved or performed during each stage and to establish the gaps. The full report is presented under the next three sub-sections entitled records creation and receipt, records maintenance and use, and records disposal. See Figure 5.1 for the record's life cycle illustration of functional operational activities of managing records.

5.3.3.1 Records creation and receipt

The reviewed literature emphasises that "management of records after their creation is just as important as ensuring that the right records have been captured" in the system (Chinyemba and Ngulube 2005). After creation, records are received in the registry, classified according to activities of the transactions that let to its creation, files are opened for different categories of records. Eventually, files are separated according to records relationships (Horsman 2001:15). In the Limpopo hospitals, the medical records management functional operations performed during the records creation and receipt life cycle stage include the file opening (80.2% (174)), records receipt for filing (63.1% (137)), records registered for filing (52.1% (113)), and eventually filed according to system classification numbers (88.5% (192)). During creation, no activities were performed, but at least during receipt, records were properly arranged for filing, classified, captured in the relevant control register, and eventually filed accordingly.

5.3.3.2 Records maintenance and use

The literature shows that during the record's maintenance and use, the organisation maintains the records by ensuring that every user, whether inside or outside the organisation, has access to and can use the records under the control and care of the records management (Bantin 2009:3; NARSSA 2004:44; 2007a:51-52; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266-270). This is because valuable records need to be maintained or conserved for future use, whether electronically in the electronic system or manually in filing custody (Horsman 2001:16). In the case of paper-based records, records tracking must be considered as very important. Records tracking also forms part of the recordkeeping operational responsibility. Poor management of records makes it difficult to identify where the records are located at the time of need (Chinyemba and Ngulube 2005; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270). In the Limpopo hospitals, the medical records management functional operations performed during the records maintenance and use life cycle stage include the access control to records and storages (92.6% (201)), records movement controlled with register (89.9% (195)), files issuing and records returning from end-users (96.3% (209)). However, there were several significant activities that seemed to be not done, such as lack of appropriate ventilation, protection against disaster and none termination of records to semi-active storages. During this stage, records are properly filed in appropriate medical records storage and controlled access to end-users using manual control registers. During this stage, when patients come

back to the institution for a follow-up visit on different illness they are provided with their files to the consulting rooms through different queues to different healthcare service points.

5.3.3.3 Records disposal

The reviewed literature states that during the records disposal stage, records are disposed of when they are no longer useful to the organisation. Disposal is conducted in the form of destruction if the records in question do not have a secondary value or long-term value. Furthermore, if records have a permanent or secondary value, they are disposed of by transfer to an archive repository as required by or planned in the retention schedule for permanent public consumption or use (Bantin 2009:3; Horsman 2001:16; NARSSA 2004:44; 2007a: 51-52; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266-270). The disposal of records is also one of the important operational activities in managing records properly. It is all about retaining, deleting, transferring or destroying records after the decision about appraisal is taken. The process of disposal includes actions such as records appraisal, sentencing, destruction or transfer of records to the national archive repository (State Records New South Wales 2004).

In disposing any records stored in the system as evidence of business activity or processes, the organisation has to apply for authority, which must be granted before any disposal can take place. For example, in South Africa, authority is granted or denied by the National Archives of South Africa based on certain conditions or reasons in response to an application by an organisation or government body. The organisation must investigate the records before deciding to dispose of it, to check if there is any work, litigations or investigations pending on the records that will be needed as evidence. They must be sure that the records are no longer required by or valuable to the organisation (ISO 15489-1 2001; NARSSA 2007a:26). In the Limpopo hospitals, the medical records management functional operations conducted at the records disposal life cycle stage include sorting and registration of records (54.4%(118)), disposal permission application (74.7% (162)), records disposal (72.8% (158)), issuing of disposal certificates (49.8% (108)), and safe keeping of the disposal register for future reference (42.9%(93)). However, identification and separation of records according to their value, whether primary or secondary value, were not accounted for at this stage.

5.3.4 Manual and electronic records management

The literature confirms that valuable records are maintained or conserved for future use, whether electronically in the electronic system or manually in filing custody (Horsman 2001:16). The records management operation is currently being dominated by the paper-based or manual way of management in South Africa, especially in the public sector (Lott 1997:iv; Weeks 2013:140-143). In the Limpopo hospitals, medical records were not being managed electronically, as confirmed by 75.6% (164) of respondents. For instance, all information was recorded and managed manually and the only information that was also captured by the system was patients' personal details and billing information. The system was also not used for capturing, scanning or tracking the medical files movement.

5.3.5 Effectiveness of electronic medical records management

The literature reviewed confirms that in the healthcare institutions, healthcare professionals still keep the medical history information such as diagnoses and medication prescriptions in a paper-based format of records system and only utilise EHRs or EMRs for capturing information about patients administrative and financial information or billing purposes (Weeks 2013:143-145; Marutha 2013:206). In the Limpopo healthcare institutions, the system was available, but not effective for medical records management as it could not be used for any records management activity such as informing whether the file is out to the end-user or is in the storage. Generally, it could not track file movement and could not capture records electronically. It could merely confirm the file number.

5.3.6 Electronic records management in line with dimensions of the records continuum model

According to the literature reviewed, the records continuum is a records management model designed by Upward (2000:23), which helps to enhance the records life cycle model in covering the operations in electronic records management and paper-based ones. The model also helps to scrutinise different levels of documentation for good records management investigation outcomes (Valtonen 2007:180; Ndenje-Sichalwe, Ngulube and Stilwell 2011:266; Chaterera, Ngulube and Rodrigues 2014:368). In the Limpopo healthcare institutions, the continuum model dimensions were not applied for medical records management since the electronic system was not functional for records management and only the manual system was applied fully.

5.3.7 Organisational recordkeeping functional requirements

The literature reviewed underscores that this is about functions of recordkeeping and documenting these functions in a form of policy or procedure manual. It is the question of identifying which activities should be involved in keeping the records and how these activities are going to be performed by whom to ensure proper keeping of the business transaction. The recordkeeping functional requirements include, for example, activities such as records creation, maintenance and disposition (Ismail and Jamaludin 2009: 138). The organisational recordkeeping functional requirements in the healthcare institutions of Limpopo were the following:

- Identifying and documenting different categories of medical records, e.g. chronic patients records,
- Keeping evidence of medical business activities,
- Designing and developing systems to facilitate medical records management processes,
- Developing policies and procedures to guide creation and management of records
- Maintain medical records,
- Dispose of medical records,
- Ensure easy retrieval and access to records, and
- Keeping confidentiality and safety of information contained by medical records and no one specified other functional requirements.

There was no full compliance with recordkeeping functional requirements due to a lack of resources, as confirmed by 51.6% (112) of respondents and the medical policy document assessment.

5.3.8 Understanding of the record metadata

The literature shows that metadata is the information about the records that are captured electronically in the electronic records management system used to manage that record. Metadata is used to identify or describe the record in relation to the other related or similar nature of records (Ismail and Jamaludin 2009:138; NARSSA 2006a:5). Metadata gives or provides a description of records in terms of, among others, characters, "identity, authenticity, content, structure and management requirements" (Ismail and Jamaludin 2009:138). In the Limpopo hospitals, the respondents understand the concept of metadata because they see it as information captured, along with electronic records describing the identity, authenticity, content, structure and management

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requirements of records and/or information used to search for or identify the record out of mass of the other records.

5.3.9 The metadata requirements for organisational recordkeeping

According to the literature reviewed, metadata ensures that records are protected, accessible and usable at all the times, gives a good understanding of the record, maintains record value, authenticity, reliability and integrity and access, privacy and rights are also managed and supported. Metadata also facilitates the process of records migration (SANS 23081 2006; Asogwa 2012:206). Metadata examples are date of records creation, transaction date, volume number and much more, depending on the organisational needs for either access control for security to such records or intellectual property (MoReq2 2008:159). The respondents understand metadata requirements in the Limpopo hospitals since they identified examples of them as records creator, record capturer/processor, records business transaction, and patients' personal details such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions.

5.3.10 The metadata requirements compliance for organisational recordkeeping

The literature shows that records capturing is performed by allocating explicit metadata, embedded in and attached to specific records, regardless of its format. The metadata should be designed according to the records system procedure to retract the record's status, structure and integrity with authority (ISO 15489-1 2001). In the healthcare institutions of Limpopo, there was compliance with records metadata requirements, as confirmed by 56.2% (122) of the respondents. For instance, the medical records metadata was mostly captured in the paper-based records and partially on the electronic system, because in the paper-based file there was information about the healthcare professionals who assisted the patients, but on the system there was no data about the nurses, doctors and other specialists who treated or prescribed medicine to the patients. This was also confirmed by interview respondents.

5.4 THE MEDICAL RECORD ARCHIVAL PROCESSES

The researcher also interpreted data based on the medical record archival processes in the healthcare institutions, which include records appraisal, retention, preservation strategies and storage management.

5.4.1 Understanding of the concept appraisal

The literature attests that appraisal is the process of planning the organisational business records that are to be created during a business transaction and determining for how long each category of records will be preserved, e.g. which records are to be kept permanently and which ones for a short period for business accountability (Ismail and Jamaludin 2009: 138; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270-271; Chaterera, Ngulube and Rodrigues 2014:370). "Records appraisal is an analysis of all records to determine their administrative, fiscal, historical, legal, or other archival value" (Maryland State Archives 2015). There was a good understanding of the concept appraisal in the healthcare institutions of Limpopo. This is because the majority (79.7% (173)) of respondents' described appraisal correctly as the process of evaluating an organization's business activities to determine which records need to be created, captured into the recordkeeping systems and for how long the records need to be kept. Respondents also described it as the process of determining the records' retention period according to their values, 92.6% (201) confirmed. However, appraisal has been performed in the healthcare institutions of Limpopo, as confirmed by recordkeeping documents analysis. The records retention schedule was developed and consolidated into the filing plans and schedule of records other than correspondence. The medical records policy also outlined the retention period for different categories of medical records. During records appraisal in the healthcare institutions of Limpopo province, records retention periods are determined for each category of medical records, and records of long-term value and short-term value are also identified. These were confirmed by 74.7% (162) respondents.

5.4.2 The assignment of the retention period for all categories of medical records

The literature guides that records retention has to do with the keeping or retaining of medical records for a certain period according to its value in a records storage medium until such time that it reaches its disposal period to either be destroyed or transferred to archival repository for permanent preservation. The organisation should have their own "documented records retention and disposal program" to secure records with fiscal, legal and business continuity (vital records) value (Ismail and Jamaludin 2009: 139; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270-271). In the Limpopo hospitals, although the majority of respondents (62.2% (135)) stated that the retention periods for medical records were not assigned in the institution, the researcher can confirm that it was assigned because the medical records management policy revealed that retention period was assigned for different categories of medical records. The interview respondents also confirmed the institutions

had the retention period for their records and it was populated into the policy. This signifies a lack of knowledge on records management issues from some of the junior staff members.

5.4.3 Rating of medical records storage management and preservation

According to the literature reviewed in Chapter Two, records have to be properly arranged by classifying them according to activities of the transactions that gave rise to its creation and files are opened for different categories of records. Eventually, files are separated according to records' relationships (Horsman 2001:15). During classification, records are categorised systematically in a consistent manner to ensure that they are grouped according to their relation for easy capturing, retrieval, maintenance and disposition (State Records New South Wales 2004; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). Classification of records assists in establishing a link between different records, naming records consistently, and facilitating retrieval of records of a specific business activity or function (ISO 15489-1 2001). The organisation may opt for either manual or electronic index. The coding and numbering of records are also important for the system to identify the location of the records for retrieval purpose (ISO 15489-1 2001). The classification scheme is used to index and locate the records in order to establish physical and intellectual control over the records that are entering the records system (Chinyemba and Ngulube 2005). Ngoepe (2004) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:269) underscore that records should be classified wisely according to their subjects to make it easier for users to search for a specific individual record/information. In the Limpopo hospitals, the medical records files' contents were not well structured and well arranged for easy monitoring, detection and control of missing records (indexing and folio-numbering), as confirmed by 53.9% (117) of respondents. The researcher also revealed through medical records file analysis that the file contents were not visibly structured and were not indexed and page numbered to ensure proper management of the file content. This was due to a huge backlog and shortage of staff or high vacancy rate.

Likewise, the literature also underscores that valuable records are supposed to be maintained or conserved for future use, whether electronically or manually in filing custody (Horsman 2001: 16). Furthermore, shortage of filing space is always considered fundamental in the government bodies (Chaterera, Ngulube and Rodrigues 2014:369). In the Limpopo hospitals, the medical records were not well arranged and filed on the shelves according to the file numbers, as confirmed by 38.7% 84 of respondents. This was due to many records files that were kept on the floor between shelves or filing cabinets due to inadequate filing space. However, all the paper record were kept in folders/covers and boxes to avoid misfiling, as confirmed by 44.2% (96). It was also observed that

medical records were best kept in files/folders/covers and filed in boxes that are arranged according to file numbers on the shelves. The majority of hospitals used mobile filing cabinets, except for a few that were using static filing cabinets.

Nevertheless, literature reviewed attest that the management of records storage is very important to ensure that records are secured and protected against any dangerous perils within the storage environment (Chinyemba and Ngulube 2005). This is why consideration must also be given to the appropriate storage environment, storage media, and physical protective materials, records handling procedure and records storage system itself (ISO 15489-1 2001). In the Limpopo hospitals, the temperature in the filing storages was not effectively controlled for safety of the records, but 42.4% (92) of the respondents disagreed with this. This is because most of the institutions did not have air conditioners in their records custodies. Those who had air conditioners were either not using them as required by the national archives policy because officials were also working inside filing storages and their bodies needed a warm temperature during winter. In some institutions, air conditioners were not functional due to lack of maintenance.

Furthermore, the literature attests that the organisation has to develop a regular backup strategy for their records and metadata for in case the system fails, an accident or security breach occurs, the computer is infected by a virus, storage devices crash and employees accidentally delete data/records (MoReq2 2008:47; Asogwa 2012:207). In the Limpopo hospitals, the medical records were not backed up with electronic records system for any disaster recovery, as attested by 56.2% (122). When analysing the system, the researcher confirmed that it is true that the system did not effectively back up the medical records. Although the system had almost all required modules for proper paper-based records backup, it was only used to capture patients' demographic data and billing information. Information relating to diagnosis, treatments, prescriptions and other related medical history were only captured inside paper-based medical records.

Although electronic medical records management system is required for different benefits, the current state of medical records management in South Africa is in the form of handwritten papers that are filed in isolation from various healthcare institutions (Weeks 2013: 140-141; Shaw et al. 2011:357-358). In most instances, even if the healthcare facilities introduce a computer technology solution, healthcare providers or professionals continue to generate paper-based records that also demand more efforts to be properly managed throughout their life cycle until they are disposed of (Ndenje-Sichalwe, Ngulube and Stilwell 2011:269-270; Lott 1997:vi; Boonstra and Broekhuis

2010:2; Asogwa 2012:201; Katuu 2015:135). In the Limpopo hospitals, the electronic recordkeeping technology did not make it easy for the institution to manage the records in their institutions, as confirmed by 66.4% (144) of respondents. This was due to the fact that the system did not have the file tracking module applied or functional, but, instead, most of the institutions used manual or paper-based medical records control registers.

On the other hand, the literature shows that effective hospital records management requires, among others, suitable buildings, equipment and other resources (IRMT 1999:1; Sinha and Shenoy 2013:330; Marutha 2011:67; Chinyemba and Ngulube (2005). In the healthcare institutions of Limpopo, the medical recordkeeping buildings were not purposely built for recordkeeping as stated by 48.4% (105) of the respondents. This was because in most of the storages, water taps and pipes were crossing the storages and some, if not all, were too small in size to accommodate all the records generated every day as patients receive healthcare services. Most of the storages looked like they used to be used for something else in the past like consulting rooms, pharmacy or staff residence or even bathrooms. The medical recordkeeping buildings were not suitable for records custody, as supported by 40.1% (87) of respondents. This was due to the small size, water taps and pipes crossing the storage, as well as the capacity that is not suitable for recordkeeping.

Furthermore, the literature reviewed from Broekhuis (2010:11) underscores that effective medical records system security needs to ensure that unauthorised access to healthcare records is restricted to maintain the records' integrity. Records of a permanent value must be preserved and handled in a storage that is secured in terms of protection against unauthorised access, loss, destruction, theft and disaster (ISO 15489-1 2001; Asogwa 2012:206). Records access must be properly managed for protection of records against unauthorised access for security, privacy and confidentiality purposes (State Records New South Wales 2004; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270). Section 17(1) of the National Health Act stipulates that the head of health institution must establish security measures to ensure that no unauthorised person has access to the health records or the health records storage facility or a health records management system. In the Limpopo hospitals, the records custody was not easily accessible for unauthorised people, as supported by 37.3% (81). This is due to the idea that most of the medical records custodies had counters and some had glass partitions to assist patients or other clients and the doors had signs on with "Unauthorised access prohibited" or "Only records management staff allowed entry". The only shortcoming that might allow information thieves to breakthrough was the lack of burglar-proofing at doors and windows in some institutions. Records also need to be properly organised, arranged and managed to ensure easy

access, retrieval and usability (sharing) by the end-users from different organisational units and stakeholders (Upward 2000:122). It was not easy to retrieve records in the custody, as confirmed by the majority of respondents (34.6% (75)). This was because it was not always easy for records management officials to retrieve or locate files in time due to congested filing custodies, since they struggled to locate whether the files were on the floor or shelves and it also made filing very difficult.

Moreover, the literature underscores that records tracking also form part of the recordkeeping operational responsibility. Poor management of records makes it difficult to identify where the records are located when they are needed (Chinyemba and Ngulube 2005; Ndenje-Sichalwe, Ngulube and Stilwell 2011:270). A record tracking is about tracking of the record movement and the use thereof whenever records are circulated to different users in an organisation at a given time and date for different purposes. In tracking records movement and use, the system identifies actions/activities outstanding to be conducted on the records, facilitates retrieval by identifying records location, which also assists in preventing loss of records. The system tracking also assists in keeping the historical information of records in terms of movement to different users and different activities conducted by different specific users. It also helps to identify the person currently in possession of the records, the date, time and period of possession from person to person. The system should allow and track the transfer of records from person to person until the records are returned to their original location in the custody (Chachage and Ngulube 2006:14; ISO 15489-1 2001; State Records New South Wales 2004). In the Limpopo hospitals, there were no registers or system to track when records are removed from the records custody, as 33.2% (72) of respondents confirmed. This is because records were only tracked using a manual register when they were collected to be placed in filing custody from the pharmacy for outpatients who collected medication and left the hospital and patients in wards who were discharged inpatients, but there was no register or system to issue outpatient files. There were also no effective security measures for records in the custody, as 40.6% (88) of respondents attested. The security measures in the records custody was not effective due to a lack of the necessary security measures like burglar-proofing at windows and doors, inappropriate bating and fumigation, lack of disaster preventive, fighting and recovery measures like adequate fire extinguishers, water and smoke detectors and ventilation control equipment.

5.5 RECORDKEEPING TECHNOLOGY

The researcher also interpreted data based on the recordkeeping technology in the healthcare service delivery in terms of management of electronic records systems and electronic system security.

5.5.1 Technology to manage medical records

The literature shows that, although the healthcare facilities introduce a computer technology solution, healthcare providers or professionals continue to generate paper-based records that also demand more efforts to be properly managed throughout their life cycle until they are disposed of (Lott 1997:vi; Boonstra and Broekhuis 2010:2; Asogwa 2012:201; Katuu 2015:135; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269-270). This is not exclusive to Limpopo healthcare institutions because the institutions have not used computer technology in managing their medical records, as also confirmed by 66.4% (144) of respondents. The available system was used to capture patients' personal details and billing information rather than to use it for patient file movement tracking and other records management related functional activities. However, the full-scope technology applied was manual since the e-system was only used for billing and for capturing patients' personal information. The system was also used for verifying the patient numbers, which were used as unique file number for filing of individual patient files. The institutional electronic technology never contributed towards effective management of medical records in relation to records management operational and functional requirements throughout the life span. The electronic system did not help the institutions with the records management activities because records management functionalities or modules were never utilised and the system did not back up the medical history of the patients, instead only the paper-based records contained full patients' medical history.

Furthermore, it is a complex task to manage records electronically since the EMRS must meet all the business needs in terms of functionalities. The organisation needs to come up with an ERMS "specialised software" in line with their functional requirements specification from specialised business requirements (MoReq2 2008:10; Ndenje-Sichalwe, Ngulube and Stilwell 2011:272-273). The literature reviewed further emphasises that the recordkeeping system needs to cover functionalities relating to records management operations, recordkeeping functional requirements and metadata requirements (Ismail and Jamaludin 2009:137-138). In the Limpopo healthcare institutions, the medical records management system had functionalities to meet all records

management operational and functional requirements throughout the life span, as confirmed by 75.1% (163) of respondents. The researcher confirmed through system analysis that the system had almost all the records management functionalities, except for the scanning of the records created in paper-based format, but many of these functionalities were not activated for use. This is why not all the records management system functionalities were being utilised effectively, as confirmed by 73.7% (160). The system was not used effectively since there were other important e-system modules or functionalities for records management that were not active or not implemented.

5.5.2 The rating of the electronic system

The reviewed literature attests that the functional requirements for electronic records management include records capturing, identifying, arrangement, description, classifying, storage, preservation, metadata and access, appraisal, retention, disposal, access management, security management and rendering of search and retrieval services for clients (Horsman 2001:14-16; Katuu 2012b:6; International Council on Archives 2008:16; Ndenje-Sichalwe, Ngulube and Stilwell 2011:269). The rating of the medical records management system revealed several challenges in the healthcare institutions of Limpopo relating to these requirements. One of these challenges was that the system records storage capacity was not adequate, as alluded to by 44.2% (96) of respondents. The storage was congested and that the capacity was too small in most of the institutions. The system had no complete metadata required for records management, identification and retrieval, as confirmed by 42.4% (92) of respondents. The system was not able to identify the records creators, requestors and many other elements of metadata. The system metadata for records retrieval was also not adequate and not user-friendly as confirmed by 49.8% (108) of respondents.

Furthermore, several functionalities were lacking in the medical records management system of Limpopo hospitals, although only a few were covered here, as confirmed by the majority of respondents for each of the functionalities. The system had functionalities for records capturing and that was confirmed by 33.6% (73) of respondents, but they were not used or were inactive. The system had no functionalities for records issuing and returning (circulation) (33.2% (72)), records disposal (61.8% (134)), scanning and capturing of electronic documents that were created in a paper-based format (50.7% (110)), and to create electronic records directly on the system (41% (89)). In support of this, the researcher never detected the functionality for records disposal during the system analysis, except the functionality for deleting the records on the system. The system analysis also revealed that there were no functionalities for scanning and imaging the paper-based records in the system used. The system records circulation functionality was also available but non-

functional as per the system analysis results. The system functionalities were not used effectively as alluded to by 42.9% (93) of respondents. All these are not in compliance, as suggested by the literature from Horsman (2001:14-16); Katuu (2012b:6); International Council on Archives (2008:16) and Ndenje-Sichalwe, Ngulube and Stilwell (2011:269).

Furthermore, the other weaknesses entailed system inability to produce an audit trail for each record; 41.9% (91) respondents confirmed this. The records in the electronic system could not be used as a backup for paper-based records as also confirmed by 55.8% (121) of respondents. If all the modules and functionalities can be activated and functional, the system will effectively back up the paper-based records, but now they could not back up because most of the functionalities were inactive. This is because the electronic system was not used to capture every piece of information about administration and treatment of the patients, as confirmed by 50.2% (109) of respondents. The system as analysed was only used for billing and capturing of patients' personal information.

Looking at the security issues in the Limpopo hospitals, access to records in the system was effectively controlled, as confirmed by 37.8% (82) of respondents. Access to information in the system was protected through user passwords and usernames, and every system user was assigned a username and password which they used to login to the system before use or accessing the information. Nevertheless, records in the system were protected against any perils such as viruses and spyware, as supported by 32.7% (71) of respondents. The computers used and the server was installed with the System Center 2012 Endpoint Protection, Symantec™ Endpoint Protection and Symantec Network Access Control. However, 40.1% (87) of respondents said that the system was not protected against any disaster. This is because there were no disaster-prevention and disaster-fighting measures for records. Moreover, the electronic records management system never effectively met/served the records management functional requirements, as confirmed by 62.7% (136) of respondents. This is because most of the key functionalities for records management were not covered.

5.6 THE STAFF CAPACITY, SKILLS AND COMPETENCIES FOR MANAGEMENT OF MEDICAL RECORDS

The study interpreted data based on the staff capacity and competencies for management of medical records in the healthcare service delivery.

5.6.1 The staff complement and structure for records management

The literature emphasises that it is unfortunate that in some government bodies, the records management function is misplaced or linked to the wrong directorates or divisions, e.g. the finance, human resource, information communication technology divisions where it receives less priority in terms of budget allocation and other resources. To make matters worse, in some of the government bodies, records are managed by the creators who had no relevant skills or competencies since no records manager was appointed or no records management structure existed. This resulted in a high risk of losing the records and/or its authenticity (Ngoepe 2014:8-9). The reason for this was mostly because the lack of interest by the organisations to develop effective records and archive management has led to people being undermined and discouraged to consider and take archive and records management as a career (Asogwa 2012:198).

Henceforth, this was the same with the healthcare institutions as the staff complement in the institutions was not adequate to perform and achieve all the operational functionalities of records management, as confirmed by 66.8% (145) of respondents. This might be the cause of inappropriate implementation of some of the medical records management activities as required by the policies and procedures. Furthermore, the records management unit was not well structured in terms of the unit and reporting channels, as confirmed by 57.1% (124) respondents. The medical records management was headed by the administrative officer in the district hospitals and specialised hospitals, who reported to the records management deputy manager, supervised by the hospital CEO. In regional hospitals, the medical records management sub-unit was headed by the senior administrative officer reporting to the records deputy manager who is supervised by the records manager under supervision of the CEO, and in provincial hospitals, the medical records management sub-unit was headed by the records deputy manager, reporting to the records manager who was headed by the senior manager corporate services under supervision of the CEO.

Furthermore, the records management unit was not well placed in terms of the unit and reporting channels in the Limpopo hospitals as determined by 60.8% (132) of respondents. The healthcare institutions were using different structures from institution to institution. Therefore, some of the records management structures were mixed or merged with the information management sub-unit at management level and some merged with the corporate services unit at management level. This created bias when it comes to budget and other resource allocation and prioritisation during planning, since records management was always treated as the last priority and allocated little or no resources. This was because some of the institutions were still using the old staff structure, which

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integrated information and records management at the executive management level merely because the manager or deputy manager was heading both information management and records management as sub-units.

5.6.2 The highest level of educational qualification

The literature reviewed underscores that in the Sub-Saharan Africa, records managers and archivist training and experience are still not adequate to eradicate the existing challenges, such as poor or lack of records management policies and legislation, organisational framework, ICT skills and competencies (Asogwa 2012:208; Nengomasha 2013:2-4). The records management professionals and other officials need to acquire records and archives competency and related skills (Ismail and Jamaludin 2009: 140). This is not exclusive to the Limpopo healthcare institutions. For instance, the highest qualification achieved by most of the respondents in all the health institutions in the province is a certificate, as confirmed by 34.1% (74) of respondents. This may be senior certificates and/or certificates attained through short learning programmes organised by the healthcare institutions. The highest level of records management qualifications achieved by respondents was also a certificate, as confirmed by 61.3% (133) of respondents. The highest level of certificate qualification in records management achieved was very basic, as confirmed by 79.3% (172) of respondents. This means that only a few achieved the intermediate and advanced certificate courses.

5.6.3 The in-house records management training and workshops

The literature reviewed indicates that the records management professionals and employees need to be trained regularly to be capable and competent at all times, even when recordkeeping technology or techniques change from time to time. It is usually due to incapable and incompetent records management officials that most of the recordkeeping systems collapse or become dysfunctional and complicated. The organisation may have a good and advanced recordkeeping system, but without the necessary skills/capacity and competencies of officials to operate and manage the records and system, the system will be as good as nothing (Asogwa 2012:203; Ismail and Jamaludin 2009: 140). In the Limpopo healthcare institutions, the situation was unlikely since the institutions were not conducting in-house records management training and workshops, as confirmed by 56.7% (123) of respondents. The institutions were also not conducting in-house records awareness workshops to all staff, as attested by 70% (152) of respondents. This was also confirmed by the records management inspection reports in which most, if not all, of the hospitals were not conducting in-house records awareness workshops in their institutions. In the case of the few institutions that claimed to have

been conducting in-house records awareness training and workshops, these were not conducted regularly, as confirmed by 32.3% (70) of respondents.

5.6.4 Medical records management experience

According to the literature reviewed, effective records management needs recruitment of qualified personnel who are also experienced with records and archives management to establish and implement policies and infrastructure, and ensure adequate and regular training for personnel (Asogwa 2012:203; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276). The highest level of work experience for the majority of medical records management staff in the healthcare institutions of Limpopo was better, because most had 3 to 5 years' of experience, as confirmed by 46.1% (100). The records management experience in general for the majority of employees was 3 to 5 years, as confirmed by 48.8% (106) of respondents.

However, the literature reviewed recommends that the records management professionals must also be capable of delivering their service using an electronic system. The records management professionals also need to be developed and capacitated to be competent in terms of "business and management skills, interpersonal and personal skills" (Ismail and Jamaludin 2009:140). This was not the case in the Limpopo healthcare institutions because the majority of employees in the healthcare institutions did not have any experience at all in electronic records management, as confirmed by 85.7% (186) of respondents.

5.6.5 Rating of skills and competencies

Lack of skills and competency for records and archive management is still a greater challenge in Africa. Most records managers and archivists in Africa were not trained professionally in records management (Asogwa 2012:203; Ndenje-Sichalwe, Ngulube and Stilwell 2011:274-276). This was also the same with the Limpopo healthcare institutions, as most of the employees were not familiar with and would not implement the principles of records management, as confirmed by 35.5% (77) of respondents. The majority of employees in the healthcare institutions had no confidence that they could manage medical records throughout its life span, as confirmed by 31.3% (68) of respondents. However, the majority of employees also lacked confidence and knowledge of how they can effectively manage medical records electronically throughout its life span, which was confirmed by 34.1% (74) of respondents. This may be due to the fact that the majority of employees had no adequate experience in electronic records management, as confirmed by 34.6% (75) of respondents. It is so disappointing to note that the majority of employees in the healthcare institutions were not

competent and skilled for all records management operational and functional requirements, as confirmed by 29% (63) of respondents.

5.7 READINESS FOR IMPLEMENTATION OF ENTERPRISE CONTENT MANAGEMENT

The researcher interpreted data about the healthcare institutions' readiness for the implementation of ECM as a modern electronic records management system.

5.7.1 The meaning of ECM

ECM is an acronym for Enterprise Content Management. According to the literature reviewed, it is a strategy that consists of a set of software products to manage all types of enterprise content throughout its entire life cycle (Bell, Shegda, Gilber and Chin 2010; Katuu 2012a:39). It is "the technologies used to capture, manage, store, preserve, and deliver content and documents related to organisational processes" (Fanning 2013:1; Kampffmeyer 2006:4). ECM consists of a set of complex technologies integrated to function together with the purpose of ensuring improvement in managing organisational business content successfully. Successful ECM system implementation brings about business contents that are easy to access and retrieve, reduces contents management risks and ensures that the organisation meets the regulatory requirements. ECM planning should be based on the organisational goals and priorities (Fanning 2013:1). It is important to understand ECM in the Limpopo healthcare institutions because the majority of employees in the healthcare institutions understand the meaning for the acronym ECM. They understand it as a strategy that consists of a set of software products to manage all types of enterprise content throughout its entire life cycle, as confirmed by 63.1% (137) of respondents. However, employees had little knowledge of the ECM indicators. They identified the indicators of ECM as migration of ERDMS to the web content; 51.2% (111) of respondents confirmed this.

5.7.2 The implementation of ECM as a modern e-records management system in the institution

The literature attests that the latest record management technology appears to be the ECM, after other electronic records management systems such as EDMS, ERMS, IDRMS or EDRMS (Katuu 2012a:39; 2015:136-138; 2012b:3). As the latest system, ECM can assist healthcare service providers in minimising patient waiting time for the retrieval of records, because retrieval of records is done quickly by using a PC keyboard at the workstation with ECM. This promotes a good relation between the doctors and the patients (Weeks 2013:143-144). However, the healthcare

institutions have not yet started to implement ECM as a modern e-records management system, as confirmed by 83.4% (181) of respondents. The only system used for medical records management is called PHIS or eHIS and not the ECM system that existed in the institution.

5.7.3 The institutional readiness for the implementation of ECM

The literature reviewed underscores that there must be assurance that all aspects of ECM introduction are taken into consideration and addressed by applying a structured framework in planning, managing or operating an ECM IT infrastructure (Fanning 2013:8). The institutions were ready for the implementation of ECM, as confirmed by 58.1% (126) of respondents. Institutions had several computers at the patients' administrative helpdesks, but, in some institutions' consulting rooms, helpdesks and other stations, there were no computers. Furthermore, 75.1% (163) of respondents confirmed that the employees found the ECM necessary and relevant for the institution. The healthcare institutions feel that, if properly implemented, the ECM may bring improvement to the organisation in terms of:

- Easy retrieval of records,
- Electronic usage of records online,
- One record accessed by many people at the same time,
- Easy business continuity,
- Provision of timely, accurate, trustworthy and complete records,
- Effective records security throughout the life span,
- Access to quality data and information,
- Compliance to legislative framework, and
- Creation of reliable knowledge at all stages of the life span.

5.7.4 Availability of the electronic records management requirements for ECM system implementation

According to the literature reviewed, there are several key issues that need a very serious attention to address when intending to implement EMR system such as scope of work and timeframes, privacy and security, expenses, effectiveness in service provision, interoperability, patients clinicians interaction, competence and knowledge in system usage and change management to deal with resistance to change by users (Weeks 2013:142; Boonstra and Broekhuis 2010:4-12), lack of leadership, and interest by other officials to participate (Boonstra and Broekhuis2010:11-12). For instance, IT components required for the ECM system include, but are not limited to

desktop/laptop/smart phone/tablet, network, internet, server/datacentre, cloud/software and skilled human resources (Fanning 2013: 8). In the Limpopo healthcare institutions, availability of computers for records management was poor as confirmed by 45.2% (98) of respondents. It seems that there were several computers in almost all the hospitals, although they were not enough and some had outdated hardware and software. Availability of computer equipment such as printers was poor, as confirmed by 60.4% (131) of respondents. The printers were also available, but not enough and some resources, like toner, were not adequate.

Furthermore, the issues relating to availability of servers were good as rated by 46.5% (101) respondents. This is because each institution had at least one server for medical records management system, PHIS. Besides, the servers' capacity was not enough as they were down and freezing frequently. Availability of computer networks was poor, as confirmed by 41.0% (89) respondents. The network was inadequate because, in some institutions, not all computers were connected and some service points did not have network points. Nevertheless, the availability of an internet connection was poor, as confirmed by 48.8% (106) of respondents. The internet was not effective since it was frequently down and continuously processing slow. According to the website analysis as in Figure 5.2, the website looks to be well designed and well structured, but the information and structure of the website seem to be centralised at the provincial Department of Health and there are no links to promote the institutions and their services. Instead, the website just listed the names of the institutions with the contact details and addresses. The website was down, freezing and responding slow frequently during browsing and documents downloading. However, the biggest problem of all was that budget availability was poor, as confirmed by 63.6% (138).

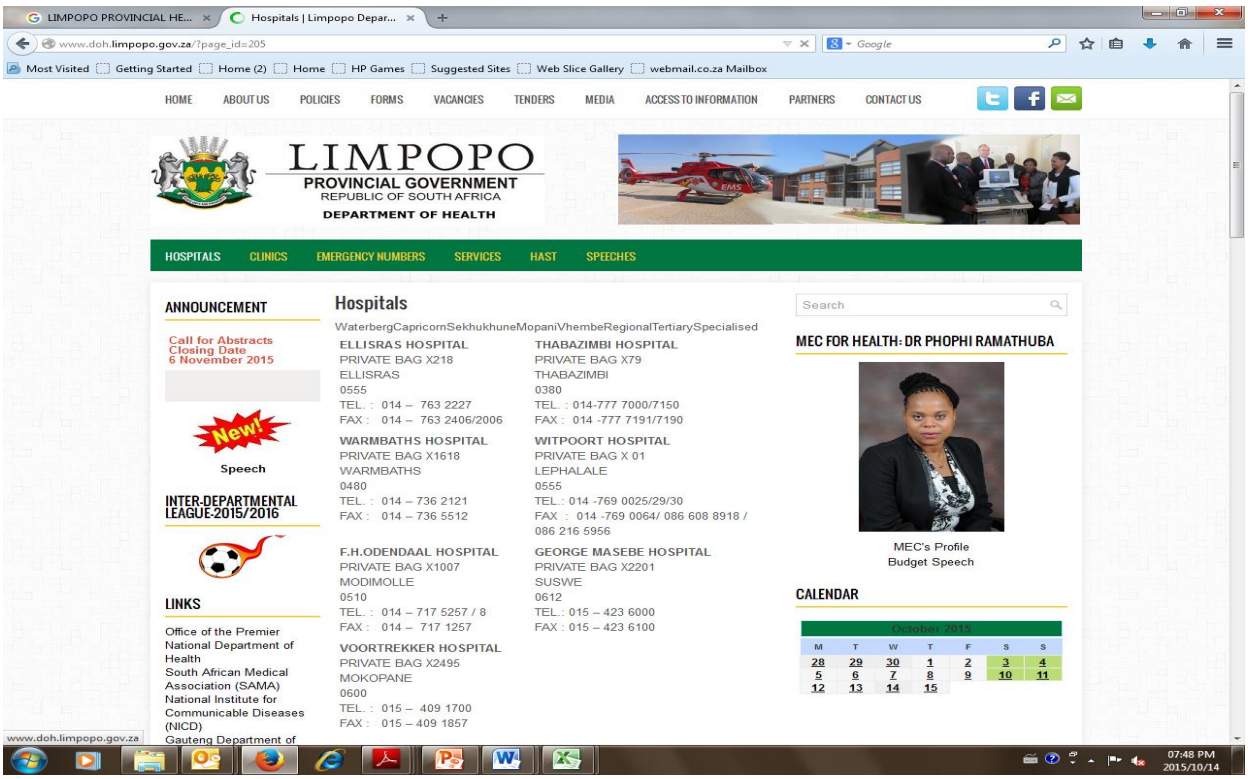

Figure 5.2: Limpopo Department of Health website

5.7.5 Responsible person for implementation of ECM

The literature proves that the project key role players or champions need to be identified, and communication needs to be strengthened as a key factor (Fanning 2013: 10). In the Limpopo healthcare institutions, the most relevantly responsible persons identified for implementation of the ECM were confirmed to be the records manager, chief executive officer and the head of department. This was confirmed by 50.2% (109), 88% (191) and 93.1% (202) of respondents, respectively.

5.8 PROPOSED FRAMEWORK TO FACILITATE MEDICAL RECORDS MANAGEMENT PRACTICE IN THE PUBLIC HOSPITALS

One of the key objectives of the study was to propose a framework that can facilitate medical records management practice in the public healthcare institutions. Data was interpreted based on findings in the matter.

5.8.1 The medical record management framework as an enabler for properly management of medical records

In the literature reviewed, Ngoepe (2014:1) attests to the fact that "records management models play a significant role in the provision of records management services in organisations". Many government bodies do not consider the appropriateness of the records management models when designing and implementing the records management programme (Ngoepe 2014:1; Ngoepe and Van der Walt 2010:83). This was the case with the Limpopo healthcare institutions, since the medical record management framework was not effectively enabling the institution to manage medical records properly, as confirmed by 71.9% (156) respondents. The current medical record management framework was not effectively enabling the institution to manage medical records properly since there was no effective tracking system and not all records management functionalities were fully implemented and were therefore not covered by the electronic system. Patients carrying their files on the workflow also compromised the security of records.

5.8.2 Rating of the current medical records management system framework

The literature reviewed underscores that the development and implementation of records management models in South Africa are still problematic. For instance, in most government bodies there were no mapped records management processes and no determined models for implementation of a records management programme (Ngoepe 2014:10; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271). Organisational leadership needs to consider a sound records management model as a necessity in the organisation. That will assist in ensuring that records are managed and preserved properly through the deployment of well-trained staff, appropriate governance tools, appropriate system and technology from creation to disposal (Ngoepe and Vander Walt 2010:83-84). It is deemed necessary that government bodies should 'map their processes and define the models appropriate for implementation of records management' (Ngoepe 2014:2; Ndenje-Sichalwe, Ngulube and Stilwell 2011:271). When designing the model, the organisation must also consider the existence of the business information system in the organisation. The system must consist of, among other things, processes, policies, procedures, software and hardware for the purpose of capturing organisational business transactions that produce records in different formats and media. For instance, paper-based records, electronic documents, electronic records and web-based transactional records integrated in single records management system (National Archives of Australia 2003:27; Ndenje-Sichalwe, Ngulube and Stilwell 2011:276).

Similarly, in the Limpopo healthcare institutions, the medical records management framework did not ensure safety and security of records from creation to disposal in its life cycle, as confirmed by 44.7% (97) of respondents. This is because one of the problems was that the framework lacked a function for backing up records and tracking files, especially at the records creation stage. The framework system was unable to detect when records were created, as attested by 65% (141) of respondents. The system framework did not detect records creation, since records were created manually in the absence of the records management officials to control the recording of the newly created records. The framework system was also unable to give the records manager an audit trail about the records, from the date of creation to the current date, as confirmed by 65% (141) of respondents. The system was not able to give an audit trail of records since it was incapable of tracking movement of medical files. Furthermore, the creation, disposal and any other records management functional activity was not covered by the system.

Furthermore, according to the literature, it seems advantageous to use a records management system that includes records in different formats and media for smooth management of records such as paper-based and electronic records (Mcleod 2012:187; Ngoepe 2014:5; Ndenje-Sichalwe, Ngulube and Stilwell 2011:276). The recordkeeping system should also be developed with the guidance of organisational business procedures and activities (Horsman 2001:9; Ngoepe 2014:5). This is unlike in the Limpopo healthcare institutions where the medical records management framework was not collaborated or integrated into the workflow, as alluded to by 43.8% (95) of respondents. There were no medical records management techniques on the workflow because, during the business process, medical records are moved from one healthcare service station to the other through the hands of the patient. In the consulting rooms and the wards, records management staff were not sure about what might be happening with the records since they were handled in their absence and there was no electronic system to track and inform them regularly about new records created and the type of records contained in the files. The medical records management framework did not use an electronic system in the institution, as confirmed by 50.7% (110) of respondents. The medical records management framework was not using the e-system as the system was not able to track file movements and/or cover many other records management functionalities, and was also not capable of capturing records metadata and/or records' scanned images. This was the reason why the system could not provide the records' audit trail.

Hence, the medical records on the framework were not entirely managed using the business administration system as confirmed by 59% (128) respondents. The business electronic system was

not being used for medical records management, but instead to capture the personal details and billing information of patients. As also illustrated by Figure 5.3, the records were not only handled by officials rendering a healthcare business service on the framework, but by the clients, as confirmed by 49.8% (108) of respondents. This was because, on the workflow, patients moved with their medical records from service point to service point during the healthcare service delivery. Although the e-system was available, records were not entirety created and managed electronically in the healthcare business process, as confirmed by 52.1% (113) of respondents. Figure 5.3 further illustrates that apart from the fact that the system was used to capture personal information and billing data per se, instead of paper-based records movement tracking and provision of audit trail, the medical records were not managed electronically in the healthcare institutions. Records were created manually and were never managed using the business administration system, as confirmed by 40.6% (88) of respondents. This is because the only aid provided by the system for medical records management was the patients' unique number that was also generated or created by the system automatically during the first visit of the patient to the healthcare facility. This number was also used as a filing number for medical records and, usually, it was verified through the system before records practitioners went to the shelves for retrieval. Generally, records were created manually and managed using a manual system on the business process, as confirmed by 49.8% (108) of respondents. Figure 5.3 illustrates the entire discussion of the medical records management throughout the healthcare service workflow.

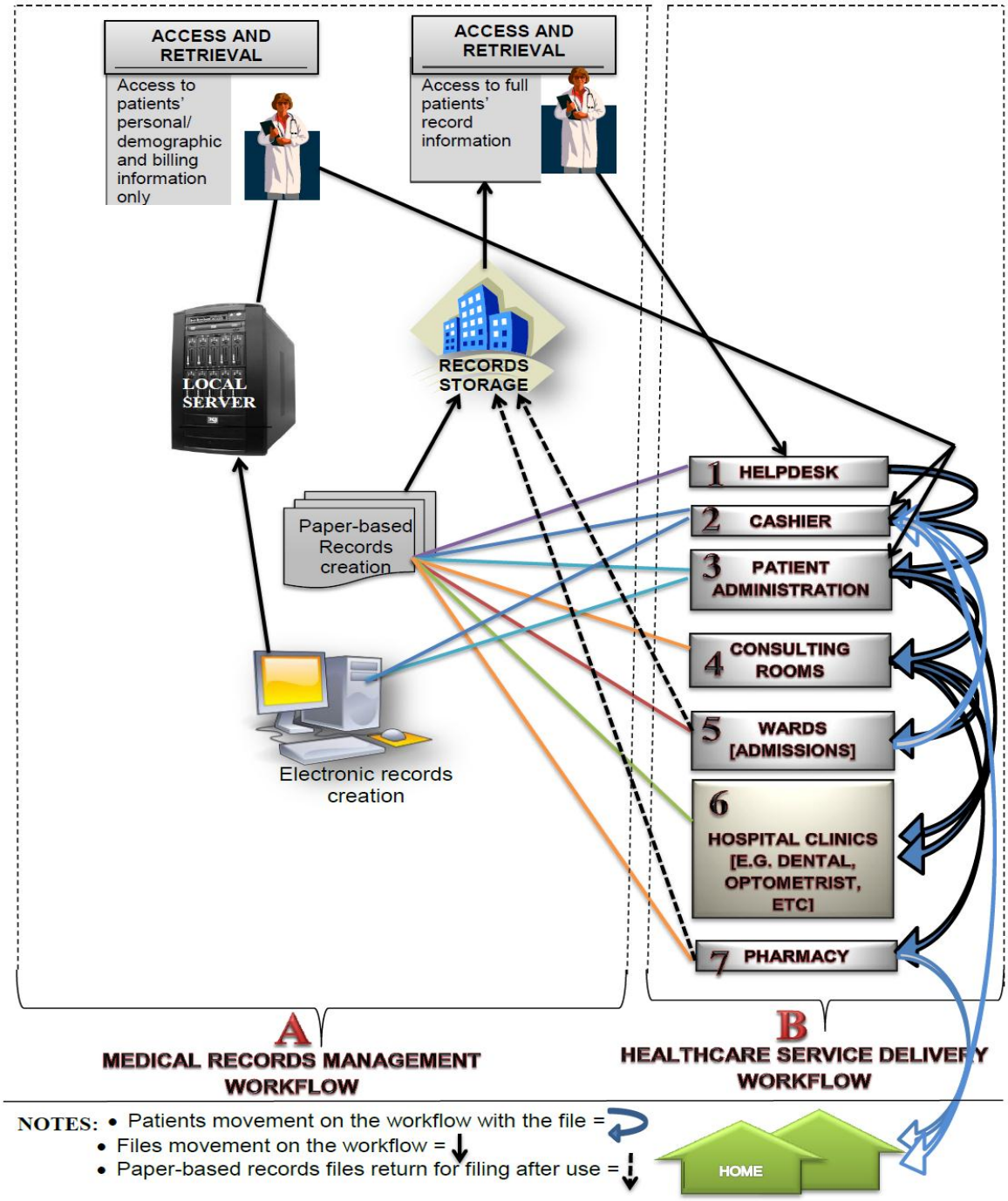

Figure 5.3: Medical records creation and management on the healthcare service delivery workflow in the Limpopo province hospitals

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5.9 UNDERSTANDING OF THE RELATIONSHIP BETWEEN MEDICAL RECORDS MANAGEMENT AND HEALTHCARE SERVICE DELIVERY

The researcher interpreted data about the relationship between medical records management and provision of healthcare service delivery as one of the research objectives.

5.9.1 Relationship between medical records management and provision of healthcare service

Good recordkeeping assists in ensuring good medical care to patients. The literature shows that there is a good relationship between the healthcare service delivery and records management, because, if records are not properly managed, healthcare service may be affected negatively (IRMT 1999:1; Sinha and Shenoy 2013:330; Dang et al. 2014:538). Similarly, in the Limpopo healthcare institutions, the majority of employees understood that there is a relationship between medical records management and provision of healthcare service, as confirmed by 73.3% (159) of respondents. They understood that there was a good relationship between medical records management and healthcare service delivery since medical records must always be used by the healthcare service providers for reference to previous medical history and/or for recording of the current medical condition observed, treatments, prescriptions and diagnosis.

5.9.2 Medical records management negative impact on healthcare service delivery

According to the literature reviewed, healthcare providers produce records that contain important information to be used in the near future for further treatment and care of the same patients (International Records Management Trust (IRMT) 1999:1; Boonstra and Broekhuis 2010:2; Sinha and Shenoy 2013:330). The records produced need to be managed properly to ensure that they are accurate, comprehensive, up to date and accessible at all the times. This is because good recordkeeping assists in ensuring good medical care to patients. If records are not properly managed, healthcare service may be affected negatively (IRMT 1999:1; Sinha and Shenoy 2013:330; Dang et al. 2014:538). In the Limpopo healthcare institutions, the medical records management impact negatively on healthcare service delivery, as confirmed by 60.8% (132) of respondents. This is because of frequent cases of missing files due to inadequate filing space in records custodies, which had a negative impact on healthcare services. In some instances, doctors were not able to help the patients with healthcare services without medical background contained in the missing files. However, respondents considered the following factors, among others, as the causes of the negative impact on medical records management to the healthcare service delivery:

- Ineffective electronic system,

- Inappropriate medical records management,
- Shortage of filing space,
- Improper medical records filing due to lack of space,
- Lack of appropriate records management resources,
- Ineffective records management framework ,
- Long turnaround time for file retrieval , and
- Missing or lost files.

5.9.3 The rate of the impact of medical records management on the healthcare service delivery

The literature reviewed attests that the absence of medical records may lead to limited healthcare service delivery. At other healthcare services, it is not possible at all to deliver healthcare services due to ineffective medical records management. Failure to create adequate records or to maintain them may have more serious consequences to healthcare service (Shepherd 2006:7; Sinha and Shenoy 2013:330; Dang et al. 2014:538). Properly managed records assist the hospital management and healthcare providers or workers with the smooth running of hospital administration, regular disposal of unneeded records, tidy records storage and proper access to records, and timely retrieval of required records, which saves time and other resources for the hospital (Boonstra and Broekhuis 2010:2; IRMT 1999:1; Sinha and Shenoy 2013:343). The healthcare records are also used by healthcare workers and management for accountability about previous healthcare actions they conducted, to collect and compile statistical reports and provide data for research (IRMT 1999:1).

Furthermore, in the case of Limpopo healthcare institutions, it was realised that poor medical records management could cause the medical professional to render wrong or poor healthcare service, as confirmed by 41.9% (91) of respondents. This implies that inaccessibility or unavailability of medical records may disable the medical professional from continuing to render healthcare service as also confirmed by 48.8% (106) respondents. However, the medical records help the healthcare professionals with the information about the patients' medical history as confirmed by 51.6% (112) of respondents. This is because the medical records contain information that ensures smooth healthcare business continuity, as alluded to by 44.2% (96) of respondents. Significantly, medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward, as supported by 45.2% (98) of

respondents. Moreover, medical records assist healthcare professionals with information for accountability, openness and transparency, as supported by 49.3% (107) of respondents.

5.10 SUMMARY

This chapter interpreted and discussed the findings of the study presented in chapter 4 to give readers the true meaning of the data collected. As part of the objectives of the study, the data discussed entails information about availability and application of medical records management governance practice and tools such as legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. Issues relating to medical recordkeeping system were also discussed in terms of its nature, operations, functional requirements and metadata requirements. The question of medical record archival processes was also discussed with reference to appraisal, retention, preservation strategies and storage management. The discussion was also focused on the recordkeeping technology with specific focus on management of electronic records systems and electronic system security. Findings about staff capacity and competencies for management of medical records were also interpreted and discussed in this chapter. Data about whether the healthcare institutions were ready for the implementation of ECM in the hospitals as a modern electronic records management system was also discussed. The discussion also focused on the data about the framework that can facilitate medical records management practice in the public hospitals.

During discussion and interpretation, the study discovered that there was a good relationship between medical records management and the provision of healthcare service and, together, the two functions affected each other, whether positively or negatively. It all depends on whether things are being done properly, following the correct procedures and prescripts. For instance, if the healthcare providers are not recording what they are doing when assisting patients or are not submitting medical records for filing, records management will have no records to manage and/or to provide access to the following time when information is required to further assist patients or even to account for or to provide access to information as required by PAIA and PAJA. Similarly, if records are created and submitted to the records management unit for proper keeping and management, but records are not properly managed as required by the relevant legislation, policies and procedures records may get lost easily, may be misfiled, not locatable or retrievable, or may fade in an electronic system, if they are ineffective when required. Therefore, this will result in patients suffering in terms of turnaround time for file retrieval, inability to render medical services without medical history, poor healthcare service such as repetition of prescriptions and treatments. Proper records management is a key to quality healthcare services. The next chapter will cover the

summary, conclusion and recommendations of the study as to how the healthcare institutions can improve their records management programme to improve the healthcare service delivery. A framework to embed medical records management into the healthcare service delivery in the healthcare institutions will also be presented and proposed in the next chapter. The proposed framework is believed to be helpful in improving medical records management situation in the healthcare institutions.

CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

6.1 INTRODUCTION

The previous chapter presented the interpretation of the research findings. In doing this, the researcher gave the reader a clear understanding of the data in a simplified manner so that the reader can gain insight into the findings, in accordance with different objectives of the study. This chapter presents the summary, conclusions and recommendations of the study. The researcher provides the summary and conclusion of the study to ensure that the reader recalls the knowledge read in the previous chapters, which will enable them to understand better when reading the recommendations of the study. In providing the recommendations, the researcher is trying to guide the organisations affected by the problem in the study towards improvement in their poor performance and the maintenance of their good performance. A framework to embed medical records management into healthcare service delivery is also presented in this chapter in an attempt to assist the healthcare institutions to have a benchmarking baseline in developing their own healthcare records management frameworks. Such a framework is aimed at resolving long patient waiting times resulting from a long turnaround time for file retrieval, and patients receiving the incorrect treatment due to a lack of medical history. The chapter also presents the implications of the study on theory, policy and practice. Further studies are also proposed for certain issues of the study to which this study never deeply focused on them.

6.2 SUMMARY FROM THE FINDINGS OF THE STUDY

This section provides the summary of the research findings as essential, but more focused on the significant points, rather than on providing every specific finding (Babbie 2004:490). The summary of the finding of the study is discussed in this section based on the objectives of the study discussed in section 1.4 of Chapter One.

6.2.1 Medical records management governance practice

The first objective of the study was to assess medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. The following are a summary of the findings:

- The RM infrastructure in the healthcare institutions was not in line with the South African legal and regulatory frameworks. Although the medical records management policy and procedure manual of the Limpopo Department of Health gave a proper mandate and guidelines in line with the legislative framework governing records management the healthcare institution, most of the requirements as stipulated in the policy guidelines were not yet complied with.
- The healthcare institutions in Limpopo used several legal and regulatory frameworks listed under item 5.2.2 in Chapter Five as a guide for the planning and establishment of the records management infrastructure.
- The policies and procedures were developed in line with legal and regulatory frameworks, but were not properly implemented due to a lack of resources, such as financial and human resources.
- The organisational infrastructure for medical records management was poor because the condition of records storage space was not good due to a lack of appropriate records security measures. The equipment and facilities were also not adequate in the institutions. For instance, the records storage capacity for paper-based medical records was not adequate in all the healthcare institutions, to the extent that other files containing records were kept on the floor between shelves.
- The current medical records management infrastructure in the healthcare institutions was also not appropriate in terms of compliance with legal and regulatory requirements compliance. For instance, the paper-based medical records storage capacity and administration resources such as boxes, file covers and markers were not adequate in the hospitals. Access control measures to the records were ineffective as patients were able to move around carrying their files on the healthcare service delivery workflow and revenue unit officials responsible for billing patients were also able to access the storages and issue files to external clients, such as lawyers and the police.
- Officials in the healthcare institutions had knowledge of the legislative framework governing records management in South Africa. This is because the officials in the institution knew about existing legislative framework governing records management in their institutions and also had records management related legislative framework, policies and procedures available for reference. Instead, due to a lack of appropriate resources required for records management, they could not completely implement these guidelines.
- The healthcare institutions applied or used the legislative framework governing medical records management in their institutions. For instance, they used different legislative

frameworks governing records management for the development of policies, making decisions and solving problems, adopting records management frameworks and e-systems, referencing during policy implementation and staff training on records management.

- The institutions had the medical records management policy for the purpose of managing medical records in the hospitals. The medical records policy's scope covered all records management functional requirements as guided by the NARSSA Act and records management models (life cycle and continuum model).
- The medical records management procedure manual had been created and was available, but was not yet fully distributed from the provincial office records management unit and implemented. There was no compliance with and/or implementation of the medical records management policies and procedure due to a lack of resources and funds.
- The management of medical records were not effective at all the stages of records management, from creation to disposal. For instance, there was no file-tracking system in place at all the stages of medical records management, files were always in the hands of patients during healthcare service delivery, no file or information backup of medical records was done, and no disposal was conducted for medical records.
- The hospital unit responsible for the management of medical records during the creation and receipt, and maintenance and use stages of the record's life cycle in the healthcare institutions was the records management unit, except for the records creation stage when the nursing unit was responsible. During the records creation and receipt stage, responsibility for medical records management lies with the nursing unit, since the records management staff and manager were not available when healthcare service during which the records were created was rendered to the patients. The intensive responsibilities of the records management unit started with the stage of records maintenance and use up to the last stage of disposal, because they were not present during the first stage of records creation, and there was no system in place to assist them with tracking the records creation and movement.
- The relevant unit for taking responsibility of managing medical records at each stage of the life cycle is the records management unit. Nevertheless, the current situation during the study was that the records management unit was not conducting any records management function and was not involved during the first stage of records creation and receipt, only the records creators took control over the records due to a lack of enabling resources like file tracking systems.

- The accountable unit for the management of medical records during each of the stages of the record's life cycle was the records management unit, although they had no control measures during the records creation stage. For instance, institutionally, the records management unit took full accountability for the management of medical records during each stage of the record's life cycle and that is the reason why policies and procedures were also developed by the records management unit to direct every employee on how to handle records.
- The medical records management unit was the unit responsible to account for records management at all stages of records' life cycle. In other words, this unit is responsible for taking the overall accountability for medical records management. This is why the medical records management policy created by the records management unit also emphasises issues of compliance with policy directives and states that disciplinary action may be taken against non-compliers.
- Security of medical records was not appropriate during certain stages of the life cycle since there was no system to detect when new records were created by nurses and doctors during healthcare service delivery. This is because records also need to be protected against the creators because due to maladministration or unprocedural transactional conduct, the records creators are usually responsible for the records disappearing during some stages. Institutions had no means of managing the file content like content indexing and page numbering and that means they could not detect missing records or documents inside the file when the end-user returned it for filing. There were no backup systems for medical records. The patients were also used as file messengers on the healthcare workflows. The records storage had no burglar-proofing and counters to prevent clients and thieves from accessing the records inside the storage.
- There was a designated medical records management unit in the institutions. For instance, the medical records management was a sub-structure/sub-division of the overall records management division and was headed by the senior administrative officer reporting to the records manager, who was responsible for all the records management sub-divisions in the institution.
- The designated records manager post was available in the hospital. However, in most of the institutions, the post was vacant. For instance, according to the organisational structure, the institution had a records manager for all the categories of records in the institution. The records management division was also divided into three sub-divisions, which are medical records management, general records management and personnel records management. Each subdivision, including the medical records management unit, was headed by the senior

administrative officer reporting to the records manager. In the case of medical records, the records manager delegated his responsibilities for medical records management to the senior administrative officer heading medical records management sub-division.

- The medical records management unit was well structured and somewhat functional, even if some of the institutional clinics were not covered, as the focus was on the wards and out-patients division (OPD).
- Medical records management is a collective responsibility of all staff members, records users and managers. For instance, all people and heads of different divisions in the institutions were responsible for sound medical records management by ensuring its proper creation and protection against any perils that may damage them. Furthermore, the employees most responsible for ensuring proper administration, safekeeping and management, as also enforced by the medical records management policy, were the records manager and his/her staff.
- Accountability for medical records management in the institution was also assigned to the chief executive officer as the overall head of the hospital.
- The institutions experienced the problem of missing files or records during the healthcare service delivery. The respondents were aware of the negative impact of missing files on healthcare service business continuity. For instance, the negative impacts of missing files on the healthcare service business continuity include:
    - inability to monitor and evaluate compliance and administrative improvement,
    - inability to provide access to records,
    - inability to respond to litigation, the Auditor-General and legal information requirements,
    - inability to comply with legislative framework, and
    - inability to respond to the Auditor-General and internal audit request.
- The respondents were also aware of the resolutions that can be applied in an endeavour to solve the problem of missing files. For instance, a solution to the problem of missing files may be:
    - the introduction and adoption of effective records management framework/ model,
    - the adoption of electronic system that is collaborative to the business process, and
    - the involvement of the records manager during the system, building and administration planning.
- There was no frequent occurrence or experience of missing documents or missing records inside the files in the institutions.

- The officials in the healthcare institutions had an idea about what may be the reasons for missing documents or missing records inside the files. The reasons for missing documents or missing records inside the files include:
    - ineffective records management framework,
    - lack of records management resources,
    - lack of records management skills and competencies,
    - shortage of staff and filing space,
    - high records demand, and
    - lack of the records manager involvement and consultation during system, building and administration planning.

6.2.2 The nature of medical recordkeeping system

The second objective of the study was to investigate the nature of the medical recordkeeping system in line with records management operations, recordkeeping functional requirements and metadata requirements and the summary is presented as follows:

- The medical records management functional operations were not properly created and implemented at all the levels of the records life cycle. This appears to be a gap that sacrifices records safety and security on the healthcare service delivery workflow. For instance, there was no records management functional operation during the first stage of creation and receipt. This is because the creation of records could not be tracked during healthcare service delivery. This means that records may be created and destroyed without the knowledge of the organisation or the knowledge of the records management officials.
- The medical records management functional operations were not implemented at all levels of the records life cycle. For instance, during the first level of the life cycle there was no file tracking activity, no backup and ventilation control was performed in the second level and disposal was also never conducted for medical records as the third level of the life cycle.
- There were medical records management functional operations during each stage of the life cycle, although some activities, such as disposal, were not yet being implemented.
- Even though the electronic system was available, medical records were not managed electronically in the healthcare institutions, but rather manually.
- The system was available, but not effective, for medical records management since it could not be used for any records management activity other than only confirming the file number and capturing billing and personal details about the patients.

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- Electronic records management were not fully in line with the dimensions of the records continuum model such as create, capture, organise and pluralise, since the electronic system was not functional for records management and only the manual system was applied fully.
- There was no full compliance with organisational recordkeeping functional requirements in the healthcare institutions due to a lack of resources. For example, the medical records management policy requires that files must be indexed, page numbered and colour coded; and the disaster management plan required that records security measures such as CO_2 fire extinguishers, water and smoke detectors, ventilation control instruments like functional air-conditioners and access control be in place but due to financial constrains not all of these were implemented.
- The hospital officials understand the concept metadata since they see it as information captured along with electronic records describing the identity, authenticity, content, structure and management requirements of records, and/or information used to search or identify the record out of mass of the other records.
- Although the system was not functional or utilised fully, the officials in the healthcare institutions also understand metadata requirements since they identified an example of these requirements as records creator, record capturer/processor, records business transaction, and patient personal details, such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions. This implies that proper implementation of the system may be a possibility with such a basic knowledge.
- In line with the institutional manual paper-based records management system, there was compliance with metadata recording requirements. Instead, there was no compliance with full metadata capturing requirements of the electronic records management system. For instance, the medical records metadata was mostly captured on the paper-based records and partially on the electronic system.

6.2.3 Archival processes for medical records

The third objective of the study was to assess medical record archival processes in terms of appraisal, retention, preservation strategies and storage management. The summary is as follows:

- Officials in the institutions could implement the appraisal process properly as they had a good understanding of it. For instance, they described it as the process of evaluating an organisation's business activities to determine which records need to be created, captured

into the recordkeeping systems and for how long the records need to be kept and the process of determining the records retention period according to their values.

- The assignment of the retention period for all categories of medical records was implemented. The retention periods for medical records in different categories were scheduled inside the medical records policy.
- The rate of medical records storage management and preservation in the healthcare institutions was not good. For instance, files were not well arranged on the shelves and contents were not structured and indexed, storage space was not ventilated, records were not backed up, water taps and pipes were crossing inside storage spaces. The storage spaces were also too small to accommodate all the records created daily. There were also no tracking system or register for files issued out and files were issued to patients as they come for consultation.

6.2.4 Technological terrain

The fourth objective of the study was to investigate recordkeeping technology in terms of management of electronic records systems and electronic system security. The summary is as follows:

- The institutions had no technology that was used effectively in managing their medical records. This is because the only available system was used to capture patients' personal details and billing information, rather than patient files' movement tracking and other records management related functional activities.
- The medical records management technology that was applied fully was manual because the records were mostly created and managed manually. The e-system was only partially used since it was only used for billing and patients' personal information capturing and verifying of the patient number, which was also used as file unique number for filing of individual patients' files. The system had almost all the records management functionalities, except for the scanning of the records created in a paper-based format, but more functionalities were not activated or active for use in capturing the information. The only functional modules were billing and patient administration.
- The medical records management electronic system in the healthcare institution was not good as it could not cover every detail of records, but financial and personal details. For instance, system records storage capacity was not adequate, records metadata was

incomplete, several functionalities were lacking and/or non-functional in the medical records management system, and the system was unable to produce audit trail and lacked backed-up.

- Although the system was contained and utilised for only billing and patients' personal details, access to records in the system was effectively controlled. For instance, access to information in the system was protected by means of a user password and username under which every system user was assigned a username and password, which they used to login to the system.
- The system was not protected against any disaster since there were no disaster-prevention measures and fighting tools.
- The electronic records management system never effectively met/served the records management functional requirements since most of the key functionalities for records management were not covered or active.

6.2.5 The staff capacity, skills and competencies for management of medical records

The fifth objective of this study was to establish staff capacity and competencies for management of medical records and it was summarised as follows:

- The staff complement in the institution was not adequate to perform and achieve all the operational functionalities of records management because the vacancy rate was very high in the healthcare institutions.
- The records management unit was not well structured in terms of the unit and reporting channels, especially in the provincial hospitals. For example, the records manager at hospital level reports to corporate services manager and not to the CEO and that means they are not role playing in the executive management meetings. The records manager was also controlled by the district offices where there was no medical records management manager position. In the district hospitals and specialised hospitals, the records management unit was managed by the information officers or information managers. This makes it difficult for the records manager to influence management's decision and adequate budget allocation.
- The records management unit was not well placed in terms of the unit and reporting channels. For instance, the hospitals were using different structures in their different institutions and this means there was a lack of standardisation although they belong to same department and province. Therefore, some of the records management structures were mixed or merged with the information management sub-unit at management level and some merged with the corporate services unit at the management level, which results in bias for resource allocation and motivation to management.

- The highest level of educational qualification achieved by the majority of officials in the healthcare institutions was a basic certificate. The highest level of records management qualifications achieved by most of the officials in the healthcare institutions was also certificate. The highest level of certificate qualification in records management achieved by many officials in the healthcare institutions was basic.
- The institutions were not conducting in-house records management training and workshops to records management officials in their institutions. The institutions were also not conducting in-house records awareness workshops to all staff in the institution.
- The medical records management highest work experience for the majority of staff in the healthcare institutions was 3 to 5 years. The records management experience in general for the majority of employees was 3 to 5 years.
- The majority of employees were not familiar with and would not implement the principles of records management.
- The majority of employees in the healthcare institutions had no confidence that they can manage medical records throughout its life span.
- The majority of employees also lacked confidence and knowledge on how they can effectively manage medical records electronically throughout its life span.
- The majority of employees had no adequate experience in electronic records management.
- The majority of employees in the healthcare institutions were not competent and skilled for all records management operational and functional requirements.

6.2.6 Readiness for implementation of enterprise content management

The sixth objective of the study was to assess the readiness for implementation of ECM in the hospitals as a modern electronic records management system and the findings were summarised as follows:

- The healthcare institutions with the provision of adequate resources can easily adopt ECM for implementation since the majority of employees in the healthcare institutions understand what ECM is. For instance, they understand it as a strategy that consists of a set of software products to manage all types of enterprise content throughout its entire life cycle.
- The healthcare institutions' records management employees also had little or no knowledge about the ECM indicators. For instance, they identified the indicators of ECM as migration of ERDMS to the web content

- The healthcare institutions have not yet started to implement ECM as a modern e-records management system. For instance, the only system used for medical records management, which was utilised for billing and patients administration (for personal detail) is called PHIS or eHIS and not ECM.
- The institutions were ready for the implementation of ECM. For instance, among other requirements for implementation of ECM, institutions had several computers, networks, servers and equipment that existed at the patients' administrative helpdesks, which may be supplemented to be enough.
- The employees found the ECM necessary and relevant for the institutions to improve the state of medical records management as the system currently used was not functional.
- The healthcare institutions feel that, if properly implemented, the ECM may bring improvement to the organisation.
- Availability of the electronic records management requirements for ECM system implementation was not good due to inadequate availability of resources. For instance, several computers, network points and printers seemed to have existed in almost all the hospitals, although they were not enough and some had outdated hardware and software. Some resources, like toners, were not adequate.
- However, availability of servers was good, but the server's capacity was not enough as the system was frequently down or freezing.
- The network was inadequate as not all computers were connected in some institutions and some service points did not have network points. The availability of the internet connection was poor as it was frequently down and continuously processing slow.
- The most relevantly responsible persons for implementing ECM were confirmed to be the records manager, chief executive officer and the head of department.

6.2.7 Proposed framework to facilitate medical records management practice in the public hospitals

The seventh objective of this study was to propose a framework that can facilitate medical records management practice in the public hospitals and the findings were summarised as follows:

- The medical record management framework was not effectively enabling the institution to manage medical records properly.

- The current medical records management system framework was not good. For instance, the medical records management framework did not enable records' safety and security from creation to disposal in its life cycle.
- The framework lacked records backup and file tracking function, especially at the records creation stage.
- The framework system was unable to detect when records were created.
- The framework system was also unable to give the records manager an audit trail about the records from the date of creation to the current date.
- There was no medical records management framework integrated into the healthcare workflow.
- There were no medical records management techniques on the workflow because medical records were moved through the hands of the patient from one healthcare service station to the other during the business process.
- The electronic records management system was not utilised to manage medical records throughout the framework in the institution as records were only generated and managed manually.
- The medical records on the framework were not managed using the business administration system.
- The business electronic system was not used for medical records management, but instead for capturing the personal details and billing of patients per se.
- Medical records were not created and managed electronically on the healthcare business process. Instead, records were created manually and has never been managed using the business administration system. Obviously, records were created manually and managed using a manual system on the business process.

6.2.8 Understanding of the relationship between medical records management and healthcare service delivery

The eighth objective of the study was to assess the relationship between medical records management and provision of healthcare service and this section was summarised as follows:

- The majority of employees understood that there are relationships between medical records management and the provision of healthcare service delivery. This implies that they knew the importance of proper management of medical records.

- The medical records management impacted negatively on healthcare service delivery in the healthcare institutions due to frequent experience or occurrence of missing files and inadequate filing space in records custodies. For example, if a record is missing, the medical practitioner may either not be able to render the healthcare service or may render the service wrongly such as repeating prescriptions or even injections unnecessarily and other medication implicate patients when repeated.
- Poor medical records management may cause the medical professional to render the wrong or poor healthcare service. For example, healthcare practitioners need medical records to check the medical history before treating the patients or prescribing any medication, so that they detect any duplication or repetition of treatments and prescription to avoid bad medical implications for patients.
- Inaccessibility or unavailability of medical records may disable the medical professional from continuing to render healthcare service business. For example, if the medical records are not available, some of the medical practitioners may avoid rendering any further service, especially for chronic illnesses, to avoid committing mistakes of maltreatment to patients.
- The medical records help the healthcare professionals with the information about the patient's medical history or background. For example, when the medical practitioner treat a patient, s/he needs records to be used for checking the patient's previous treatment and medication prescriptions as a guidance for going forward with the treatment.
- The medical records contain information that ensures smooth healthcare business continuity. For example, the medical records help the healthcare practitioner with the information about what was done or which steps were previously completed or are still outstanding for the patient's current illness before proceeding with the treatment.
- Medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward. For example, medical practitioners hold a meeting on a weekly basis to check how they were performing every week. Where they notice that mistakes have been made, they try to guide each other on improvements necessary and they do this by referring from the medical records, especially those with mistakes or problems.
- Medical records assist healthcare professionals with information for accountability, openness and transparency. For example, in a situation where some patients litigate the hospital about maltreatment, the medical records can be used as proof to show how the service was rendered and they do not have to rely on an oral account of the treatment.

6.3 CONCLUSIONS OF THE STUDY FROM THE FINDINGS

Conclusions are made in terms of research objectives. According to Babbie (2004:490), "the report should conclude with the statement of what you have discovered about your subject matter and where future research might be directed". Beginning with the focus on the research problem, ineffective records management framework resulted in the healthcare institutions experiencing difficulties to provide quality data, timely retrieval of records for doctors and citizens, and reviewability of healthcare service performance for improvement (monitoring and evaluation). For instance, the medical records were not properly managed and recordings/records inside the files were missing and, in some instances, were not done properly. Such kinds of records always provided data that was incomplete, inaccurate, unreliable, untrustworthy and unauthentic. Data of such characters may lead to more serious consequences such as misleading organisational decision-making and problem-solving strategies (Anova Health Institute 2012; Shepherd 2006:7). Furthermore, ineffective records management framework in the healthcare institutions resulted in lost records and unnecessarily retained ephemeral records. This further resulted in difficulty to locate files containing medical records and information as requested by healthcare providers for medical history reference, citizen information requests in terms of PAIA and PAJA, management for accountability and organisational business performance evaluation and monitoring and auditors for auditing organisational compliance with policies and procedures (Shepherd 2006:7; Wright and Odama 2012:147-149). This is why the key rationale of this study was to investigate and recommend a collaborative medical records management system framework to embed medical records management into the healthcare service delivery. This was with the purpose of achieving proper patient records management practice in the healthcare institutions. The framework is presented and discussed as the last item under the next section, which deals with the recommendations of the study.

6.3.1 Conclusion about medical records management governance practice

This section gives the conclusion about medical records management governance practice, in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. To begin with, the records management governance structure, the healthcare institutions had medical records management units to take responsibility and accountability for medical records management. The unit was well structured and functional. The main drawback was that although posts for the records manager and other records management officials were available as confirmed by the organisational structure, most of these critical positions were vacant due to a lack of funds. Nevertheless, in the healthcare institutions, the records manager was accountable to the chief

executive officer for any records management related issues. Generally, the records management unit was relevantly accountable for medical records management during all the stages of the record's life cycle. This is because, institutionally, the records management unit was assigned with the full responsibility and accountability for management of medical records during each stage of the record's life cycle.

On the other hand, the records management infrastructure in the Limpopo healthcare institutions was not completely in line with the South African legal and regulatory frameworks requirements. Besides, the medical records management policy and procedure manual gave a proper mandate and guidelines in line with the legislative framework governing records management in the healthcare institution. The institutions did not yet comply with most of the requirements, as stipulated in the policy and procedure guidelines due to lack of resources. Overall, in the healthcare institutions, the medical records management related legislative framework, policies and procedures were available but not implemented, mainly due to a lack of fundamental resources and officials' inadequate knowledge. The healthcare institutions were not provided with sufficient budget, were never allocated with the necessary human and technological resources to support the records management functions and were not provided with access to recorded information. The institutions experienced insufficient records administration resources, funds, shelving equipment and stationery, which led them to failure in implementing most of the medical records management policy requirements.

6.3.2 Conclusion about the nature of medical recordkeeping system

This section gives the conclusions of the nature of the medical recordkeeping system with specific focus on records management operations, recordkeeping functional requirements and metadata requirements. The medical records management functional operations were not well established at all the levels of the record's life cycle. For instance, during the first stage of records creation and receipt the records management functional operations was not clear, as records creation could not be tracked during healthcare service delivery. Generally, this means that the medical records management functional operation was not adequately conducted at all levels of the life cycle. In support of this, there was no visible activity for records management that was conducted during the healthcare workflow.

Furthermore, there were several significant activities that seemed to be not done during the different stages of the record's life cycle, including appropriate records ventilation control, protection of records against disaster and not terminating records to semi-active storages. During the records

creation stage no activity was performed but at least during the records receipt stage, records were properly arranged for filing, file opened, classified, captured in the relevant control register, and eventually filed accordingly. During the medical records maintenance and use stage, records access was not effectively controlled and registers were also not used to control the movement of paper-based records, files were issued without being recorded and records were only registered from end-users when they were returned. This implies that records were not recorded when issued to patients for consultation and the only recording took place when files were collected from the pharmacy and the wards for filing in records custody. During the records disposal stage, records were not disposed of as the institutions were unable to perform operational activities, such as records sorting and registration, disposal permission application, records disposal, issuing of disposal certificates, and eventual keeping safe of the disposal register for future reference. Overall, there was no full compliance with recordkeeping functional requirements due to a lack of resources.

Nevertheless, one of the key elements in records management is the records metadata. The officials in the healthcare institutions understand the concept metadata and metadata requirements as they were able to identify its definitions and described metadata requirements. Besides, there was partial compliance with records metadata requirements in the institutions since only the paper-based system contained full details and the electronic system only contained some details. For instance, the medical records metadata was mostly captured on the paper-based records and partially on the electronic system since in the paper-based file also received the information about the healthcare professionals who assisted the patients, but in the e-system, there was no data about the nurses, doctors and other specialists who treated the patients or prescribed medicine to them.

6.3.3 Conclusion about the archival processes for medical records

This section focuses on the conclusions of the study based on the medical records archival processes in accordance with appraisal, retention, preservation strategies and storage management. Nonetheless, there was an understanding of the concept appraisal in the healthcare institutions of Limpopo. Officials in the healthcare institutions described appraisal correctly as the process of evaluating an organisation's business activities, to determine which records need to be created, captured into the recordkeeping systems and for how long the records need to be kept. Appraisal has been conducted in the healthcare institutions of Limpopo. The records retention schedule was developed based on different categories of medical records and was incorporated into the medical records management policy and schedule of records other than correspondence.

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Looking at the preservation strategy, the medical records files' contents were not well structured and well arranged for easy monitoring, detection and control of missing records, since the file contents were not visibly structured and were also not indexed and page numbered (folio-numbering) to ensure proper management thereof for paper-based records. The medical records were not well arranged and filed on the shelves according to the file numbers since many files of records were kept on the floor between shelves or filing cabinets due to inadequate filing space. The temperature in the filing storages was not controlled for safety of the records. In some institutions, air-conditioners were not available, in some institutions they were available but not functional and in some they were available but not set to the required temperature as per the national archives policy. Officials in the institutions were also working inside filing storages. The paper-based medical records were not appropriately backed up with electronic records system for disaster recovery.

Furthermore, the medical recordkeeping buildings were not suitable and/or purposely built for recordkeeping. This was because most of the storages looked like they used to be used for something else in the past like consulting rooms, pharmacy or staff residences or even bathrooms. The records custodies and registries had access control for unauthorised people, such counters and unauthorised prohibition signs. On the other hand, due to congested filing custodies, it was not always easy for records management officials to retrieve or locate files in time. There were also no effective security measures for records in the custody. The security measures in the records custody were not effective due to a lack of the necessary security measures.

6.3.4 Conclusion about technological terrain on recordkeeping

This section gives the conclusions about the findings on the recordkeeping technology in terms of management of electronic records systems and electronic system security. The institutions had no e-technology that was fully used in managing their medical records, since the only available system was used to capture patients' personal details and billing information rather than patients' files' movement tracking and other records management related functional activities. The e-system was also used for allocating and verifying the patient number, which was also used as the file unique number for filing of individual patients' files. The electronic system did not help the institutions with the records management activities since records management functionalities or modules have never been utilised and system did not backup the medical history of the patients, instead only the paper-based records contained full patient medical history. The system had almost all the records management functionalities, except for the scanning of the records created in paper-based format,

but most of the functionalities were not activated for use. The system was not used effectively since other important e-system modules or functionalities for records management were not active or implemented.

Furthermore, looking at the medical records system management challenges, system records storage capacity was not adequate. The system was also not able to identify the records creators, requestors and many other elements of metadata. The system metadata for records retrieval was also not adequate and not useful. There were several functionalities lacking or not active in the medical records management system although few were covered. The system also had no functionalities for records issuing and returning (circulation), records disposal, scanning and capturing of electronic documents that were created in a paper-based format, and to create electronic records directly on the system. The system was also unable to produce an audit trail for each record. The electronic system was not used to capture every piece of information about the administration and treatment of the patients.

Focusing on the electronic system security, access to information in the system was protected through user password and username, under which every system user was assigned a username and password which they used to login to the system before using or accessing the information. Nevertheless, records in the system were protected against any perils such as virus and spyware. The computers used and the server was installed with the System Center 2012 Endpoint Protection, Symantec™ Endpoint Protection and Symantec Network Access Control. However, the system was not protected against any disaster. This was because there were no disaster-prevention and fighting measures for records. The electronic records management system never effectively met/served the records management functional requirements since most of the key functionalities for records management were not covered.

6.3.5 Conclusion about the staff capacity, skills and competencies for management of medical records

This section presents the conclusion about findings on the staff capacity and competencies for management of medical records. To begin with the staff capacity for medical records management, the staff complement in the institution was not adequate to perform and achieve all the operational functionalities of records management. Furthermore, the records management unit was not well structured in terms of the unit and reporting channels. The records management unit was not well placed in terms of the unit and reporting channels. The healthcare institutions were using different

structures from institution to institution. So, some of the records management structures were mixed or merged with or represented by the information management sub-unit at management level and some merged with or were represented by the corporate services unit at management level.

However, looking at the officials' qualifications, the highest qualification achieved by most of the records management officials in the entire healthcare institutions in the province was a certificate. The highest level of records management qualifications achieved by officials in the health institutions was also a certificate. The highest level of certificate qualification in records management achieved was basic. This implies that only a few achieved the intermediate and advanced certificates. Furthermore, the medical records management's highest work experience for the majority of staff in the healthcare institutions was 3 to 5 years. The records management experience in general for the majority of employees was 3 to 5 years. The majority of employees in the healthcare institutions did not have any experience in electronic records management at all.

However, due to a lack of capacity and knowledge or skills, most of the institutions were not conducting in-house records management training and workshops to all staff in the institution. The majority of employees were also not familiar with and would not implement the principles of records management. The majority of employees in the healthcare institutions had no confidence that they can manage medical records throughout its life span. However, the majority of employees also lacked confidence in and knowledge of how they can effectively manage medical records electronically throughout its life span. Hence, the majority of employees in the healthcare institutions were not competent and skilled for all records management operational and functional requirements.

6.3.6 Conclusion about the readiness for implementation of enterprise content management

This section purported to present conclusions about the readiness for implementation of ECM in the hospitals of Limpopo as a modern electronic records management system. The majority of employees in the healthcare institutions understand the meaning for the acronym ECM although they had little knowledge about the ECM indicators. The healthcare institutions in Limpopo have not yet started to implement ECM as a modern e-records management system, but they were ready for its implementation since some of the required resources were available. The only system used for medical records management was called PHIS or eHIS and the ECM system did not exist in the institution. ECM is necessary and relevant for the management of records and information in the

institution as realised by the institutions. As also realised by the healthcare institutions, the ECM may bring improvement to the organisation if properly implemented, such as easy retrieval of records, electronic usage of records online, many people share same records same time, easy business continuity, provision of timely, accurate, trustworthy and complete records, and effective records security throughout the life span, access to quality data and information, compliance with legislative framework, and also creation of reliable knowledge at all stages of the life span.

Furthermore, several key IT resources such as computers, printers, networks, internet connection and other equipment required for proper implementation of ECM were available although not adequate. Availability of servers was good because each institution had at least one server for medical records management system, PHIS. The server's capacity was not enough, which led to the system being down and freezing frequently. The internet was not effective since it was also frequently down and continuously processing slow. The website seemed to be well designed and structured, but the information and structure of the website seemed to be centralised at the provincial Department of Health and there were no links to promote the institutions and their services. Instead, the website just listed the names of the institutions with the contact details and addresses. The availability of the medical records management budget was also poor. The responsibility for implementation of ECM lies with the records manager, chief executive officer and the head of department.

6.3.7 Conclusion about the proposed framework to facilitate medical records management practice in the public hospitals

This section concludes on the findings about the nature of a framework that can facilitate medical records management practice in the public hospitals. The medical record management framework in the healthcare institutions was not effectively enabling the institution to manage medical records properly. The framework had no effective tracking system and not all records management functionalities were fully implemented as also not covered by the electronic system. Furthermore, patients were carrying their files on the workflow, which sacrifices security of records.

However, the medical records management framework did not enable records safety and security from creation to disposal in its life cycle. The framework lacked a records backup and file tracking function, especially at the records creation stage. The framework system was also unable to detect when records were created. The framework system was not able to give records an audit trail as it

was incapable of tracking medical files' movement. The creation, disposal and any other records management functional activity were also not covered by the system.

Furthermore, the medical records management framework was not collaborated or integrated into the workflow. There were no medical records management techniques on the workflow as during the business process medical records were moved through the hands of the patient from one healthcare service station to the other. In the consulting rooms and the wards records management staff were also not sure about what might be happening with the records since they were handled in their absence and there was no electronic system to track and inform them regularly as required about new records created and type of records contained in the files. The medical records management framework was not using the e-system since the system was not able to track file movements and/or cover many other records management functionalities and was also not capable of capturing records' metadata and/or records' scanned images. The records were not only handled by healthcare business service rendering officials on the framework, but also by the clients/patients.

6.3.8 Conclusion about understanding of the relationship between medical records management and healthcare service delivery

This section presents the conclusion on the relationship between medical records management and provision of healthcare service. The officials in the Limpopo hospitals understood that there is good relationship between medical records management and healthcare service delivery since medical records always have to be utilised by the healthcare service providers for both reference from previous medical history and/or recording of the current medical condition observed, treatments, prescriptions and diagnosis. In the hospitals of Limpopo, the medical records management impacted negatively on the healthcare service delivery in the healthcare institutions because of frequent experience or occurrence of missing files. In some instances, doctors were not able to help the patients with healthcare services without the medical background in the missing files. The negative impact of medical records management to the healthcare service delivery might be caused by ineffective electronic system, inappropriate medical records management, shortage of filing space, improper medical records filing due to lack of space, lack of appropriate records management resources, ineffective records management framework, long turnaround time for file retrieval and missing or lost files. Furthermore, poor medical records management may cause the medical professional to render the wrong or poor healthcare service due to poor record authenticity, usability, irretrievability, integrity and/or total loss. Inaccessibility or unavailability of medical records may disable the medical professional from continuing to render healthcare service.

However, the medical records help the healthcare professionals with the information about the patient medical history because the medical records contain information that ensures smooth healthcare business continuity. Significantly, medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward. Medical records assist healthcare professionals with information for accountability, openness and transparency.

6.4 RECOMMENDATIONS

Looking at the research problem, the records management framework needs to be reviewed and improved by ensuring that it is embedded into the healthcare service delivery since healthcare providers create records during healthcare rendering. During the same time they also need information from the records they created previously or in the past to further render the service to patients. Implementation of the embedded framework may ensure provision of quality data, timely retrieval of records for doctors and citizens, and reviewing of healthcare service performance through monitoring and evaluation with ease for improvement from time to time. Improvement to the records management framework may also bring about proper management of medical records that is free from missing files and/or missing documents in files. This may also ensure that the organisation attains data that is complete, accurate, reliable, trustworthy and authentic, and avoid the generation of data that misleads organisational decision-making and problem-solving strategies. The implementation of effective records management framework may ensure that the organisation only keeps records that are important and useful to the organisation. It may also ensure that these valuable records are safeguarded against any danger for loss or damage. The healthcare institutions need to come up with the medical records management framework that will enable them to easily and timely locate medical records files as and when requested by healthcare providers, citizen, management, and auditors for different reasons. For instance, records may be requested by healthcare providers for medical history reference, citizen requests information in terms of PAIA and PAJA, management need records for accountability, organisational business performance evaluation and monitoring and auditors need records for auditing of organisational compliance with policies and procedures. Therefore, this is because when the records requested are required for use during a certain time or period, they must be provided by that time. This study investigated, developed and recommended a collaborative medical records management system framework to embed medical records management into the healthcare service delivery. This is a framework that

will bring about sound patient records management practice that effectively supports healthcare service delivery. The proposed framework is presented in this chapter in Figure 6.5.

6.4.1 Recommendations about medical records management governance practice

This section gives recommendations about medical records management governance practice, in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities. Looking at the medical records management capacity, the institutions must ensure that at least more than 75%, if not all, of posts established on the structure are filled, especially the records manager posts to ensure proper implementation of policies and procedures. The records manager must be considered a critical post and must be filled within at least three (3) months after being vacated because the unit may not properly function without a capable head who must take responsibility and accountability for proper planning and functioning of the unit. The hospitals must ensure that the records manager recruited and appointed is suitably qualified for the position to ensure proper planning and implementation of the medical records management programme.

Furthermore, even though records management is a collective responsibility for every employee in the organisation, the records manager and his team must play the leading responsibility and accountability for every record that is created in the Limpopo health institutions. The qualified and competent records manager must be appointed to help the organisation design the records management system framework that will enable them to manage records at all stages of the records life cycle, from creation to disposal. The healthcare providers and other records users must be responsible for ensuring that records are protected against any damage or theft until such time as it is submitted to registry for filing. The records management officials must always ensure safety and security of records in the custody by ensuring that all the security measures for records are in place and that access control is strengthened. To minimise records theft and damage, patients should not be carrying files on the workflow or in the queue, alternatively, the institutions should appoint a queue marshal or a file messenger. A queue marshal or file messenger will be responsible for moving files from one service point to the other while controlling the patients' queue. By doing this, s/he will be making sure that every patient is in the right queue and that they are satisfied at all times. An electronic queue control system that can project and announce patients' queue numbers and allocate them to a helpdesk for assistance based on the patient's service needs is also recommended to avoid patient congestion and conflict on the workflow.

Furthermore, adequate resources, including funds, must be provided by the head of the institutions to enable the unit to design an effective electronic system that can track records' creation and movement in all the stages. The records management unit must perform activities such as tracking of records creation and demanding them to be submitted for filing, checking their nature of handling and creation during the first stage of records creation and receipt rather than only the records creators' taking the lead and control over the records. Nevertheless, the records manager must officially be assigned the accountability for proper management of medical records in the institution and officials in the records management unit must also be given the responsibility for sound records management and administration. The records manager as an accounting official for the records management function must come up with policies and procedures that guide the records management officials on how to administer the records throughout the life cycle. S/he must also ensure that the relevant officials are trained and monitored to check whether they comply with the policies and procedures as trained, and that corrective measures are implemented where there are deviations. This is because the records manager must implement the strategy to ensure that records are adequately captured, created, transmitted, used, stored, indexed, retrieved, controlled, retained and preserved in compliance with legislation, standards, policies and procedures as also alluded to by Chachage and Ngulube (2006:10); Ndenje-Sichalwe, Ngulube and Stilwell (2011:268).

The heads of the healthcare institutions must provide the necessary resources as guided by the medical records management policy, procedure manual and legislation. In doing this, they will ensure that the records management infrastructure in the Limpopo healthcare institutions is fully implemented in line with the South African legal and regulatory frameworks requirements. For instance, the head of the institution must provide records storage that is free from water taps and pipes crossing records storage spaces, security measures such as water and smoke detectors, adequate firefighting precautionary measures, adequate ventilation control tools like air conditioners in most records preservation custodies, and records storages that are purpose built for recordkeeping purposes. The organisational disaster management plan also needs to be implemented and the head of the institutions must provide the necessary resources. The healthcare institutions must use legislative frameworks as a guideline for different records management actions such as developing policies, making decisions and solving problems, adopting records management frameworks and E-Systems and for reference during policy implementation and records management training for staff. This will help them to align their records management activities to the relevant legal and regulatory prescripts.

The institutions must also ensure that records management registry is available to avoid officials working in the storage since they may not cope with the necessary temperature of 18°C and 20°C as required by policy, especially during winter. The institutions must also strengthen access control to registry and records custodies to avoid records theft and unauthorised destruction, as well as unauthorised viewing of confidential information. The medical records management system has to be improved or changed by the records manager with the support of the heads of the hospitals to cover all the information about the patients, including prescriptions, diagnosis, treatments and many more to back-up the paper-based records. The records management unit has to devise with a means of managing the file content for officials to detect missing records or missing documents inside the file when the end-user return files for filing. The file contents for paper-based records need to be structured and indexed to detect missing records inside the file with ease.

Generally, the records manager must design the strategies to ensure that the management of medical records is effective at all the stages of records management, from creation to disposal. The records manager must ensure that during the records creation, full medical records containing information recorded at all service points during healthcare service delivery are created in both paper-based format and electronic format for backup purposes and quick access to and sharing of patients' information by healthcare providers. He must also ensure that the semi-active paper-based records are separated or terminated from active records to ensure separation of active and semi-active records in different storages. This will also ensure easy retrieval and disposal. Institutions must involve the records manager during the system building and administration planning to ensure effective records management programme.

6.4.2 Recommendations about the nature of medical recordkeeping system

This section gives recommendations about the nature of medical recordkeeping system with specific focus on records management operations, recordkeeping functional requirements and metadata requirements. The medical records management functional operations need to be reviewed for re-establishment at all levels of the records life cycle to close the loophole for records safety and security. For instance, the records management functional operations need to be clear during the first stage of records creation and receipt by applying the system that is able to ensure that the records creation is tracked during healthcare service delivery. The medical records management functional operations need to be adequately established and performed at all levels of the life cycle. This can be made possible by establishing and performing activities for records management to be performed during the healthcare workflow, including the records creation and use by healthcare

providers, in consultation with the records manager. For instance, during maintenance and use, records need to be recorded when issued out and when returned during patient consultation from the pharmacy and the wards for filing in records custody. Records must also not be issued to patients, but to healthcare providers for safety purposes if paper-based records will still be maintained. In an endeavour to improve their records management programme, the healthcare institutions may follow the record's life cycle, typically mapped by the researcher in Figure 6.1. As illustrated, medical records are created by the healthcare providers; then receipt in records management custody for maintenance, distribution and user access control; termination of less frequently utilised records to semi-active storage; and eventually disposal of inactive records by either destruction or transfer to archive based on their values following appropriate archival procedures. Records with an enduring value will be transferred to archival repository for permanent preservation to be accessed by overall public people and ephemeral records will definitely be destroyed.

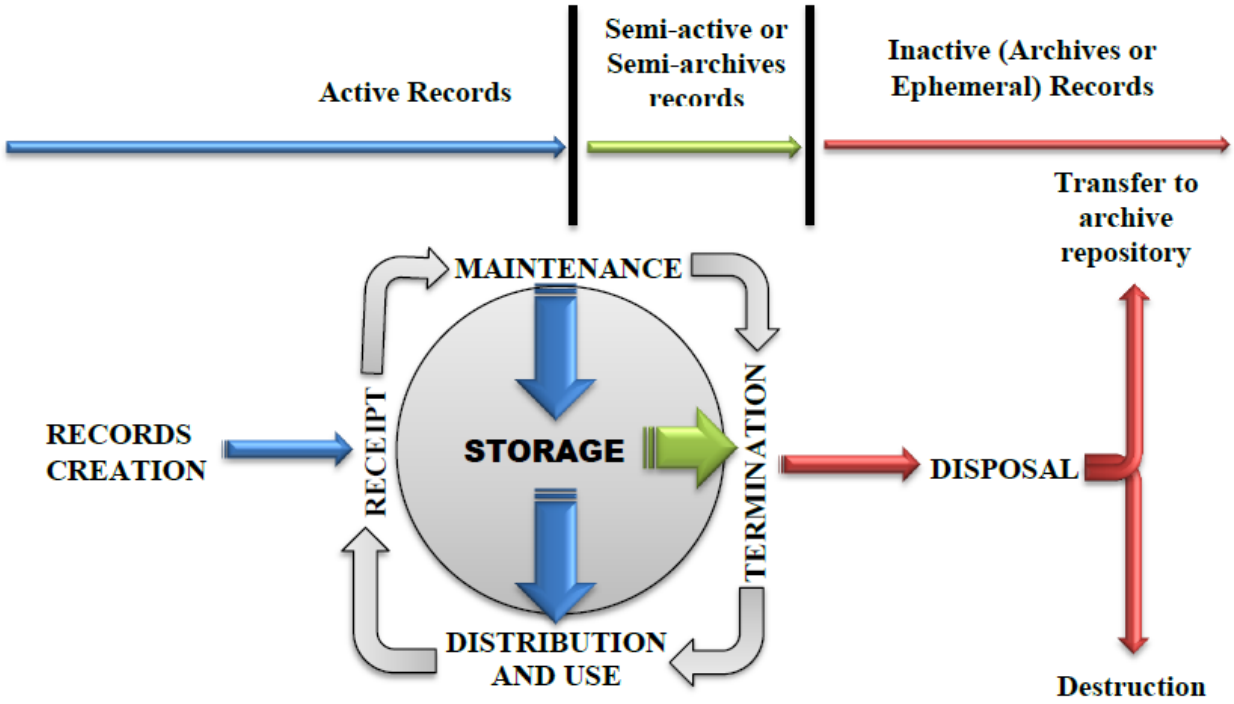

Figure 6.1: Typical records life cycle to guide management of medical records in the healthcare institutions

Furthermore, during the records creation and receipt stage, records need to be properly recorded or captured, classified, arranged and filed as guided by the filing system numbers. The records existence needs to be tracked by applying an appropriate system to know its condition, creator, period and purpose or activity. During the records maintenance and use, access to the records and

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storage needs to be controlled to ensure that only authorised people access the records. The records maintenance measures also need to be in place. For example, air conditioners, pests control and other preventive measures need to be in place. Records movement also needs to be controlled with registers, files and records returning and registering from end-users, file content needs to be regularly and thoroughly checked for completeness. The institutions must also ensure the availability of appropriate ventilation equipment, records protection against disaster and termination of records to semi-active storages. Records must be properly filed in appropriate medical records storage and controlled access to end-users using manual control registers or electronic records management system. During this stage, when patients come back to the institution for a follow-up visit on a different illness, their files must be provided to healthcare providers in the consulting rooms, rather than to patients in different queues leading to different healthcare service points. During the records disposal stage, records need to be sorted and registered, applied for disposal permission, records disposed of, certificates issued, and disposal register kept safe for future reference. However, prior to disposal, records need to be identified and separated according to their value, whether primary or secondary value. The institutions need to fully comply with recordkeeping functional requirements and be provided with adequate and appropriate resources. Among other records management operational activities, the institutions have to apply the following operational activities:

- Identifying and documenting different categories of medical records, e.g. chronic patients records,
- Keeping evidence of medical business activities,
- Designing and developing systems to facilitate medical records management processes,
- Developing policies and procedures to guide creation and management of records,
- Maintaining medical records,
- Disposing of medical records,
- Ensuring easy retrieval and access to records, and
- Keeping confidentiality and safety of information contained by medical records.

However, for improved and smooth running of medical records management, the institutions need to identify and apply an electronic records management system. For instance, all information has to be recorded/captured and managed electronically rather than only patients' personal details and billing information. The available electronic system may be used for capturing, scanning or tracking the medical files' movement in order for it to be effective. Generally, the system must be used to track file movement and/or capture records electronically. In planning or reviewing of the system,

the continuum model dimensions need to be applied for electronic medical records management. The healthcare institutions need to phase out the manual way of managing the medical records, and rather use paper-based records as backup.

Nevertheless, it is a great advantage that officials in the institutions understand the metadata and its indicators or elements. Records metadata is one of the key elements of records management. Officials just need an advanced practical training of records management that mainly covers the application of metadata and its use. The healthcare institutions need metadata for their recordkeeping system to identify and/or describe the record in relation to the other related or similar nature of records. The organisation needs to have metadata set for the description of the organisational records characters and identities. Metadata information needs to be captured along with electronic records describing its identity, authenticity, content, structure and management requirements, and be used to search or identify the record from the mass of other records. Among other metadata elements, the institutions need to cover records creator, record capturer/processor, records business transaction and patient personal details such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions. The metadata information about the healthcare professionals assisted patients, the nurses, doctors and other specialists who treated or prescribed medicine to the patients should also be covered as part of the metadata to have a detailed audit trail.

6.4.3 Recommendations about the medical record archival processes

This section focuses on the recommendation of the study based on the medical records archival processes, in accordance with appraisal, retention, preservation strategies and storage management. Nevertheless, it is an advantage that the officials in the organisation understand exactly what the records appraisal is and that the medical records were already appraised and assigned a retention period in the institutions. This is because the institutions need to draw their system specification according to the records appraised and retention schedule as also populated in the policy to ensure that, among others, some of the disposal activities are performed by the electronic system. The institutions must also ensure that in preserving their records, the system assists in terminating semi-active records and archiving of records with an enduring value, destruct ephemeral electronic records that are due for disposal, generate a list of all paper-based records that are due for disposal, generate the disposal register or database and certificate for disposal.

However, the medical records files need to be well structured and well arranged in both electronic and paper-based formats for easy monitoring, detection and control of missing records. The file contents need to be visibly structured, indexed and page numbered (folio-numbering) to ensure proper management of the file content. The institutions need to secure adequate records filing space or storages to protect records from various hazards and to avoid large numbers of record files being kept on the floor between shelves or filing cabinets. Nevertheless, all the paper records must be kept inside folders/covers and boxes to avoid misfiling and damage. It is recommended that the institutions use static filing cabinets for paper-based records to avoid future maintenance costs or stagnation during filing although it occupies more space. The institutions need to identify or build a registry open-plan working office for records management officials to avoid working in the filing storages. They must also purchase and install appropriate and adequate air conditioners that will always be set at 18°C to 20°C for records safety and security.

The institutions also need to back-up their medical records to ensure that they can always recover records with ease, especially for vital records, in case of disaster. The medical records in the storage must be backed up with an electronic records system or duplication of copies in the same format and kept in different storages that are far apart from each other for any disaster recovery. Besides, if the institutions decide to back-up the medical records, they should use the electronic business system, as the system had almost all the modules required for proper paper-based records backup because it must not only be used to capture patients' demographic data and billing information. Records relating to diagnosis, treatments, prescriptions and other related medical history must not only be captured in paper-based medical records per se but also into the electronic system. For instance, they must make sure that the system has the file tracking module functional and not only manual or paper-based medical records control registers. The institutions must try to enforce usage of the electronic system with keyboard creation of records to avoid handwritten medical history that may also not be properly read or spelled by the next person, including the pharmacist who issues prescribed medicine to patients.

In changing from paper-based records management strategies to the electronic mode of managing records, the organisation will need to come up with many change management strategies, including training instilling the interest of stakeholders and end-users. In improving their records management programme system, the hospitals in the Limpopo province may need to reshape their mode of records management into one of the two alternative modes, as sketched by the researcher based on the findings in Figure 6.2 and Figure 6.3. According to the first option illustrated in Figure 6.2, full

records are created in a paper-based format on the workflow, managed using the electronic system to track movement and keep audit trail. Then created paper-based records are also scanned and kept electronically in the system with their metadata to serve as a backup and general administrative access to avoid paper-based records misfiling and loss due to frequent retrieval. In the case of the second option in Figure 6.3, full records are created in an electronic format on the workflow, then a printout is made for backup into paper-based records format and managed using the electronic system to track movement and keep audit trail. Electronic records in the system can be used for general administrative access to avoid misfiling of paper-based records and loss due to frequent retrieval. Paper-based records can be scanned or captured back into the system after the disaster for recovery and, if paper-based records are affected by disaster, records can be printed again from the system before both formats are affected.

Furthermore, in both options, the system must also be able to assist in tracking terminated paper-based records from active to semi-active and also give a report about the records that are due for disposal and indicate whether each of them are archival or ephemeral. During disposal, records must be disposed of entirely including any of its backup. The system must also use two servers, one for local usage within the hospital and the other external centrally/provincially for access by the entire province, where all hospitals, districts, provincial offices, clinics, health centres and vertical programmes keep their backups and share patients' or medical records/information. All the other institutions, must be able to access information about any patients consulted in any of their healthcare institutions through web content from the central server. Where healthcare professionals opt to use paper-based records, patients' records must not be carried by patients on the workflow, but files messengers or queue marshals as illustrated with arrows. Any of the two methods of managing medical records illustrated in Figure 6.2 and Figure 6.3 would ensure safety, security and smooth sharing of medical records information across the relevant units, healthcare facilities and all other hospitals, whether public or private within the province or entire country. Paper-based records may only be used as a backup in case the disaster affects electronic records. The backup may be in both paper-based format and electronic records server (central server). The records management system must also be embedded into the healthcare service business process or workflow.

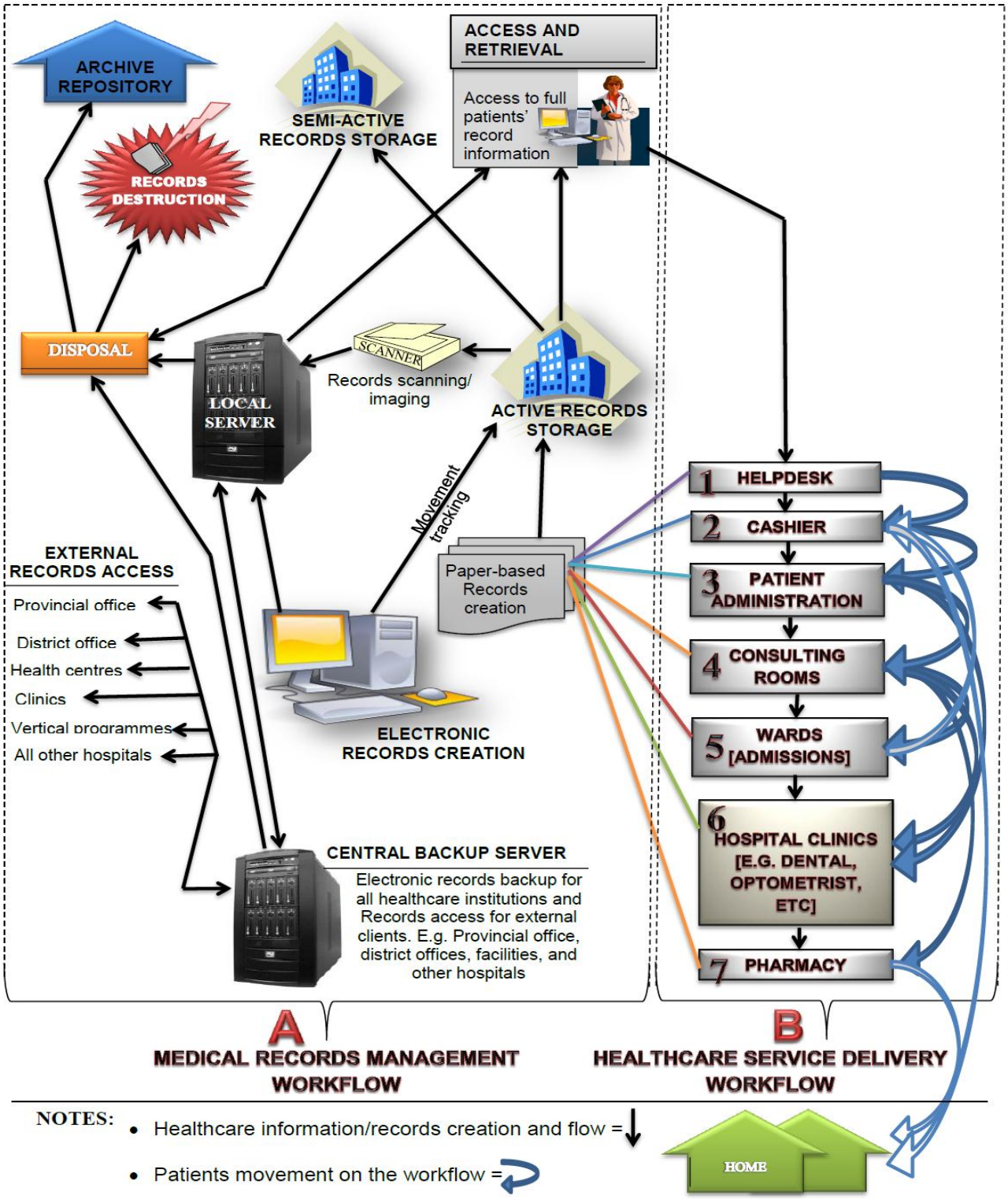

Figure 6.2: Typical guideline for creation of paper-based records with electronic records management system backup on the healthcare service delivery workflow

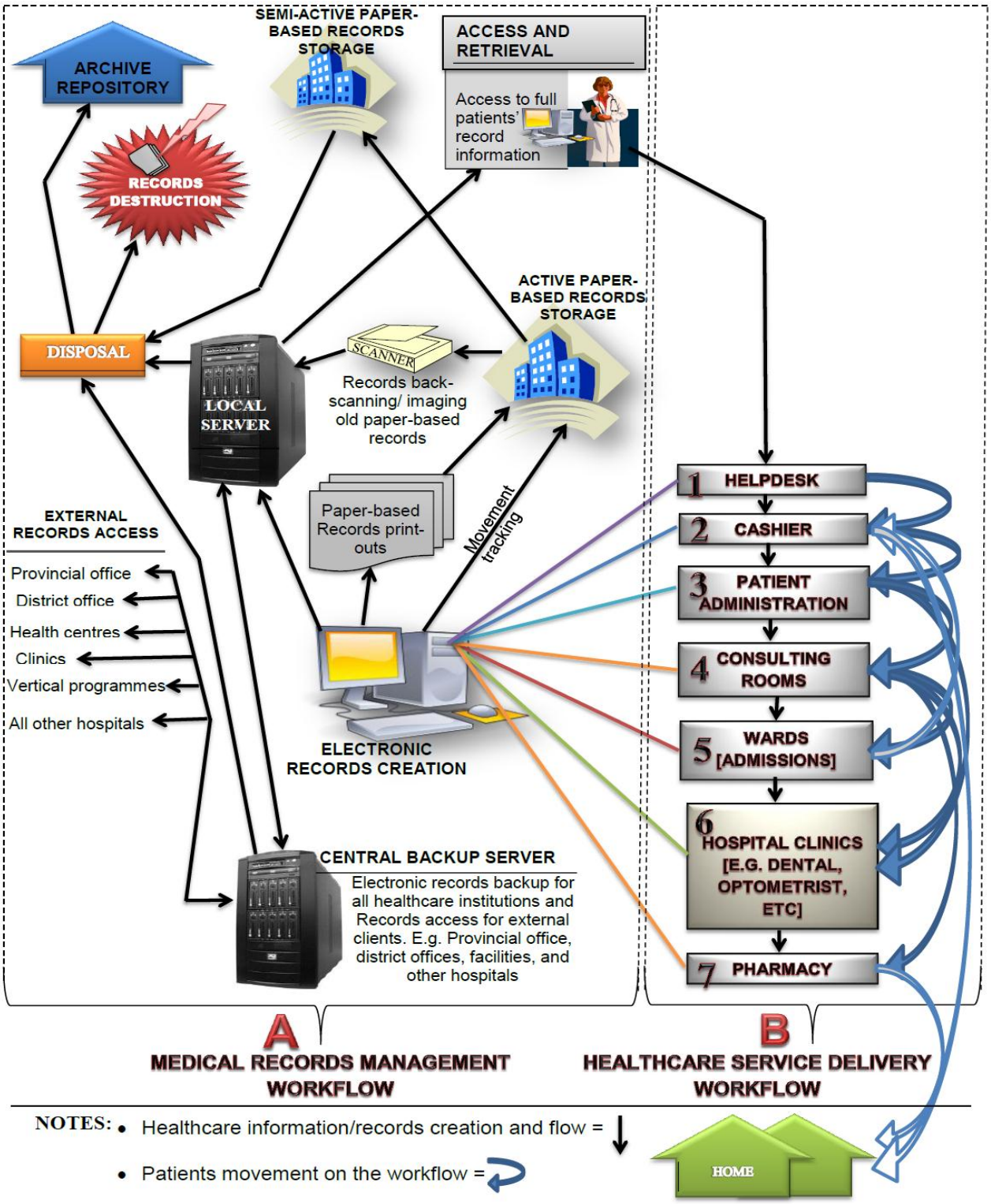

Figure 6.3: Typical guideline for creation of electronic records with paper-based records management system backup on the healthcare service delivery workflow

However, for the purpose of proper paper-based recordkeeping, the institutions need to design a recordkeeping building plan that is suitably qualified for recordkeeping purposes without water taps and pipes crossing in the storage space and with adequate filing space to accommodate all the

records generated every day as patients receive healthcare services. The institutions must avoid using unsuitable records storages that seems to have been built for another purpose, unless it has been restructured, changed or amended for this purpose. The records custody that will ensure safety and security of records, especially against information thieves with the provision of records security measures such as a client helpdesk counter and burglar-proofed doors and windows that also have blinds or are painted. Significantly, the registry doors or entrances must have a caution notice that state that unauthorised personnel or non-records management staff are not allowed to enter the premises. The institutions need to provide adequate filing space for records to ensure easy and timely location and retrieval of records while avoiding damage to records. Depending on whether the institutions decided to continue with the manual paper-based records management system or to move to electronic way of managing records, either system must have a records movement tracking functionality or tool, especially when files are moving in and out of the storage. For the purpose of overall security of records in custody, institutions must ensure that the storage has the necessary security measures; for example, proper burglar-proofed windows and doors, regular bating and fumigation, disaster preventive, fighting and recovery measures such as fire extinguishers, water and smoke detectors and ventilation control equipment are installed.

6.4.4 Recommendations about the technological terrain on recordkeeping

This section gives a recommendation about the recordkeeping technology in terms of management of electronic records systems and electronic system security. The institutions need to come up with technology to be used in managing all their medical records, rather than only capturing patients' personal details and billing information per se. There is a need for the institutions to come up with the system that will be utilised for capturing and management of a complete medical record for each patient. This kind of system is best illustrated by Figure 6.2 and Figure 6.3. It is also advisable that the institutions may couple paper-based and electronic records format or phase out the manual (paper-based) way of managing records and introducing an electronic system that will assist effectively with proper records management and records sharing. They must introduce a system that cover all records management functionalities, including scanning or imaging of records in relation to the records management module. In order to successfully implement the electronic records management system, all records management functionalities covered need to be utilised and the system must be backed up. See Figure 6.2 and Figure 6.3 for illustrations.

The system must also have functionalities such as records issuing and returning (circulation), records disposal, scanning and capturing of electronic documents that were created in a paper-based

format, and to create electronic records directly on the system. The system also needs to have a functionality for records disposal. A functionality for scanning and imaging of the paper-based records into the system is also important to be covered. They must make sure that the system is developed in such a way that it is able to produce an audit trail for each record in the system. The records in the electronic system must also be usable as a backup for paper-based records. The electronic system needs to be used for capturing every piece of information about administration and treatment of the patients.

The institutions need to research or conduct a feasibility study on the amount of records or information generated every day and how long each record must be kept until the last stage of record disposal so that, eventually, they can come up with adequate storage capacity for electronic records storage of such records. This is because institutions need to make available adequate storage capacity for records in their servers to avoid congestion, slow system response and crash. The system needs to be populated with a complete and adequate set of metadata as required for records management, identification and retrieval. In doing this, the system will be able to identify the records creators, requestors, users and many other elements of metadata.

Access to records in the system must be controlled effectively to secure information and ensure confidentiality of patients' personal information. Access to information on the system must normally be protected through user password and username, under which every system user is assigned a username and password which they use to login to the system before using or accessing the information. Records in the system also need to be protected against any perils such as a virus and spyware using internet security and antiviruses. The system also needs to be protected physically against any disaster like fire, water, pests and rodents. This can be done by making available the disaster-prevention and fighting measures for records as well as the disaster management plan.

6.4.5 Recommendations about the staff capacity, skills and competencies for management of medical records

This section presents recommendations about staff capacity and competencies for management of medical records. The institutions, through the provincial Department of Health, must reengineer the medical records management unit sectional structure and workflow. This will enable them to eventually devise a suitable structure that will also cover the clinics and other wards within the hospital such as a wellness clinic, optometry clinic, dental clinic, X-ray department, radiology and

many more clinics. In so doing, they must ensure that the records management unit is well structured in terms of the unit and reporting channels. They must also ensure that staff capacity is always at least more than 75%. This can be achieved by always recruiting immediately as officials exit the institution for various reasons. This will also ensure appropriate implementation of the medical records management activities as required by the policies and procedures.

Looking at the recommended structure, the structure of the medical records management may best be manageable with the structure entailing the records manager under the hospital chief executive officer, who is also responsible for other categories of records. The manager must supervise the deputy records manager and delegate other managerial responsibilities to him. The deputy records manager should supervise the work of the medical records management sub-unit entirely and supervise senior administrative officer. The senior administrative officer will supervise the chief registry clerks, who closely supervise registry clerks in all the service points. In other words each service point must have a chief registry clerk with some registry clerks. The number of registry clerks will depend on the workload in each workstation. For instance, the outpatients unit may have more registry clerks since every patient receives service there before moving to any station, the dental and wellness clinic may have at least two registry clerks and one chief registry clerk. The senior administrative officer will be responsible to coordinate all the service points headed by the chief registry clerks to ensure quality of work. The deputy manager and the manager must strategize on the improvement of service, training of staff, development of policies, procedures, norms and standards in accordance with the district and provincial office, and also plan and manage projects. Nevertheless, the institutions must also include the posts for at least two officials who will be responsible for controlling the queue and movement of files to avoid the culture of using patients as messengers for their own files when moving from service point to service point should they persist to continue with paper-based records creation and management. The researcher designed a sketched in Figure 6.4 to illustrate a typical example of a functional medical records management staff capacity structure that is based on the healthcare functions of the hospital. Although only a few functions or divisions were used or illustrated as an example, there are many more functions to be covered when institutions do practical planning of their medical records management staff structure.

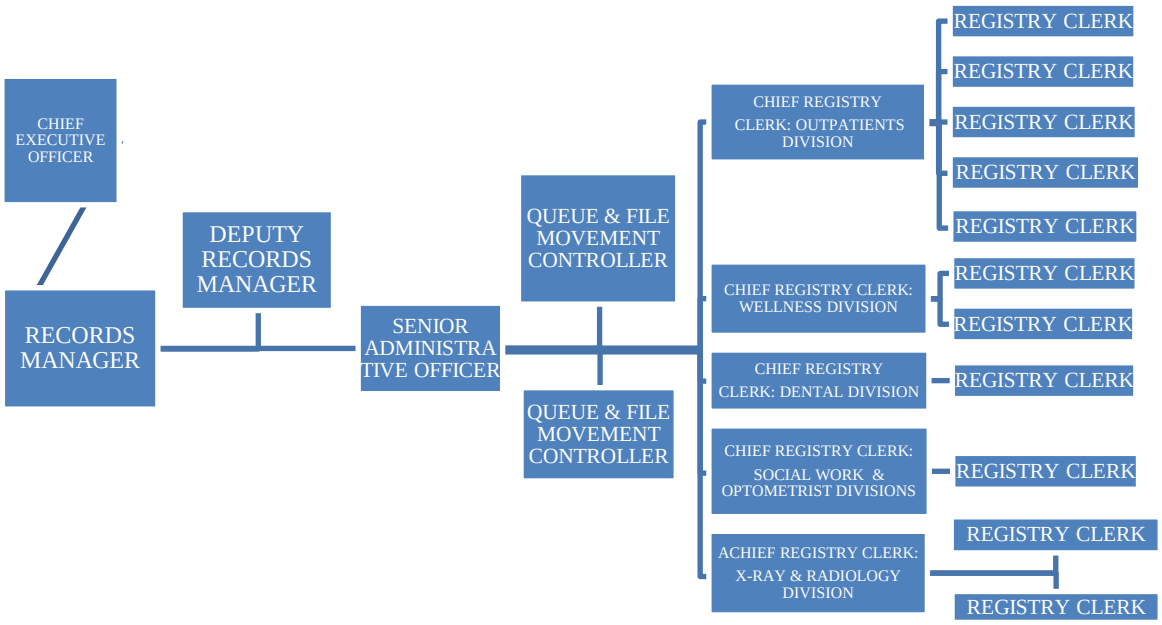

Figure 6.4: Typical guideline of a functional medical records management unit staff structure

The records management unit must be well placed in terms of the unit and reporting channels by ensuring that that they have access to influence management decisions on records management issues. In order to ensure standardisation, all healthcare institutions must be using similar structures from institution to institution as developed and implemented by the head office with assistance of the district office and inputs from healthcare facilities. For instance, records management structures should not be mixed or merged with other units like the information management sub-unit at management level or corporate service unit at the management level. This will avoid bias when it comes to budget and other resources allocation and prioritisation during planning so that records management must always be treated as the only priority and allocated adequate resources. The provincial office has to enforce the implementation of a new structure in the healthcare institutions.

However, after reengineering of the records management structure, operational functions and workflow, the institutions need to identify and map out key performance areas for each post and recruit people for appointment of suitably qualified officials to improve the service. The posts requirements for the records manager, deputy manager and senior administrative officer may be at least a suitable degree in records management or information management with extensive experience in records management. The chief registry clerk may at least hold a relevant diploma in records management or information management with relevant two years' experience in records

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management. At least the registry clerks could be considered with a senior certificate or higher certificate in records management and related knowledge and experience. The queue and file movement controllers could be required to have a senior certificate with at least knowledge of records management and its importance with at least recommended a customer care certificate. The institutions must also provide professional training for currently appointed staff who do not meet the post qualification requirements and relocate those who may not be trainable or are not willing to acquire the knowledge as required for the post they occupied

However, a well-structured medical records management unit with suitably qualified officials must enable the institutions to conduct in-house records management training and workshops to capacitate officials in terms of proper records administration, handling, safety and security. The institutions must also be able to conduct an in-house records awareness workshop to all staff in the institution. The in-house records awareness training and workshops must be conducted regularly in the institutions. This must make the majority of employees familiar with and implement the principles of records management. The regular training must be able to give the majority of employees in the healthcare institutions more confidence to manage medical records throughout its life span. Employees must have confidence in and knowledge of how they can effectively manage medical records electronically throughout its life span. This is because employees must be given adequate training and/or experience in electronic records management. Hence, employees in the healthcare institutions must be competent and skilled for all records management operational and functional requirements.

6.4.6 Recommendations about the readiness for implementation of enterprise content management

This section discusses recommendations about the readiness for the implementation of ECM in the hospitals of the Limpopo province in South Africa as a modern electronic records management system. The healthcare institutions have the advantage that they can implement the ECM system with ease as employees understand it and its indicators. The healthcare institution, through the provincial Department of Health, must improve and fully implement their PHIS system in collaboration with the ECM. The other advantage or opportunity for the institutions to implement ECM is that they already have several computers, basic network lines, printers, servers and other related IT requirements that can be used as a start. The institutions need to purchase and add more of these resources to ensure effective implementation of the system without many barriers.

It also depends on the support and interest of the provincial health department to carry responsibility for supporting the institutions with adequate budget and other resources like sufficient and qualified officials. The healthcare institutions must implement ECM as it is necessary and relevant for the management of records and information in the institution to bring improvement in terms of, among others:

- Easy retrieval of records,
- Electronic usage of records online,
- One record accessed by many people at the same time,
- Easy business continuity,
- Provision of timely, accurate, trustworthy and complete records,
- Effective records security throughout the life span,
- Access to quality data and information,
- Compliance with legislative framework, and
- Creation of reliable knowledge at all stages of the life span.

Furthermore, the institutions must conduct a feasibility study to identify the number of computers, printers, server capacity, network lines and points, internet connectivity requirements and the kinds of information to share through the site with clients and employees. After the feasibility study, they must cost all the required resources for the system before implementation to ensure successful implementation of the system. The records manager must, in his endeavour for ECM implementation, get in the support of management, the CEO and the head of the Department of Health, as well as the political will. This will instead avoid cases of the website just listing the names of the institutions with the contact details and addresses, rather than also presenting or promoting services of the institutions and news about the job they are doing, healthcare guidance and many more. The institutions must also deal with the issue of website downtime, freezing and slow response during browsing and documents downloading, especially during normal working hours to avoid healthcare service delay.

6.4.7 Recommendations about understanding of the relationship between medical records management and healthcare service delivery

This section presents recommendations on the relationship between medical records management and provision of healthcare service. It is the recommendations of this study that officials in the healthcare sector, including records management practitioners and healthcare service providers, need to intensively be sensitised or made aware of the interrelationship between medical records

management and healthcare service delivery practice through workshops and coaching. Thy need to be made aware that there is a high relationship between medical records management and the provision of healthcare service since medical records always need to be utilised by the healthcare service providers for both reference to previous medical history and/ or recording of the current medical condition observed/diagnosed, treatments, prescriptions and diagnosis. The officials need to be made aware that improper management of medical records may negatively impact on the healthcare service delivery in the healthcare institutions as the healthcare providers may frequently experience the problem of missing files. The records management unit must make management aware that records may not be managed properly due to various reasons, such as inadequate filing space in records custodies so that resources may be prioritised for records management. The institutions need to come up with an effective electronic records management system that will help to ensure appropriate medical records management; with adequate records filing or capturing space and proper medical records filing. This may be achievable by providing appropriate records management resources, effective records management framework. In so doing, institutions will ensure an acceptable turnaround time for file retrieval and minimise or combat missing or lost files challenge.

6.4.8 Recommendations about the proposed framework to facilitate medical records management practice in the public hospitals

This section recommends about the nature of a records management framework that can facilitate medical records management practice in the public hospitals. The healthcare institutions must come up with the medical record management framework that can effectively enable the institution to properly manage medical records. A framework that may provide an effective records tracking system and cover all records management functionalities and avoid patients carrying their files on the workflow to avoid sacrificing the security of records.

However, the institutions must ensure that the records management framework has a records backup and file tracking function, especially at the records creation stage, to detect when records are created. The hospitals must also ensure that the system framework adopted uses the electronic system to detect records creation since records are created in the absence of the records management officials to control recording of the newly created records. The hospitals must also ensure that the framework system is able to give the records manager an audit trail about the records, from the date of creation to the current date. In order to ensure an effective audit trail, the

system must be capable of tracking medical files movement, usage, creation, disposal and any other records management functional activity.

Furthermore, the healthcare institutions must ensure that the medical records management framework is designed in such a way that it is collaborated or integrated into the healthcare service delivery workflow. This is to ensure effective medical records management techniques on the workflow with the assurance that, during the business process, medical records are not moved through the hands of the patient from one healthcare service station to the other. In the consulting rooms and the wards, records management staff must be sure about what is happening with the records even if they are handled by the healthcare providers in their absence. This is because the records management framework must have an electronic system to track and inform the records management officials regularly as required about new records created and type of records contained in the files. The medical records management framework e-system must be able to track file movements and/or cover many other records management functionalities and must also be capable of capturing records metadata and/or records scanned images. In doing this, the system will also be able to provide the records audit trail. Hence, the medical records on the framework must be managed using the business administration system to cover records of all healthcare transactions. This is because records are being created and utilised by all healthcare providers in each and every service point during the business process. In other words, records need to be created electronically and managed using the business administration system. Instead, some backup of paper-based records may be created and managed using the same electronic system for backup in case the disaster affects the electronic system and the records fade entirety.

6.4.8.1 Recommended framework

The central objective of this study was to recommend a framework that can embed the medical records management into the healthcare service delivery business process or workflow of the healthcare institutions in the Limpopo province in South Africa. The framework illustrated in Figure 6.5 was introduced with the intention of assisting healthcare institutions to close gaps in terms of healthcare records management problems such as theft, access control, records backup, disaster management, condition of records custody and required resources and other enablers. All of which result in resolving long patient waiting times due to long turnaround time for file retrieval, patients not being treated correctly or receiving incorrect treatment due to lack of medical history. This was tackled by investigating and developing the recommended collaborative medical records management framework system for sound patients' records management practice as illustrated by

Figure 6.5. Sound patient records management practice that may support the creation, safety and security of records. This was to ensure that records always contain quality information. It should also be ensured that records provide timely, accessible, complete, valid and accurate information to be used for different purposes, including support to management decision-making, problem-solving and healthcare service continuity.

The healthcare institutions in Limpopo have established and implemented the records management programme, but the study discovered that they still struggle with timely retrieval or provision of records and collection of accurate data for healthcare professionals. The aim of this study was that this framework would make a positive contribution to the improvement of the state of records management in the healthcare institution in such a way that records are secured, easily located and timely retrievable through sound records management. This is because the records management process will be embedded into the healthcare service delivery practice. The process of developing a framework and embedding it into the healthcare service process may not be an overnight task as it involves many activities and critical resources. Through Figure 6.5, this study proposes a non-prescriptive framework to embed the medical records management into the healthcare service delivery workflow. The intention was to allow the organisations to cone the proposed framework into their own local environment and situation. The framework was integrated into the healthcare service delivery workflow or activities as illustrated by Figure 5.3 in Chapter Five as per the findings of the study.

Looking at the framework illustration in Figure 6.5, in preparation to customise the proposed framework and its implementation, organisational records management programme will need to be reviewed and improved, together with its records management system. As illustrated on the diagram in Figure 6.5, to begin with the entire process of records management improvement, the organisation will need to make sure that they have a suitably qualified ***records manager*** to lead the process. It is deemed vital that the records manager receive all ***management support*** and ***political will*** in order to succeed in his/her endeavour. As illustrated, the records manager may require identifying all stakeholders for records management in the organisation and involve them in the form of establishing ***records management committee***. This will help to push and support every proposal or submission and combat any barrier that may hinder progress. The stakeholders must consist of people who can affect records management strategies directly or indirectly, either with provision of resources, recommendations and approval for implementation and motivations.

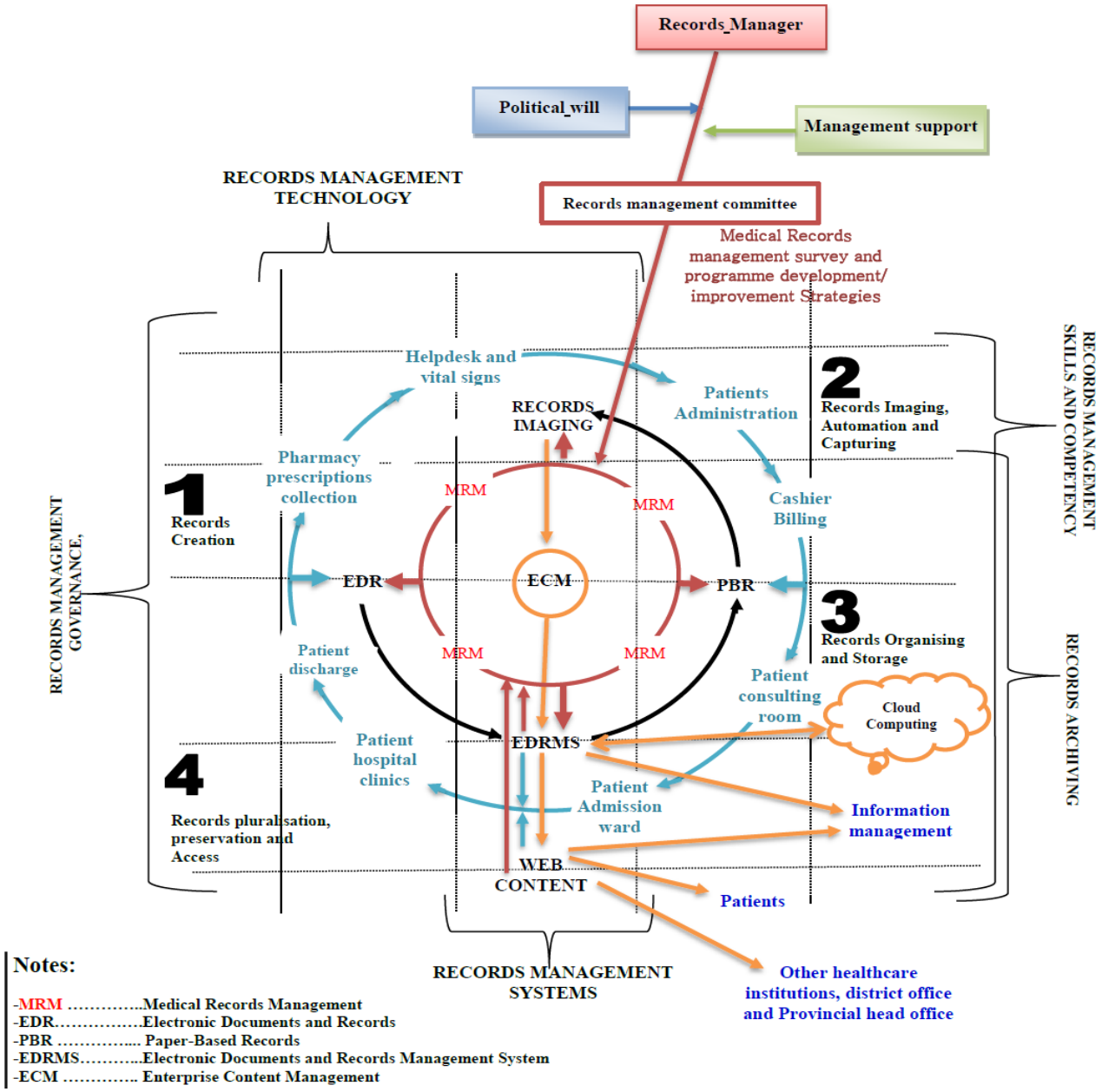

Figure 6.5: A framework to embed medical records management into the healthcare service delivery

Furthermore, as illustrated after the establishment of the records management committee, the committee may start with conducting the ***medical records management survey*** under the leadership and guidance of the records manager as a champion in the field of records management. The survey will help to identify the current kinds of medical records, its state and mode of management, records management systems as well as issues relating to retention periods, disposal mode and many more details (Fanning 2013: 3; Yusuf and Chell 2005:72; Yusof and Chell 2000:69; Chaterera, Ngulube and Rodrigues 2014:366-367). The survey will also help to discover whether the current systems

capture and maintain business activity records properly, explore any records requirements, system performance and capabilities (ISO/TR 15489-2 2001 and ISO 15489-1 2001; Van der Westhuizen, Abbott and Schellnack-Kelly 2010:182; Chaterera, Ngulube and Rodrigues 2014:369). This is because information about what has to be improved, maintained, added or removed in the programme is required before any action by the organisation or committee.

Generally, the records survey or audit will enable the records management committee to explore valuable information relating to and to strategize about records management governance tools, records management technologies, records management skills and competencies requirements, records archiving processes and records management system. This implies that policies and procedures will need to be reviewed, if available, or developed, if not available at all. Furthermore, qualifications, skills and competencies for suitably qualified officials to manage medical records must be identified at all levels of the division. The electronic records system covering all operational functionalities and meeting all security requirements must also be specified. As illustrated by Figure 6.6, records management needs all five elements of trusted records management strategy brought together to be able to properly support the healthcare service delivery with the timely provision of access to authentic records and proper keeping of newly created medical records regularly. Therefore, the central point or objective of medical records management must always be to support healthcare service delivery and thus the reason it is supposed to be embedded in it. Figure 6.6 illustrates that in order for the records management framework to be effective, it has to be supported by appropriate records management governance tools such as skilled and competent staff, policies and procedures, system and technology, and archival strategies. These will enable the records management framework to support healthcare professionals with timely access to authentic records on the healthcare business process. At the same time, the framework must ensure that same healthcare professionals also feed the healthcare records management system timeously with newly created records for safekeeping, whether electronically or manual.

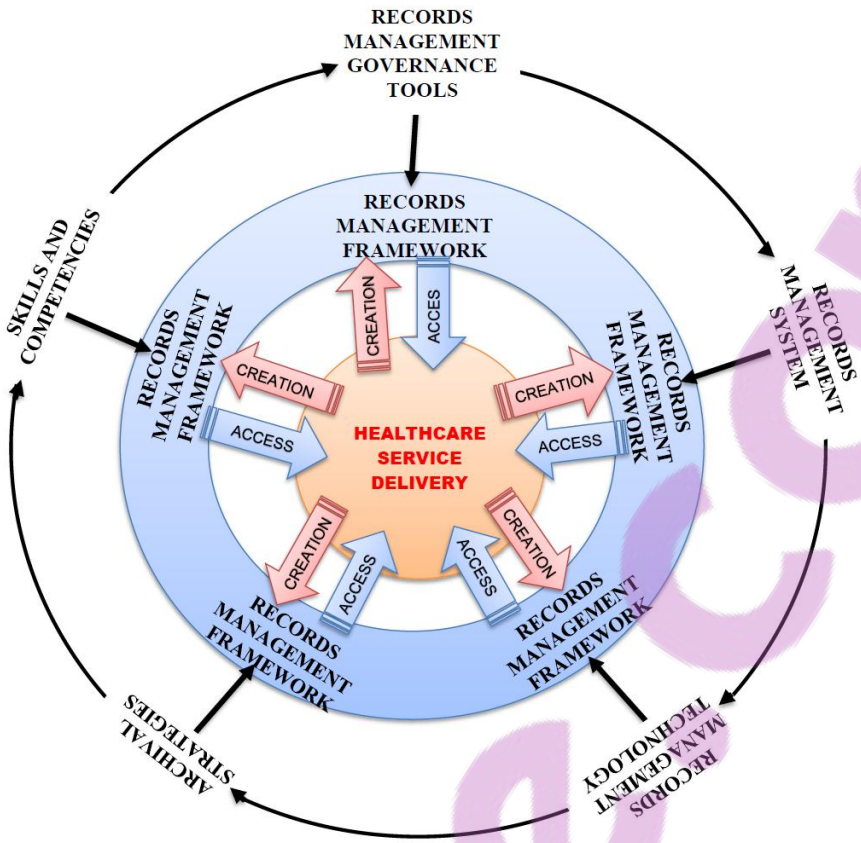

Figure 6.6: Application of the five elements of trusted medical records management on the framework to support healthcare service delivery

However, reverting back to the recommended records management framework illustrated in Figure 6.5, because the organisation was still managing their records manually, the records management system may also need to be improved to electronic with the provision of adequate resources. After the survey, the institutions may be able to design their own suitable records management system based on their environmental and situational requirements. The ECM system was just used as a recommendation for the sake of this model in Figure 6.5, however, organisations are at liberty to choose and come up with another appropriate system based on their needs and technological development. At the current technological level, the organisation is recommended to apply the ECM as a modern records management technology that is made up of EDRMs, records imaging, paper-based file tracking and web content management. This is not exhaustive as ECM may integrate as many content management technologies as possible, including document management, records management, web content management, workflow or business process management, collaboration, imaging, portals and knowledge management (Katuu 2012a:39; Katuu 2012b:3; Katuu 2015:137). For the purpose of this non-prescriptive framework, only EDRMs, records imaging, web content and paper-based file tracking is covered as a baseline.

Furthermore, the records management functionalities must be incorporated into the ECM to effectively be able to manage the medical records on the healthcare workflow. The recommended framework is built into the healthcare service delivery process workflow under which all the activities conducted by the healthcare providers illustrated in Figure 5.3 is conducted. That is based on the findings of the study interpreted in chapter 5. During each activity of the healthcare services, records about the activities conducted during that day or time are created. At the same time, records about the previous healthcare service activities rendered are also consulted to see what the illness was. What was diagnosed? Which treatment was rendered? And which medications were prescribed to the patients? Through proper e-records management system, different hospitals may share records about the same patients for any of his/her consultation from any hospital. In the situation where the patient has already opened file in other hospitals, the next hospital consulted does not need to create a new file, but merely continues using same file created in other hospitals and update it with new information about the current consultation of the same patients. Therefore, this requires healthcare records to be properly managed at each stage of the healthcare service delivery to ensure its safety, appropriate accessibility and timely provision to healthcare givers. This will assist the institutions to avoid long patient waiting times, unacceptable healthcare services or inability to render certain kinds of healthcare services due to doctors not have the patient's medical background or history. Proper records management may eventually be considered as one of the top priorities and key enabler for successful rendering of healthcare service to patients, if embedded properly into the healthcare service process. This is because the recommended framework may assist in sound records management throughout the healthcare service process.

Sound healthcare records management that effectively ensures successful healthcare service delivery is only possible with the positive support of the healthcare institutions management as well as the political will from the departmental and institutional political stakeholders. Records management objectives will also need to be linked to or informed by the organisational healthcare service delivery objective, as it is the core function of the institution. The records management unit or officials also need to get a buy-in from the healthcare service providers as they are records creators and users, for compliance with records management legal and regulatory requirement. They also need buy-in from management as the accounting officers for records management strategies, policies, procedures, standards and norms endorsement or approval and support in the institution. The healthcare service providers, together with the entire organisation, must obtain an understanding that medical records management is a collective responsibility and that they also

have an important role to play in ensuring that records are managed and safeguarded properly as long as they are there in possession of records. They must understand that this is done for the benefit of the patients as fellow citizens and for making their healthcare service work easier for the satisfaction of patients and other clients.

Furthermore, Figure 6.5 also shows that at each stage of healthcare service delivery, records need to effectively be created and managed electronically as guided by the four dimensions of the records continuum model (create, capture, organize and pluralise), using the ECM system as recommended for the framework. For the purpose of this framework, records are managed in four steps as constructed from the records continuum model dimensions. The four steps are (1) Records creation, (2) Records imaging, automation and capturing, (3) Records organising and storage, and (4) Records pluralisation, preservation and access. As illustrated in Figure 6.5, the four steps are discussed in relation to the embedded healthcare service delivery processes activities as follows:

1)Records creation

Records are created during every healthcare service point process activity. When these records are created, they need to be managed effectively as required by the healthcare business. At some of the healthcare service points, records are frequently reutilised for different business-related purposes, such as reference for patient medical history before rendering further services, reporting, checking patients payments and billing, responding to public records requests and/or litigations. The records creation step will be discussed in detail under each and every healthcare service point processes in the upcoming items. This will show the kinds of records created, business transaction that led to the creation of record, the use and kind of information contained for each healthcare business process activity. During this period, the records management system must be able to track creation of new records, business transaction and its movements. The system must also be capable of keeping an audit trail for each record in terms of its creation, use and movement. This will be possible with the relevant and complete metadata creation and capturing.

2) Records imaging, automation and capturing

The healthcare/medical history records created in all healthcare service point process activities are automated and captured electronically into the system after creation. The old medical records with an enduring value that were created manually in paper-based format may also be converted to image in the form of PDF so that they can also be captured in the patients' e-files through the

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patients' individual profiles or accounts. The capturing can be done using the EDRMS that is built into the ECM to ensure that the healthcare givers access the patients records with ease and on time.

3) Records organising and storage

The records management practitioners will need to ensure that the patients' medical history records are properly classified in accordance with the approved organisational classification scheme or filing plans. The records management officials must also ensure that patients' medical history records are properly captured with appropriate metadata to the patient files in the electronic system, preferably the ECM system with its built-in EDRMS. The paper-based records files containing the entire patients' records can also be preserved as part of the backup for the e-records and can be managed using the same electronic system for movement tracking. The records can also be preferably stored in the government cloud computing storage to ensure that all healthcare institutions are able to access the medical records for each patient wherever and whenever they attend to patients' illnesses.

4) Records pluralisation, preservation and access

The patients' medical history record must eventually be integrated and preserved as an asset of the organisation for access by relevant and authorised individuals and organisations. During this time, third-party records requesters will need written consent from the patient. For the purpose of this framework, patients can access their medical records through the web content with their account usernames and password as provided for by the institutions through the system. The patients' medical history records information as part of the entire file may be shared or made accessible throughout the relevant organisational departments or units such as information management, hospital clinics, pharmacy, cashier, and many more units and other healthcare institutions within the country during the healthcare business process and/or workflow. Medical information sharing can also be made possible with global healthcare facilities, if the need is revealed and cooperation and agreement are reached with different nations. Relevant officers or units based at the districts, other healthcare institutions and the provincial office may also be provided with access to the records through the web content. In this framework, records may be accessed in either internal system such as ECM built-in EDRMS or the web content, especially for officials attached to the institution, but external individuals like patients and institutions like head office, districts and other hospitals may always use the web content to access records held by other institutions. Since the system will be integrated all healthcare facilities must share the same file for each patient online. However, instead of opening a new file for a new patient who already consulted or received healthcare service in

other corporate healthcare institutions, healthcare providers must simply update the patient file with the current information

The healthcare service processes and records creation as embedded into the medical records management are to be conducted as follows based on the findings of this study:

a) Helpdesk and vital signs

The helpdesk and vital signs area is the starting point for the healthcare service in the healthcare institutions where the patients arrive or start receiving service from home. At this service point, patients are being welcomed and interviewed about the reason for their visit to the healthcare institution by the helpdesk nurse who also takes the vital signs from the patients. Vital signs taken include the state of patients' blood pressure, body temperature, patient weight, patient height and other things as essential. Vital signs are also recorded for the doctor to use in the upcoming service point as part of the medical record. The helpdesk officer usually does not need a record for reference, but, instead, they only feed new information about the vital signs to the patient file that the doctor and other healthcare givers are going to use in other parts of the workflow. During this period, records management practitioners are expected to ensure proper records keeping and sound records management as guided by the four steps or dimensions above this section.

b) Patients administration

The patient administration is the healthcare workflow service point in which patient personal details and demographic information are collected and captured into the system. Patients are interviewed about their personal and demographic information and, where necessary, identity documents and proof of income are required. In case there is no proof, the patients are given the income declaration forms to complete and sign. The information captured includes names, surname, identity number, group (e.g. H0 or H1) or amount of income, telephone/cell-phone numbers, physical and postal address, next of kin, and many more. Personal information is also recorded for organisation use in terms of patient identification and differentiation from the rest of the other patients. The patient's administrative officer usually does not need a record for reference, but they only feed new or updated information about the personal and demographics to the patient file that the doctor and other healthcare givers are going to use in other parts of the workflow to identify the patient. During this period, records management practitioners are expected to ensure proper records keeping and sound records management so that the patients are identifiable, located and communicated with ease

using either post or phone. However, the records created need to be managed properly by the records management practitioners as guided by the four steps or dimensions.

c) Cashier billing

The cashier billing desk is one of the service points to which patients are billed, provided with the bills, makes payments for healthcare service rendered to them previously and enquire about the amount owed. Patients are being welcomed and interviewed about the services they want to pay for and the amount owed from the previous consultations and prescriptions. Billing information recorded includes the amount paid, service paid for and dates of services and payment. Billing information is also recorded for hospital use as part of the medical record for debt consolidation and collection. The billing officer usually needs records for reference about the previous consultation bills and that help them to advise the patients to pay and sensitise them about the consequences of not paying. The healthcare providers may also need the billing information to ensure that the service rendered is paid or proper arrangement to pay later is made with the relevant unit or officers. During this period, records management practitioners are expected to ensure proper records keeping and sound records management as guided with the four steps or dimensions.

d) Patients consulting room or consultation

The patients' consulting room is one of the service points where patients are interviewed about their medical problems, assessed for symptoms, diagnosed, treated and prescribed medication, referred to specialist or clinic within the hospital, referred to a higher healthcare institution with more facilities and relevant specialists or even recommended for admission to further treatment and monitoring with ease. In the consulting room, information recorded includes the medical issues such as diagnosis, treatments, illnesses, medical assessments or tests, medical conditions and prescriptions with dates. The other records created during the assessment and treatment depending on the nature of illnesses may include X-ray films and interpretation of the medical officer, laboratory tests results, theatre surgery and many more. Such healthcare information is also recorded for hospital use as part of the medical record for further patients' treatment and assessments. The medical officer usually needs a record for reference about the previous consultation illnesses, diagnoses, prescriptions and conditions of patient illness for those previous dates. The healthcare providers may also need such information to ensure that the healthcare service is rendered with ease and with no repetition of treatments and medications and to compare the previous illness with the current results. This indicates to the doctor whether the illness is getting better or worse so that s/he can make decision to change the treatment or refer the patient to a specialist. During this period, records

management practitioners are expected to ensure proper record keeping and sound records management as guided with the four steps or dimensions.

e) Patients admission ward

The patients' admission ward is one of the service points from where patients are admitted into the ward for the medical practitioner to monitor and assess the patient illness, treat the illness, prescribe medication for the nurse to provide to patients from the pharmacy. Other things done in the consulting rooms for out-patients may also be done here, such as interview about pain based on the illness, X-ray, laboratory tests, referral to specialist or clinic within the hospital, referral to a higher healthcare institution with more facilities and relevant specialists, etc. In the admission ward information recorded includes the medical issues such as admission and dates, diagnosis, treatments, illnesses, medical assessments or tests, medical conditions and prescriptions with dates, nurses and doctors rendered the healthcare service as well as the discharge before the patients are released from the hospital. The other records created during the assessment and treatment, depending on the nature of illnesses may include X-ray films and interpretation of the medical officer, laboratory test results, theatre surgery and many more. Such healthcare information is also recorded for hospital use as part of the medical record for further patient treatment and assessments in future. The medical officer usually needs a record for reference about the previous consultation illnesses, diagnoses, prescriptions and conditions of patient illness for those previous dates should the patient return to the hospital for further treatment of the same illness or new. The healthcare providers may also need such information to ensure that the healthcare service is rendered with ease and with no repetition of treatments and medications since that may negatively affect the health of the patient. During this period, records management practitioners are expected to ensure proper records keeping and sound records management as guided with the four steps or dimensions.

f) Patients hospital clinics

The patients' hospital clinics are some of the special service points to which patients are referred when diagnosed or suspected to be having special a condition. Patient may choose to go to the special service clinic directly, especially follow-up patients. The special cases clinics include the dental and the optometry clinic. The kind of healthcare service rendered here will depend on the nature of the clinic and the patient's problem or illness. For instance, the optometrist will check or assess the patients' eyes, diagnose the problem that led to the illness, prescribe medication or recommend surgery, or even admit the patient, where deemed necessary, or refer the patient to the other higher healthcare facility with more equipment and specialists, prescribe spectacles, etc. On

the other hand, the dentists may follow the same processes focusing on the tooth illnesses. Assessments and diagnosis may be done, medication may be prescribed, some teeth may be removed and some restored, and maybe some false teeth may be provided, some teeth may be cleaned and some repaired. Patients may also be interviewed about pain they are feeling based on the illness, X-ray and laboratory tests may also be conducted. In the hospital clinics, information recorded includes the medical issues including dates such as, diagnosis, treatments, illnesses, medical assessments or tests, medical conditions and prescriptions with dates, nurses and doctors rendered the healthcare service. The other records created during the assessment and treatment depending on the nature of illnesses may include X-ray films and interpretation of the medical officer, laboratory test results, theatre surgery and many more. Depending on the clinic service rendered, dental records about tooth cleaning, restoration, removal, repair, false tooth will be recorded. In terms of optometry, the records may cover information about nature of eye illnesses, nature of lenses required and prescribed according to the assessment and many more. The list of the clinics is not exhaustive and dental and optometry are merely used as an example for the sake of this framework. Such healthcare information is also recorded for hospital use as part of the medical record for further patient treatment and assessments in future. The medical officer usually needs a record for reference about the previous consultation illnesses, diagnoses, prescriptions and conditions of patient illness for those previous dates should the patient return to the hospital for further treatment of the same illness or another illness. The healthcare providers may also need such information to ensure that the healthcare service is rendered with ease and with no repetition of treatments and medication prescriptions since that may negatively affect the health of the patient. During this period, records management practitioners are expected to ensure proper records keeping and sound records management as guided with the four steps or dimensions.

g) Patient discharge

The patient discharge is the last activity of the healthcare services during which the patient is released from the hospital. During discharge the healthcare provider checks the condition of the patient based on the illness of admission, and decides whether further medication or tests have to be done. Where deemed necessary, the patient is thoroughly assessed and prescribed medication to be used at home is given, the patient is provided with a reference letter to the nearest clinic for further check-up and prescription collection. The patient is then released to go home. The healthcare provider may also need records containing information about previous treatments for medical history reference before discharge. During this period, records management practitioners are

expected to ensure proper records keeping and sound records management as guided with the four steps or dimensions.

h) Pharmacy prescriptions

At the pharmacy service point, patients are issued with medication as prescribed by the doctors from different service points within the healthcare workflow. In some instances, the pharmacist may ask several questions in relation to the patients about the medication s/he is about to issue, such as allergies. All this information is recorded to form part of the patients' overall healthcare record. The pharmacist may also check previous prescriptions in the records, whether there are no repeated unnecessary prescription so as to advise and quality check in assistance with the doctor concern. The records created by the pharmacy services activities also need effective management as guided through the four steps or dimensions for future utilisation and timely accessibility, and thus are the duty of the records practitioners.

6.5 IMPLICATIONS OF THE RESEARCH FOR THEORY, POLICY AND PRACTICE

The findings of this study outlined and highlighted many of the fundamental issues for consideration in the improving healthcare service records management. Most of the issues presented by the study are critical to the extent that they affect healthcare service and patients directly. The study went further and recommended appropriate solution to every challenge and problem explored. If properly implemented, the recommendations of this study may result in acceptable or satisfactory patient waiting times, completely combating the problem of missing files and attaining improved quality healthcare data. This is because the study also discussed issues relating to how records management affects the healthcare services, patients and professionals, as well as the running or operation and management of the organisational healthcare service. That is, of course, depending on whether the management of records is proper or not. This means the negative impact on healthcare service may result from poor records management, and sound records management may result in a positive impact on the service. The organisation may also ensure that their healthcare records are backed up, prepared for disaster and their records are effectively safeguarded against any hazards or perils. The study also proposed and recommended as a baseline to the institutions a non-exhaustive framework to embed medical records management into the healthcare service delivery to which they may customise their own institutional situation or environment. Generally, the framework may be coned based on their needs as an organisation. Overall, this study contributes much to theoretical and conceptual knowledge in the field of records management, particularly healthcare records. The

study also ensured that the healthcare organisations has a source of reference for establishing their policies, procedures and best practices based on the findings, recommendations and framework introduced or proposed. It also guides on the systematic establishment of the records management programme, its operation and systems.

6.6 SUGGESTION FOR FURTHER RESEARCH

This study had different objectives to achieve and all these objectives where achieved. Findings on the following items aligned to the objectives were presented and recommendations were given for the institutions of the study and other healthcare organisations globally to utilise as a guideline:

- Medical records management governance practice was assessed,
- The nature of medical recordkeeping system was investigated,
- Medical record archival processes was established,
- Recordkeeping technology was investigated,
- Staff capacity and competencies for management of medical records were established,
- Readiness for implementation of ECM was assessed,
- A framework that can facilitate medical records management practice was proposed, and
- Relationship between medical records management and provision of healthcare service was assessed.

However, there are many areas of healthcare records management that require further studies to ensure intensive findings and solutions so that, eventually, healthcare institutions achieve a smooth running of the healthcare service delivery. This study recommended the use of the ECM system, but further study is recommended about the process of developing and integrating every other medical records management systems into the ECM system. The independent study about the need, significance and mode of healthcare records sharing system among different healthcare institutions is also necessary, be it provincially, nationally, continentally or globally. This can assist in avoiding duplication of treatment and prescriptions from institution to institution for similar patients, especially for chronic illnesses. This is because some patients have a culture of moving from one healthcare institution to the other with the same illness or problem and fail to inform the healthcare givers their medical background. Therefore, instead of progressing with treatment, different doctors start treatment from the beginning as they see the patient for the first time only to find that all doctors consulted gave similar treatments and prescriptions. Intensive study is also necessary to

guide the healthcare institutions on the importance, the nature, and type of records backup system suitable for the healthcare institutions and how to develop such a system.

Generally, there is a need for a further study that will focus on the development of an online outpatient consultation system to reduce patient overcrowding and long waiting times in the healthcare institutions. The study will investigate about the system that may enable patients to consult, obtain prescriptions and medical advice online through their smartphones tablets and computers. This is the system that will be able to prescribe and advise the patient to physically visit the healthcare institution if the illness symptoms/problems warrant the patient to be seen and assessed by the doctor. The system that will be able to allow patients to either print out prescriptions for pharmacy or route it online directly to the pharmacy to request medication delivered to the home address. This will make sure that only critical patients with the likelihood of being admitted visit the healthcare institution for the healthcare practitioner directly assess them in the hospital.

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6.7 FINAL CONCLUSION

This chapter concludes the findings of the study. In final conclusion, the healthcare institutions already had an established records management programme with staff structure using decentralised recordkeeping, storage and staff; and centralised policy development and implementations training; however, with many shortfalls that need to be addressed. The study made several recommendations about the improvement of healthcare records management. Instead, the central point is that the records management framework was not effective and needs to be reviewed or reengineered and improved, as proposed by this study, and it needs to be ensured that it is embedded into the healthcare service delivery practice. This may ensure provision of quality data, timely retrieval of records for doctors and citizens, and reviewable healthcare service delivery performance with ease for improvement from time to time. This study fundamentally investigated and recommended a collaborative medical records management system framework to embed medical records management into the healthcare service delivery for sound patient records management practice. It is fundamental that, prior to development and implementation of the records management framework, several key issues should be resolved as guided through the recommendations of this study. This may ensure that the organisation attains records that contain data that is complete, accurate, reliable, trustworthy and authentic and will bring about data that is not misleading organisational decision-making and problem-solving strategies.

Furthermore, the institutions also has to review the organisational records management unit staff structure, improve it and ensure that, if possible, all posts are filled, especially the records manager post. The records manger post needs to be prioritised to ensure that the unit has the head who will strategize and plan the development of policies, procedures, norms and standards as well as the framework and appropriate recordkeeping system in line with legislative frameworks as required. What is fundamental is that the records manager will need to be supported fully with the necessary resources for him to succeed in the improvement mission. The institutions must also ensure that all appointed staff receive appropriate training with the aim of enabling them to discharge their duties with ease and be monitored to check compliance and ensure immediate corrections, as necessary. Overall, officials in the institutions, including the healthcare providers, must also be provided with records awareness workshops regularly. For the proposed improvements to be possible, the appointed records manager must be a suitably qualified professional to be able to devise the strategy to ensure that records are adequately captured, created, transmitted, used, stored, indexed, retrieved, controlled, retained and preserved in compliance with legislation, standards, policies and procedures, as required. Nevertheless, for paper-based records, if preserved as a backup for e-

records, properly and purpose-built custody will need to be made available, together with other relevant resources like shelving equipment, archival boxes and file folders/covers. In case of the electronic records management system, the institutions must have the electronic system implementation resources available before purchasing the system. The researcher recommends ECM as a modern and effective electronic system that integrates other systems and functions based on the organisational needs. For instance, EDRMS, RMS, DMS, KM and other systems and functions may be incorporated into ECM.

Generally the institutions need to strengthen effective management of healthcare records, since, together; they have a significant relationship with the healthcare service delivery. This means that one may not succeed without the other. For instance, based on the nature of their illnesses, some patients may not be treated in the absence of medical records and obviously the medical records may not be created if patients are not treated. Force to render some treatments to patients in the absence of medical records may lead to the healthcare givers rendering the wrong service such as providing inappropriate treatment and/or prescriptions. This is why some of the healthcare providers completely avoid or refuse to render the healthcare service if the patients' healthcare records or history is not available or provided. Looking at the medical records management models, the healthcare intuition may maintain the current model of decentralised records management and access, staff structure with manager; and centralised planning and strategies, development and implementation of policies, procedure and other guidelines, training, monitoring and evaluation. This will maintain uniformity or standardisation of operation and control over policies, procedures and implementation.

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LIST OF APPENDICES

Appendix 1: Letter used to request approval to conduct the study in the Limpopo Department of health.

P.O Box 563
SEKGOPO
0802
03 December 2013

The Head of Department
Limpopo Department of Health and Social Development
PRIVATE BAGX9302
POLOKWANE, 0700

Dear Sir/Madam

This letter serves to request your approval for me to conduct a research study about records management models in your department. The researcher is an employee of the Department and would like to plowback through this study.

I am currently a PhD (Doctoral) student in the Department of Information Science at the University of South Africa (UNISA). The study is about **"models for managing medical records in the public health sector of the Limpopo province".** The purpose of the study is to investigate, develop and recommend effective collaborative medical records management system framework or model for sound patients' records management practice. Sound patients records management practice that may support the production and provision of records with quality information that is timely, complete, valid and accurate to support management decision, problem solving and healthcare service continuity.

The department will benefit a lot from the information obtained and the resultant recommendations for its management decision-making and problem solving. The results of this study will also assist a lot for administrative officials who are directly or indirectly affected by records management practice in the health institutions, especially patients' medical records. The study will also contribute much on enabling the department to improve patient satisfaction rate and patient waiting time in the health institutions, especially hospitals.

In completion of the study the researcher will donate a copy of the dissertation to the department for its Library and Information centre to enable future convenience reference. Confidentiality will be ensured on the data collected for the study. Attached is the letter issued by the University of South Africa (UNISA) as a means of verification for my study, ethical clearance, research proposal and consent form.

Thanking you in anticipation for your forthcoming positive response

Yours faithfully

Ngoako Solomon Marutha (Mr.)
PhD Student: University of South Africa (UNISA)
Cell: 083 4361 652,
E-mail: marutha75@gmail.com

Appendix 2: Ethical clearance letter from UNISA

UNISA university of south africa

Department of Information Science
College of Human Sciences

Date: 23 January 2014

Proposed title: Models for managing medical records in the public health sector of the Limpopo province in South Africa

Principal investigator: Ngoako Solomon Marutha

Student number: 45884889

Reviewed and processed as: Class approval (see paragraph 10.7 of the UNISA. Guidelines for Ethics Review)

Approval status recommended by reviewers: Approved

The Research Ethics Committee of the Department of Information Science in the College of Human Sciences at the University of South Africa has reviewed the proposal and considers the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed. Approval is hereby granted for NS Marutha (45884889) to proceed with the study in strict accordance with the approved proposal and the ethics policy of the-University of South Africa.

In addition, the candidate should heed the following guidelines:

- To only start this research study after obtaining informed consent from the interviewees
- To carry out the research according to good research practice and in an ethical manner
- To maintain the confidentiality of all data collected from or about research participants, and maintain security procedures for the protection of privacy
- To notify the committee in writing immediately if any adverse event occurs.

Kind regards

Mr SC Ndwandwe
Chair: Research Ethics Committee
Department of Information Science
Tel + 2712 429 6037

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsmile: +27 429 12 429 4150
www.unisa.ac.za

Appendix 3: Introductory letter to the Limpopo department of health by UNISA Department of information science through the study supervisor

UNISA university of south africa

University of South Africa
School of Arts
Department of Information Science
P. O. Box 392
UNISA
0003
UNISA - Campus
Tel: (012) 429 2832
Fax: (012) 429 3792
E-mail: ngulup@unisa.ac.za
www.unisa.ac.za

3 December 2013

To whom it may concern,

This letter serves to introduce Mr. Ngoako Solomon Marutha who is registered as a student in the Department of Information Science at the University of South Africa (UNISA). Mr Marutha is currently carrying out a study on **"Models for managing medical records in the public health sector of the Limpopo".** The significance of records management in the service delivery chain cannot be overemphasized. The purpose of the study is to investigate, develop and recommend an effective and collaborative medical records management system framework or model for patients' records management. Sound patients' records management practice may support the production and provision of records with quality information that is timely, complete, valid and accurate to support management decision, problem solving and healthcare service continuity.

In order to undertake the study, Mr Marutha will need to distribute a questionnaire and conduct interviews and observations in Government departments and hospitals. In that light, the Department of Information Science kindly requests you to render any possible assistance to Mr Marutha in order to facilitate the conduct of the study.

If you require any clarification pertaining to the study, please, feel free to contact Prof. Patrick Ngulube, who is the supervisor of the research, on telephone 27124292832 or email ngulup@unisa.ac.za.

Thank you in advance in anticipation.

Yours faithfully

Prof Patrick Ngulube (Supervisor)

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Appendix 4: Letter of approval to conduct the study by the Limpopo department of health

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Latif Shamila Ref:4/2/2

Marutha NS
University of South Africa
P.O.Box 392
UNISA
0003

Greetings,

A Framework for embedding medical records management into the health care service delivery practice in the Limpopo Province of South Africa.

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
   - Further arrangement should be made with the targeted institutions.
   - In the course of your study there should be no action that disrupts the services.
   - After completion of the study, a copy should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.

Your cooperation will be highly appreciated.

Head of Department Date 01/04/2014

18 College Street, Polokwane, 0700, Private Bag x9302, POLOLKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: http/www.limpopo.gov.za

Appendix 5: Survey questionnaire/interviews informed consent form

UNISA university of south africa

DEPARTMENT OF INFORMATION SCIENCE

SURVEY QUESTIONNAIRE/INTERVIEWS INFORMED CONSENT FORM

"A FRAMEWORK TO EMBED MEDICAL RECORDS MANAGEMENT INTO THE HEALTHCARE SERVICE DELIVERY IN THE LIMPOPO PROVINCE OF SOUTH AFRICA"

I am Ngoako Solomon Marutha, PhD student for Information Science at the University of South Africa (UNISA). I am conducting a research study on **"*A framework to embed medical records management into the healthcare service delivery in the Limpopo province of South Africa*".** The purpose of the study is to investigate, develop and recommend effective collaborative medical records management system framework or model for sound patients records management practice. The information obtained and the resultant recommendations could assist the Department of Health in the Limpopo Province in its decision-making for improvement or adoption of medical records management model and practice. Participation in this study is absolutely voluntary.

The information in this questionnaire/interview shall not be used for any other purposes other than for this study. You are not required to provide your name, and will therefore remain anonymous. The aim of the questionnaire and/or interview is to evaluate your opinion, perceptions and feelings about medical records management models in hospitals. The results of the study will be used to help answer unanswered questions as far as medical records management models in the Department of Health are concerned. Other possible benefits for participating in this study are opportunity to share your experiences, contribute to knowledge about records management improvement programs. It is on these bases that the researcher is requesting you as the study participant to give consent through this form for your participation in the study. Should you have any question or seek any clarity, feel free to ask the researcher at any time of your participation at marutha75@gmail.com or 083 436 1652.

I hereby give consent for me to participate in this study and that the information I provide in the questionnaire and/or interviews will be used for accomplishment of this research project. The information provided will be treated with high degree of confidentiality as stated in this consent form and will therefore remain anonymous. Please tick (✓) or cross (**X**) the answer for the following question.

- I need to receive copy of research report summary in completion of the study YE NO

_____ _____

Participant signature Date

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Appendix 6: Survey questionnaire

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DEPARTMENT OF INFORMATION SCIENCE

SURVEY QUESTIONNAIRE

"A FRAMEWORK TO EMBED MEDICAL RECORDS MANAGEMENT INTO THE HEALTHCARE SERVICE DELIVERY IN THE LIMPOPO PROVINCE OF SOUTH AFRICA"

I am Ngoako Solomon Marutha, PhD student for Information Science at the University of South Africa (UNISA). My research topic is ***"A framework to embed medical records management into the healthcare service delivery in the Limpopo province of South Africa".***The purpose of the study is to investigate, develop and recommend effective collaborative medical records management system framework or model for sound patients' records management practice. The information obtained and the resultant recommendations could assist the Department of Health in the Limpopo Province in its decision-making for improvement or adoption of medical records management model and practice. Participants dealing with records administration and usage were randomly selected using stratified simple random sampling method and participation in this study is absolutely voluntary.

The information in this questionnaire shall not be used for any other purposes other than for this study. You are not required to provide your name, and will therefore remain anonymous. The aim of the questionnaire is to evaluate your opinion, perceptions and feelings about medical records management models in hospitals. The results of the study will be used to help answer unanswered questions as far as medical records management models in the Department of Health are concerned.

It would be highly appreciated if you could answer all questions accurately. Please give your honest and sincere opinion. Your responses will be helpful in reviewing the extent of the current records keeping models and practice in the Limpopo Province of South Africa. Please feel free to contact Solly Marutha for more information and enquiries at 083 4361 652 or marutha75@gmail.com . The researcher would like to thank you in anticipation for your interest and effective participation in this study. Please also sign consent form at the end of this questionnaire.

COMPLETE THIS QUESTIONNAIRE AS GUIDED BELOW

1. Please answer questions by making a tick (**✓**) or a cross (**X**) next to the correct answer and explain where necessary.

2. Use "**N/A**" for not applicable questions, avoid skipping some questions.

3. If writing space is not enough use separate page and write the question number next to the answer.

This questionnaire will only take 15 minutes to complete.

1. PERSONAL DATA

1.1 Indicate your age group, gender, post level and work position on the tables below.

AGE GROUP	
18-24	
25-30	
31-35	
36-40	
41-45	
46-50	
51-55	
56-60	
60-65	

GENDER	
MALE	
FEMALE	

POST LEVELS	
4	
5	
6	
7	
8	
9 - 10	
11 - 12	

WORK POSITION	
Manager	
Deputy Manager	
Senior Admin Officer	
Administration Officer	
Chief Registry Clerk	
Senior Registry Clerk	
Registry Clerk	
Other, specify	

1.2 Please provide the following information for your hospital.

Hospital name_____ Telephone_____

District name_____ Website_____

Address_____

2. MEDICAL RECORDS MANAGEMENT GOVERNANCE PRACTICE

2.1 Is the records management infrastructure in line with the South African legal and regulatory frameworks?

YES	
NO	

Please elaborate on your answer_____

2.2 If yes in 2.1, which South African legal and regulatory frameworks were used to guide the establishment of the records management infrastructure? (tick all that are applicable)

The Constitution of the Republic Of South Africa (Act no. 108 of 1996).	
The National Health Act (Act no. 61 of 2003)	
The Northern Province Health Services Act (Act No 1998)	
The National Archives and records service of South Africa Act (Act no. 43 of 1996)	
The Northern Province Archives act (Act No. 5 of 2001)	
The Promotion of Access to Information Act (Act no. 2 of 2000)	
The Promotion of Administrative Justice Act (Act no.3 of 2000)	
The Public Service Act (Act No.103 of 1994)	
The Public Service regulation 2001	
The Basic Conditions of Employment Act (Act no. 75 of 1997)	
Skills development Act (Act no.31 of 2003)	
The Employment Equity Act (Act no.55 of 1998)	
The Health Act (Act no.55 of 1997)	
The Public Finance Management Act (Act no.1 of 1999 as amended)	
Protection of Information Act (Act no. 84 of 1984)	
Protection of Personal Information Act (Act No. 4 of 2013)	
Limpopo Information Security policy	
Electronic Communication and transactions act (Act no. 25 of 2005)	
Minimum information security standards	
Labour relations Act (Act no. 42 of 1995)	
Others, specify	

2.3 Rate the organisational infrastructure for medical records management in terms of the following items? Rate from very good to very poor on the table below by making a tick (✓) or a cross (**X**) next to the correct answer.

2.4

STATEMENTS	VERY GOOD	GOOD	UNSURE	POOR	VERY POOR
1) Storage capacity					
2) Shelving equipment					
3) Records administration resources, funds and stationery					
4) Disaster preventive measures					
5) Records backup system					
6) Electronic recordkeeping technology					
7) Records storage ventilation system					

8) Records access control and measures					
9) Records movement tracking system					
10) Records safety and security measures					

Please elaborate the reasons for your answers on the table above

_____

_____

2.5 Please indicate whether you strongly agree, agree, unsure, disagree or strongly disagree with the following statements about the effectiveness of the current medical records management infrastructure in terms of legal and regulatory requirements.

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The medical records storage capacity is adequate					
2) Shelving equipment and facilities are adequate.					
3) Records administration resources are adequate.					
4) Disaster preventive measures are in place and effective.					
5) Records backup system is available.					
6) Electronic recordkeeping technology is adequate and effective.					
7) Records storage ventilation system.					
8) Records access control measures are effective.					
9) Records movement tracking system is effective.					
10) Records safety and security measures are adequate and effective.					

2.6 Do you know any legislative framework governing records management in South Africa?

YES	
NO	

2.7 If yes, list any legislative framework governing records management in South Africa.

_____

2.8 Which legislative frameworks is your organisation using for management of medical records?

_____

2.9 How do you apply legislative framework in governing medical records management? (tick all that are applicable)

Legislative framework are used for policy development	
Used for decision making and problem solving	
In adopting a records management framework and e-system	
Refer during policy implementation	
For training staff on records management	
Others, specify	

2.10 Is your institution having any policy for management of medical records?

YES	
NO	

2.11 If yes, does the policy cover all records management functional requirements as guided by NARSSA Act and records management models (life cycle and continuum model)?

YES	
NO	

2.12 Please indicate which functionalities are covered by the policy?

Records receiving	
Records preservation and conservation	
Records maintenance and use	
Records disposal	
Others, specify	

2.13 Is the organisation having medical records management procedure manual?

YES	
NO	

2.14 If yes, is the procedure manual is in line with the medical records management policy and NARSSA Act?

YES	
NO	

2.15 Are the procedure manual covers the entire medical records management functionalities and procedures?

YES	
NO	

2.16 Is the policies and procedure implemented or complied with as required?

YES	
NO	

Give reason to support your answer:

_____

2.17 Is the medical records managed effectively at all stages of the life cycle, from creation to disposal?

YES	
NO	

Elaborate on your answer:

_____

2.18 If no, how do you think this impact on the safety and security of records?

_____

2.19 Which unit is responsible for management of medical records during each of the three stages of the records life cycle? Tick all that applies.

UNITS	STAGES OF THE RECORDS LIFE CYCLE		
	1) Records Creation and receipt	2) Maintenance and Use	3) Disposal
Clinical unit			
Nursing unit			
Records management unit			
Other			

2.20 Please indicate and explain whether the units responsible above are relevant to manage medical records at each stage of the life cycle. Tick all that are applicable.

UNITS	STAGES OF THE RECORDS LIFE CYCLE		
	4) Records Creation and receipt	5) Maintenance and Use	6) Disposal
Clinical unit			
Nursing unit			
Records management unit			
Other			

Give reasons for your answers_____

2.21 Which unit is accountable for management of medical records during each of the three stages of the records life cycle? Tick all that applies.

UNITS	STAGES OF THE RECORDS LIFE CYCLE		
	7) Records Creation and receipt	8) Maintenance and Use	9) Disposal
Clinical unit			
Nursing unit			
Records management unit			
Other			

2.22 Please indicate and explain whether the units accountable above are relevant to manage medical records at each stage of the life cycle. Tick all that are applicable.

UNITS	STAGES OF THE RECORDS LIFE CYCLE		
	10) Records Creation and receipt	11) Maintenance and Use	12) Disposal
Clinical unit			
Nursing unit			
Records management unit			
Other			

Give reasons for your answers_____

_____

2.23 Please indicate whether the medical records are secured during each stage under management of each of the unit?

UNITS	STAGES OF THE RECORDS LIFE CYCLE		
	13) Records Creation and receipt	14) Maintenance and Use	15) Disposal
SECURED AND SAFE			
NOT SECURED AND SAFE			

Please elaborate on your answers_____

2.24 Does the institution have a designated medical records management unit?

YES	
NO	

2.25 If yes, is the medical records management unit structure having a designated records manager?

YES	
NO	

2.26 Is the staff under the medical records manager well structured?

YES	
NO	

Please give reason for your answers_____

2.27 Please illustrate and explain the staff structure hierarchy from the highest post to the lowest.

_____

_____

_____

2.28 Who is the overall responsible person for medical records management in the institution?

Chief executive officer	
Clinical manager	
Nursing manager	
Records manager	

Please give your opinion about the placement situation as chosen on the table above.

_____

2.29 Who is the overall accountable person for medical records management in the institution?

Chief executive officer	
Clinical manager	
Nursing manager	
Records manager	

Please give your opinion about the placement situation as chosen on the table above

_____

2.30 Is the institution frequently experience the problem of missing medical files?

YES	
NO	

2.31 If yes, what might be the causes?

_____

2.32 How do you think missing files negatively impact on the organisational business continuity? (Tick all that are applicable.)

Inability to monitor and evaluate compliance and administrative improvement	
Inability to provide access to records	

Inability to respond to litigation, Auditor General and legal information requirements	
Inability to comply with legislative framework	
Inability to respond to Auditor General and internal audit request	
Others, specify	

2.33 How do you think this can best be resolved?

Introduction and adoption of effective records management framework/ model	
Adoption of electronic system that is collaborative to the business process	
Involvement of the records manager in system, building and administration planning	
Others, specify	

2.34 Does the institution frequently experience problem of incomplete records or data that is not accurate, reliable or trustworthy?

YES	
NO	

2.35 If yes, what do you think might be the causes or problem?(Tick all that are applicable.)

Ineffective records management framework	
Lack of records management resources	
Lack of records management skills and competencies	
Shortage of staff	
Shortage of filing space	
High records demand	
Lack of the records manager involvement and consultation during system, building and administration planning	
Other, please specify	

2.36 How do you think this is impacting on institutional business continuity?

_____

2.37 How do you think this can best be resolved?

_____

3. THE NATURE OF MEDICAL RECORDKEEPING SYSTEM

3.1 Is the records management functional operation established at all levels of the life cycle?

YES	
NO	

Elaborate on your answer_____

3.2 Is the records management functional operation conducted at all levels of the life cycle?

YES	
NO	

Elaborate on your answer_____

3.3 What is the records management functional operation during each stage of the life cycle?

1) Records creation and receipt. (Tick all that is applicable.)

Files are opened for records to be created as the patient arrive	
Records are received from creators	
Records are recorded in the new files received register	
Records are captured in the system as new files receipt	
Records are classified according to system filing plan	
Records are appraised	
Records are filed in accordance with the system file plan	
Others , specify	

2) Records maintenance and use. (Tick all that is applicable.)

Records quality are maintained with appropriate ventilation, e.g. air-conditioned	
Records are protected against any disaster, e.g. water, fire, pests and rodents	
Access to records custodies and registry office is controlled	
Records movement is controlled through registers or system	
Files are issued to and returned from authorised records requesters	
Records are terminated to semi-active records custody when no longer active	
Others , specify	

3) Records disposal. (Tick all that is applicable.)

Records are identified for disposal	
Records are separated according to archival and ephemeral value	

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Records are properly sorted and registered for disposal	
Disposal permission is applied from the Archivist	
If disposal authority is granted records are disposed in line with the authority	
Disposal certificate is issued by the records manager	
Disposal register is created and kept safe for future reference and accountability	
Others , specify	

3.4 Is the institution also managing their records electronically?

YES	
NO	

3.5 Is electronic records management effective and efficient?

YES	
NO	

Please give reason for you answer

_____

3.6 Is the electronic records management done in line with all dimensions of the records continuum model, which are records creation, records capture, organisation of corporate memory, pluralisation of collective memory?

YES	
NO	

Elaborate on your answer_____

3.7 What is the electronic medical records management functional operation during each dimension of the records continuum model?

1) Document creation _____
2) Records capture_____
3) Organisation of corporate memory_____
4) Pluralisation of collective memory_____

3.8 What are the organisational recordkeeping functional requirements? (Tick all that is applicable.)

Identifying and documenting different categories of medical records, e.g. Chronic patients records	
Keep evidence of medical business activities	
Designing and developing systems to facilitate medical records management processes	

Developing policies and procedures to guide creation and management of records	
Maintain medical records	
Dispose medical records	
Ensure easy retrieval and access	
Keep confidentiality and safety of information contained by medical records	
Others, specify	

3.9 Is your institution also complying with these functional requirements?

YES	
NO	

Elaborate on your answer_____

3.10 What do you understand by the concept record metadata? (Tick all that is applicable.)

Information captured along with electronic records describing the identity, authenticity, content, structure and management requirements of records	
Information used to search or identify the record out of mass of the other records	
Computer system used to capture the records and data	
Shelves used to keep records containing the data	

3.11 What are the metadata requirements for organisational recordkeeping? (Tick all that is applicable.)

Records creator	
Record capturer/processor	
Records business transaction	
Patient personal details such as names, client number, identity, prescriptions, illnesses, treatments and date of transactions	
Records retention or disposal period/year	
Others, specify	

3.12 Is your institution also complying with each of the metadata requirements?

YES	
NO	

Elaborate on your answer_____

3.13 If no, what do you think are the reasons or problems and what can be done to improve?

_____

_____

4. THE MEDICAL RECORD ARCHIVAL PROCESSES

4.1 What do you understand by the concept appraisal? (Tick all that is applicable.)

The act of making decisions on what records are to be created and how long they need to be kept to meet organizational accountability	
The process of evaluating an organization's business activities to determine which records need to be created, captured into the recordkeeping systems and how long the records need to be kept	
Is the process of determining the records retention period according to their values	
Is the process of destroying the records	
Others, specify	

4.2 Are the medical records in your institution appraised?

YES	
NO	

4.3 If yes, please indicate how medical records were appraised. (Tick all that is applicable.)

Institution identified categories of medical records to be kept.	
Records retention periods were determined for each category of medical records	
Electronic records to be captured into the recordkeeping systems were identified with the retention period	
Records of long term value and short term value were identified.	
Ephemeral records were destroyed and archival value records were transferred to archive repository	
Others, specify	

4.4 Is the institution assigned the retention period for all categories of medical records?

YES	
NO	

Elaborate on your answer_____

4.5 Please rate management of the records storage and preservation of medical records in the institution from strongly agree to strongly disagree?

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The medical records are well arranged and filed on the shelves according to the file numbers.					
2) The temperature in the filing storages is controlled for safety of the records.					
3) All the record are kept inside folders/covers and boxes to avoid misfiling.					
4) The medical records files contents are well structured and arranged for easy monitoring and control of missing records (indexing and folio-numbering).					
5) The medical records are backed up with electronic records system for any disaster recovery.					
6) The electronic recordkeeping technology makes it easy to manage the records.					
7) The medical recordkeeping buildings are purposely built for recordkeeping.					
8) The medical recordkeeping buildings are suitable for records custody.					
9) The records custody is not easily accessible for unauthorised people.					
10) It is easy to retrieve records in the custody.					
11) There are registers or system to track when records are removed from the records custody.					
12) There are effective security measures for records in the custody.					

5. THE RECORDKEEPING TECHNOLOGY

5.1 Is the institution having any technology to manage medical records?

YES	
NO	

Elaborate on your answer_____

5.2 If yes, is the technology electronic or manual?

ELECTRONIC	
MANUAL	

Elaborate on your answer_____

5.3 If the technology is electronic is it effectively helping to manage medical records in relation to records management operational and functional requirements throughout the life span?

YES	
NO	

Elaborate on your answer_____

5.4 Does the system have functionalities to meet all records management operational and functional requirements throughout the life span?

YES	
NO	

Elaborate on your answer_____

5.5 Are all the records management system functionalities effectively being utilised?

YES	
NO	

Elaborate on your answer_____

5.6 If no, what do you think is the causes of the problem?

_____

_____

5.7 Please rate whether you agree with the following statements relating to the electronic system in the institution, from strongly agree to strongly disagree.

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The system records storage capacity is adequate.					
2) The system has a complete metadata required for records management, identification and retrieval.					

3) The system metadata for records retrieval is adequate and user friendly.					
4) The system has functionalities for records capturing.					
5) The system has functionalities for records issuing and returning (circulation).					
6) The system has functionalities for records disposal.					
7) The system has functionalities for scanning and capturing electronic documents that were created in a paper-based format.					
8) The system has a functionality to create electronic records directly into the system.					
9) System has the ability to produce audit trail for each record.					
10) The system functionalities are effectively utilised.					
11) Records in the electronic system can be used as a backup for paper-based records.					
12) Electronic system is used to capture every piece of information about administration and treatment of the patients.					
13) Access to records in the system is effectively controlled.					
14) The system is protected against any disaster.					
15) The records in the system are protected against any perils such as virus and spyware.					

5.8 Is the electronic records management system effectively meet/serve the records management functional requirements?

YES	
NO	

Elaborate on your answer_____

5.9 What do you think need to be improved on the system to comply with the records management functional requirements?

_____

_____

6. THE STAFF CAPACITY, SKILLS AND COMPETENCIES FOR MANAGEMENT OF MEDICAL RECORDS?

6.1 Do you think the staff complement for records management is adequate in your institution?

YES	
NO	

Elaborate on your answer_____

6.2 Do you think the records management unit is well structured in terms of the unit and reporting channels?

YES	
NO	

Elaborate on your answer_____

6.3 Do you think the records management unit is well placed in terms of the unit and reporting channels?

YES	
NO	

Elaborate on your answer_____

6.4 What is the highest level of your general educational qualification?

Certificate	
Higher certificate	
Diploma	
Undergraduate degree	
Honours degree	
Master's degree	
Doctoral degree	

6.5 Which records management qualifications have you achieved?

Certificate	
Higher certificate	
Diploma	

Undergraduate degree	
Honours degree	
Master's degree	
Doctoral degree	

6.6 If the certificate was the highest records management qualification achieved state at which level it was achieved?

Basic	
Intermediate	
Advanced	

6.7 Please list all the records management skill and qualifications that you still need to have complete and effectively capacity to manage medical records.

_____

_____

6.8 Is the institution conducting in-house records management training and workshops?

YES	
NO	

6.9 Is the institution conducting in-house records awareness workshop to all staff in the institution?

YES	
NO	

6.10If yes, is the training and workshops regularly conducted?

YES	
NO	

Elaborate on your answer_____

6.11 How long have you being working for medical records management?

Less than 1 year	
1 to 2 years	
3 to 5 years	
More than 5 years	

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6.12 What is your records management work experience?

Less than 1 year	
1 to 2 years	
3 to 5 years	
More than 5 years	

6.13 What is your electronic records management work experience?

None	
Less than 1 year	
1 to 2 years	
3 to 5 years	
More than 5 years	

6.14 Please rate your skills and competencies by ticking from strongly agree to strongly disagree with the statements on the table below.

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) I am familiar with and can implement the principles of records management.					
2) I can manage medical records throughout its life span.					
3) I can effectively manage medical records electronically throughout its life span.					
4) I have adequate experienced in electronic records management.					
5) I am competent and skilled for all records management operational and functional requirements.					

7. READINESS FOR IMPLEMENTATION OF ENTERPRISE CONTENT MANAGEMENT (ECM) AS A MODERN ELECTRONIC RECORDS MANAGEMENT SYSTEM

7.1 What do you think is ECM? (Tick all that is applicable.)

Collaborative electronic system	
Electronic system that integrate other business activities into the business process	
It is a strategy that is made up with a set of software products to manage all types of enterprise content throughout its entire life cycle	
Others, specify	

7.2 What are the indicators of ECM readiness? (Tick all that is applicable.)

Migration of ERDMS into the web content	
The introduction of improved add-ons such as web content management tools, e-mail integration and workflow/business process management to cover the application and development of EDRMS	
A collective business processes management approach	
Covers many other components including knowledge management	
OTHERS	

7.3 Is the institution already implementing ECM as a modern e-records management system?

YES	
NO	

7.4 If no, is the institution ready for the implementation of ECM?

YES	
NO	

Elaborate on your answer

_____

7.5 Do you think ECM is necessary and relevant for your institution?

YES	
NO	

Elaborate on your answer

_____

7.6 Which improvements do you think ECM can bring to the institution if properly implemented? (Tick all that are applicable)

Easy retrieval of records.	
Electronic usage of records online.	
One record can be accessed by many people at the same time.	
Easy business continuity.	
Provision of timely, accurate, trustworthy and complete records.	
Effective records security throughout the life span.	
Access to quality data and information.	
Compliance to legislative framework.	
Creation of reliable knowledge at all stages of the life span.	

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7.7 Please rate availability of the following electronic records management requirements for effective implementation of ECM system.

STATEMENTS		VERY GOOD 76-100%	GOOD 51-75%	UNSURE	POOR 21-50%	VERY POOR Less than 25%
1) Computers						
2) Computer equipment, e.g. Printers						
3) Servers						
4) Networks						
5) Internet connection						
6) Internet website						
7) Intranet website						
8) Budget/funds						
9) Others, specify						

7.8 Who do you think is responsible for implementation of ECM? (Tick all that is applicable.)

Records manager	
Chief Executive Officer	
Head of department	
MEC	

7.9 What do you think can be done to ensure effective implementation of ECM and ensure that it is functional?

_____

_____

8 PROPOSED FRAMEWORK TO FACILITATE MEDICAL RECORDS MANAGEMENT PRACTICE IN THE PUBLIC HOSPITALS

8.1 Do you think the current medical record management framework is effectively enabling the institution to properly manage medical records?

YES	
NO	

Please elaborate on your answer_____

8.2 Please rate the current medical records management system framework from strongly agree to strongly disagree on the table below.

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) The framework enables records safety and security from creation to disposal in its life cycle					
2) The framework system detect when records are created					
3) The framework system gives the records manager an audit trail about the records from the date of creation to the current date					
4) The medical records management framework is collaborated or integrated into the workflow					
5) The medical records management framework utilise electronic system					
6) Medical records on the framework are managed using the business administration system					
7) Records are only handled by business rendering officials on the framework, but not the clients					
8) Records are created and managed electronically on the business process					
9) Records are created manually and managed using the business administration system					
10) Records are created manually and managed using a manual system on the business process					

8.3 If the medical records management framework is not effective or is poor what do you think might be the causes?

_____

8.4 What do you think must be done to improve or introduce the new framework that is effective?

_____

9 MEDICAL RECORDS MANAGEMENT AND HEALTHCARE SERVICE DELIVERY RELATIONSHIP

9.1 Do you think there are relationship between medical records management and provision of healthcare service?

YES	
NO	

Elaborate on your answer_____

9.2 If yes, Please explain how the healthcare service delivery and medical records management impact on each other both positively and negatively.

_____

9.3 Explain how the current medical records management impact on the healthcare service delivery.

_____

9.4 In your institution, do you think medical records management impact negatively on healthcare service delivery?

YES	
NO	

9.5 If yes, what do you think might be the causes of the negative impact? (Tick all that apply.)

Ineffective electronic system	
Inappropriate medical records management	
Shortage of filing space	
Improper medical records filing due to lack of space	
Lack of appropriate records management resources	
Ineffective records management framework	
Long turnaround time for file retrieval	
Missing or lost files	
Other, specify	

9.6 If yes above, what do you think must be done to solve this negative impact? Tick all that apply._____

9.7 Please rate the impact of medical records management on the healthcare service delivery from strongly agree to strongly disagree on the table below.

STATEMENTS	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
1) Poor medical records management may cause the medical professional to render wrong or poor healthcare service.					
2) Inaccessibility or unavailability of medical records may disable the medical professional from continuing rendering healthcare service					
3) Medical records help the healthcare professionals with the information about the patient medical history					
4) Medical records contain information that ensures a smooth healthcare business					

continuity					
5) Medical records assist healthcare professionals with information for planning, correcting mistakes and improving service going forward					
6) Medical records assist healthcare professionals with information for accountability, openness and transparency					
7) Other, please specify					

THANK YOU.

The researcher would like to thank you for taking your time to complete this questionnaire, your contribution, participation and cooperation is highly appreciated. Please forward your completed questionnaire to Mr Ngoako Solomon Marutha through e-mail address: marutha75@gmail.com and/or sollymn@webmail.co.za by 31 February 2015.

Please also forward copies of records management-related documents like brochures that describe departmental organisational structure and records collections preserved, audit reports, policies, procedures, standards and norms for records keeping. Please do not forget to sign the consent form attached in the next page.

MaruthaNS
Cell: 083 436 1652
Office Tel: (015) 293 6132

Appendix 7: Survey questionnaire pre-test schedule

DEPARTMENT OF INFORMATION SCIENCE

SURVEY QUESTIONNAIRE PRETEST SCHEDULE

"A FRAMEWORK TO EMBED MEDICAL RECORDS MANAGEMENT INTO THE HEALTHCARE SERVICE DELIVERYIN THE LIMPOPO PROVINCEOF SOUTH AFRICA"

I am currently a registered student for PhD in Information Science at the University of South Africa (UNISA). I am conducting a research study on ***"A framework to embed medical records management into the healthcare service delivery in the Limpopo province of South Africa".*** The purpose of the study is to investigate, develop and recommend effective collaborative medical records management system framework or model for sound patients records management practice. The population of the study includes only hospitals within the Limpopo Province. I am now conducting a research project questionnaire pre-test. This serves to request your assistance for assessing validity and reliability of the questionnaire that will be used for this study to collect data. Your inputs on the questionnaire will be highly appreciated for the success of this research project. Please scrutinise the quality of the questionnaire using the checklist below. Indicate if each of the following items on the checklist is correct or incorrect in the questionnaire by making a Tick (✓) or a cross (**X**) next to each item. You can also write other comments in the attached questionnaire where necessary.

ASSESSMENT ITEM	INCORRECT	CORRECT	IF YOUR ANSWER IS "INCORRECT" PLEASE PROVIDE SOME SUGGESTIONS
1. Typography	CORRECT	INCORRECT	
2. Grammatical Spelling	CORRECT	INCORRECT	
3. Questions numbering	CORRECT	INCORRECT	
4. Font size	CORRECT	INCORRECT	
5. Vocabulary	CORRECT	INCORRECT	

(terminologies)			
6. length of the questionnaire	CORRECT	INCORRECT	
7. Item style	CORRECT	INCORRECT	
8. Line spacing	CORRECT	INCORRECT	
9. Survey format flow	CORRECT	INCORRECT	
10. Appropriateness of items	CORRECT	INCORRECT	

The researcher would like to thank you for taking time to assess the validity and reliability of this survey questionnaire. Please forward completed questionnaire to me via email: marutha75@gmail.com and/or sollymn@webmail.co.za by 31 January 2014.
Yours faithfully

Ngoako Solomon Marutha
PhD Student
Cell: 083 436 1652
Office Tel: (015) 293 6132

Appendix 8: Survey observation schedule

UNISA university of south africa

DEPARTMENT OF INFORMATION SCIENCE

SURVEY INTERVIEW SCHEDULE

"A FRAMEWORK TO EMBED MEDICAL RECORDS MANAGEMENT INTO THE HEALTHCARE SERVICE DELIVERYIN THE LIMPOPO PROVINCEOF SOUTH AFRICA"

1. INTERVIEW DETAILS

Interviewer----------

Date ----------

Time----------

Place----------

Mode of interview ----------

2. RESPONDENTS DETAILS

Post level----------

Gender----------

District where the hospital belong----------

3. DESCRIPTION OF THE RESEARCH PROJECT

A framework to embed medical records management into the healthcare service delivery in the Limpopo province of South Africa.

4. MEDICAL RECORDS MANAGEMENT GOVERNANCE PRACTICE

What is your opinion and understanding about the current medical records management governance practice in your institution?

Is the governance practice making it easy to manage and access the records when they become required?

Explain whether the records management policies and procedures make it easy for the records to be managed and retrieved/served to clients.

What is your opinion and understanding about the current records management staff structure and reporting channels?

Does the current records management staff structure and reporting channels makes it easy for the staff to discharge their responsibilities and easily account for their administrative actions?

---

5. NATURE OF MEDICAL RECORDKEEPING SYSTEM

Explain how is the recordkeeping system in the hospital complying with all the records management operations, recordkeeping functional requirements and metadata requirements?

Does the system effectively assist in managing and securing medical records?

Are there any improvements required for the system to effectively manage and secure records?

---

6. MEDICAL RECORD ARCHIVAL PROCESSES

Explain if whether the records appraisal, retention, preservation strategies and storage management is being done in your institution?

Explain, how your institution go about disposing medical records and whether the institution was once disposed off medical records

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7. RECORDKEEPING TECHNOLOGY

Explain the nature of the electronic records systems utilised in your institution.

How is the system meeting functional requirements for records management?

How is the system safety and security for the records it contain?

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8. STAFF CAPACITY AND COMPETENCIES FOR MANAGEMENT OF MEDICAL RECORDS.

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How do you find the staff capacity and competencies for management of medical records in the institution?

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9. READINESS FOR IMPLEMENTATION OF ECM IN THE HOSPITALS

Explain how far you find the institution ready for the implementation of ECM and how relevant is it to your institution?

---

10. FRAMEWORK THAT CAN FACILITATE MEDICAL RECORDS MANAGEMENT PRACTICE IN THE PUBLIC HOSPITALS.

How effective do you find the current medical records management framework?

What do you think should be the relevant nature/ characteristics of a suitable medical records management framework in your institution?

Generally what do you think are the major challenges hampering proper records management in your institution?

How do you think these challenges can best be resolved to ensure effective records management?

---

11 MEDICAL RECORDS MANAGEMENT AND HEALTHCARE SERVICE DELIVERY RELATIONSHIP

Explain whether the medical records management impact negatively or positively on the healthcare service delivery.

If the impact is negative what best can be done to resolve the problem?

- What are the medical records archival processes in terms of appraisal, retention, preservation strategies and storage management?
- How is the recordkeeping technology used to manage and protect electronic medical records in the hospitals?

Appendix 9: Research objectives, research questions and possible data sources

Research Objectives	Research Questions	Questions addressing the objectives		
		Questionnaire	Interview	Observation technique
To assess medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities.	What is the medical records management governance practice in terms of legal and regulatory infrastructure, policies, procedures, responsibilities and accountabilities in the Limpopo public hospitals?	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33	4	2
To examine records management operations, recordkeeping functional requirements and metadata requirements in relation to the recordkeeping system in the Limpopo public hospitals.	What are the records management operations, recordkeeping functional requirements and metadata requirements in relation to the recordkeeping system in the Limpopo public hospitals?	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12	5	3
To establish medical record archival processes in terms of appraisal, retention, preservation strategies and storage management in the Limpopo public hospitals.	What are the medical records archival processes in terms of appraisal, retention, preservation strategies and storage management in the Limpopo public hospitals?	4.1, 4.2, 4.3, 4.4, 4.5	6	2
To investigate recordkeeping technology used to manage and protect electronic medical records in the Limpopo public hospitals.	How is the recordkeeping technology used to manage and protect electronic medical records in the Limpopo public hospitals?	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9	7	4
To establish staff capacity	How adequate is the staff	6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8,	8	

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List of research project topics and materials

Research Objectives	Research Questions	Questions addressing the objectives		
		Questionnaire	Interview	Observation technique
and competencies for management of medical records in the Limpopo public hospitals.	capacity and competencies for the management of medical records in the Limpopo public hospitals?	6.9, 6.10, 6.11, 6.12, 6.13		
To assess the readiness for implementation of ECM in the Limpopo public hospitals as a modern electronic records management system.	How ready are the hospitals for the implementation of ECM in the Limpopo public hospitals as a modern electronic records management system?	7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9	9	
To propose a framework that can embed medical records management into the healthcare service delivery for facilitating medical records management practice in the Limpopo public hospitals.	What framework can be proposed to embed medical records management into the healthcare service delivery for facilitating medical records management practice in the Limpopo public hospitals?	8.1, 8.2, 8.3, 8.4	10	5
To assess understanding of the relationship between medical records management and provision of healthcare service in the Limpopo public hospitals.	Do the healthcare institutions in Limpopo understand the relationship between medical records management and healthcare service delivery?	9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7	11	