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List of acronyms and abbreviations

AIDS	Acquired Immune-deficiency syndrome
ANC	Antenatal care
APHRC	African Population and Health Research Center
AU	African Union
CDC	Centers for Disease Control and Prevention
CS	Caesarean section
CSA	Central Statistical Agency
CSPro	Census and Survey Processing System
DC	Delivery care
EA	Enumeration area
EDHS	Ethiopia Demographic and Health Survey
EHNRI	Ethiopian Health and Nutrition Research Institute
FMOH	Federal Ministry of Health
G8	Group 8
GDP	Gross domestic product
HEP	Health Extension Program
HEWs	Health Extension Workers
HH	Household
HIV	Human Immuno-deficiency Virus
HSDP	Health Sector Development Plan
ICF	Inner City Fund
ICPD	International Conference on Population and Development
MDG	Millennium Development Goal
MMR	Maternal mortality ratio
MNCH	Maternal, Newborn and Child Health
NGO	Non-governmental Organization
NMR	Neonatal mortality rate
OR	Odds ratio
PCA	Principal Component Analysis
PMNCH	Partnership for Maternal, Newborn and Child Health
PNMR	Perinatal mortality rate
PPS	Probability proportional to size
SPSS	Statistical Package for Social Sciences
TBA	Traditional Birth Assistant
TFR	Total fertility rate
UN	United Nations

UNFPA	United Nations Population Fund
UN-Habitat	United Nations Human Settlements Programme
UNICEF	United Nations Child Fund
UNISA	University of South Africa
UN-OHCHR	United Nations Office of the High Commissioner for Human Rights
USAID	United States Aid for International Development
WHO	World Health Organization

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1   INTRODUCTION

It has been more than six decades since the World Health Organization (WHO) Constitution adopted that

> "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition" (Constitution of the World Health Organization 1946:2).

The World Health Assembly's declaration of 'health for all by the year 2000' at Alma-Ata in 1978 required governments and the WHO to be committed for the attainment of a level of health that will allow all the people to lead a socially and economically productive life (WHO 1981:15). In 1978 an International Conference on Primary Health care stated that the key to achieve the previous declaration is primary health care (WHO 1981:15). After two decades in 2000, 189 countries promised, later 191 countries agreed, to free the world from extreme poverty and related deprivations including disease and came up with eight international development goals named as the Millennium Development Goals (MDGs). Maternal health was a core agenda at the 1994 International Conference on Health and Development (ICPD) and later emanated as MDG 5 from the action agreed on at the ICPD. The eight MDGs are:(1) eradicate extreme poverty and hunger; (2) achieve universal primary education; (3) promote gender equality and women empowerment; (4) reduce child mortality; (5) improve maternal health; (6) combat HIV/AIDS, malaria and other disease; (7) ensure environmental sustainability, and (8) global partnership for development (United Nations (UN) 1995:40-42; UN 2000:3-5).

During the previous regime, in the late 1970s to early 1990s, Ethiopia's health policy was based on the concept of primary health care following the 1978 Alma-Ata Conference (Getachew [Sa]:80). Currently, the country is also committed to achieving

the Millennium Development Goal 5, a reduction of maternal mortality ratio by 75%, by 2015. This goal is among the core agenda in the country's consecutive Health Sector Development Programs (HSDP). It was clearly indicated that the general goals of the HSDP-III were:to improve maternal health, reduce child mortality and combat HIV/AIDS, malaria, tuberculosis and other diseases and they are still part of the new HSDP-IV (Federal Ministry of Health (FMOH) 2005:57; 2010a:31).

Maternal mortality is a long-standing reality in Ethiopia. According to the WHO estimate (2012a:39), Ethiopia is "making progress" but it may not be able to achieve the MDG 5 by 2015. Ethiopia's high fertility rates (TFR=4.8) and high maternal mortality (676 per 100, 000 live births) indicates high parental demand for children and suggests that safe motherhood is a key human development challenge in the country (Central Statistical Agency (CSA) and Inner City Fund (ICF) International 2012:70, 270). In 2010, the country ranked fifth globally and third in Africa in the number of maternal deaths with about 18, 000 mothers dying every year (Save the Children 2010:11). Maternal death refers to the "death of a woman while pregnant or within 42 days of termination of pregnancy The main causes of maternal mortality worldwide are known as direct obstetric causes including haemorrhage, sepsis, hypertension, abortion and obstructed labour (Kinney, Lawn & Kerber 2009:17; FMOH 2009:9; WHO 2010a:156).

In Ethiopia there have been improvements in maternal health services utilisation such as antenatal care coverage (34%); however, skilled attendance at birth (10%), the most important predictor of maternal mortality (UN 2000:5) and postnatal care coverage (7%) remain very low except the capital Addis Ababa (CSA and ICF International 2012:120, 127, 129). Skilled delivery assistance coverage is among the lowest in Africa (Friberg, Kinney, Lawn, Kerber, Odubanjo, Bergh, Walker, Weissman, Chopra & Black 2010:2). The WHO recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester (WHO 2002:12).

Many previous studies have shown that urban women are more advantaged for skilled delivery attendance compared to rural women and the gap is even larger among those living in large cities or in the capital (Gabrysch & Campbell 2009:13). However, differentials between regions within a country are usually moderate to large in size, an extreme case is recorded for Ethiopia, with the widest urban-rural gap in selected

maternal and child health care coverage indices including antenatal care and skilled attendance at birth (Save the Children 2010:24; WHO 2012b:29-31). Delayed uptake of health services is among the existing perceived and real problems of the urban setting (United States Agency for International Development [USAID] 2012:33).

1.2   BACKGROUND TO THE RESEARCH PROBLEM

About 800 women die from pregnancy or childbirth-related complications around the world every day (WHO 2012a:19, 2012b:1); and maternal mortality accounts for 15% female deaths (Patton, Coffey, Sawyer, Viner, Haller, Bose, Vos, Ferguson & Mathers. 2009:887). More than half of the 287,000 women who died in 2010 from pregnancy-related causes are from the African region which constitutes only about 15% of the world's population (Population Reference Bureau 2013:7; WHO 2012a:1). The high number of maternal deaths in some areas of the world reflects inequities in access to health services (Patton et al 2009:890-891; WHO 2012a:29; 2012b:40). In recent years, efforts to eliminate inequalities in the utilisation of basic health care services including maternal and child health have been emphasised for improvement of health in developing countries. In Africa, policy and programme attention is shifting towards maternal, new-born, and child health (MNCH) continuum of care. However, governments' budget share of health in the continent has been inadequate to deal with obstetric cases. For sub Saharan Africa in particular, the percentage of gross domestic product (GDP) devoted to health ranges from as low as one percent to 3.7%.

Most maternal deaths are avoidable, by improving women's access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by skilled health professionals, as timely management and treatment can make the difference at this critical time (WHO 2008; WHO 2012a:7). Poor women in remote areas of sub-Saharan Africa and South Asia are the least likely to receive adequate health care due to low numbers of skilled health workers. While levels of antenatal care have increased in many parts of the world during the past decade, only 46% of women in low-income countries benefit from skilled delivery assistance by a midwife, a doctor or a trained nurse (WHO 2008).

The 1993 Ethiopian national health policy followed by the consecutive Health Sector Development Plans (HSDP I-IV) and the nationwide Health Extension Programme contributed to increased accessibility and availability of health care facilities and improvements of health care services in general. In recent years the national health delivery infrastructure has grown significantly. However, these efforts have been accompanied by growing gaps in the health care utilisation between regional states and social and economic groups in the Ethiopian communities. There have also been huge disparities in maternal health and utilisation of maternal health care between different geographic areas and social groups (Abdella 2010:116-118; CSA and ICF International 2012:119-133, 270; Donnelly 2011:1907-1908; Koblinsky, Tain, Gaym, Karim, Carnell & Tesfay 2010:107-108; Yesuf & Calderon-Margalit 2013:6-8; Wamai 2009:289).

The Ethiopian health system is under-developed and underfinanced (FMOH 2010a:73). While some progress has been made in providing basic health services to poor women and their children, the progress may be uneven because many people are not reached with services (CSA and ICF International 2012:126). While there appear to exist a wide range of therapeutic choices in the modern public health facilities in Ethiopia (FMOH 2010a:5-6), the utilisation of maternal and child health services is limited unlike in the capital Addis Ababa (CSA and ICF International 2012:120-130). Besides the well documented socio-economic and demographic factors that affect utilisation of services such as availability, accessibility, quality of services, distance to health service, cost of services, technical qualifications of health practitioners, and women's autonomy in household decision-making (CSA and ICF International 2012:128; G/Egziabher & Melkamu 2008:40-42; Hailu, Gebremariam & Alemseged 2010:29-30; Nair, Morankar, Jira & Tushune 2010:64); many other factors do also influence the health care seeking behaviour of women including the living conditions, environment, professional preference or seeking for specialised services, unintended pregnancy, technological preference, individual perceptions and level of awareness towards the services.

Little is known about the extent of the influence of such individual and health care system factors on adequacy of utilisation of maternal health care services in Addis Ababa. This research aims to answer the stated research questions by exploring some of the associated social determinants of women's utilisation of adequate antenatal and delivery care services.

1.3   STATEMENT OF THE RESEARCH PROBLEM

A research problem is an "intellectual puzzle" intended to be investigated by the researcher (Blaikie 2010:16). Obstetric complications during pregnancy and child birth are claiming thousands of lives everyday worldwide.   More 284,000 deaths occur annually, with most of them occurring in developing countries (World Bank 2012; WHO 2012a:20). Maternal mortality ratios show huge discrepancy between the developed (16 per 100,000 live births) and developing nations (240 per 100,000 live births); more than half (56%) of these maternal deaths occur in sub-Saharan Africa region alone (WHO 2012a:19, 22).

In Ethiopia, the maternal mortality ratio is still high and is among the seven countries which account for 3-5% of maternal deaths each globally (WHO 2012a:22) and shows no significant change in the 15 years preceding the 2010 EDHS. According to this EDHS report, in 2011 maternal death accounted for 30 percent of all deaths compared to the 21% and 25% share in 2005 and 2000 respectively. The maternal mortality ratio was 676 per 100,000 live births for the seven years preceding the survey slightly higher than the 2005 EDHS estimate (673 per 100,000 live births) (Central Statistical Agency (CSA) [Ethiopia] and Inner City Fund (ICF) International 2012:13, 15, 270). In 2009, the MMR in Hospitals in Ethiopia was slightly less than 500 per 100,000 live births (FMOH 2009:8).

Skilled birth attendance has been mentioned as one of the packages of intervention areas for improving maternal and child health and is one of the MDG indicators to track national effort towards safe motherhood (CSA and ICF International 2012:127; FMOH 2010a:43). In Addis Ababa, a significant proportion of mothers (17%) continue to give birth unattended by skilled personnel about six percent of the deliveries were attended by traditional birth attendants and more than eight percent of the births were attended by a relative or other (CSA and ICF International 2012:128). Many factors are known to affect the utilisation of delivery services from modern health care facilities or women's preference to professionals or places of delivery (African Population and Health Research Center (APHRC) 2009; Gabrysch & Campbell 2009:3; Kinney et al 2009:17).

Studies show that maternal mortality is consistently lower in urban areas than in rural areas (Asamoah, Moussa, Stafström & Musinguzi 2011 4; Liang, Dai, Zhu, Li, Zeng,

Wang, Li, Li, Zhou & Wang 2011:6; WHO 2013), with remote communities often having poorer access to health care (Gabrysch & Campbell 2009:13). However, disparities for the fast-growing population of urban poor who struggle as much as or more than their rural counterparts to access quality health care is masked by the urban averages (Kinney, Kerber, Black, Cohen, Nkrumah, Coovadia, Nampala & Lawn 2010:4). For example, informal settlements (slums) in Nairobi, Kenya's capital city had a maternal mortality ratio (706 deaths per 100,000 live births) higher than the country's average (560 per 100,000 live births) (APHRC 2009). Slum dwellers constitute an increasing part of city residents in many African countries (Patel & Burke 2009:741), and therefore need special attention as their situation is likely to affect the development indicators in a given country. More often their plight is masked by average urban indicators that do not help policy makers and programme designers and implementers in designing evidence-based policies and programmes towards them. In Addis Ababa, the differences in the maternal health care utilisation between slum and non-slum residents have not been fully studied.

According to the 2011 Ethiopia Demographic and Health Survey (EDHS) the rate of caesarean-section (CS) (22%) in Addis Ababa (CSA and ICF International 2012:128) was far more than 10-15% rate recommended by WHO (1985). This recommended limit has been recently backed up by study result from 137 countries (Gibbons, Belizán, Lauer, Betrán, Merialdi & Althabe 2011:9-10). Further research shows that CS rates beyond 15% are considered medically unjustified or unnecessary with negligible benefits for most mothers and yet costly and unequally distributed among the population (Gibbons et al 2011:8-10; Main, Morton, Hopkins, Giuliani, Melsop & Gould 2011:5, 9). The raise in CS rate are mainly attributed to increased practices among low risk mothers without medical indications, women's request or lack of resistance due to lack of awareness and influence by physicians (Gamble, Creedy, McCourt, Weaver & Beake 2007:338; Main et al 2011:5, 6, 9). Main et al (2011:9) have shown that medical factors do not explain the increase in CS rate. Studies show that excess CS rates mainly among the repeated procedures have multiple adverse consequences including increased likelihood of maternal morbidity and mortality compared to vaginal delivery (Main et al 2011:5-8, 10; Souza, Gülmezoglu, Lumbiganon, Laopaiboon, Carroli, Fawole & Ruyan 2010:17). In this study, the contribution of the woman's request and the service provider's influence on the growing CS rate; or whether women were provided

the appropriate information by health professionals to inform their decision on the modes of delivery was systematically examined.

In Addis Ababa, though the private health facilities (hospitals and clinics) outnumber public clinics (FMOH 2011:55), only 20% of deliveries take place in the private sectors and 17% of mothers deliver at home (CSA and ICF International:126). Hence, the researcher is keen to explore the factors behind mothers' preferences to places of delivery care.

Studies conducted on ANC and delivery care (DC) utilisation in Addis Ababa have either been facility based, used only one or two single outcome variables (timing and number of visits), focused on the aggregate urban population, or generally scarce (Tariku, Melkamu & Kebede 2010:228; Yesuf & Calderon-Margalit 2013:2, 5). The researcher has no knowledge of any study that addressed the overall adequacy of ANC i.e. the content of services, timing of first visit and number of visits in the capital which signals that the factors that affect women's maternal health care seeking behaviour in relation to adequacy of antenatal care services, mode of delivery and their preference to places of delivery have not been fully studied. This study aims to systematically explore the differences in the maternal health care utilisation among the different community groups and the factors that influence women's health care seeking behaviour and selection of place of delivery. It is envisaged that a clear understanding of such factors is key in building a responsive maternal health care system and to improve health outcomes in Ethiopia.

1.4   AIM OF THE STUDY

1.4.1 Research purpose

The main aim of this study is to systematically assess women's maternal health care seeking behaviour in Addis Ababa, Ethiopia. The information obtained would be used to inform programme designers and provide a framework for formulation of appropriate measures to improve maternal and child health outcomes.

1.4.2 Research objectives

- To describe the level of maternal health care utilisation among women of different socioeconomic and demographic groups in the study area.
- To identify the health care system, demographic, social, economic and other determinant factors associated with the overall adequacy of antenatal care such as, timing of visits, number of visits and service content; and delivery care utilisation in the study communities.
- To describe and analyse the determinants influencing mother's preferences for places to give birth and their mode of delivery.
- To develop a framework for formulation of measures to improve maternal health outcomes.

1.5 RESEARCH QUESTIONS

The central research question is "What are the determinants of maternal health care utilisation in Addis Ababa?"

Specific research questions:

- What are the levels of maternal health care utilisation among women of socio-economic and demographic groups in the study area?
- What are the differences in adequacy of ANC and delivery care utilisation among women of different backgrounds in Addis Ababa?
- What are the differences in delivery care utilisation, preference to place of delivery and mode of delivery?
- What demographic, social, economic and other factors are correlated with adequacy of ANC and delivery care utilisation in the study area?

1.6 SIGNIFICANCE OF THE STUDY

It will be very important to carry out this study because no previous studies could be found that described the level of maternal health care seeking behaviour and its determinants in the proposed study area with respect to the specified outcome variables. Knowledge gained through this study will help health professionals including

policy-makers, programme designers and implementers in Addis Ababa to address identified problems which ultimately would improve the quality and equity of health care.

1.7   CONCEPTUAL DEFINITIONS OF TERMS

A conceptual definition refers to the theoretical meanings of the concepts under study (Polit & Beck 2008:59).

1.7.1   Skilled birth [delivery] attendance

The term delivery refers to "the birth of a child" (Dictionary of Medical Terms 2007, sv "delivery"). Skilled birth attendance is therefore a delivery attended by an

> "accredited health professional (midwife, doctor or nurse) who has been educated and trained to proficiency in the skills needed to manage normal pregnancies, child birth and the immediate postnatal period, and in the identification, management, and referral of complications in women and newborns" (WHO 2007:44).

1.7.2   Caesarean delivery

A caesarean delivery is a surgical procedure whereby the baby is removed from the mother's uterus through an incision in the abdominal wall (Main et al 2011:17).

1.7.3   Health (care) seeking behaviour

Health seeking behaviour is a state in which a person in stable health actively seeks ways to alter personal health habits and/or the environment to move toward a higher level of wellness (Carpenito-Moyet 2008:810).

1.7.4   Pregnancy intention

Births are defined as: *intended* at conception: if they were wanted at the time, or sooner, irrespective of whether or not contraception was being used; or *unintended* at

conception: if a birth had not been wanted at the time conception occurred, irrespective of whether or not contraception was being used.

Further distinction is made among unintended births: *mistimed* for those births that were wanted at some time in the future but that occurred sooner than required as a result of contraceptive misuse, non-use, or failure; or *unwanted* (at conceptions) for those births that occur to women who say, prior to pregnancy, that they did not want to have any more children at all (Santelli, Rochat, Hatfield-Timajchy, Gilbert, Curtis, Cabral, Hirsch, Schieve & Other Members of the Unintended Pregnancy Working Group 2003:94).

1.8   OPERATIONAL DEFINITIONS OF TERMS

Whatever well-formulated a conceptual definition is, it may not fulfil the needs of a researcher who has come up with his/her own research problem and variables to be measured. Hence, there should be another means of conceptualisation called operational definition to indicate the way the issues under study are observed or measured. Conceptualisation refers to the process through which a researcher specifies or clarifies the meaning of indicators used in the research process (Babbie 2013:53). Gravetter and Forzano (2010:75) defined operational definition as a procedure for measuring and defining a construct. Operational definition gives clear meaning to a concept by clarifying how it will be applied in a particular circumstance (Provost & Murray 2011:37).

1.8.1 Dependent variables

1.8.1.1   Antenatal care

This study used four indicators to describe ANC In this study information regarding ANC utilisation was measured by the number of visits, timing of first visit, content of ANC services, and overall adequacy.

Timing of visit was considered adequate if the first visit took place within the first twelve weeks; and the number of visits was considered adequate if the mother had at least four visits in the pregnancy period. The Ethiopia Obstetrics Management Protocol (FMOH 2010b:15) and the WHO (2002:12) recommends that a woman without complications

should have at least four antenatal care visits, the first of which should take place during the first trimester.

Service content was assessed to allow the research in estimating the overall service adequacy together with the above two indicators. Participants were asked about the basic ANC components received as recommended by WHO for all women regardless of the gestational age at first visit to clinics (WHO 2002:10). Hence, to define adequate content of ANC, the following information was obtained from potential respondents:

- Measurement of mother's weight and height
- Blood pressure
- Fundal or uterine height and fetal heartbeat assessment
- Urine and blood sample taken (blood type, haemoglobin (anaemia) and syphilis test)
- Tetanus injection
- Iron supplementation
- Information or counselling given about signs of pregnancy complications- abdominal pain, severe headache, vaginal bleeding

In this study, service content was categorised as adequate if all the above services were provided to the mother at least once during the pregnancy according to the national recommendation, otherwise inadequate.

Finally, overall ANC adequacy was defined using timing of visits (first visit in the first trimester), number of visits (at least four during last pregnancy), and service content (all the 12 basic service received at least once during the last pregnancy).

1.8.1.2   Delivery care

In this study two indicators were used to describe delivery care:

Preference on place of birth: This represented three choices that a woman can make during delivery: deliver at a public institution (at a health care facility), deliver at private institution and deliver at home with or without professional assistance.

Mode of delivery: Caesarean versus vaginal delivery regardless of the use of instruments or not in the latter case. In addition to the above, technological preference was examined using information on whether the caesarean birth was based on medical indication, provider's influence or woman's birth preference or request.

1.8.2 Independent variables

Figure 1 shows the different socioeconomic and demographic variables at individual, household or community levels that were used to explain variations in ANC and delivery care utilisation. These variables were used as population characteristics of predisposing, enabling and need factors. Some variables on the health care system including private versus public facilities, adequacy of ANC care utilisation and outcomes were also used as explanatory factors for delivery care as an outcome variable.

Wealth quintile. Is a measure of the household economic status of the family the woman belongs to and it was estimated using Principal Component Analysis (PCA) of variables of household possession and variables of housing conditions (see section 3.4.3. of Chapter 3 for description of variables). The indexing scores were used to categorise households as lowest, low, middle, high and highest wealth quintiles. The assumption in PCA is that the most important reason households have different values of the indicators we put in the PCA is their wealth (Córdova 2009:1-3).

Institution category: Health institutions from which the women attended services were categorised as either public or private and this allowed for comparison of service variation between the two. Private institution includes both for profit and not-for-profit institutions.

High-risk pregnancy. A woman meeting at least one of the following criteria i.e., nulliparous with 35 years or older; more than four previous births; history of spontaneous abortion, known high blood pressure, diabetes, epilepsy, or depression during pregnancy, was considered high-risk (Dangal 2007). However, though previous CS delivery, previous preterm delivery, stillbirth, or neonatal death were among the indicators for high risk pregnancy, they were dropped in this analysis as they can be analysed for only those with history of previous pregnancy which reduces the sample size hugely by more than 50%, down to 584 from 903.

Pregnancy intention: Type of last pregnancy or childbirth was the variable of interest under this category of variables and was measured in terms of pregnancy intention. Women were asked about their recent births whether they wanted it then, wanted later, or did not want to have any more children at all. In the analyses parts, the intention status of the birth was defined in two different ways, first as a dichotomy variable: intended versus unintended (either mistimed or unwanted), and second as a trichotomy variable: intended, mistimed, or unwanted.

Caesarean-section. Women were asked about their previous history of CS delivery and the responses were grouped based on the motivations behind the procedure as those procedures done because of the woman's preference without medical indication, provider's influence without medical indication and those with medical indication.

Slum-non-slum residents. Slum households were defined based on the five indicators developed by the United Nations Human Settlements Programme (UN-Habitat) (2003:12). Hence,

- *Access to improved water*: access to tap water piped into dwelling or yard, shared but not public or protected dug well, spring or rain water collection was categorised as improved, otherwise unimproved.
- *Access to improved sanitation*: access to pour flush or improved pit latrine private or shared but not public was categorised as improved, otherwise unimproved.
- *Sufficient living area*: was considered as sufficient if only two or less individuals share the same sleeping room. This was measured by dividing the number of household members to the number of sleeping rooms in the house. Households using the living room as their sleeping space were considered to have one sleeping room.
- *Durability of housing*: was measured based on the building materials used for the roof (durable if built from corrugated iron/metal, wood, cement, concrete), walls (durable if exterior wall is built from cement, concrete, wood or iron/metal) and floor (durable if built from polished wood, asphalt, ceramic, cement & carpet) otherwise not durable.

- *Secure tenure*: was measured whether the house in which the respondent is living is owned by her or on rental. Legal certification for the status of ownership was not inquired as it might be sensitive to the respondent. Those who were living in their relative's houses because the later was not around were considered as 'dependants' and were included under 'Rental'. Rent from government houses are much cheaper and more stable than from private which are very expensive and lack freedom.

According to UN-Habitat a household is categorised as non-slum if all of the above five indicators are fulfilled, otherwise slum. For this particular study, the preliminary analysis showed that only 42 (4.8%) of the households fulfilled all the five indicators. For the purpose of yielding reasonable statistical comparison with adequate number of cases expected per category of variables, the researcher applied less stringent indexing. Accordingly, a household was categorized as non-slum if at least three of the five indicators were fulfilled, otherwise slum.

1.9   FOUNDATIONS OF THE STUDY

1.9.1 Behavioural Model of Health Services

The current study was grounded on the basis of the Health care Utilisation Model (Andersen 1995). The Andersen Health care Utilisation Model has been used extensively in analysing factors that influence the utilisation of health care services and to understand disparities in utilisation of medical services (Loquias, Kittisopee & Sakulbamrungsil [Sa], 201-211; Babitsch, Gohl & Von Lengerk 2012:1-15). This model also known as the Behavioural Model of Health Services was initially developed in 1968 by Ronald M. Andersen, a medical sociologist and health services researcher, to assist the understanding of why families use health services, to define and measure equitable access to health care, and to assist in developing policies to promote equitable access (Andersen 1995:4; Andersen & Davidson 2001:11).

In the analysis of social and individual determinants of health services use among families, Andersen and Newman Model presupposes that health care utilisation is a function of multilevel factors called predisposing, enabling or need factors i.e. individual's predisposition, ability or need to use services. The latest framework shows

the link between societal determinants, health care system and individual determinants and their impact on health care utilisation (Andersen & Newman 2005:4, 14-16).

Predisposing factors: It is hypothesised that some individuals are more likely to use services more than other individuals where the tendency to use services is predicted by pre-existing individual characteristics though these characteristics are not directly responsible for health service use. Individual predisposing factors include demographic variables such as age, sex and previous illnesses or health conditions; socioeconomic status which is a reflection of the individual's social standing measured by characteristics such as educational attainment and occupation of the family head; and these demographic and social status factors are linked to a third subcomponent of the predisposing factors-attitudinal beliefs such as attitude, value and knowledge where individuals who are more aware or have stronger faith in the efficacy of treatment are more inclined towards health care utilisation (Anderson & Newman 2005:12, 14-15).

Enabling factors: Being predisposed to health services is not enough for individuals as there must be some means to get services. The means which permits families to satisfy their health service needs is defined as enabling. Enabling conditions ensure the availability of health services to individuals. These conditions can be found both on family and community levels measured by resources such as income, health insurance coverage or any source of payment regardless of the individual's regular source of care or nature and accessibility of that source of care. Apart from family attributes, community level characteristics such as the amount, varieties, locations, structure and distribution of health facilities and personnel linked to means of transportation, travel time to and waiting time for health care are some of the enabling characteristics which influence use of health services. The type of place of residence or rural-urban nature of the community also determines service utilisation as local norms and values influence the behaviour of the individual. Health policies also fall into the category of contextual enabling factors (Anderson & Newman 2005:12, 14-16).

Need factors: With the assumption of the individual's predisposition or ability to use services, families or individuals must also perceive illness or morbidity. Need factors or illness level represents the most immediate cause of health service use. These individual level need-based characteristics are measured by perceived need for health services i.e., how people view and experience their own general health, functional state

and illness symptoms and evaluated need i.e., professional assessments and objective measurements of patients' health status and need for medical care (Andersen & Davidson 2001:4, 7-8; Andersen & Newman 2005:16). According to Andersen (1995:3), perceived need is more useful in understanding health care seeking or adherence to treatment while evaluated need is more closely related to the kind and amount of treatment provided to the client. Hence, a woman's need for care may be influenced by past experiences in pregnancy and childbirth or personal preferences. According to Andersen and Davidson (2001:5), behavioural model of health service use, outcome can be measured by consumer satisfaction. In this thesis this model structure was used for selection of variables for the analysis.
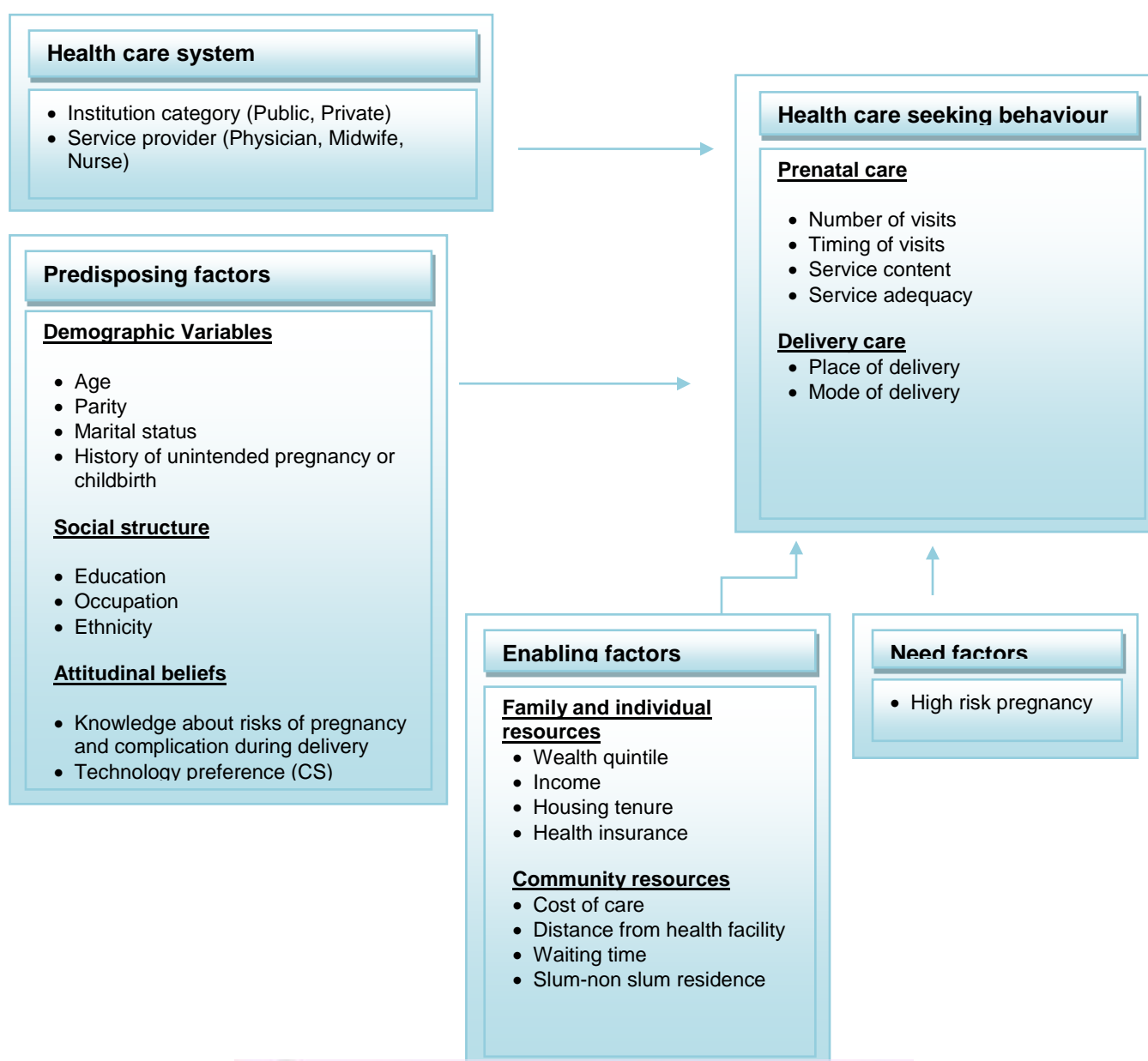
Figure 1.1   Analytical framework for determinants of maternal health seeking behaviour in Addis Ababa
(Adopted from Andersen and Newman 2005:14)

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1.10   SCOPE OF THE STUDY

There are various underlying and basic factors that affect maternal health care seeking behaviour or maternal health outcomes including the macro-level political and economic factors. However, this research focused on selected health care system, individual, household and community and other variables to see their effect on the outcome variables. The study considered only issues or information obtained from women of 15-49 years with a history of child birth 1-3 years before the study.

The study was based on cross-sectional data therefore, may not allow for establishing causal association, and relationship between the predictor and outcome variables would contain unknown magnitude or direction. The fact that the data collection was based on interviews using a structured questionnaire, the data might be exposed to interviewer's bias or may vary across the respondents due to difference in skill or understanding. To overcome such problems, the questionnaire was translated into the local Amharic language and data collectors were trained thoroughly.

1.11   STRUCTURE OF THE THESIS

The thesis is organised with chapters that are logically interlinked in line with the research objectives and research questions. Table 1.1 presents the summary of the structure of the thesis briefly.

Table 1.1   Structure of the thesis

Chapter	Title	Content description
1	Orientation to the study	Background to the research problem, research problem, research purpose, objectives and research questions, significance of the study, conceptual and operational definition of terms, foundation of the study, and scope of the study
2	Literature review	An in-depth review on the literature related to the topic under investigation to give the researcher information on what is published or discussed in the literature. Major areas covered include health care-seeking behaviour, role of maternal health care, global, regional and national overview of maternal

Chapter	Title	Content description
		health care, maternal health care utilisation and factors related to it.
3	Research design and methods	The overall research approach and plan to answer the research question. Research context, research paradigm, research design, research method (sampling, data collection and analysis), ethical considerations, and data and design quality (validity and reliability)
4	Analysis, presentation and description of findings	Data analysis, presentation and interpretation of findings
5	Discussion	To provide sound arguments in logical and organised manner in line with theories and empirical findings. Topics outlined in line with the research objectives and questions.
6	Proposed framework	Purpose of the proposed framework for action, basis for the development of the framework, policy context, indicators examined in the current research, summaries of major findings, identified elements for improvement, priorities for action, and implementation of the framework.
7	Conclusion and Recommendations	Summaries of design and method, and research findings, conclusions and recommendations based on findings linked to research questions, contribution of the study and limitations of the study.

1.12   CONCLUSION

This chapter gives introductory information regarding the entire study. The chapter highlights the overview of the study. The background information to the research problem of adequate antenatal care utilisation and preferences for places to give birth was discussed. The purpose, objectives and research questions were also presented in this chapter.

The study aimed to systematically assess women's maternal health care seeking behaviour and their preference to a specific health facility or place of delivery in Addis

Ababa. Definitions of key terms were provided as well as the foundation of this research. The chapter concluded with the scope of the study and by providing information about the organisation of the thesis into the six chapters it comprises. The writing of this thesis followed the tutorial letter provided by the Department of Health Studies, UNISA for proposal, dissertation and thesis writing (UNISA MNUALLL/301/0/2012).

The next chapter will present the review of literature relevant to the subject of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the literature review on the subject of the study. Literature review lays out the foundation of a particular study and is intended to assess existing evidence regarding the topic of interest with a purpose of identifying what is known and unknown about the research subject (Boswell & Cannon 2011:118). The chapter reviews the literature on maternal health care seeking behaviours of mothers mainly on the perspectives of the client and the health care services in Addis Ababa.

The review in this study is an attempt to link findings in the literature about maternal health care seeking behaviour particularly on antenatal and delivery care utilisation. As this study is specifically concerned with service utilisation, information related to the types of services or outcome variables considered in the current study were reviewed. Global, regional, national and local sources regarding the variations in the care-seeking behaviour of women during pregnancy and delivery were reviewed.

2.2 HEALTH/CARE SEEKING BEHAVIOUR

2.2.1 The concept of health care

The Dictionary of Epidemiology refers health care as "services provided to individuals or communities by agents of the health services or professions to promote, maintain, monitor, or restore health" (Porta 2008:111). Under the definition, health care is not limited to medical care and its concept sometimes includes 'health-related self-care'. The Oxford Dictionaries (2013) defines health care as "the maintenance and improvement of physical and mental health, especially through the provision of medical services". The provision of health care refers to the way resources such as money, staff, equipment and drugs are combined to allow the delivery of health interventions (WHO 2013).

2.2.2 The concept of health care-seeking behaviour

Health-seeking behaviour of individuals involves two major aspects: the "process" or the health-seeking behaviour or the act of seeking health and the "end point" or the health care seeking behaviour. Health-seeking behaviour is about illness behaviour in general and focuses on motivating factors of illness perception and health belief in particular. The health care seeking behaviour on the other hand involves identification of pathways to the formal health care system, starting from home care and traditional healers and extending to the formal health care system (Grundy & Annear 2010:1-2).

The health-seeking behaviour in general is beyond the scope of this study because the aim of the study focuses on the health care seeking behaviours. As cited in Rahman, Islam, Islam, Sadhya and Latif (2011:32), health care seeking behaviour refers to a "sequence of remedial actions that individuals undertake to rectify perceived ill health". The sequences include the time span from symptom onset to contacting a health care provider, the type of health care provider chosen by the household, and the patient's compliance with treatment. These sequences are the ways in which people look for treatment or help for their illnesses or health condition (Rahman et al 2011:32).

The view is often that the desired health care seeking behaviour is for an individual to respond to an illness episode by seeking first and foremost help from a trained health care worker in a formally recognised health care setting. Perception of signs and symptoms of illness or condition is crucial to seek help from health care professional (Scott 2010:166).

2.3 THE ROLE OF MATERNAL HEALTH CARE

2.3.1 Antenatal care

Antenatal care (ANC) programmes were introduced at around the beginning of the 21st century (Mathai 2011) as a constellation of interventions that a pregnant woman receives from health care services. ANC aims to prevent and identify pregnancy risks and treat conditions timely through providing appropriate information to the client (Singh, Remez, Ram, Moore & Audam 2009:24; WHO and United Nations Children's Fund (UNICEF) 2013:13) and helps a woman to approach pregnancy and birth as a

positive experience. Hence, the care should be appropriate, affordable and should fulfil the needs of the mother including the poor (UN 2013:30; WHO 2002:12-30; WHO and UNICEF 2013:132). As cited in Garrido (2013:4), Berg's report on Prenatal Care in Developing Countries indicates the four components of the ANC goal: (1) early detection of pregnant women at risk of any potential complications;(2) action in order to prevent any future difficulties; (3) diagnosis and treatment of pre-existing medical conditions and (4) prompt referral to the appropriate specialist when complications develop during pregnancy.

Comprehensive skilled antenatal care services can save lives of mothers and neonates (Gabrysch & Cambell 2009:9; The Partnership for Maternal, Newborn & Child Health [PMNCH] 2011:7; UN 2013:30; WHO 2012b:8; WHO and UNICEF 2013:23). The number and timing of antenatal visits and the content of services during antenatal visits matter the most in identifying pregnancy risks and management of delivery complications (Adjiwanou & LeGrand 2013:30-31). According to WHO, under normal circumstances a woman should have at least four antenatal care visits and the first visit should take place at or before the first 12 weeks of gestation. However, in 2011 only half of pregnant women in developing regions received the recommended minimum of four antenatal care visits (UN 2013:28, 30). There are recommended ANC packages that should be provided to any pregnant woman regardless of the gestational age at first visit. The packages include physical examinations (weight, height, blood pressure measurement, foetal heartbeat assessment), laboratory investigations (urine and blood samples), preventive procedures (tetanus injection and iron supplementation) and provision of information or counselling on signs of pregnancy complications and measures to be taken by the mother (FMOH 2010b:13-24; WHO 2002:12).

2.3.2 Delivery care

2.3.2.1 *Skilled birth attendance*

The term skilled birth attendance has been defined as the process by which a woman is provided with adequate care during labour, delivery and the early postpartum period (Adegoke & Van den Broek 2009:34; WHO 2007:44). The recommendation regarding the implementation of skilled birth attendance at all levels for every segment of the

population has been universally acknowledged and also endorsed. Progresses have been made so far in raising the proportion of skilled birth attendance (UN 2013:29).

Skilled birth attendance including emergency obstetric care has been identified as an important approach to reduce maternal mortality and morbidity in developing countries (PMNCH 2011:6; UN 2013:29; WHO and UNICEF 2013:59, 78). Therefore, the proportion of births attended by skilled health personnel has become a proxy indicator for maternal deaths used to monitor progress towards achieving MDG 5. Global targets for skilled birth attendance were set by the UN in 1999 just five years after the ICPD 1994. The global goals were to achieve 80%, 85% and 90% of all births assisted by skilled attendants by 2005, 2010 and 2015 respectively (UN 2000; WHO 2008:1). Estimates suggest that the presence of a skilled attendant at every delivery would reduce maternal mortality by 13-33% (Adegoke & Van den Broek 2009:35).

In developing regions, the proportion of births attended by skilled personnel has risen from 55% in 1990 to 66% in 2011. However, the service is reaching the people in need of it unfairly (UN 2013:29; WHO 2012b:1). Many wealthy nations and Eastern Asia have universal coverage, but more than half of all births in sub-Saharan Africa and South Asia take place without the support of a skilled birth attendant (UN 2013:29; WHO and UNICEF 2013:20). In some African countries including Ethiopia, skilled birth attendance is even less than 20% (CSA and ICF International 2012:127; WHO 2008:2-5; WHO 2012b:29).

2.3.2.2 Mode of delivery

Though vaginal delivery is the safest way of childbirth, if performed appropriately caesarean-section following medical indication is a potentially life-saving procedure. Caesarean section rates beyond 15% are considered medically unjustified or unnecessary with negligible benefits for most mothers (WHO 1985). The rate of CS is rising globally and evidence shows adverse maternal health outcomes due to the procedure being carried out without any medical indication. The procedure is costly and unequally distributed among the population (Gibbons et al 2011:8-10; Main et al 2011:5, 9). Studies show that excess CS rates mainly among the repeated procedures have multiple adverse consequences including increased likelihood of maternal morbidity and mortality compared to vaginal delivery (Main et al 2011:5-8, 10; Souza et al 2010:3-6).

The increase in caesarean section rate is mainly attributed to increased practices among low risk mothers and without medical indications, women's request for the procedure, lack of resistance due to lack of awareness about physician's influence, improved socioeconomic status, opting for perceived high quality of care, and perception of safety, and shortage of health workers therefore, quick delivery in order to have more time for other patients (Gamble et al 2007:338-339; Main et al 2011:5-6, 9). Main et al (2011:9) indicate that medical factors do not explain the increase in CS rate.

Generally, the rate of CS is lower than expected in low income countries and higher than expected in middle and high income countries. Excess CS may imply inequalities in health or health care in or across countries (Gibbons et al 2011:8, 10).

2.3.2.3 Preference for places to give birth

Discrete choice health care models have been used extensively to study health service utilisation in developed and developing countries. Study results from using the models show that changes in relative prices shift households from one health-care sector to another. In particular, an increase in user fees at government health facilities in developing countries has been shown to shift patients from the public clinics to traditional and informal medications of low quality. The literature further shows that quality of services offered are a key determinant of patients' choice of medical facilities and of the intensity at which the facilities are used (Mwabu 2008:87).

One important decision women make during pregnancy is where to give birth. Preferences for places to give birth refer to the main options available in which to give birth i.e., birth either at home or in a health facility and then in private or public facilities (National Childbirth Trust 2009:7). The most risky time in a child's life is during birth and shortly thereafter and it is also a very risky time for mothers in the developing world (Save the Children 2010:12; Singh et al 2009:17). Therefore, timely use of qualified personnel reduces the risk of death for both the mother and newborn (Gabrysch & Campbell 2009:10; Singh et al 2009:16).

Limited alternatives for preferences where to give birth, surrounded by a number of factors, is still a major problem both in developed and developing countries though the

magnitude and nature of the problem varies according to the set up (National Childbirth Trust 2009:8).

Providing access to health services according to need has become more complex in the context of an increasing role for private providers and, frequently, a more limited role for the public sector (Grundy & Annear 2010:1). Even in areas with a wide range of public and private health care providers, mothers have limited alternatives to seek care if health systems are characterised by high out-of-pocket payments (Kinney et al 2010:5). Some studies have shown that although women report better quality of care in private facilities, the costs deter them from using the services (Gabrysch & Campbell 2009:9). For example, a study in Nigeria indicates that low service cost is associated with public hospitals for antenatal care (Ewa, Lasisi, Maduka, Ita, Ibor & Anjorin 2012:377). Despite this, a preference for the use of private providers is still evident even among those guaranteed free access to public providers (Grundy & Annear 2010:1).

Studies also indicate that women living in poor conditions rely more on public or governmental health services than on private health services (Ibnouf, Van den Borne & Maarse 2007:740); or are more likely to have TBA or no trained assistant at delivery (Tann, Kizza, Morison, Mabey, Muwanga, Grosskurth & Elliott 2007:7) compared to women of better living conditions. In addition studies have shown that, urban, rich and more educated women prefer to be attended by skilled personnel, if not doctors then midwives, as care providers; and well educated mothers are more likely to go to private hospitals seeking for antenatal care (Save the Children 2010:12; Tann et al 2007:7).

The features of the health facility, trust in, and/or the health care workers customer care also play major roles in decision making about the choice of the health facility. A study in the slums of Nairobi indicates that 10% of the births were handled by TBAs and many women prefer TBAs to nurses in public health facilities because of the bad attitude and abusive behaviour of the nurses (African Population and Health Research Center [APHRC] 2009). Hence, high quality care provided by doctors is associated with more use of antenatal care services (Ibnouf et al 2007:741).

2.4   GLOBAL OVERVIEW OF MATERNAL HEALTH CARE

Maternal health refers to the health of women during pregnancy, childbirth, and postpartum. WHO states that though motherhood is often a positive and fulfilling experience, birth for too many women specially in developing nations is associated with suffering, morbidity, and death (WHO 2013). Health problems during pregnancy and childbirth are not limited to the mother alone but can have serious consequences to the child, the family or the community as a whole. Hence, maternal health and health care determine neonatal and child survival outcomes (PMNCH 2011:7; WHO 2002:1; UN 2013:30).

Maternal mortality remains a major challenge to nations of the world (WHO 2012b:13-14; WHO 2012a:32-36). The UN and nations of the World were committed to reduce maternal mortality by 75% in a quarter of a century (1990-2015) (UN 2000:3).The 1994 ICPD strengthened international commitment to reproductive health (UN 1995). The focus on maternal mortality was sharpened later on when reduction in maternal mortality ratio (MMR) by three-quarters became one of the targets of the eight MDG as goal 5 (UN, 2000:3). Since the Millennium declaration, progress in maternal mortality has been encouraging though slow (Hogan, Foreman, Naghavi, Ahn, Wang, Makela, Lopez, Lozano & Murray 2010:1613-1621; Kinney et al 2009:11; UN 2013:28), and no reduction in MMR in some other countries (WHO 2012a:25, 27).

Acceleration of progress in maternal mortality has been given renewed policy attention such as, the G8 leaders' statement on "Promoting Global Health" (G8 Leaders Declaration 2009), the 2009 global consensus statement for MNCH (PMNCH. 2009), the launching of Global strategy for women's and children's health by the United Nations Secretary-General (United Nations Secretary-General Ban Ki-moon 2010:2), and the declaration of the African Union (AU) on "Maternal, Newborn and Child Health and Development in Africa" (AU 2010:1-3).

Since the launching of the Safe Motherhood Initiative in 1987 by international agencies and governments to raise the global awareness about the impact of maternal mortality and morbidity and find solutions (United Nations Population Fund [UNFPA] 1999), the health and well-being of mothers and new-borns have been improving in many countries (WHO 2012b:23-24). However, inequalities within countries are increasing

between those living in better conditions and have access to care, and those marginalised for different reasons (Kinney et al 2010:4, 6).

As an attempt to halt such disparities, for years now, a human rights-based approach to maternal mortality and morbidity has been advocated by human rights experts and organisations (Yamin 2010:95-112; UN 2010:31; UN Office of the High Commissioner for Human Rights [UN-OHCHR] 2008:15). The human rights-based approach emphasises the continuum of maternal care under the core principles (UNICEF 2009:13). The UN Human Rights Council states that the integration of a human rights-based approach can contribute positively to the common goal of reducing maternal mortality rate (UN 2012a:2). Besides, the Independent Expert Review Group (IERG) (2012:8) which was mandated to monitor progress on the UN Secretary-General's Global Strategy for Women's and Children's Health has recommended the application of human rights-based approach towards achieving MDG 5. The 2012 Report of the UN-OHCHR emphasises that women are active rights holders entitled to play a part in matters related to their sexual and reproductive health but not passive beneficiaries (UN 2012c:5). The poor progresses in meeting the MDGs particularly by the developing nations is linked to unmet commitments, inadequate resources, lack of focus and accountability, and insufficient interest in sustainable development (UN 2010:31). Yamin (2010:112) argues that the right to maternal health

> "requires translating the powerful normative discourse of human rights into operational guidance and concrete tools for development practitioners, health planners and service providers, as well as the users of health systems".

In 2010, an estimated 287, 000 maternal deaths occurred globally implying that it has taken 20 years to achieve a decline of just 47% from levels in 1990. To meet MDG 5, the remaining 28% reduction of maternal deaths should be achieved in the remaining five years i.e., by 2015 (WHO 2012a:24). Other specific target achievements indicate that universal access to antenatal care by ensuring at least one visit in the first three months of pregnancy reached 88%; and universal access for at least four visits in the whole pregnancy reached 55% by 2012 (WHO 2012b:24).

Most pregnant women (81%) in developing countries visited antenatal care services at least once in 2011 (UN 2013:30). Far less available and accessible is provision of professional childbirth care, either institutional or at home, and of emergency obstetric and newborn care services (Ewa et al 2012:377; Singh et al 2009:17). In many settings, systematic and regular post-partum follow-up care is rarely available and even women who deliver in a health facility are often discharged within hours post-partum and are not seen again until some considerable time afterwards (Singh et al 2009:22).

2.5   MATERNAL HEALTH CARE IN SUB SAHARAN AFRICA

Studies from developing countries such as Philippines and Sub-Saharan Africa indicate the strong link between primary health care, health development, human development, labour productivity and economic development (Skolnik 2008:13, 19). Some African countries including those with often negative publicity have encouraging records of saving the lives of mothers, newborns, and children (Friberg et al 2010:7; WHO 2012a:25). The UN (2012b:30) MDG report indicates that the MMR in Sub Sahara Africa has declined by more than 40% between 1990 and 2010.

Sub-Saharan Africa accounts for about 13% of the world's population yet half of the world's burden of maternal, newborn, and child deaths-nearly 4.7 million deaths per year occur in this region (Kinney et al 2010:3; Population Reference Bureau 2013:7). In 2010, the MMR in developing regions (240 deaths per 100,000 live births) was 15 times higher than in developed regions (16 deaths per 100,000 live births). Sub-Saharan Africa had the highest MMR at 500 maternal deaths per 100 000 live births accounting for 56% of all deaths globally (UN 2012b:31; WHO 2012a:22, 23).

Maternal mortality is consistently lower in urban areas than in rural areas (Asamoah et al 2011:4; Liang et al 2011:6; WHO 2012c), with remote communities often having poorer access to health care than urban dwellers (Gabrysch & Campbell 2009:13). However, the disparities for the fast-growing population of urban poor who struggle as much as or even more than their rural counterparts to access quality health care tend to be masked by the urban averages (Kinney et al 2010:4). For example, in the informal settlements (slums) in Nairobi, Kenya's capital city, the maternal mortality ratio (706 deaths per 100,000 live births) was higher than the country's average (560 per 100,000 live births) (APHRC 2009).

Pregnancy and childbirth complications are among the biggest challenges for maternal, newborn, and child health in sub-Saharan Africa (Kinney et al 2009:17, 21, 34). In this region, notably antenatal care (ANC) tends to have relatively high coverage with 77% of the pregnant women receiving at least one ANC visit with a skilled attendant. Skilled attendance and emergency obstetric care on the other hand has much lower coverage with only 45% of births attended by skilled personnel in 2010 (Kinney et al 2010:6-7; UN 2012b:31, 32). Skilled attendance at birth varies from 6% in Ethiopia to 99% in Mauritius (World Bank 2012). Surprisingly, in Sub Sahara Africa, the proportion of women who attended four or more antenatal visits has fallen from 50% in 1990 to 45% in 2010 (UN 2012b:33).

Health care is simply unaffordable for many families in the sub-Saharan Africa a situation aggravated by smaller proportion allocated in total governments' budgets (WHO 2010b:25, 42; Modi 2012). Due to introduction of user fees and cost-sharing arrangements, access to health care services remains a bottleneck for the poor. Kinney and his colleagues (2010:5-6) state that low coverage, poor quality and inequities in the provision of essential maternal health care services are existing challenges for Sub Saharan Africa. These challenges put sub-Saharan Africa at a critical point for achieving the Millennium Development Goals for maternal and child survival (Friberg et al 2010:2; WHO 2012b:14).

2.6   MATERNAL HEALTH CARE IN ETHIOPIA

2.6.1 Maternal health care policies and efforts in Ethiopia

Ethiopia has designed a number of policies and strategies for improving maternal and reproductive health. Assurance of health care for all segments of the population was one of the top priorities in the Ethiopian Health Policy and it states that special attention shall be given to the health needs of women and children among others (Health Policy of the Transitional Government of Ethiopia 1993). The endorsement of MDG 5 in the HSDPs is an indication of the commitment or political will of the government towards reducing maternal mortality across the nation (FMOH 2005:57). The FMOH has produced the National Reproductive Health Strategy and the commitment to achieving the Millennium Development Goals (MDGs) was among the three overriding priorities

for the government of Ethiopia and the RH community more broadly. The core strategies for maternal and newborn health are:

- empowering women, men, families, and communities to recognise pregnancy-related risks
- ensuring access to a core package of maternal and neonatal health services
- creating an environment conducive to safe motherhood and child health (FMOH 2006:16-18)

More recently, Desalegn (2013:9), the Ethiopian Prime Minister, indicated the renewed commitment of the country to improve the health of its people with particular emphasis to women and children.

Ethiopia's Health Extension Program is one of the most innovative community-based health programmes in Africa. It aims to ensure access to and quality of primary health care in rural communities. The Federal Ministry of Health (FMOH) of Ethiopia launched the Health Extension Program (HEP) in 2003 and it became operational with the deployment of thousands of Health Extension Workers (HEW). The programme focuses on "providing quality promotive, preventive, and selected curative health care services in an accessible and equitable manner to reach all segments of the population, with special attention to mothers and children" in rural villages. By 2010, there were 30,578 HEWs serving almost all villages in rural areas (Karim, Admassu, Schellenberg, Alemu, Getachew, Ameha, Tadesse & Betemariam. 2013:27). In 2009, the rural HEP was adopted for the urban setting to ensure equity of health care services at household levels with the deployment of nurses as HEWs (USAID 2012:4, 33). The Ethiopia's HEP has shown tangible positive impacts on community health (Banteyerga 2011:48). The programme was indicated as one of the novel ideas for service delivery in developing countries by reorienting services towards primary care (Balabanova, Mills & Conteh, Akkazieva, Banteyerga, Dash, Gilson, Harmer, Ibraimova, Islam, Kidanu, Koehlmoos, Limwattananon, Muraleedharan, Murzalieva, Palafox, Panichkriangkrai, Patcharanarumol, Penn-Kekana, Powell-Jackson, Tangcharoensathien & McKee 2013:10).

In Ethiopia, the total health expenditure (4.3%) as a percentage of the gross domestic product (GDP) has remained largely stable for years. With emphasis given to publicly

funded health care, out-of-pocket payments in Ethiopia is 42% (Balabanova et al 2013:2, 11), and the public health sector is the main provider of primary health care and serves two-third of the population who cannot afford private health care (FMOH 2006:5). The main objective of public sector service provision, as stated in the National Health Policy is "*to give comprehensive and integrated primary health care services in a decentralized and equitable fashion* [I italicized]" (Health Policy of the Transitional Government of Ethiopia 1993).

2.6.2 Maternal mortality in Ethiopia

High maternal mortality is a long-standing reality in Ethiopia. According to a recent estimate, the life-time risk of maternal death in the country is 1 in 67 (WHO 2012a:33). The WHO (2012a:39) estimates that Ethiopia is 'making progress' but not 'on track' to achieve the MDG 5 by 2015. Ethiopia's high fertility rate (TFR=4.8) and high maternal mortality rate (676 per 100, 000 live births) indicate high parental demand for children and suggests that safe motherhood is a key human development challenge in the country (CSA and ICF International 2012:70, 270). In 2010, the country ranked fifth globally and third in Africa in the number of maternal deaths with about 18, 000 mothers dying every year (Save the Children 2010:11). The key factor contributing to both high maternal and new born mortality is the low rate of skilled care attendance during pregnancy and delivery (FMOH 2006:16).

The country's neonatal mortality rate (NMR) has remained high (37 per 1000 live births) with early neonatal deaths accounting for 79% of all deaths occurring under one month. The neonatal mortality for the capital city, Addis Ababa, was 21 per 1000 live births while the national perinatal mortality rate (PNMR) was estimated to be 46 per 1000 pregnancies (CSA and ICF International 2012:109, 113).

2.6.3 Maternal health care utilisation in Ethiopia

The WHO recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester (UN 2012b:33). In Ethiopia there have been improvements in maternal health services utilisation with antenatal care coverage of about 34%. However, skilled attendance at birth, the most important predictor of maternal mortality (UN 2000:3) and postnatal care

coverage remain very low 10% and 7% respectively (CSA and ICF International 2012:120, 127, 129). Skilled delivery assistance coverage in the country is among the lowest in Africa (Friberg et al 2010:2).

Evidences show that urban women are more advantaged for skilled delivery attendance compared to rural women (UN 2013:29) and even more privileged are those living in large cities or in the capital (Gabrysch & Campbell 2009:13). The disparities between regions within a country are usually moderate to large in magnitude. An extreme case is recorded for Ethiopia, in which urban women are 8.5 times more likely to deliver with skilled attendance at birth, 40 times more likely for Addis Ababa, compared to rural women (Save the Children 2010:24; WHO 2012b:29-31). Besides, low accessibility to and delayed uptakes of health services are among the existing perceived and real problems of the urban setting (USAID 2012:33).

2.6.4 Maternal health care protocol and recommendations in Ethiopia

Every pregnant woman in Ethiopia has the right to information about her health, discuss her concerns, thoughts, and worries, know in advance about any planned procedure to be performed, privacy, confidentiality, and express her views about the services she receives (FMOH 2010b:8). To fulfil these rights, in 2010 the government of Ethiopia developed an Obstetrics Management Protocol based on WHO's goal-oriented model (WHO 2002). The protocol focuses on a limited set of essential antenatal, delivery, postnatal and newborn care services and prescribed statements about indications in the use of procedures like caesarean-section, ultrasound, and screening of symptomatic sexually transmitted infections including HIV test and management of victims of sexual assault (FMOH 2010b:8, 15, 42, 219).

The major goal of focused antenatal care is to help women maintain normal pregnancies through:

- Health promotion and disease prevention
- Early detection and treatment of complications and existing diseases
- Birth preparedness and complication readiness planning

According to the protocol, pregnant women were recommended to attend four ANC visits during pregnancy. The first ANC visit should occur in the first trimester, around or preferably before 16 weeks of gestational age as compared to WHO recommendation for the first visit to occur at or before 12 weeks of gestational age. The protocol further suggests two visits in the third trimester (FMOH 2010b:8-12; WHO 2002:7, 12).

The 'focused antenatal care' model has two categories: basic component care- for pregnant women eligible to receive routine ANC; and specialised care for those needing specialised care based on their specific health conditions or risk factors. Set of criteria are used to categorise women into either of the service categories based on the Focused ANC classifying checklist. If a woman has at least one of the conditions listed on the classifying form, she is eligible to follow the *specialised care* but if she has none of them, she will be eligible for the *basic component care*.

The recommended medical services which should be provided in all or some of the four visits (FMOH 2010b:13-24) include:

- *History*:socio-demographic background, medical (history of diabetes, cardiac illness, hypertension, HIV, tuberculosis, etc) and obstetric history (stillbirth or neonatal death, weight at birth of last born, operation like CS, eclampsia, etc).
- *Physical examination*:vital signs, height and weight measurement, uterine height, symptoms of HIV/AIDS, etc.
- *Laboratory tests*:urine analysis, syphilis test, blood group, haemoglobin, volunteer HIV test, etc.
- *Care provisions*:iron folate supplementation, tetanus toxoid injection, insecticide treated nets for malaria endemic areas, etc.

Counselling: on danger signs of pregnancy (vaginal bleeding, severe headache, dizziness, sustained vomiting, and swelling, loss of foetal movements, convulsion, severe abdominal pain, or fever), birth plan, breast feeding, benefits of HIV testing, etc.

According to the delivery protocol, "caesarean-section is performed when safe vaginal delivery is either not feasible (absolute) or would impose undue risks to the mother and/ or faetus (relative)". The indications for CS include fetopelvic disproportion leading in failure to progress in labour, placenta praevia, foetal malposition and malpresentations,

suspected foetal distress, cord prolapse, previous uterine incision, and maternal infections (e.g. HIV, active Herpes simplex). The protocol states that appropriate indications, presence of trained provider and appropriate equipment and facilities are the prerequisites for CS. It enforces the provider to explain to the client or relatives about the procedure and to seek informed consent. The protocol also indicates the possible complications of the procedure in detail. It states that maternal mortality is higher after CS than after vaginal delivery. While the protocol is silent about inappropriate CS that can be initiated either by the mother or the care provider without any medical or obstetric indications (FMOH 2010b:118-121), it indicates the possible inappropriate utilisation of ultrasound which can lead to excessive reliance on technology or procedures and ultimately increasing health care costs. The number of recommended scans is not indicated, too. To overcome such problems, the Obstetrics Protocol specifies the indications for ultrasound (FMOH 2010b:40).

2.7 FACTORS AFFECTING MATERNAL HEALTH CARE UTILISATION

Major complications that occur during and following childbirth are the leading cause of death among adolescent girls in most developing countries (WHO 2012c); and can be sudden and unpredictable. Maternal and perinatal outcomes in such instances are greatly improved when such complications occur in the presence of a trained attendant and in a facility well equipped to handle such emergencies (Singh et al 2009:16).

A considerable variation in maternal health in the developing world is partly due to differences in the availability and accessibility of health services. In addition to the direct causes of deaths (Kinney et al 2009:17), poverty and inequity undermine the survival of mothers (Kinney et al 2010:4-5; WHO and UNICEF 2013:26). Poverty is an underlying cause for many deaths, with nearly 99% of global maternal deaths occurring in low and middle-income countries (The World Bank 2012; WHO 2012a:22; WHO 2012c).

The determinants of the utilisation of maternal health care services vary across socio-economic, demographic and cultural contexts (APHRC 2009; Gabrysch & Campbell 2009:3). Some of the selected factors influencing maternal care utilisation are summarized as follows.

2.7.1 Demographic factors

2.7.1.1 Age of mother

Maternal age is often indicated as a proxy for health care seeking behaviour. Older women are more likely to use health care services (Adjiwanou & LeGrand 2013:32) due to their accumulated experience in using health services, more confidence in household decision-making, and they might be told by health worker that older age is a risk factor (Nikie´ma, Beninguisse & Haggerty 2009:372; Gabrysch & Campbell 2009:5). A study from multiple African countries indicates that primipara women or teenagers are less likely by about 16% to receive advice and information about pregnancy complications (Nikie´ma et al 2009:371). In China, the age of the mother was positively associated with ANC visit (Long, Zhang, Xu, Tang & Hemminki 2010:1213). A community based study in Vietnam shows that giving birth in Hospitals was more frequently associated with women older than 35 years (Toan, Eriksson, An, Chuc, Bongjers & Gottvall 2013:12).

However, it is also true that in some societies maternal health care utilisation is lower among older women (CSA & ICF International 2012:120; Ibnouf et al 2007:740-741). There is a thought that older women may consist of more traditional cohorts and may be resistant for modern health care services (Gabrysch & Cambell 2009:4). In Nepal and India, institutional delivery was more common among young mothers compared to older ones (Baral, Lyons, Skinner & Van Teijlingen 2012:624; Mahapatro 2012:29). Similarly, in urban Kenya, young women were better users of skilled professional assistance (Ochako, Fotso, Ikamari & Khasakhala 2011:7).

2.7.1.2 Parity

Higher parity women are less likely to use health care services (Long et al 2010:1215; Mahapatro 2012:29). Multipara women prefer to deliver at home by using traditional birth attendants or with no support at all (Canavan 2009:32). Similarly, a study from the Democratic Republic of Congo indicates that primiparous and grand multiparous women were twice likely not to attend ANC compared to multiparous women. The same study however, indicates that more multiparous women delivery at health facility than the primi or grand multiparous ones (Ntambue, Malonga, Dramaix-Wilmey & Donnen 2012:7). In

Uganda, high parity women tended to receive a lower content of ANC service (Adjiwanou & LeGrand 2013:32). The poor maternal health care utilisation rate by multi-parity women is sometimes related to the misconceptions of risks of pregnancy as they feel experienced and knowledgeable from previous pregnancies and childbirths (Ochako et al 2011:7).

2.7.1.3   *Unintended pregnancy*

Unintended pregnancies have been acknowledged as important factors influencing maternal health care seeking behaviour. Studies show that unintended births are associated with:delayed initiation of antenatal care (Dibaba, Fantahun & Hindin 2013:6; Exavery, Kanté, Hingora, Mbaruku, Pemba & Phillips 2013:7-8), smoking during pregnancy ending at least with low birth weight, not breastfeeding the baby, and poorer outcomes for the mother and the mother-child relationship (LeMier 2013:1). A meta-analysis based on studies conducted in different countries revealed higher odds of inadequate ANC utilisation among women with unintended pregnancies (Dibaba et al 2013:6). An urban based study from Democratic Republic of Congo shows that women who had unplanned pregnancy were less likely to attend ANC services compared to those who had planned their pregnancies by themselves or jointly with partner (Ntambue et al 2012:7). In Kenya, the odds of home delivery increased by 40% when the pregnancy is unwanted or unintended and in South Africa, the odds of having a doctor at delivery increased by 30% when the child was wanted at the time of birth (Gabrysch & Cambell 2009:9).

2.7.2 Social structures

2.7.2.1   *Education*

Education is one of the key social determinants of health and health care. Low levels of female education (Long et al 2010:1214) and lack of empowerment prevent women from seeking maternal care (Kinney et al 2010:4). A study in Ghana indicated that women with secondary schooling have higher probability of getting the whole range of ANC services compared to women with no schooling (Adjiwanou & LeGrand 2013:3). A mother with more than primary education in Bangladesh has twice more chance of seeking for ANC services from trained service provider (Amin, Shah & Becker et al

2010:6). Woman's and partner's or husband's education has a positive effect on seeking modern antenatal care and skilled birth attendance services (Adjiwanou & LeGrand 2013:31; Ibnouf et al 2007:739; Tann et al 2007:7). Husband's education provides the opportunity for couples to be open for modern medicine and to be aware of the benefits of health care. A literature review of multiple studies shows that husband's higher education is associated with skilled delivery attendance at birth for his wife (Gabrysch & Cambell 2009:9).

2.7.2.2 *Occupation*

Women's gainful employment increases their empowerment and their bargaining position in the distribution of resources at household level. It gives them more autonomy which helps them ensure their right to health care (Mahapatro 2012:23, 25). Studies show that women engaged in farming activities are less likely to use ANC and skilled delivery care services. Similarly, women in the formal employment are more likely to use delivery services compared to their informally employed counterparts (Gabrysch & Cambell 2009:9, 11). Likewise, women whose husbands are in skilled occupation are more likely to use maternal health care compared to those whose husbands are engaged in manual or agricultural occupation (Mahapatro 2012:28). Wives of husbands with high status occupation are better off in using health facilities either due to the ability to pay for service fees or because of the health insurance coverage by employers (Gabrysch & Cambell 2009:11).

2.7.3 Attitudinal beliefs

2.7.3.1 *Knowledge about risks or complications of pregnancy*

Women's awareness about pregnancy complications and risks hugely influence maternal care utilisation. Perceived benefits of skilled services, influence women's care seeking behaviour. These perceptions can be shaped by increasing the general level of awareness about dangers or risks of pregnancy and childbirth and possible interventions (Gabrysch & Cambell 2009:8). Each antenatal visit creates an opportunity to teach pregnant mothers how to recognise signs of pregnancy complications and how to seek for emergency obstetric care (Singh et al 2009:24). A study conducted using DHS data from 19 African countries indicates that providing advice and information on

pregnancy complications enhances the positive impact on the number of antenatal visits and increases the likelihood of institutional delivery. The same study indicates that among women who attended only one ANC visit, those who received advice about pregnancy complications were 70% more likely to have institutional deliveries compared to those who didn't receive advice (Nikie´ma et al 2009:369-371). Women in Zambia who were aware of danger signs of pregnancy and those from Mali who were informed about pregnancy complications at ANC visit were found to be more likely to give birth in health facilities (Gabrysch & Cambell 2009:8).

2.7.3.2   *Preference to technological procedures (caesarean section delivery)*

The utilisation of caesarean section (CS) is increasing globally and the reasons behind the increase are mixed as many women prefer to undergo CS either due to physician's influence without any medical indications or in the absence of emergency (Gibbons et al 2011:9-10). The perceptions around CS may have impact in the decision-making process of women towards mode of delivery. Mothers do request CS for many reasons including fear of pain during vaginal delivery, assumed safety for child, expected faster recovery after delivery and better sexual life (Toan et al 2013:15). Studies from Ghana and India indicate that women in favour of CS believe that the procedure is less painful and safer than vaginal delivery. On the other hand, those in favour of vaginal delivery reported that it is natural, safer, and less expensive than CS (Adageba, Danso, Adusu-Donkor & Ankobea-Kokroe 2008:139; Ajeet, Jaydeep, Nandkishore & Nisha 2011:246). Another study by Naithani, Bharwal, Chauhan, Kumar, Gupta and Kirti, (2013:15) indicate that women didn't opt to CS due to fear of operation and delay to resume to household chores. Many of the respondents from Ghana reported that they would readily agree to undergo the procedure when it is indicated (Adageba et al 2008:139). The Indian study indicates that nearly two-third of the study population had no or very little information about the procedure (Ajeet et al 2011:247).

2.7.3.3   *History of pregnancy complications*

Women experiencing complications or worried about health problems are likely to seek both antenatal care and skilled attendance at birth more frequently than other women. Women with high risk pregnancy are more likely to get skilled delivery assistance from health facilities (Toan et al 2013:12). Women with previous medical interventions at

delivery, like a caesarian section, will be advised by health workers to seek skilled care for subsequent deliveries for fear of increased risk for rupture with a scarred uterus (Gabrysch & Campbell 2009:10). Complications during an attempted home delivery including prolonged labour or knowledge about pregnancy risks often influence women and their families to seek professional care. Worth remembering is that expecting complications may discourage women from seeking skilled care at delivery through fear of operation or caesarean section (Carter 2010:21, 29); or women's decision is mostly related to seeking for emergency obstetric care than preventive care (Gabrysch & Campbell 2009:11).

2.7.4 Family and individual resources

2.7.4.1   *Wealth*

Large disparities in maternal health care exist between rich and poor people (Baral et al 2012:623; Canavan 2009:4; WHO 2012c), between public and private health sectors, between provinces or districts, and among rural, urban, and peri-urban populations (Canavan 2009:33; Singh et al 2009:17). For example, in 29 Sub-Saharan Africa countries, skilled attendance during childbirth is four-fold higher for the richest families than the poorest (Lawn, Lee, Kinney, Sibley, Carlo, Paul, Pattinson & Darmstadt 2009:12). In some cases, household level poverty plays a different role on skilled delivery attendance. For example, a study from Burkina Faso indicates that household wealth is negatively associated with ANC utilisation and has no any significant association with facility-based delivery (De Allegri, Ridde, Louis, Sarker, Tiendrebéogo, Yé, Müller & Jahn 2011:6). Another study from Kenya shows that women from the richest households were nine percent more likely to receive good ANC services compared to those from the poorest households (Adjiwanou & LeGrand 2013:32). In Bangladesh, mothers from highest wealth quintile were nearly 8 and 11 times more likely to seek ANC and delivery care services respectively compared to those in lowest wealth quintile (Amin et al 2010:6).

2.7.5 Accessibility and quality of care

Empirical findings from studies of preventive and curative services indicate that health care utilisation is related to the availability, cost of care during pregnancy and childbirth

(Carter 2010:18; Friberg et al 2010:6; Tann et al 2007:7), distance from health facility (Joharifard, Rulisa, Niyonkuru, Weinhold, Sayinzoga, Wilkinson, Ostermann & Thielman 2012:7; USAID 2012:11) and social structure, health beliefs, and personal characteristics of the users (Singh et al 2009:12). The cost of care-seeking may include costs of transportation, medications and supplies, official and unofficial provider fees as well as the opportunity costs of travel time and waiting time lost from productive activities (Gabrysch & Campbell 2009:11, 13). According to findings of a study in Uganda, nearly 40% of women with financial and transport limitations delivered at home with no trained assistant (Tann et al 2007:7). Difficulties in physical accessibility (Kinney et al 2010:4) of or geographical distance to health services (Tann et al 2007:7) affects the utilisation of maternal care services through delaying of reaching the health facility or indirectly delaying individuals motive of seeking for care (Gabrysch & Campbell 2009:12).

Weak health system infrastructures, lack of skilled service providers and substandard quality of care hinder maternal health care utilisation in developing countries (Baral et al 2012:621; Canavan 2009:20). The content or quality of antenatal care matters on the skilled birth attendance (Adjiwanou & LeGrand 2013:30-31, 33). Mothers with previous good experience for skilled delivery attendance are also likely to seek skilled services (Gabrysch & Campbell 2009:10). In rural Vietnam, women receiving overall adequate ANC services were more likely to give birth at Hospitals (Toan et al 2013:12). Even in areas where avoiding fees may benefit poor families, the issue of quality remains a concern (Kinney et al 2010:5). Perceived quality of care including staff friendliness, availability of supplies and waiting times (USAID 2012:11) has been found to have strong influence on health care seeking (Gabrysch & Campbell 2009:9).

2.7.6 Previous ANC experience

The decision to seek ANC and the decision to deliver in a health facility can be determined by different as well as similar factors (De Allegri et al 2011:6). It is common that ANC is provided by mobile clinics and small facilities or at primary health care levels that do not offer delivery services as part of basic package of maternal health care (Canavan 2009:9). Moreover, timing for ANC is flexible and free of charge in most places unlike delivery services which incurs high cost of care (Gabrysch & Campbell 2009:9).

ANC services are important entry points for birth preparedness (Canavan 2009:9). There is also a strong linkage between use of antenatal care and place of delivery or skilled birth attendance. Women who make four or more antenatal care visits are more likely to deliver in a health facility or by qualified practitioner than women who make less than four antenatal visits (Baral et al 2012:624; De Allegri et al 2011:5; Joharifard et al 2012:7). Early initiation of first ANC visits also influences use of skilled assistance at birth (Ochako et al 2011:7). In Kenya and in Ghana women who have had at least four antenatal consultations were, respectively, 20% and 17% more likely to give birth with medical assistance (Adjiwanou & LeGrand 2013:30).

2.8   CONCLUSION

This chapter presented an in-depth literature review conducted on the research topic. The literature review facilitated the development of feasible research problem for the research proposal and the research methodology. It also shaped a better understanding of the study topic. It enabled the researcher to link the research findings with existing knowledge.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1   INTRODUCTION

Prior to applying the empirical phase of a study, the researcher is required to make a decision about the research design and the research methods including the sample and sampling techniques to be applied in the selection of the study population. In this study, the researcher chose the research design and methods that would be appropriate to answer the research objectives and questions. The research method included discussions on the research population, sampling and sampling technique, and data collection methods and data analysis. Aspects of validity and reliability of the instrument and ethical issues were also described.

3.2   RESEARCH CONTEXT

Addis Ababa is located at 90° 2' N latitude and 38° 45' E longitude. Established in 1886 and with 2.7 million population size (female=52%), Addis Ababa is one of the oldest and largest cities in Africa. It constitutes four percent of the national and nearly a quarter of the urban population (23%) in Ethiopia which is eight times larger than the second largest city, Dire Dawa. Addis Ababa is much larger and more diverse than any other city in the country and the city is growing more rapidly (nearly by 4%) doubling every decade (Office of the Population Census Commission 2007:7; UN-Habitat 2008:7). It is also located at one of the highest at an average altitude of 2400 meters. Being the capital of a non-colonised country in Africa, it has been playing a historic role in hosting regional organisations such as the African Union, and the Economic Commission for Africa, which contributed to the decolonisation of African countries, and later bringing Africa together (UN-Habitat 2008:4). Politically, Addis Ababa is organised through smaller units called sub-cities. The sub-cities are further divided into Kebeles, the smallest formal administrative units in the political structure.

Addis Ababa hosts peoples of diversified ethnic background (more than 80) of which the majority are Amhara, Oromo, Guragie and Tigraway. Amharic constitutes the biggest share of mother tongue followed by Oromipha. In terms of religion, about three-fourth are Orthodox Christians followed by Muslims and Protestants (Office of the Population Census Commission 2007:91, 116, 143).
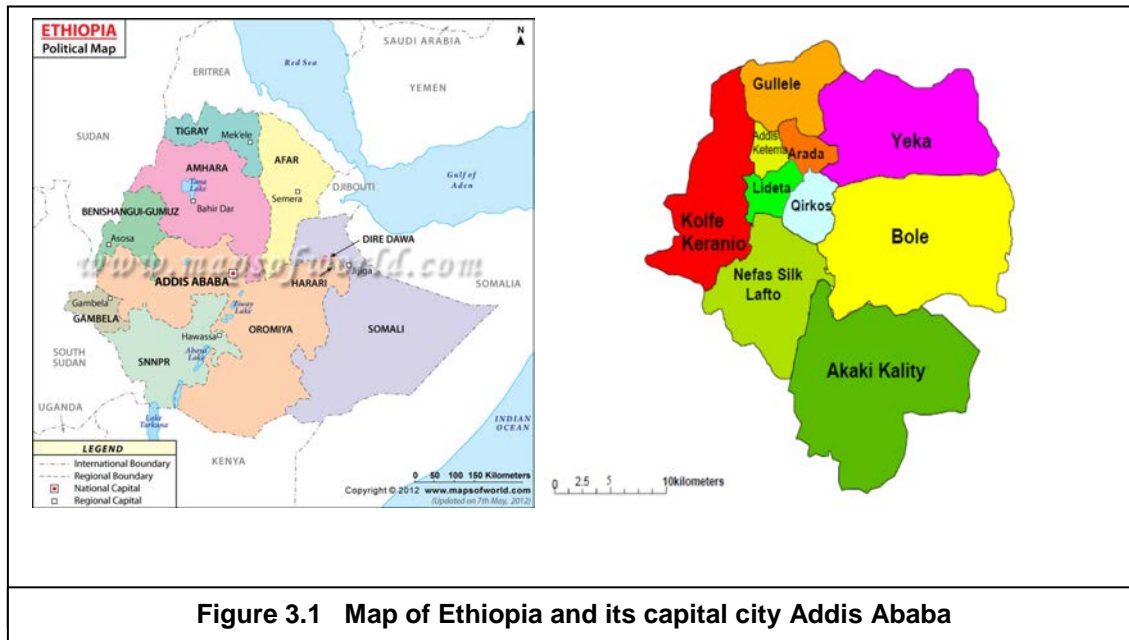
Figure 3.1   Map of Ethiopia and its capital city Addis Ababa

(FMOH 2005:58)

Located in the centre of Ethiopia and given the lack of development policies in other urban centres, Addis Ababa is privileged with the majority of social and economic infrastructure in the country. As a result, the very high rate (40%) of rural-urban migration from all the corners combined with rapid natural population growth poses critical challenges on the city. Like any other major city of Africa, it is presently suffering from widening income disparity, deepening poverty, rising unemployment, severe housing shortage, poorly developed physical and social infrastructure and the proliferation of slum and squatter settlements (UN-Habitat 2007:1). Soil, air and water (river) pollution as a result of industrial wastes are real growing concerns in Addis Ababa (UN-Habitat 2008:4). The capital is plagued with slum areas or Kebele houses built since the 1970's with no significant change to date at the lowest standards in terms of density, sanitation and availability of potable water (USAID 2012:2).

The current health coverage in the capital has increased, the distance travelled to find a health facility is less than 2 kilometres, vaccination coverage is high, and the rate of HIV/AIDS infections have started to decline yet the second highest (5.2%) in the

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country. In Addis Ababa, the total fertility rate (TFR) (1.5%) is below replacement level. However, because of its primacy, the city has a disproportionate share of growth accompanied with health problems including congestion, pollution and streams of rural-urban migrants. Hence, the nature of health problems in Addis is different from other cities in the country (USAID 2012:2). The under-five mortality and neonatal mortality rates for the capital were 53 and 21 per 1,000 live births respectively (CSA [Ethiopia] and ICF International 2012:64, 71, 79, 80, 97, 101, 113, 120, 126, 129, 182, 235). The rise of metabolic syndrome is another emerging problem of the capital city (Misganaw, Mariam, Araya & Ayele 2012:3-4). The private sector has been playing a considerable role in improving the physical coverage with access remaining as a challenge due to unaffordable prices for the majority of the population. More than 83% of the Hospitals are owned by private owners as compared to only five public hospitals. There are also more than 500 private clinics in the capital (FMOH 2011:55).

Nearly 11% of all the physicians, both general practitioners and specialists, and 7% of midwives in Ethiopia are found in the capital, Addis Ababa, which constitutes only slightly less than four percent of the national population. Though this may connote the inequitable human resource for health distribution in the country, these health professionals are still overstretched. In Addis Ababa, one physician, either a general practitioner or a specialist, serves 17,607 people and one midwife serves 18,598 people (FMOH 2011:63). This ratio is far smaller than the 1:5,000 ratio for midwives and 1:1,000 ratio for physicians recommended by the WHO. In 2011, the share of the health budget for the City Administration was only five percent, the lowest of all the Regional States and City Administrations in Ethiopia (FMOH 2011:58; FMOH 2010a:1).

3.3   THE RESEARCH DESIGN

Research design, as defined in the Dictionary of Epidemiology, is "the 'architecture' of the study whereby its structure, the details of the study population, time frame, methods, and procedures are explicitly stated in the research protocol"(Porta 2008:216). According to Blaikie (2010:15):

> "A research design is an integrated statement of and justification for the technical decisions involved in planning a research project. ...designing social research is the process of making all decisions related to the

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research project before they are carried out ... *Designing a research project is the way in which control is achieved* [I italicized]."

Research design, also sometimes called as a research strategy, can also be defined as an approach in research determined by stated research questions (Gravetter & Forzano 2010:159).

3.3.1 Design chosen

Choosing the right research design avoids invalid inferences and the research design ensures that the evidences obtained from the data analyses answer the stated research questions as explicitly as possible (Blaikie 2010:24-25). A research design tells us the level of control that the investigator imposes on the study. Compared to experimental designs, in descriptive and correlational designs the researcher has less or no control over the independent variables though random selection can provide control. The research design determines the sampling, measurement and analysis techniques to be applied in the research process (Gravetter & Forzano 2010:216-20).

A correlational design is a type of descriptive research design used to indicate the strength of association among variables of interest (Daughtery 2011:176; Shaffer 2009:22). According to Stangor (2010:160), correlational research design is 'used to search for and describe relationships among measured variables'. The term correlation expresses the degree to which two or more variables change together or are related (Porta 2008:53). In this study, correlational design was employed because the researcher was interested to determine the relationship between the outcome variables and independent or predictor variables based on existing theories. Quantitative descriptions were made on the extent of the problem and other measurable attributes.

Correlational designs can be cross-sectional or longitudinal; retrospective or prospective based on the nature of the research questions, samples and measures (Gravetter & Forzano 2010:213). A correlational design uses descriptive design to describe the relationship between variables and also applies both descriptive and inferential statistics to identify relationships (Deming & Swaffield 2011:90, 93). It can be used for model testing based on existing theories or models (Gravetter & Forzano 2010:213). The

inferential statistical part depends on mathematical models and there are three important dimensions to be considered in employing this design:

- The **relationship** between the variables
- The **strength** of the relationship
- The **generalisation** of the knowledge from the relationships of the variables obtained from the sample to the real world (Deming & Swaffield 2011:94)

Strengths of correlational research design

- Provides information about the strength of the relationship between variables
- It allows to study behaviour in everyday life
- It can be used when experimental research is impossible when predictor variables can't be manipulated (Stangor 2010:177)

Limitation of correlational research design

- It is not possible to conclude that causal relationship is established among the measured variables (Stangor 2010:170-171)

3.4 RESEARCH METHOD

Research methods refer to all the methods, including data collection, statistical techniques and evaluation of the accuracy of the results, applied in the whole course of the research operation (Crowther & Lancaster 2008:68).

3.4.1 Sampling and population

3.4.1.1 *Population universum*

The group of people on which a researcher is interested in and on which the results of the study are applied refers to population (Bruce, Daniel & Stanistreet 2008:133). Population is the set of all measurements of interest to the sample collection (Ott & Longnecker 2010:5). Polit and Beck (2008:67) defined population as 'all the individuals

or objects with common, defining characteristics. The population universum for this study was all women of 15-49 years old residing in Addis Ababa.

3.4.1.2 *Target population*

Target population is a complete collection of objects or peoples whose description is the major goal of the study (Ott & Longnecker 2010:24). According to White (2011:248), a target population is a population which meets criteria for sampling. The target population for this study was all women of 15-49 years of age who have experienced at least one birth in the last 1-3 years before the date of data collection.

3.4.1.3 *Accessible population*

An accessible population refers to the population out of which a sample is taken or a group which can be accessed by a researcher reasonably (White 2011:251; Boswell & Cannon 2011:146). The accessible population for the study included those women (15-49) with a history of at least one birth in the last 1-3 years preceding the date of data collection. The study population was selected based on the following inclusion and exclusion criteria. Lists of inclusion and exclusion criteria were provided for data collectors before they went for the house-to-house survey.

3.4.1.4 *Inclusion criteria*

Inclusion criteria also termed eligibility criteria refer to the characteristics that the study participants will have in common and that must be considered in selecting the study sample (Boswell & Cannon 2011:149). The inclusion criteria for this study include:

- Women of reproductive age groups (15-49 years)
- Women with history of childbirth in the last 1-3 years before the time of data collection or those who have under-three children
- Women who have been residents of Addis Ababa. In this case residents are those women who had been living in Addis Ababa for at least one year (one gestational period)

3.4.1.5   Exclusion criteria

Exclusion criteria refer to the characteristics of individuals that will make them ineligible to be in the sample (Boswell & Cannon 2011:149). The exclusion criteria in this research include:

- Children less than 15 years of age and women greater than 49 years of age regardless of their childbirth status
- Women without history of childbirth or those who have never given birth in the last 1-3 years before data collection
- Women who are defacto residents of Addis Ababa or visitors

3.4.1.6   Sampling technique

Researchers have a wide alternative of choosing either probabilistic or non-probabilistic sampling techniques. The non-probability sampling technique is used to select research participants non-randomly. Hence, non-probability sampling method doesn't guarantee the representativeness of the sample for the larger population.

The most important sampling for generalisation to the population on the basis of samples is the random selection of study units through probability sampling (Babbie 2013:72). However, Babbie (2011:243) states that no probability sample is perfectly representative in all respects though errors can be minimised through controlled selection. Probability sampling can be simple or extremely difficult, time consuming or expensive. According to Babbie (2011:241), this method remains the most effective method for the selection of samples for two major reasons: it avoids the researcher's unconscious or conscious bias in sample selection; and probability sampling allows statistical estimation of sampling errors.

The heterogeneity of the population under study forces a researcher to use probability sampling so as to reflect the variations that exist in the population (Babbie 2010:194). The most common types of probability sampling are simple random sampling, systematic sampling, stratified sampling and cluster sampling (Babbie 2011:242; 2013:89; Gravetter & Forzano 2010:153, 154). We can avoid incorrect conclusion of our

study from selection bias, if we apply the right sampling technique (Babbie 2010:195; Bruce et al 2008:134).

The most preferred sampling technique used in large population that is spread in wider geographic areas is cluster sampling (Babbie 2010:215). Cluster sampling is a multistage sampling technique in which existing groups called clusters are selected or sampled initially and the members of each cluster are selected randomly afterwards (Babbie 2011:234). When the sample selection needs different levels of clusters, the sampling technique is referred to as multistage cluster sampling (Brase & Brase 2010:16). Cluster sampling is an easy way of getting representative samples through relatively random selection (Gravetter & Forzano 2010:154).

Strengths of cluster sampling:

- The sampling doesn't require the complete listing of the entire population of the study area except those to be studied (Babbie 2011:234).
- No need to know all of the elements of the population.
- It is efficient strategy when the population is large or spread in wider geographic areas (Babbie 2011:235; Boswell & Cannon 2011:152).

Limitations of cluster sampling:

- The listing of households in the selected strata or groups (clusters) is both labour intensive and expensive.
- A multistage cluster sampling is subject to multiple sampling errors resulting in less accurate sample (Babbie 2011:235).

Addis Ababa, the study area, is divided into 10 sub Cities and each sub City is further divided into several small administrative units called Kebeles. Because of the different political or administrative structures and wider geographic areas, cluster sampling technique was employed for this study. In the 2007 Ethiopia Housing and Population Census, Kebeles were further subdivided into enumeration areas (EAs). An EA is a geographic area consisting of a convenient number of dwelling units which was used as a counting unit for the census. The average number of households (HHs) per EA in

urban Ethiopia is 169. The number of clusters (EAs) in Addis Ababa was about 3865 (CSA [Ethiopia] and ICF International 2012:275-6).

The study employed a stratified, two-stage cluster design. Since Addis Ababa is entirely urban, stratification was achieved by using the sub Cities (10 strata). In the first stage, 30 sample points (EAs) were selected independently from all the strata with Probability Proportional to (EA) Size (PPS) of households using the 2007 Population and Housing Census data (Annexure A). A new household listing was not conducted for this study but the random sample selection was done using the number of households identified for EDHS 2011. In the second stage, 906 households were selected with PPS of households in each EA (Table 3.1). PPS is a special and efficient method in multistage cluster sampling (Babbie 2011:243).

3.4.1.7   Sample frame

A sampling frame is a list of individuals from which we select samples (Brase & Brase 2010:17). According to Babbie (2011:242), a sampling frame refers to 'a list or quasi list of the members of a population'. For this particular research, the sampling frame for the first stage was the lists of clusters (enumeration areas) per strata and for the second stage were the lists of households in each EA. Households were the sampling units for this study. A sample unit refers to the object that is actually measured (Ott & Longnecker 2010:24).

3.4.1.8   Ethical issues related to sampling

This study employed an optimal sample size that can ensure external validity. Research participants were selected fairly or randomly among the target population. Participants were not selected systematically for reasons not related to the research focus. Participants were not paid incentive in return for their participation for this study.

3.4.1.9   Sample

A sample is any subset of the measurements selected from the population (Ott & Longnecker 2010:5); and a random sample of individuals should possess variations which are observed in the source population (Babbie 2013:76).

The term sample is also defined by Polit and Beck (2008:765) as a subset of the population that is selected for a particular study, and the members of a sample are the respondents. There are various types of samples with different degree of suitability for a particular study. A randomly selected sample is cost-effective and more efficient to produce good quality evidence as it is difficult to reach the whole target population (Boswell & Cannon 2011:147). Polit and Beck (2008:289) say quantitative researcher seeks to select samples that will make generalisation to the wider community or group possible.

In quantitative approach, we use a sample since it is unnecessary or impractical to study the whole population due to time, financial and other constraints. However, for generalisation to the general population to be realistic, the sample should be representative of the population. A sample is considered as representative if it approximately shares the "aggregate characteristics" of the general population and if all members of the population have equal chance of being selected in the sample (Babbie 2013:77; Boswell & Cannon 2011:147). Representativeness is a criterion to assess the adequacy of a sample. Ideally, a sample is representative of the accessible population and the accessible population is representative of the target population (Polit & Beck 2008:67, 353).

As there are multiple variables to be treated in this study, the sample size estimation was based on the maximum sample size for estimating single proportion approach (Bui & Taira 2010:414).

$$n = \frac{\alpha^2 p(1-p)}{\varepsilon^2}$$

Where:

n=required sample size

α=critical value for the chosen confidence level at 95% (standard value of 1.96)

p=estimated prevalence of the problem (variable being assessed)

ε=margin of error of 5% (standard value of 0.05).

For this particular calculation, p=84% (percentage of skilled attendance at birth for Addis Ababa) and hence the required initial sample size was 206. A design effect of 2 obtained in EDHS 2011 report was considered in determining the sample size (CSA

[Ethiopia] and [ICF] International, 2012:127 & 303). In cluster sampling, a design effect of 2 or 3 is recommended (Dattalo 2008:36). Then n=2*206=412 was the minimum sample size for each of the two sampling stages namely the Enumeration Areas (EAs) and the households and hence, n=2*412= 824. The sample size was further increased by 10% to account for contingencies such as non-response or recording errors. Therefore, the minimum sample size required to conduct this research was 906. Based on rough calculation from the 2007 Census data, at least one mother of under-three children is expected in every five household (Office of the Population Census Commission 2007:405).

Table 3.1 Sample size distribution by strata, Addis Ababa, 2013

Strata	# of selected EAs	# of HHs in the selected EAs*	# of respondents
Arada	2	394	74
Akaki Kality	1	174	36
Addis Ketema	3	519	110
Bole	6	1,045	159
Gulele	3	472	74
Kirkos	3	590	93
Kolfe Keranyo	4	743	118
Lideta	2	293	47
Nifas Silk Lafto	4	747	88
Yeka	4	722	104
Total	33	5699	903

*Source 2011 EDHS archive from CSA

3.4.2 Data collection

Data collection is a key component in all research studies. Data collection processes include surveys, experiments and examination of data from existing records, reports, censuses, and previous studies (Ott & Longnecker 2010:17). The selection of appropriate data collection tool is the key component of a research process (Moule & Goodman 2009:288).

3.4.2.1 Data collection approach and method

A day before the actual data collection, each data collector was provided with the Location and Sketch Maps of the selected clusters (EAs) (Annexure B). The location map has the details of the main access to a cluster, including main roads and main landmarks in the cluster. The sketch map on the other hand has the details of marks of all structures found in the cluster which helps the interviewer to relocate and select households. It also contains the cluster identification information, location information, access information, and principal physical features of the area. Both maps were produced during the household listing operation of the 2011 EDHS and the researcher bought them from the Central Statistical Agency of Ethiopia.

The households that were scientifically selected to be included in the study were enumerated using the household and individual women questionnaire developed by the researcher. The household section of the questionnaire was used to collect information on housing characteristics such as type of drinking water source, type of toilet facility, housing material, space (number of rooms) and possession of selected goods or materials. The individual questionnaire section focused on the socio-demographic characteristics and maternal health care utilisation aspect of the respondent.

All women age 15-49 years who were members of the household and who have been living there for at least one year but not visitors were eligible for interview. Identifying all eligible women in the household, interviewing them and revisiting households that were missed in the first visit were the responsibilities of the interviewers. Interviewers were required to do only one revisit and those households missed during the second visit were assumed as non-response.

Households were randomly selected according to probability proportional to size of households in each EA. The systematic random sampling of the eligible households was done based on the number of households recorded during the complete listing of households in each EA during the last EDHS (2011). To minimise sampling errors that may arise due to changes in the years after the last enumeration (complete household listing), approaching the Kebelle administrations was an important step in the survey process as it is necessary to be aware of and sensitive to the various community levels in the study area. The researcher consulted government officials both at sub-city and

Woreda (Kebele) levels and community members in the respective EAs. Hence, the demolitions of significant portions of four EAs from four strata were the major changes reported. The researcher verified these changes and took the necessary action. Three EAs were replaced by other randomly selected 3-4 adjacent EAs and remaining households of the fourth EA were completed from a section of another adjacent EA.

In this study verbal face-to-face interview was administered using a structured questionnaire.

3.4.2.2 *Development and testing of the data collection instrument*

Literature dictates that the aims of a study influence whether a standardised questionnaire can be used or an original questionnaire needs to be developed by the researcher. In this study, the DHS women's questionnaire was considered. However, the standardised questionnaire did not address all the information needed for this particular study and the researcher had to develop the original questionnaire. For example, the standardised questionnaire didn't address information needed to differentiate between slum and non-slum residents including housing tenure, preference to procedures or technology (caesarean section and ultrasound) at delivery, details of caesarean section, and perceived inappropriate investigations or procedures.

The data collection instrument was designed by the principal investigator. The structuring and some components of the instrument were modelled from the Ethiopia DHS women's questionnaire (CSA Ethiopian and ICF International 2012:352) but others were developed by the researcher based upon the objectives or research questions of the study and using the literature review as a frame of reference. The questionnaire was structured into four main sections covering: (1) the household information; (2) background information of the respondent; (3) maternity and maternal health care, and (4) other health related issues.

Recall bias was taken into consideration during the development of the questionnaire. Therefore, women were asked about their most recent or last birth and the date of birth of the child was asked to minimise recall bias. The final version of the questionnaire was reviewed by the researcher's supervisors, other public health experts and a statistician and was accepted for its validity.

Before commencement of data collection, the final draft of the questionnaire was piloted and refined using 15 copies to ensure that possible responses are included in the questionnaire. Pre-testing was done by trained enumerators under the supervision of the principal investigator to minimise possible errors because of ambiguous questions. The overall aim of the study and the objective of piloting of the questionnaire were briefly explained to the enumerators. During the pre-test, questionnaires were completed by respondents that have similar characteristics with the sample but among those outside the selected enumeration areas. The pre-testing assisted in correction of spelling and grammar errors, and refining of the wording or the translation from the interviewer's perspective. Individual as well as group meetings and discussions with data collectors contributed for improvement of the wording of some questions. Based on the field estimate during the pre-test, it was decided that a data collector was allowed to complete a maximum of ten questionnaires per day so that the quality of the data wouldn't be hampered.

3.4.2.3   *Characteristics of the data collection instrument*

The most common data collection instrument used in quantitative research including descriptive correlational design is a structured questionnaire (Daugherty 2011:220). In structured questionnaire, the wording of the questions and the response alternatives are predetermined or pre-coded (Polit & Beck 2008:414). Structured questionnaire or structured interview schedule is a technique in which all participants are asked the same questions in precisely the same order. The main purpose of using such a structured format is to treat each person in a similar manner so that responses of the different respondents can be compared (Shaffer 2009:16).

Strengths of structured questionnaire:

- It is a quick way to gather comprehensive information (Babbie 2010:285).
- Standardised formats allow the researcher to make comparisons across data provided by different respondents and make easier to show the relationship between variables (Babbie 2010:286; Shaffer 2009:22).

- The data collected ensures high validity and reliability since it allows application of probabilistic sampling techniques and same standard questionnaire is used for all the respondents (Babbie 2010:287; Covington 2008:272, 274).

- Collects easy to count responses [data] with high rates from large samples and complicated ones leading to meaningful statistical analysis. The sequence of questions and answers is under the control of the interviewer (Babbie 2010:285; Daughtery 2011:220).

- Administration of structured interview schedule doesn't require the reading skills of respondents [literacy] and even complicated questions can be administered with help of the interviewer in clarifying ambiguities (Babbie 2010:286; Covington 2008:274).

Limitations of structured questionnaire (interview schedule):

- Data collected may not be accurate or less reliable due to interviewer bias (Ott & Longnecker 2010:29; Shaffer 2009:22).

- Data may show variation due to variations in individuals' skills and level of understanding (Shaffer 2009:22).

- Pre-coded response choices may not be comprehensive enough or answers may not all be accommodated and hence respondents may be forced to give inappropriate answers which affects the representation of people's views (Covington 2008:273).

- Face-to-face interviews are expensive, time-consuming and are subject to interviewer bias and respondent fatigue (Babbie 2010:285; Covington 2008:274).

- Errors in recording affect the final result of the study (Ott & Longnecker 2010:29).

- Design time and interpretation can also make questionnaires relatively expensive (Daughtery 2011:220).

3.4.2.4   Data collection process

Obtaining permission for field work: After getting the ethical clearance from the Ministry of Science and Technology, letter of approval to conduct field work was obtained from
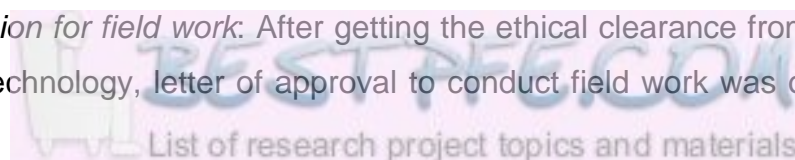
Bureau of Health (Annexure C); and respective Offices of sub-Cities of Addis Ababa Administration were copied. Letter of application requesting permission for the work was submitted to the offices (Annexure D). The officials were briefed about the research topic, the purpose, methodologies and ethical issues, type of activity, level of human activity, relevance or appropriateness of the research and the expected duration needed to finish the data collection. Summary of data collection plan and copies of the ethical clearances obtained from the respective bodies were presented to them.

Selection of data collectors or interviewers: The time taken to complete the questionnaire was 32 minutes on average as it was estimated during the pre-test. Then it was decided to employ ten interviewers to administer the questionnaires and to accomplish the data collection within 9-10 days. Data collectors were chosen among those who participated in previous Ethiopia DHS particularly those who were data collectors or field data editors in Addis Ababa. This was done in consultation with researchers from Ethiopian Health and Nutrition Research Institute (EHNRI) and experts who were involved in the supervision of data collection in the EDHS in the study area. Field workers were also selected for their ability to explain the aims of the study and gain understanding with prospective respondents, their maturity and confidence with a view to dealing with the occasional aggressive or mistrustful person, interpersonal skills, and their willingness to work long nearly for eight hours a day. All data collectors were required to have at least bachelor degree in health or social science fields, and be able to speak, read and write Amharic language. Translators were pre-arranged in case the need arises but none of the data collectors faced language barrier. Some of the data collectors were able to speak more than one language (Amharic and Tigrigna).

Training of data collectors: The training of data collectors was done in Amharic to ensure concepts and questions were understood. Data collectors were given the chance to share their experiences including challenges that could be faced in the field from previous similar exposures. Training of the interviewers took one day. The training was facilitated by the principal investigator.

The training had two sections: The theoretical or classroom and the role play. In the later case, interviewers demonstrated the role of interviewers and respondents i.e. as an interviewer and interviewee in classroom. Interviewers got the opportunity of learning

from each other by asking questions and talking about situations encountered in practice. During the training, the informed consent, each section of the questionnaire, questions and instructions were discussed in detail. Even during the actual fieldwork, interviewers had the chance to discuss with the principal investigator about misconceptions which were not covered in training and challenges faced in the house-to-house survey.

Questionnaire administration: A total of ten interviewers, six males and four females, carried out the data collection. Every interviewer was given a letter of support from the Bureau of Health of Addis Ababa. Local guides were assigned for each EA to assist the interviewers during the identification of the boundaries of the EAs using the maps. As much as possible, the guides shouldn't have any political affiliation or any relation with health care providers to minimise any bias on data collection. Every morning at 7:30, each interviewer had to go to the respective EAs for data collection. Data collection was mainly done early morning and late afternoon to catch up potential respondents and to minimise revisits. Every day, mostly evening time, all the interviewers had to have brief meeting with the Principal Investigator to submit the completed questionnaires, discuss on daily activities and challenges and to collect questionnaires for next day activities. Data was collected from women age 15-49 years between Dec. 24, 2013- Jan. 10, 2014 from all the 10 sub-Cities involving 33 EAs and 906 respondents. Witness to consent form was also used for participants less than 18 years old as they are less likely to decide on their own health care matters.

Supervision: Supervision and observation were continuous processes throughout the fieldwork. The principal investigator was supervising the interviewers throughout the process. Administered questionnaires were reviewed by the principal investigator on daily basis for inaccuracies or missed questions and other problems. The supervisors had the role of checking whether the correct EAs, households and respondents were interviewed, reviewing each questionnaire for inaccuracies or missed questions and completeness and consistency, meeting every evening sometimes every morning to discuss challenges and share daily plans, and helping interviewers resolve problems. During supervision it was found that a team of data collectors started data collection in a wrong EA and that team had to identify the correct EA and collect the data after rejecting the questionnaires completed from the wrong EA.

3.4.2.5   Ethical considerations related to data collection

According to Polit and Beck (2008:170), ethical considerations refer to the procedures that are required and followed to protect the rights of institutions or individuals through maintaining scientific integrity. The ethical aspects of a research and the procedures to be applied should be overt to the study population to the extent that innocent questions could affect the respondent (Blaikie 2010:31). Ethical issues have roles in shaping social research problems besides the technical aspect (Babbie 2011:89).

In any research involving human beings, there are three fundamental or basic ethical principles that must be followed or applied by researchers namely *respect for persons, justice and beneficence* (Iphofen 2009:52-55, 66-67, 91-92, 211; Snežana 2001:179).

Respect for persons implies autonomy of individuals and beneficence is paired with non-maleficence. Autonomy is the principle of respect for human dignity and the rights of individuals to decide things for themselves (Porta 2008:12). Justice refers to being fair or an equitable or fair distribution of benefits and rewards in the society (Porta 2008:138; Snežana 2001:180). Beneficence implies doing good in the best interest of the population at stake by maximising benefits and minimising harms (Porta 2008:17; Snežana 2001:179); whereas non-maleficence refers to the Hipocratic principle of "do no harm" or causing no harm (Porta 2008:167; Snežana 2001:179).

The researcher strongly believes that the selected topic, which has high potential to improve health care to the community guarantees that the research itself is ethical. Moreover, the following measures were taken to ensure that research ethical principles are respected and applied throughout the study period.

- *Protecting the rights of institutions:* Ethical clearance was obtained from the Research and Ethics Committee of the Department of Health Studies of the University of South Africa and the National Research Ethics Review Committee of the Ministry of Science and Technology, Ethiopia (Annexure E & F). Permission for field work or data collection was also obtained from the Bureau of Health of Addis Ababa City Administration and respective sub Cities or Kebelles (Appendices 5 and 6). Since the research was based on household survey, there was no direct involvement of health institutes in the research process.

- ***Voluntary participation (veracity):*** In social science, research participants or respondents should not be forced to give information against their will (Babbie 2011:89; Blaikie 2010:31; Moule & Goodman 2011:57). Hence, research participants were not required to be involved without their willingness and if they don't agree their right to withdraw at any time during interview was dully respected. Participants were assured that they can withdraw from the study at any time without any consequences. The overall aims and objectives of the study were explained to the data collectors in detail stressing the point that all respondents were to participate voluntarily.

- ***Informed consent:*** Informed consent implies that participants are informed adequately about the research, are able to understand the information, and have the freedom to agree or to decline voluntarily (Iphofen 2009:66-67; Polit & Beck 2008:176). Participants were informed, before their informed consent was sought, about the nature and purpose of the research, and the methods and how the result will be used. Participants were also specifically informed the estimated time commitment needed at the point of contact; about the selection procedure and number of research participants required; that the data they provide will be used for research purposes; about what their contribution would mean to women or the community to receive fair and just maternal health care; and were assured that their participation in the study wouldn't endanger their attendance at the health facilities in the study area. The study was briefly explained for each participant including its risks and benefits and was given the opportunity to consent for participation. Literate participants were required to sign on the Amharic version of the consent form (Annexure G). Illiterate ones were required to sign in front of a witness (Annexure H) using an imprint of their index finger. In this research there were only 2 (0.2%) respondents less than 18 years of age. Those who were not willing to sign for any reason were not forced to do so but were allowed to participate in the study.

- ***Privacy and confidentiality:*** Confidentiality is the situation that the researcher promises to keep the information obtained from the research participant in private or to withhold information from others (Babbie 2011:89; Iphofen 2009:91-92; Porta 2008:49). It is important to ensure that respondents will not be at risk of

being embarrassed for releasing information to a third party (Gravetter & Forzano 2010:126). For this particular study, to ensure the privacy of participants is secured, respondents were untied from public attention by conducting the interview in a communally conducive environment (Porta 2008:195); and confidentiality of the data was guaranteed by preserving the anonymity of the study participants (Blaikie 2010:31; Moule & Goodman 2009:288). Identifying information (names and addresses of respondents) was not included in the data collection instrument. At the end of data collection, each signed consent form was separated from the anonymously completed interview schedule and sealed in a separate envelop so that no one would be able to match any completed interview schedule with any signed consent form.

3.4.3 Description of variables

3.4.3.1 Independent variables

The independent variables for this study were selected based on a modified version of the Behavioural Model of Health Services of Andersen and Newman (2005:14). These authors distinguished three sets of factors related to health care seeking behaviour of individuals namely the predisposing, enabling and need factors. Under the predisposing factors, demographic variables such as age, parity in terms of number of living children, current marital status and pregnancy intention related to last childbirth, social structure variables such as education, occupation and ethnicity were considered at individual, household and community levels. Age was categorized based on the standard reproductive age group though the number of categories was later reduced into three for analysis purpose. As regards to pregnancy intention, women were asked about their recent births whether they wanted it then, wanted later, or did not want to have any more children at all. In the analyses parts, the intention status of the birth was defined in two different ways, first as a trichotomy variable: intended, mistimed, or unwanted, and second as a dichotomy variable: intended versus unintended (either mistimed or unwanted).

Women's education was defined here as the highest level of schooling attended regardless of whether the woman completed the level. Educational status was

categorized as no education, primary education and secondary or higher education. Mother's occupational status was categorized as employed and unemployed.

Besides, preference for procedures including ultrasound and CS were used as proximal attitudinal belief variable. Women were asked about their previous history of CS delivery and the responses were grouped based on the motivations behind the procedure as those procedures done because of the woman's preference without medical indication, provider's influence without medical indication and those with medical indication. Number of ultrasound scans during the last pregnancy were reported by mothers as interval scale variables and later categorized for analysis purpose.

Under the enabling factors, individual and family resource indicator variables including housing tenure, health insurance, and wealth quintile were included. Women were asked about the owner of the house in which they live at the time of data collection and responses were grouped as own or rental. Those who visited health facility for ANC or delivery care were also asked whether there was an organization or agency that either partially or fully covered their expenses and responses were grouped as Yes or No.

The relative economic status of the households was determined indirectly through the creation of a wealth index. Wealth has been shown to be reliably examined as the household's economic status of the family the woman belongs to (Amin et al 2010:5; Rutstein & Johnson 2004:9). In this analysis, the construction of wealth index was done via a collection of indicators representing durable goods owned by the household, materials used in construction of the home, water and sanitation facilities and size of the home. Instead of assigning equal weights to each of the indicators in the wealth index, principal components analysis (PCA) was employed. A total of 17 indicators (variables) were initially considered in the PCA. Before performing the factor analysis, presence of outliers were checked though none of the variables were detected to have outliers. In SPSS, one of the most commonly used techniques to define or extract factors is Kaiser's criterion, or the eigenvalue rule. Under this rule, only those factors with an eigenvalue (the variances extracted by the factors) of 1.0 or more are retained (Krishnan 2010: 15-20). The PCA yields a factor score for each household. By definition, the principal component variables across individuals or households have a mean of "0" and standard deviation of "1" (Cordova 2009: 3). The same result was obtained in this analysis too.

In this study, using Kaiser's criterion, the data revealed seven factors. The assets used in the index were presence or absence of: television, phone, personal computer, refrigerator, vehicle, source of water and type of toilet facility. The three factors (television, phone and computer) explained 57.7% of the total variation with the first, second and third explaining 27.5, 15.5 and 14.6% of the total variations respectively. In the grouping of the wealth status, after obtaining the wealth quintiles, the 903 sample size was classified into five categories of approximately equal numbers ranging from the least advantaged (first quartile or lowest class) to the most advantaged (fifth quintile highest class).

In addition, one community resource variable, type of resident, was used in the analysis. Type of resident was measured as slum and non-slum residents. This type of resident was measured based on the five indicators developed by UN-Habitat (2003:12). Access to improved water, access to improved sanitation, sufficient living area, durability of housing and secure tenure (housing tenure) were used in the construction of type of resident. Details of these indicators are available under Operational definition of terms of Chapter 1. According to UN-Habitat a household is categorized as non-slum if all of the above five indicators are fulfilled, otherwise slum. For this particular study, the preliminary analysis showed only 9 (1%) of the households fulfilled all the five indicators. However, this figure doesn't allow as to do a statistical analysis (<10 cases per cell) as comparison between categories may mislead interpretation. Hence, the researcher applied less stringent indexing. Hence, a household was categorised as non-slum if at least three of the five indicators are fulfilled, otherwise slum.

History of high-risk pregnancy was the variable treated under the need factor for the current study. Hence a woman meeting at least one of the following criteria i.e., nulli-parous with 35 years or older; more than four previous births; CS delivery, previous preterm delivery, stillbirth, or neonatal death, history of spontaneous abortion, known high blood pressure, diabetes, epilepsy, or depression during pregnancy, was considered high-risk (Dangal 2007). However, though previous CS delivery, previous preterm delivery, stillbirth, or neonatal death were among the indicators for high risk pregnancy, they were dropped in this analysis as they can be analysed for only those with history of previous pregnancy which reduces the sample size hugely down to 584 out of 903.

3.4.3.2 Outcome variables

Many studies globally have investigated ANC using single indicators such as attendance by skilled provider, visit to health facilities, the number of antenatal visits or the timing of first visit (Adjiwanou & LeGrand 2013:29; Amin et al 2010:6-7; Ntambue et al 2012:8; Ochako et al 2011:7). No standard indicator is defined to be used all across and different researchers use different or similar indicators. As to the knowledge of the researcher very few studies have examined contents of ANC services. Studies that have examined the overall adequacy of ANC using the three basic indicators (timing, number and content of ANC) combined as single indicator is even scarce (Tran, Gottvall, Nguyen, Ascher & Petzold 2012:3). Some other studies combined only timing and number of antenatal visits to measure adequacy of ANC services (Ajayi & Osakinle 2013; Bassani, Surkan & Olinto 2009; Neto, Oliveira, Zandonade & Leal 2013:1667).

In this study, a single overall ANC adequacy indicator was constructed using the three indicators i.e., timing of first visit, number of visits, and adequacy of service content as recommended in the WHO and Ethiopia National guidelines and protocols (Chapter 1:Operational definition). ANC was defined as overall adequate if the woman had her first antenatal visit with in the first 12 weeks, had at least four antenatal visits and had received the 12 basic component ANC services at least once in the last gestation period. The content of the services doesn't include services recommended for mothers who need special care, just to avoid recall bias and fatigue to the respondents. Therefore, it should be kept in mind that the term "had all basic component ANC services" doesn't reflect the entire services received during ANC visits. It should also be noted that women don't specifically know the procedures, examinations or laboratory investigations done for them during antenatal visit.

The researcher believes that this combined indicator accommodates the major ANC dimensions and will avoid misinterpretation of ANC coverage based solely on one or two single indicators. For instance, the ANC coverage in the study area was very high (97.9% for at least one visit) but the coverage were surprisingly very low when it comes to the other indicators; overall adequate care only at 12.1% (Chapter 4).

The outcome variables for delivery care (mode of delivery and place of delivery) are straightforward and are available under section 3.3.4 of this chapter and Chapter 1. The caesarean section rate was measured as number of caesarean section delivery per 100 births (live or stillbirth).

3.4.4 Data analysis

In quantitative research, researchers seek to know how and why things vary and how they relate to each other. This can be done by statistical analyses. To answer research questions and test hypotheses, data should be analysed in an orderly and coherent manner involving from routinely simple to complex and sophisticated methods (Polit & Beck 2008:68). The concepts and building blocks of the study or the inputs for statistical analyses are called variables. In a different expression, a variable is a 'characteristic or condition' which changes in value or kind taking two or more values (Gravetter & Forzano 2010:18). A variable which is a consequence of the other variable is termed dependent variable (outcome variable) whereas the variable which causes the dependent variable is called an independent variable. Independent variables (IV) change or determine the values of the dependent variable (DV) (Polit & Beck 2008:58).

In this study data was entered using the Census and Survey Processing System (CSPro) software. CSPro is public domain software used globally for entering, editing, tabulating and dissemination of census and survey data of any size. It is developed and supported by the United States (US) Census Bureau and ICF International (US Census Bureau 2013). For this study, an experienced statistician was temporarily hired to enter the data using CSPro. Then, the data was analysed for both descriptive and inferential statistics using the Statistical Package for Social Sciences (SPSS) version 16.0 (Kirkpatrick & Feeney 2011). Bivariate (chi-square tests) were applied on the descriptive part of the analyses. Chi-square (χ^2) statistic is designed to analyse categories of nominal data (Wood & Ross-Kerr 2011:259) or to assess the relationship between two nominal or categorical variables (Stangor 2010:164).

Multivariate logistic regression modelling was estimated to determine the relationship between an outcome variable and a predictor or independent variable by keeping the influence of other predictor variables on the outcome variable statistically constant or controlled (Stangor 2010:169). Logistic regression is used when the dependent variable

is dichotomy and the independents are of any type (Dattalo 2008:31). For this study, p-value <0.05 was considered as statistically significant at 95% confidence interval.

All of the outcome variables, timing of ANC visits (first visit at or before 12 weeks of gestation), number of visits (at least four visits in the pregnancy period), service content (basic ANC components received at least once during the last pregnancy), overall ANC adequacy (fulfilled all the minimum requirements for timing, number and content of ANC visits), and mode of delivery (vaginal versus CS) was dichotomous except women's preference to place of delivery which have three choices or categories: public health institution, private health institution and deliver at home or outside health care system.

3.5 DATA AND DESIGN QUALITY: VALIDITY AND RELIABILITY

Whatever research design or methods are employed, research instruments must fulfil two important qualities: validity and reliability (Shaffer 2009:15). The data collection instrument is the major determinant of the validity and reliability of the data (Wood & Ross-Kerr 2011:198). The validity and reliability of measurements affect the accuracy of the factors being studied (Gravetter & Forzano 2010:219).

3.5.1 Validity

Validity is the degree to which an instrument measures that it is supposed to measure (Gravetter & Forzano 2010:78; Polit & Beck 2008:457). According to Polit and Beck (2008:286, 298), validity is a property of an inference and it is one of the most important strategies to enhance internal validity.

3.5.1.1 Internal validity

The degree to which the researcher draws conclusions regarding what actually happened in the study is referred to an internal validity (Hulley, Cummings, Browner, Grady & Newman 2007:8).

Since the data was collected through randomisation, internal validity in this research was not at risk. Variables were also controlled during analyses by applying multiple regression methods. The structured questionnaire was designed carefully and was

commented by the researcher's supervisor and expert opinions were sought from other public health experts and an experienced statistician. The wording of the questions was arranged carefully to avoid systematic misinterpretations by the subjects.

In such types of research, confounding factors are important threats by masking associations. To avoid important threats arising from associations between variables including false associations, possible confounding variables were included in this study if not the confounding factors were controlled statistically by applying multivariate regression techniques to separate the effects of the different variables.

3.5.1.2 *External validity*

External validity is concerned about the application of the conclusion or the generalisation to people or events outside the study (Hulley et al 2007:8). Polit & Beck (2008:753) defined external validity as the degree to which study findings can be generalised to settings or samples other than the one studied.

In this study, valid findings were achieved by employing appropriate and strong research design. Besides, representative sample size was drawn and accurate data collection methods were applied by deploying skilled data collectors to maximise the response rate. To evaluate the data collection instrument and the feasibility of the study, pre-testing was done using a pilot study. During analysis, interaction effects were estimated and tested using multiple regression technique so that the interpretation of the individual variables would not be incomplete or misleading. Interaction effect means that the effect of an independent variable on the outcome is affected by another independent variable i.e., the impact of one variable depends on the level of the other variable but not a combined effect of the independent variables.

3.5.2 Reliability

Reliability refers to the extent in which a measuring instrument yields consistent results both over time and across observers (Shaffer 2009:15). Polit and Beck (2008:730) also termed reliability as the consistency and dependability with which an instrument measures the attributes it is supposed to measure.

Since this study was based on quantitative data collected using structured interview schedule the finding of which was statistically analysed with precise estimations, its results were considered as valid and reliable (Pellissier 2007:19).

To establish reliability in this study, the questionnaire was set in logical order in a clear, concise and unambiguous manner with meaningful and easy to follow instructions; unnecessary, repetitive or inappropriate questions were avoided; data collectors were trained effectively to minimise errors that might arise because of misunderstanding of the purpose and content of the instrument and incorrect recording. The questionnaire was translated into local Amharic language and back translated to the source language (English) as highly recommended in health surveys (Kazi & Khalid 2012:514). All possible answers were pre-coded in the questionnaire in advance except continuous variables so that there was minimal chance of error while coding. Responses were standardised wherever possible as most part of the questionnaire was adopted from standard questionnaires like DHS tools. Women were asked about their most recent or last birth and the date of birth of the child was asked to minimise recall bias. Timing of the interview was arranged in such a way that the respondent wouldn't be missed or wouldn't be in fatigue to reach at an acceptable response rate. Careful measures were taken during coding, in mathematical calculation during analysis and interpretation of the data.

Finally, coefficient alpha, also called Cronbach's alpha was estimated as a measure of reliability. It is the most popular method and an important concept in the evaluation of assessments and questionnaires. It is useful to add validity and accuracy to the interpretation of research data. The principle is that if coefficient alpha proves to be very low, either the test is too short or the items have very little in common. As the estimate of reliability increases, the fraction of a test score that is attributable to error will decrease. Generally, a questionnaire with Cronbach's α of 07-0.8 is considered reliable (Tavakol & Dennick 2011:53, 54). The Cronbach's α value for this study was 0.677 which implies that the questionnaire is reliable.

3.6   CONCLUSION

In this chapter, the research design and methodology used in conducting this study were described in detail. A quantitative descriptive correlation survey research design was utilised to conduct the study. All the aspects of the data collection instrument in terms of development, pre-testing and administration during the data collection process were explained.

The mechanisms employed to ensure the reliability and validity of the instrument were discussed and the Chronbach's reliability test of this study was indicated. Ways in which the basic principles of public health research ethics were applied were also discussed.

Chapter 4 deals with the analysis and interpretation of the analysed data.

CHAPTER 4

ANALYSIS, PRESENTATION AND DESCRIPTION OF FINDINGS

4.1   INTRODUCTION

The main aim of this research was to describe and systematically assess women's maternal health care seeking behaviour in Addis Ababa in order to inform programme designers and stimulate formulation of appropriate measures to fill identified gaps in the study area. This Chapter presents the data analysis and its interpretation. Data were analysed and presented in both descriptive and inferential statistics. Under the subsequent sections, findings which answered the stated research questions were presented.

4.2   DATA MANAGEMENT AND ANALYSIS

Several data quality issues affect the interpretation of survey findings. Therefore, in this study care was taken to maintain the quality of the data before, during and after data collection by pretesting of the questionnaire in the local Amharic language; training of interviewers, close monitoring of field works, and orienting and hiring of experienced data entry operator. Also, it was important to establish whether the women who were interviewed are representative of the larger population of women of 15-49 age groups in terms of different variables.   In this study, questionnaire response rate and the age reports were evaluated before further statistical analysis was performed.

4.2.1 Data cleaning: consistency and completeness

One of the strengths of a structured questionnaire is that the sequence of questions and answers is under the control of the interviewer (Babbie 2010:285; Daughtery 2011:220). This in turn helps in the process of evaluating the quality of the data. Consistency and completeness are among the many data quality dimensions considered in this study. Consistency, completeness and correctness are the basic elements of clean data (Fan & Geerts 2012:3).

Data cleaning or data scrubbing is the process of detecting and correcting inaccurate incomplete, incorrect, irrelevant parts of the data set or data base by replacing, modifying, or deleting the wrong data. Data cleaning is the first step in data processing. It helps to create reliable database and avoid false conclusions (Tyagi & Samuel [s.a].

In this study, data was cleaned during data collection on daily basis, during data entry and before analysis for its completeness and consistency. Information completeness focuses on whether the researcher's database has complete information to answer research questions; while data consistency refers to "the validity and integrity of data representing real-world entities" (Fan & Geerts 2012:3-5). Checking for consistency helps in identifying conflicting results. In this study, the completeness and consistency of the data was cleaned before analysis by running frequency, cross-tabs, and sorting of the variables of interest using SPSS.

By running frequencies of variables, missing values, invalid values and outliers were identified. For example, while running the frequency of a variable with possible responses of "Yes" or "No" and values of 1 or 2, the frequency output might indicate a missing category with value of 11 or 22 due to double tabbing or there can be no value due to missing errors. Invalid character values were corrected by cross-checking with the values in the mother document (questionnaire) by tracking the Case Identification Number of the respective cases. In case, if the values in the questionnaire were the same as the ones in the database, the cases were excluded in the respective analyses. The other method used for checking the accuracy of the data in this study was by examining the minimum and maximum values of numeric variable. For example, the study population covers women of ages 15-49. Hence, values either below 15 or above 49 wouldn't be part of the analysis.

The method used for checking the consistency of the data was by 'selecting' and 'splitting' the data using SPSS in line with the 'skip' instruction in the questionnaire. For example, the 'Data'->Select command of SPSS identifies those respondents who didn't receive ANC services. Then, while running the frequency for place of visit, the output should be zero as place of visit was inquired only for those who had at least one ANC visit. Similarly, for women who didn't have any ANC visit the output for frequencies for 'time of first visit' or for 'ANC service packages received' shouldn't be different from zero (see section 1.8. of Chapter 1 for operational definition of terms). Similarly, for a woman

who reported 'home' as her place of delivery for her last born, 'caesarean section' shouldn't be expected as her mode of delivery. Such errors due to the missing of the skip pattern by interviewers were identified during data cleaning. Corrections were made by referring to the questionnaire and if the values were not credible as per the questionnaire the cases were excluded from analysis.

Data completeness was checked during data collection by the Principal Investigator, during data entry by the Data Entry Expert and before analysis by the Principal Investigator. As a result three records were discarded before data entry for incompleteness.

4.2.2 Response rate

Response rate is the number of participants who completed a questionnaire divided by the total number of participants who were asked to participate in the survey (Centers for Disease Control and Prevention [CDC]:2010:1; Polit & Beck 2008:765). Higher questionnaire response rates increase the validity and usefulness of the study results. In this study, higher questionnaire response rates were recorded which reflects the quality of training provided to interviewers, their understanding and the daily supervision by the principal investigator (Table 4.1).

Table 4.1   Response rate for structured questionnaire, Addis Ababa, January 2014

Variable	Number of questionnaires administered	Number of questionnaires completed	Percent	Reason for non-response
Antenatal care visit	906	903	99.7	Refusals (2) & incompleteness (1)
Delivery care	906	901	99.4	Refusals (2), incompleteness (1) & inconsistency (2)
Total number of usable questionnaires	906	903	99.7	

4.2.3 Measuring age heaping

The degree of age preference can be used to test for deficiencies in a survey data. Although age is an important variable in health and demographic analysis, it is typically

prone to errors of recall and other types of biases. One way of checking or assessing the quality of data is by evaluating the distribution of age reports in terms of heaping following digit preference by respondents. Age heaping happens whenever individuals (respondents or enumerators) tend to report age values with certain digit preferences commonly 0 and 5 (Pardeshi & Geeta 2010:391).

One way of checking the quality of age data is by using Myers' blended index. Myers' Index is the percentage of cases that would be shifted from one final digit (0-9) to another in order to get a uniform distribution across the final digit. This yields an index of preference for each terminal digit representing the deviation from 10% of the total population reporting the particular digit. The overall index is derived as half the sum of the absolute deviations from 10% and is interpreted as the minimum proportion of individuals for whom an age with an incorrect final digit is reported. The index is 0 when no age heaping occurs and 90 when all age reports have the same terminal digit (US Bureau of the Census 1971:206-208). The overall index for the current age reports was 12.1. The most preferred terminal digits, while reporting age, were 0, 5 and 8 and least mentioned were 1, 9 and 4 (Figure 4.1). But, the line graph for the 5-year age groups indicated no heaping and this shows that the use of age groups in the statistical analysis will avoid the effect of age heaping.
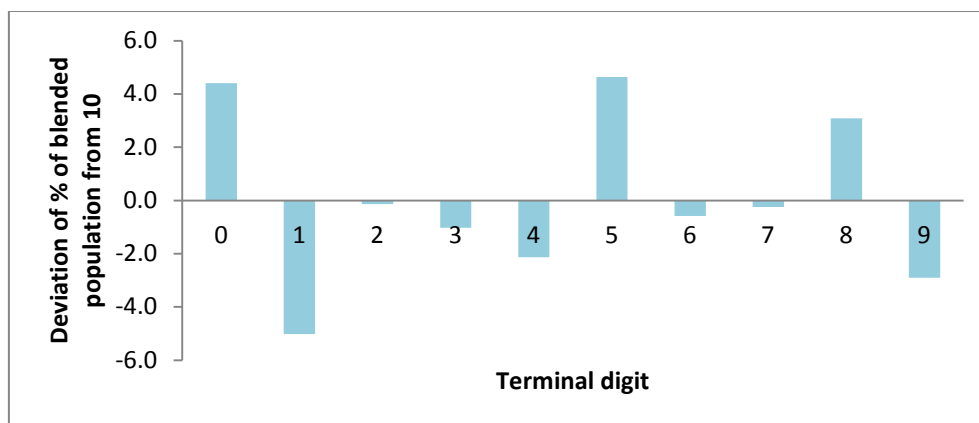
Figure 4.1 Myers' blended index by terminal digits of age reports, Addis Ababa, Jan 2014

4.3 EMPIRICAL RESULTS

4.3.1 Background characteristics

4.3.1.1 *Demographic characteristics*

4.3.1.1.1 *Age of respondents*

There were 903 respondents age ranged between 16 and 46 years. About a quarter of them were young women of aged 15-24 years and only two (0.2%) women were of less than 18 (16-17) years old. The mean age of the respondents was 27.8 years with a standard deviation of nearly 5.0 years. Women in the age group 20-39 years account for 96.3% of the participants (Figure 4.2).
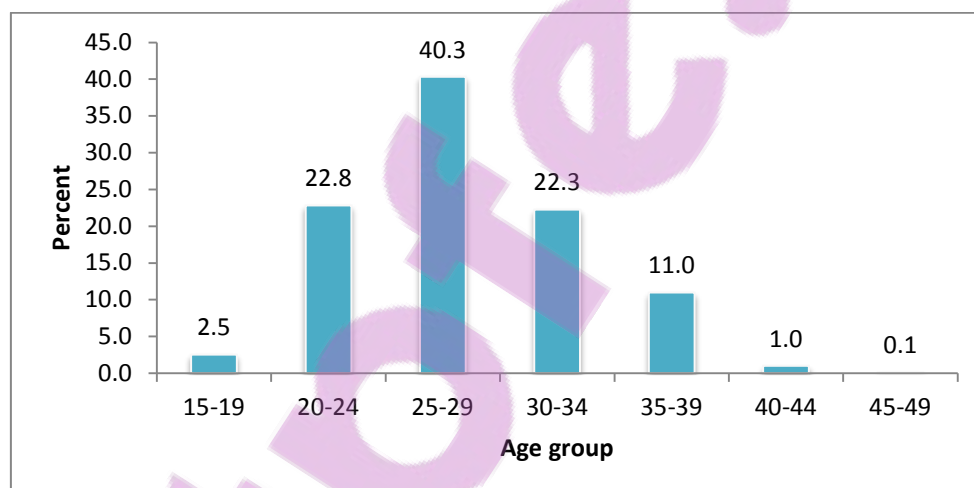
Figure 4.2 Proportion of women in five year age groups, Addis Ababa, January 2014 (N=903)

4.3.1.1.2 *Parity (number of living children)*

Figure 4.3 shows the parity (only living children) of the study population. Nearly 100% of the women had at least one living child. The number of living children ranged from 0-6 per woman. Slightly more than 75% of the participants had 1-2 living children and the average number of living children that a woman had was 1.2.

74
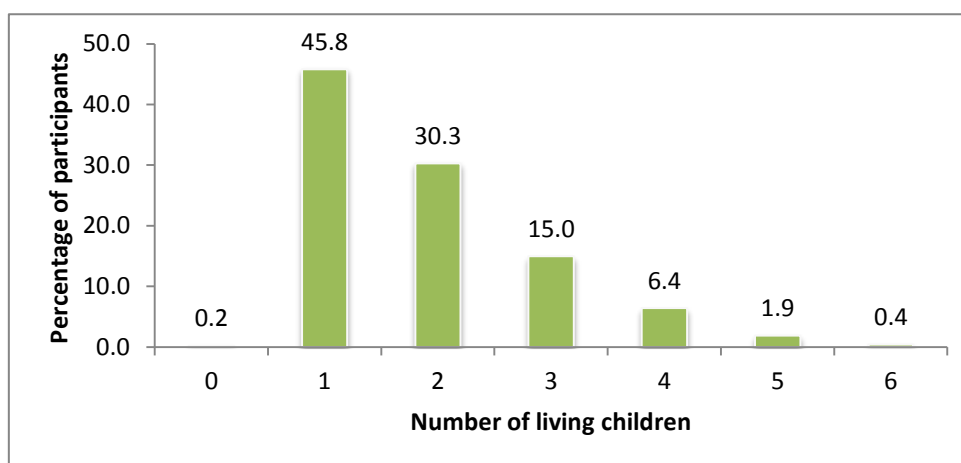
Figure 4.3   Number of living children of respondents, Addis Ababa, January 2014

4.3.1.1.3   Current marital status

Nearly 90% of the women were either married or cohabiting/living together with their partners. The remaining women were never-married, divorced, widowed or separated (Table 4.2).

Table 4.2   Proportion of women by marital status, Addis Ababa, January 2014

Current marital status	Frequency	Percent
Married	640	71.0
Cohabiting*	165	18.3
Never married	43	4.8
Widowed	4	0.4
Divorced	12	1.3
Separated	37	4.1
Total	**901**	**100.0**

*Living together with partner without legal marriage certification

4.3.1.1.4   Pregnancy intention

Women were asked whether their last birth was intended or unintended at the time of conception. Unintendedness was further categorised as either mistimed or wanted no more. About 27.2% of the 903 women indicated that their last born child was unintended at the time of conception of which 18.5% were mistimed or were not wanted at the time of conception and nearly 8.7% were completely unwanted. The remaining 72.8% were intended births (Figure 4.4).
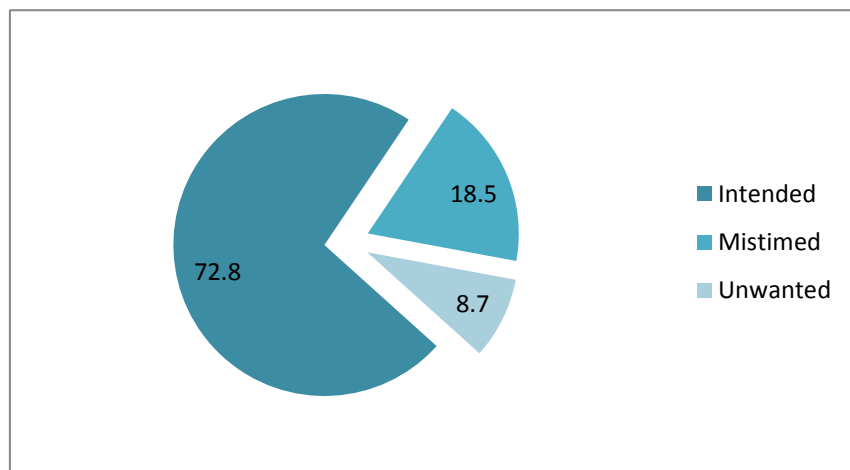
Figure 4.4   Prevalence of unintended births in Addis Ababa, January 2014

4.3.1.1.5   High-risk pregnancy

Among the five indicators used to classify the respondents by type of pregnancy, high-risk versus low-risk, spontaneous abortion was highly prevalent at 15.0% compared to the other indicators. About six percent of the respondents had history of high blood pressure, 2.3% had more than four previous births and less than two percent reported history of diabetes mellitus and epilepsy combined (Table 4.3).

Table 4.3   History of high-risk pregnancy of participants, Addis Ababa, January 2014

Indicators	Frequency	Percent
More than 4 previous births		
Yes	21	2.3
No	881	97.7
Total	**902**	**100.0**
Spontaneous abortion		
Yes	131	14.7
No	760	85.3
Total	**891**	**100.0**
High blood pressure		
Yes	55	6.1
No	845	93.9
Total	**900**	**100.0**
Diabetes		
Yes	7	0.8
No	893	99.2
Total	**900**	**100.0**
Epilepsy		
Yes	6	0.7
No	894	99.3
Total	**900**	**100.0**

In this analysis, a woman meeting at least one of the above five criteria (Table 4.3) i.e., multiparous or women with more than four previous births; history of spontaneous abortion, known high blood pressure, diabetes, or epilepsy during pregnancy, was considered high-risk (Dangal 2007). Accordingly, more than one out of five of the women were classified as having history of high-risk pregnancy (Table 4.4). Detail discussion about the definition and description of variables is given in Chapters 1 and 3.

Table 4.4 Type of pregnancy among women 15-49 years, Addis Ababa, January 2014

Pregnancy	Frequency	percent
High-risk	193	21.5
Low-risk	705	78.5
Total	**898**	**100.0**

4.3.1.2   Social structure

4.3.1.2.1   Educational status of women

Table 4.5 presents the educational status of the women studied. The literacy rate among the women exceeds 86% but the majority (39.2%) of them had only primary education and only 15.1% of them had tertiary education.

Table 4.5   Educational status of respondents, Addis Ababa, January 2014

Mothers educational status	Frequency	Percent
No education	121	13.5
Primary education	352	39.2
Secondary education	289	32.2
Tertiary education	136	15.1
Total	**898**	**100.0**

The educational status of the respondents varies by type of resident (Figure 4.5). Nearly 16.0% of the women living in the slum households had no formal education more than twice among the non-slum households. Among the slum residents (households) more than 60.0% of the women had only primary or no education compared to 65.0% of the non-slum residents with secondary and above level of education. More than a quarter of the non-slum residents had attained tertiary education, nearly three times those among the slum residents.
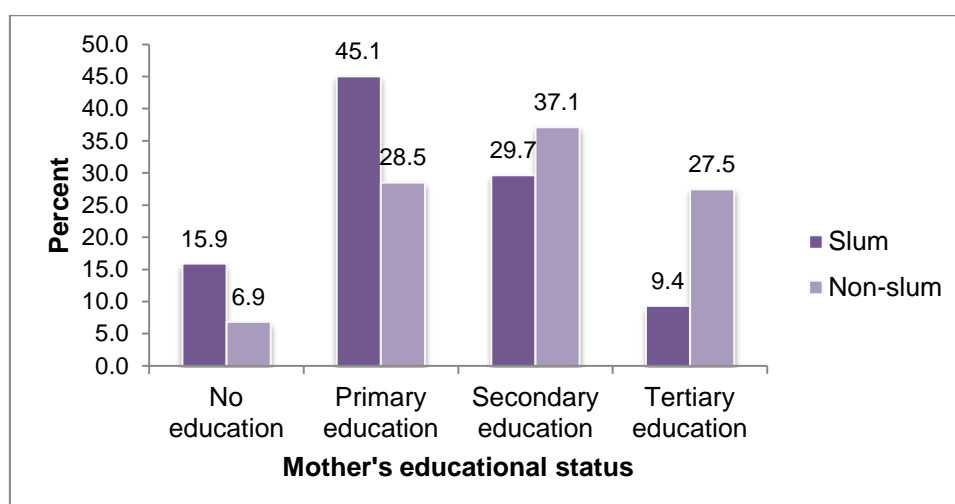
Figure 4.5 Educational status of respondents by type of resident, Addis Ababa, January 2014 (N=862)

Table 4.6 shows the percent distribution of women by educational attainment across selected socio-demographic characteristics. More than half (54.0%) of the young women (15-24 years) had completed primary education as compared to 35.8% and 32.4% of those aged 25-39 and 40-49 years respectively. Except for completion of primary education, in all the other levels of education, the proportion of women increases with the age of the respondents.

As expected, nearly one-third (31.2%) of employed women had completed tertiary level of education compared to only 9.3% of the unemployed. However, the overall result shows that 87.6% of the unemployed have completed at least primary education, which is more than 83.5 of the employed.

Table 4.6 Percent distribution of respondents by highest level of education and by median year completed, Addis Ababa, January 2014

	Highest schooling completed				Total	Median
	No education	*Primary education*	*Secondary education*	*Tertiary education*		
Age group						
15-24	12.4	54.0	27.9	5.8	100.0	7.0
25-29	12.7	35.8	33.6	17.9	100.0	9.0
30-49	15.2	32.4	33.7	18.8	100.0	9.0
Total	**13.5**	**39.2**	**32.2**	**15.1**	**100.0**	**8.0**
Mother's occupation						
Unemployed	12.4	44.1	34.2	9.3	100.0	8.0
Employed	16.5	25.3	27.0	31.2	100.0	10.0
Total	**13.5**	**39.1**	**32.2**	**15.2**	**100.0**	**8.0**

The percentage distribution of the level of education by ethnicity is shown in Figure 4.6. The proportion of women with no education was highest (27.0%) among the seven ethnic groups under the category of 'Others' which include Afar, Gamo, Hadiya, Sidama, Somalie, Wolaita, and others combined followed by Guragies (20.9%). The least proportion of women with no education (5.5%) and the highest proportion of women with tertiary education (25.5%) were reported among the Tigraways. The second highest proportion of women with tertiary education was reported among the Amharas. The lowest proportion of women with tertiary education was observed among Guragies.

	Amhara	Guragie	Oromo	Tigrie	Others
No education	10.1	20.9	9.2	5.5	27.0
Primary education	34.9	47.3	42.5	27.3	40.4
Secondary education	37.0	24.7	31.6	41.8	22.5
Tertiary education	18.0	7.1	16.7	25.5	10.1
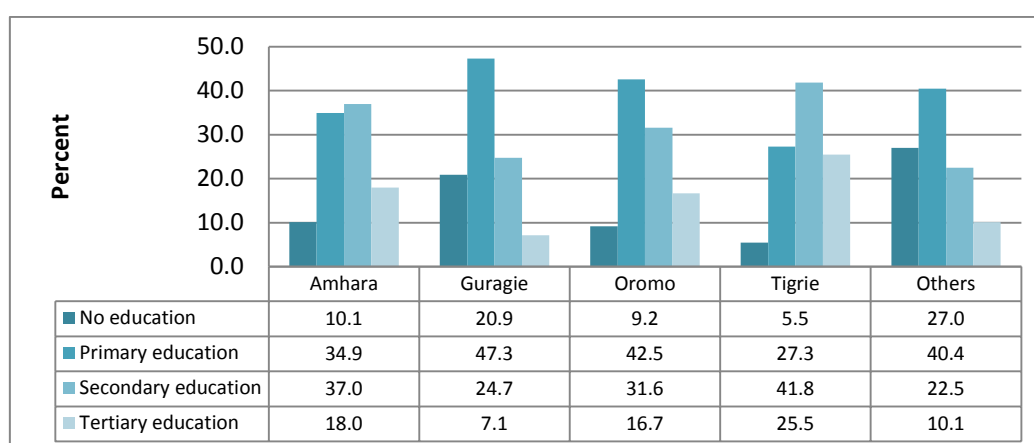
Figure 4.6   Percent distribution of respondents' level of education by ethnicity, Addis Ababa, January 2014

Table 4.7 presents the distribution of educational attainment by wealth quintile. There are mixed variations among women across the five wealth quintile categories in educational status. As expected, slightly less than half of (49.3%) women in the high wealth quintile households had at least secondary education as compared to 40.3% of the low wealth quintile. However, the highest overall proportion of educated women (94.4%) was recorded among the medium wealth quintile households.

Table 4.7 Percent distribution of educational attainment by wealth quintile, Addis Ababa, January 2014

Wealth quintile	Mother's educational status				Total
	No education	Primary education	Secondary education	Tertiary education	
Low	15.1	44.5	28.0	12.3	100.0
Medium	5.6	37.4	40.2	16.8	100.0
High	16.0	34.7	32.5	16.8	100.0
Total	**13.5**	**39.2**	**32.3**	**15.0**	**100.0**

4.3.1.2.2 Mother's occupation

The unemployment rate among the study participants was very high at 73.5%. Nearly one-tenth of the study participants were private employees followed by self-employed (6.1%). These two occupations constitute 34.2% and 27.0% respectively of all the employed respondents (Table 4.8).

Table 4.8 Occupational status of respondents, Addis Ababa, January 2014

Mother's occupation	Frequency	Percent
Unemployed	658	73.5
Government employee	55	6.1
Private	81	9.1
Self employed	64	7.2
Other	37	4.1
Total	**895**	**100.0**

4.3.1.2.3 Ethnicity

By ethnic composition, 43.9% of the respondents belong to the Amhara ethnic group, while nearly one-fifth of them were Guragies (20.3%) and Oromos (19.4%). Tigraways constitute 6.1% of the study population (Figure 4.7).
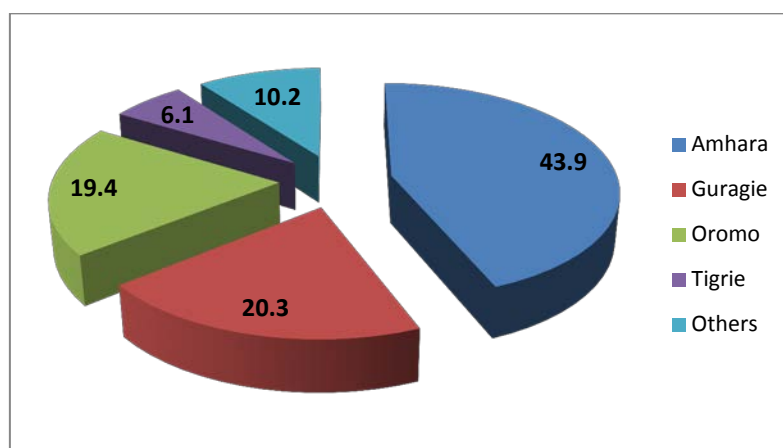
Figure 4.7 Ethnic background of respondents, Addis Ababa, January 2014 (N=900)

4.3.1.2.4 Religion

Christianity and Islam are the main religions of the study population. About 70.1% of the population were Orthodox Christians, one-fifth were Muslims, 8.6% were Protestants (Table 4.9).

Table 4.9   Percent distribution of women by type of religion, Addis Ababa, January 2014

Religion	Frequency	Percent
Orthodox	632	70.1
Muslim	188	20.8
Protestant	78	8.6
Catholic	1	0.1
Other	2	0.2
Total	**902**	**100.0**

4.3.1.3   Knowledge about risks of pregnancy and complications during delivery

In this study, the study participants' level of awareness about risks of pregnancy and complications during childbirth was assessed. Responses are presented as follow but it should be kept in mind that the observations could be underestimated due to recall problem.

Table 4.10 presents the danger signs of pregnancy reported by study participants. Women were asked whether they were counselled about the danger signs of pregnancy during their ANC visits for the last pregnancy. Nearly three fourth of them (73.8%) responded positively whereas a quarter of them negatively. To assess the level of awareness on danger signs of pregnancy, they were further asked to mention some of the danger signs. Accordingly, vaginal bleeding was identified by the majority (62.8%) of the respondents followed by severe headache (21.7%) and swelling of hands and face (22.3%). Abdominal pain was also reported by one-fifth of them.

Table 4.10   Women's awareness about danger signs of pregnancy, Addis Ababa, January 2014

Danger signs of pregnancy	Percent
Fever	16.6
Swelling of hands and face	22.3
Abdominal pain	20.1
Severe headache	31.7
Vaginal bleeding	62.8
Blurred vision	10.1
Tiredness or breathlessness	8.9
Reduced baby movement	19.9

Table 4.11 presents the major complications during delivery reported by study participants. Similar to above, women's awareness about the major childbirth related complications was assessed. Hence, about 43.7%, 34.8%, and 25.3% of them reported

postpartum haemorrhage, high blood pressure, and still birth respectively. Convulsion (7.9%) was the least known complication followed by prolonged labour (18.0%).

Table 4.11 Women's awareness about complications during child birth, Addis Ababa, January 2014

Complications during delivery	Frequency	Percent
High blood pressure	305	34.8
Convulsion	69	7.9
Postpartum haemorrhage	380	43.7
Prolonged labour	156	18.0
Stillbirth	220	25.3

4.3.1.4   Individual, family and community resources

4.3.1.4.1 Housing tenure and type of resident

Housing tenure and type of residence were among the family and community resources considered as independent variables in this study (Table 4.12). Nearly two-thirds (66.2%) of the study population were slum residents. Using housing tenure, only one-fifth (20.0%) of them live in their own houses; while the majority (69.1%) live on rental houses. More than half (52.2%) of the respondents rented private houses while 16.9% rented public houses (from government). About 10.0% of the respondents were dependants living in their relatives' or employer's houses (e.g. maids and watchmen) without rental payment.

Table 4.12   Distribution of respondents by housing tenure and type of resident, Addis Ababa, January 2014

Variable	Frequency	Percent
Type of resident		
Slum	571	66.2
Non-slum	291	33.8
Total	**862**	**100.0**
Housing tenure		
Own house	180	20.0
Rental from private	470	52.2
Rental from government	152	16.9
Dependent	90	10.0
Other	8	0.9
Total	**900**	**100.0**

4.3.1.4.2   Wealth index

Wealth index is a common variable used in many research publications and demographic and health surveys to indicate inequalities in household characteristics in the use of health and other services (Amin 2010: 5-6; CSA and ICF International 2012: 19; Gabrysch and Cambell 2010: 6-12). In this study, similar to other previous studies wealth index was constructed using durable household properties as described in Chapters 1 and 3.

In this survey, slightly less than one-third of the respondents belong to the low wealth quintile. More than one-fifth of them were in the highest wealth quintile followed by the lowest (19.6%) and the high (19.0%). The middle wealth quintile constitute only about one-tenth of the study population (Fig. 4.8).
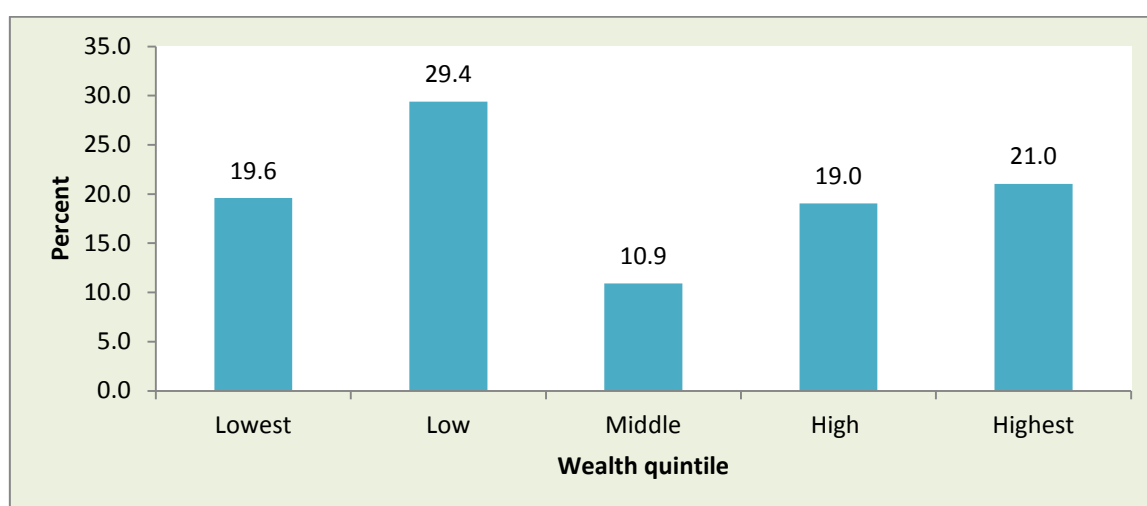
Figure 4.8   Percent distribution of respondents by wealth quintile, Addis Ababa, January 2014

4.3.2   ANC services utilisation

Table 4.13 presents a summary of ANC service utilisation rate among the study participants. The coverage of ANC utilisation in Addis Ababa was 97.9% slightly higher than the 2011 EDHS report (CSA and ICF International 2012:120). Nevertheless, there were ranges of huge gaps in the timing, number, content and overall adequacy of the ANC services received. The World Health Organization recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first 12 weeks (WHO 2002:12). The Ethiopia National Obstetric Management Protocol extends the timing for the first visit up to 16 weeks of

gestation (FMOH 2010b:15). In this study, the researcher chose the more conservative WHO 2002 recommendation than the National protocol as the earlier is the better for initiation of antenatal visits.

In this study, 86.5% of the ANC clients had four or more visits during their last pregnancy; but only slightly more than half of them (51.1%) started their first antenatal visit in the first trimester. Based on the less conservative recommendation of the National Protocol, about 78.2% of them initiated their first visit within 16 weeks of gestation. The mean timing was more than 14 weeks. The proportion of women who received adequate antenatal services further declined when it comes to service content. Only 19.8% of the antenatal clients received all the basic antenatal care components at least once. Consequently, the proportion of women with overall adequate antenatal care was very low at 10.9% mainly due to inadequate use of basic components of antenatal services. The basic ANC components are those recommended by WHO and the FMOH of Ethiopia for all women regardless of the gestational age at first antenatal visit to health facilities (WHO 2002:10; FMOH 2010b:13) (Figure 4.8).

Table 4.13 Percent distribution of ANC service utilisation of women, Addis Ababa, January 2014

ANC service	Frequency	Percent
ANC visit		
Yes	884	97.9
No	19	2.1
Total	**903**	**100.0**
Timing of first ANC visit		
Late	428	48.9
Early	448	51.1
Total	**876**	**100.0**
Number of ANC visits		
Inadequate	116	13.5
Adequate	743	86.5
Total	**859**	**100.0**
Content of ANC service		
Inadequate	685	80.2
Adequate	169	19.8
Total	**854**	**100.0**
Adequacy of ANC service		
Inadequate	741	89.1
Adequate	91	10.9
Total	**832**	**100.0**

4.3.2.1 Effect of timing of first antenatal visit on the number of visits and content of services received

Figure 4.9 presents the association between timing of first antenatal visit and adequacy of number of visits and content of services received. Hence, the majority (93.7%) of the early starters had at least four antenatal visits compared to 79.1% of the late starters. This showed strong statistically significant association (P-value=0.000). On the other hand, though the proportion of women who received adequate content of antenatal services (22.0%) is higher for early starters than the late ones, the association is not statistically significant (P=0.07).
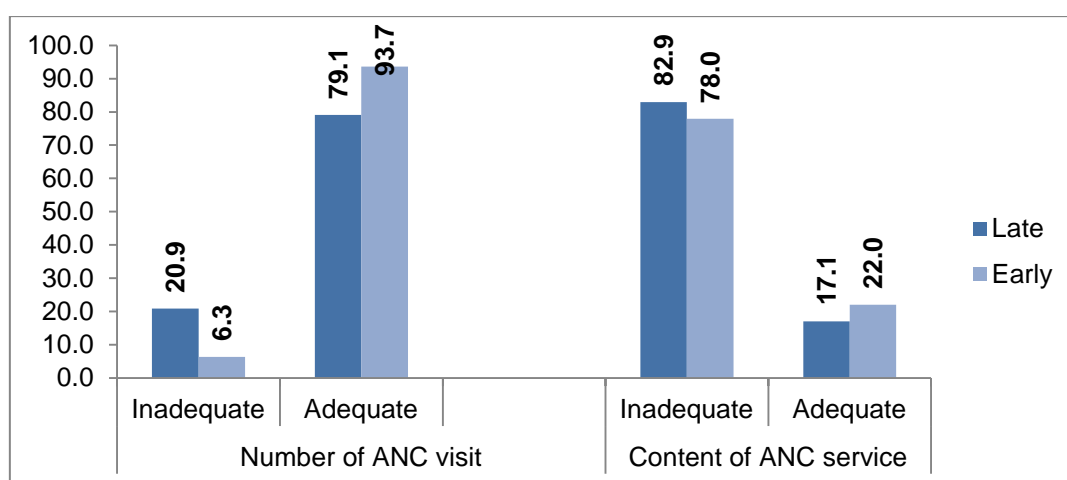
Figure 4.9   Timing of initial visit and adequacy of number of ANC visits and content of services, Addis Ababa, January 2014

4.3.2.2 Ultrasound utilisation

Table 4.14 presents utilisation of ultrasound scans by ANC clients. In this study, 89.5% of the women had at least one ultrasound scan during their last pregnancy and the mean observed number of scans was 2.1. About 28.2% of the women were screened three or more times. The maximum number of screening was 15 scans.

Table 4.14   Ultrasound examinations per pregnancy per woman, Addis Ababa, January 2014

Number of ultrasound scans	Frequency	Percent
0	92	10.5
1	290	33.1
2	248	28.3
3+	247	28.2
Total	**877**	**100.0**

4.3.2.2.1 Type of resident and ultrasound utilisation

Though the proportion of women who had at least one ultrasound screening at ANC visits during their last pregnancy was very high for both of the slum (88.1%) and non-slum (92.3%) residents, the later had three or more screenings which is more than double for slum residents. More than two-third of the women from non-slum residents had two or more ultrasound screening; while similar percentage of women among slum residents had 1-2 ultrasound screenings per pregnancy (Figure 4.10). The difference in the number of ultrasound screening between the slum and non-slum residents was statistically significant (Pearson's $\chi 2$ P-value=0.000).
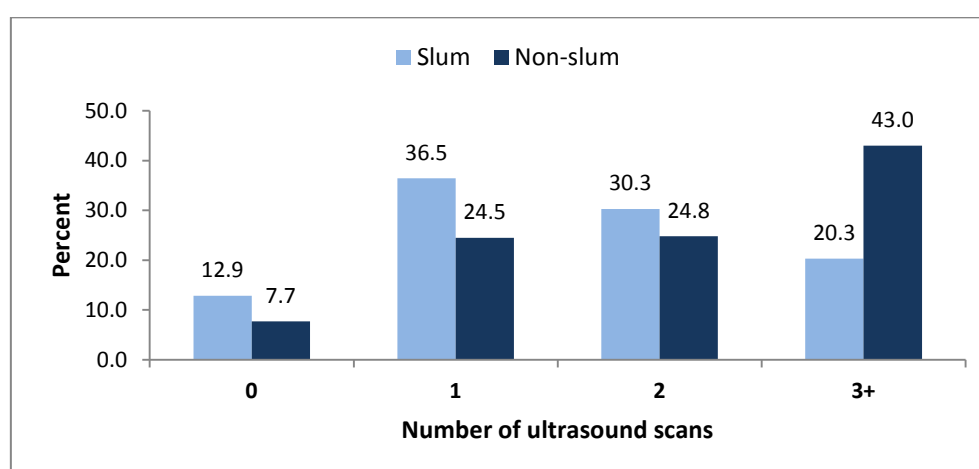
Figure 4.10   Ultrasound utilisation among ANC users by type of resident, Addis Ababa, January 2014

4.3.2.1.2 Demographic characteristics and number of ultrasound scans

Socio-demographic and health care factors were explored in relation to the number of ultrasound scans. The results show that there are statistically significant differences between the number of ultrasound scans and women's demographic status, social status or health care services received.

Table 4.15 shows the ultrasound utilisation rate by age and pregnancy intention of the respondents. More than 90.0% of the women aged 30-49 years were screened at least once during their last pregnancy compared to 85.4% of the younger age groups (15-24 years. In fact nearly one-third (31.6%) of the women in the age range of 30-49 had three or more ultrasound scans compared to 19.2% of those 15-24 years old. An evidence

from China shows a higher frequency of ultrasound scanning among younger age women of 23 and less years (Huang, Tao, Raven, Liu, Wu & Tang 2012:5).

With regards to the woman's pregnancy intention, those with unintended pregnancy were less likely to have ultrasound scanning compared to those whose last pregnancy was intended at the time of conception. More than nine out of ten women with intended pregnancy had at least one ultrasound scan compared to eight in ten.

Table 4.15   Demographic differentials of ultrasound scan at ANC visits, Addis Ababa, January 2014

Background characteristics	Number of ultrasound scans per pregnancy				Total	Mean
	0	**1**	**2**	**3+**		
Age group *(P=0.002)*						
15-24	14.6	42.0	24.2	19.2	100.0	1.67
25-29	9.3	30.2	29.9	30.5	100.0	2.18
30-49	9.9	29.3	29.3	31.6	100.0	2.30
Total	**10.8**	**32.8**	**28.3**	**28.1**	**100.0**	**2.09**
Mother's pregnancy intention *(P=0.000)*						
Unintended	20.0	34.0	26.4	19.6	100.0	1.72
Intended	7.5	32.4	29.0	31.2	100.0	2.23
Total	**10.8**	**32.8**	**28.3**	**28.1**	**100.0**	**2.09**

4.3.2.1.3   Mother's social structure and ultrasound utilisation

Table 4.16 presents mother's educational attainment and occupational status by ultrasound utilisation. The results in this study show that highly educated women were more likely to use ultrasound scan than those with no formal education. In fact, more than 60.0% of the women with tertiary level of education had three or more ultrasound scan compared to only 3.5% and 18.1% of those with no education and with primary education respectively.

Similarly, employed women were more likely to have three or more ultrasound scan (36.1%) compared to the unemployed (25.2%). Surprisingly, the overall ultrasound utilisation rate was higher among the unemployed at 90.3% than the employed ones at 85.8%. However, still the majority of the unemployed (65%) had only 1-2 scans compared to 50% of the employed. The proportion of the unemployed women with less than four ANC visits is higher (16.1%) than that of the employed (12.6%). The possible explanation could be because of the type of place of ANC visit. In this study, 23.5% of

the unemployed women attended their ANC at private facilities as compared to only 7.4% of the employed. But as it is shown on Figure 4.12, ultrasound utilisation is higher among the clients of private facilities compared to those of public facilities.

Table 4.16   Mother's education and occupation as differentials of ultrasound utilisation at ANC visits, Addis Ababa, January 2014

Background characteristics	Number of ultrasound scans per pregnancy				Total	Mean
	0	*1*	*2*	*3+*		
Mother's educational status *(P=0.001)*						
No education	20.4	44.2	31.9	3.5	100.0	1.19
Primary education	14.9	40.9	26.0	18.1	100.0	1.61
Secondary education	6.3	26.4	33.1	34.2	100.0	2.46
Tertiary education	2.2	14.9	20.9	61.9	100.0	3.31
Total	**10.9**	**32.6**	**28.3**	**28.2**	**100.0**	
Mother's occupation *(P=0.001)*						
Unemployed	9.7	34.7	30.3	25.2	100.0	2.03
Employed	14.2	27.9	21.9	36.1	100.0	2.26
Total	**10.9**	**32.9**	**28.1**	**28.1**	**100.0**	**2.09**

The mean number of ultrasound scan per pregnancy among those highly educated (tertiary level of education) was nearly three times higher than among those with no formal education (Figure 4.11).
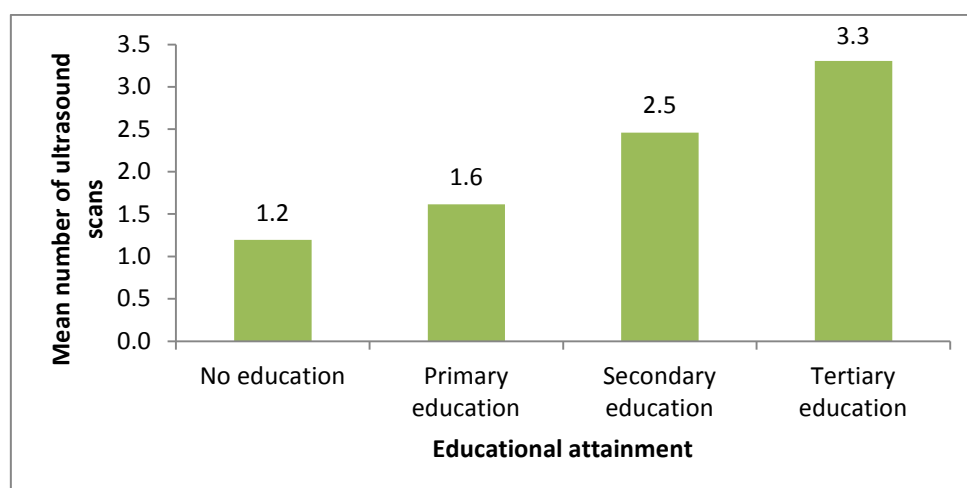
Figure 4.11   Mean number of ultrasound scans by women's education, Addis Ababa, January 2014

4.3.2.1.4   High-risk pregnancy and ultrasound utilisation

As indicated in Table 4.17, almost equal proportion of women (90.0%) with history of high-risk pregnancy and those with no history of high-risk pregnancy had at least one ultrasound screening for their last pregnancy. A difference was observed when the

number of screenings increased. More women with history of high-risk pregnancy (38.0%) had three or more ultrasound screening than those with no history of high-risk pregnancy (25.4%).

Table 4.17 High-risk pregnancy and ultrasound screening at ANC visits, Addis Ababa, January 2014

Background characteristics	Number of ultrasound scans per pregnancy				Total	Mean
	0	*1*	*2*	*3+*		
High-risk pregnancy *(P=0.003)*						
Yes	11.5	24.5	26.0	38.0	100.0	2.53
No	10.7	34.9	28.9	25.4	100.0	1.97
Total	**10.9**	**32.6**	**28.3**	**28.2**	**100.0**	**2.10**

4.3.2.1.5 ANC visits and ultrasound utilisation

The rate of ultrasound scan at antenatal visits was very high among clients of private health facilities than the public facilities (Figure 4.12). About 98.0% of the pregnant women who had their ANC follow up at private health facilities had at least one ultrasound scan during their last pregnancy compared to 89.0% of those in public health facilities. Clients of private health facilities were more likely to have more frequent ultrasound scans compared to clients of the public facilities, especially with three or more times scans, at 48.3% and 24.9% respectively (P=0.001).
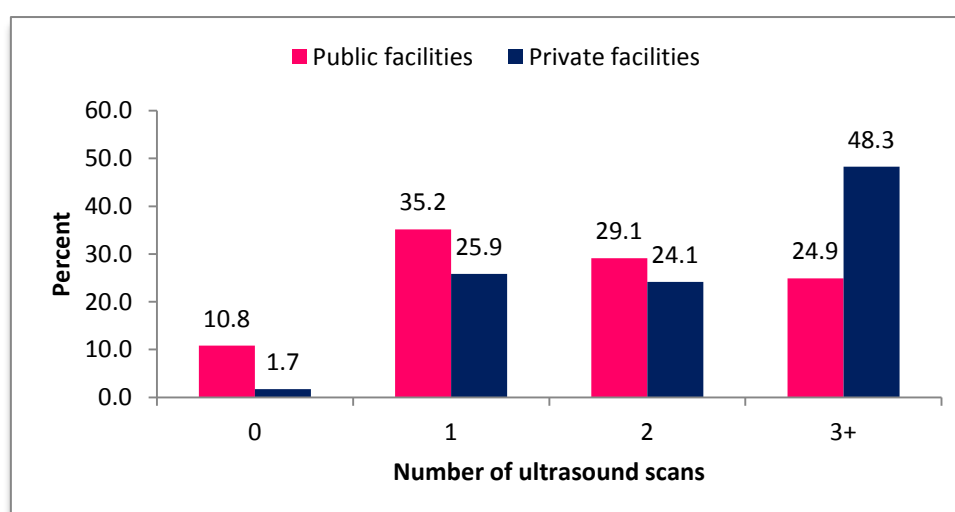
Figure 4.12   Ultrasound screening rate by place of ANC visit, Addis Ababa, January 2014

The number of ultrasound scans is positively associated with the number of ANC visits. Women who had three or more ANC visits at private health facilities had higher frequency of ultrasound scan compared to those at public facilities. The minimum mean

number of ultrasound scans for clients of private health facilities was about three as compared to one in the public health facilities. The highest frequency of ultrasound scans (4.6) was observed among clients of public facilities (Figure 4.13).
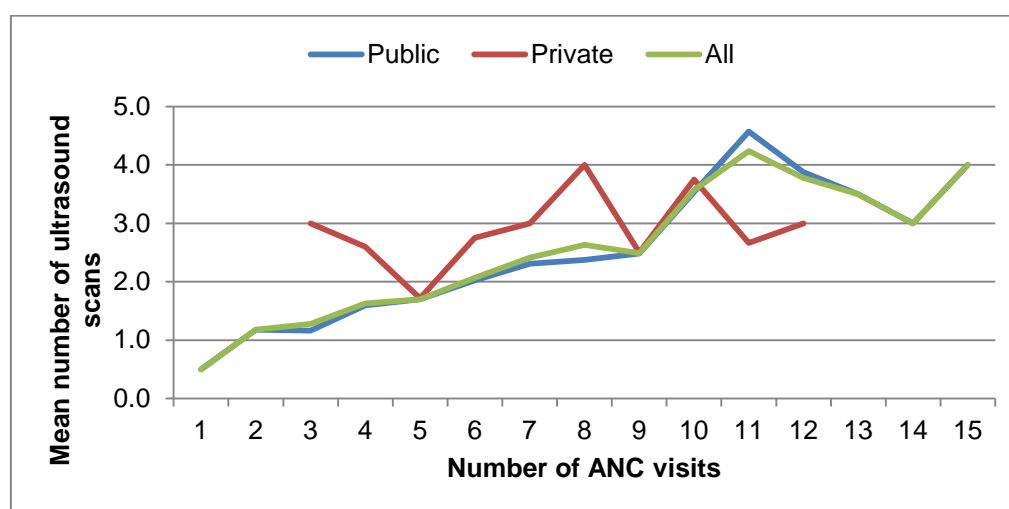
Figure 4.13   Number of ultrasound scans at ANC visits by type of facility, Addis Ababa, January 2014

4.3.2.1.6   Ultrasound scanning and ANC service content

Table 4.18a and Table 4.18b show the association between number of ultrasound scanning and the adequacy of service content. The intention was to see if the increase in number of ultrasound scan goes in line with the recommended basic ANC component services. The result shows that more women (27.1%) with three or more ultrasound scans received adequate services compared to those with two and less times scans (17.2%). In fact those who didn't have any ultrasound scan received better content of services (19.5%) than those with one or two ultrasound scans at about 16.8% each. The associations were statistically significant at P=0.013 and P=0.001 for Table 4.18a and b respectively.

Table 4.18a   Number of ultrasound scans by adequacy of service content, Addis Ababa, January 2014

Number of ultrasound scans	Content of ANC		Total	N
	Inadequate	*Adequate*		
0	80.5	19.5	100.0	82
1	83.2	16.8	100.0	279
2	83.2	16.8	100.0	238
3+	72.9	27.1	100.0	236
Total	**80.0**	**20.0**	**100.0**	**835**

90

Table 4.18b Number of ultrasound scans by adequacy of service content, Addis Ababa, January 2014

Number of ultrasound scans	Content of ANC		Total	N
	Inadequate	*Adequate*		
0-2	82.8	17.2	100.0	599
3+	72.9	27.1	100.0	236
Total	**80.0**	**20.0**	**100.0**	**835**

4.3.2.3   *Disparities in antenatal and delivery care use*

About 98% of women both from the non-slum and slum residents had at least one ANC visit. About 96.2% of the non-slum women and 90.1% of the slum women gave birth at health facilities and received skilled birth attendance. However, statistically significant disparities were observed between the slum and non-slum residents and across the different categories of the selected independent variables regarding the utilisation of ANC and delivery care services.

4.3.2.3.1 *Disparities in antenatal care by types of residents*

Significant differences were observed between slum and non-slum residents in the timing of first visit (P=0.009), number of ANC visits (p=0.103), and content of ANC visits (P=0.037) (Fig. 4.14). Slum resident women attended their first ANC visit late, had fewer visits and used fewer services than non-slum women. As a result, they had a lower level of overall adequate use of ANC than the latter.

The proportion of women who initiated ANC within the first trimester was 48.0% for slum and 58.2% for non-slum residents. The corresponding percentages of women who had at least four visits were 85.1% and 89.2% respectively. Only 18.5% of slum women used the entire basic component services at least once, compared to 21.7% for non-slum women. Similarly, overall adequate use of ANC among slum women (10.3%) was less than that in non-slum women (11.5%). Though such disparities were observed between the two groups of women, the overall coverage in the timing of first antenatal visit, content of antenatal services and overall adequacy of the ANC services was generally very low for the study area.
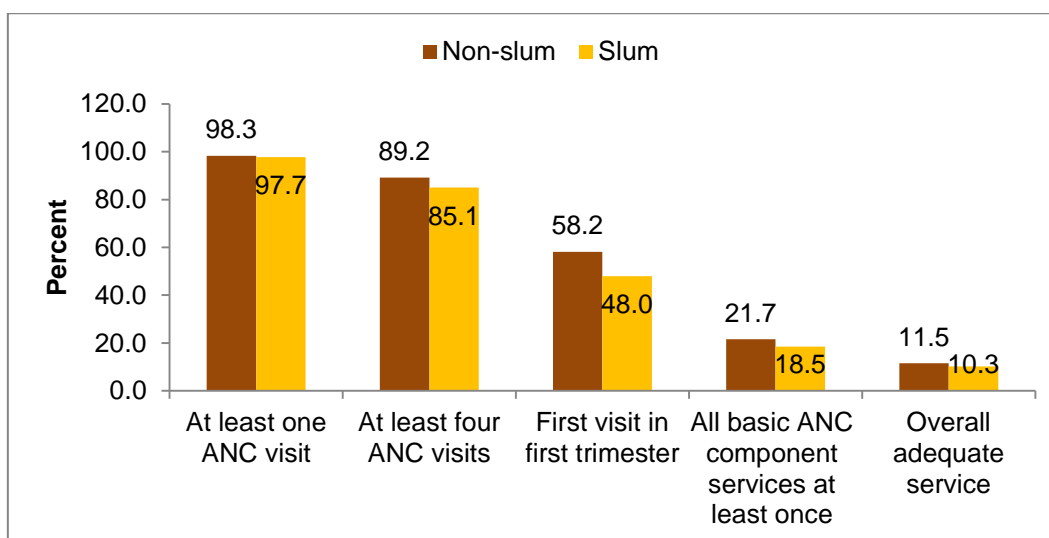
Figure 4.14 Percentage distribution of ANC services by type of resident, Addis Ababa, January 2014

The average number of ANC visits during the last pregnancy for slum women was 5.6 compared to 6.1 for urban women. Figure 4.15 illustrates the distribution of the number of ANC visits between the two residents.
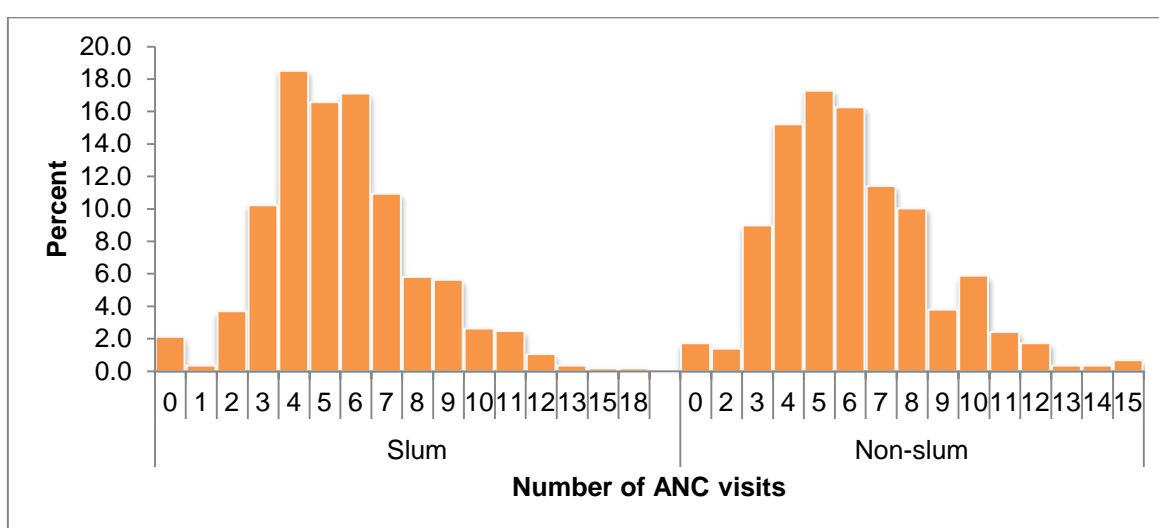
Figure 4.15   The distribution of number of ANC visits in the slum and non-slum residents, Addis Ababa, January 2014

Figure 4.16 presents the percentages of women that received the basic ANC component services. The slum women were less likely to have overall adequate ANC often due to failure to receive important services like physical measurements including maternal height, uterine height, and blood pressure; assessment of urine sample, anemia and syphilis test; and tetanus injection.

Surprisingly, the proportion of women who had the optional ultrasound scan among the slum (88.1%) and non-slum (92.3%) residents was much higher than those who

received the mandatory ANC component services at 21.9% and 24.6% respectively. The mean number of ultrasound examinations during pregnancy was 1.6 for slum and 2.7 for non-slum residents.
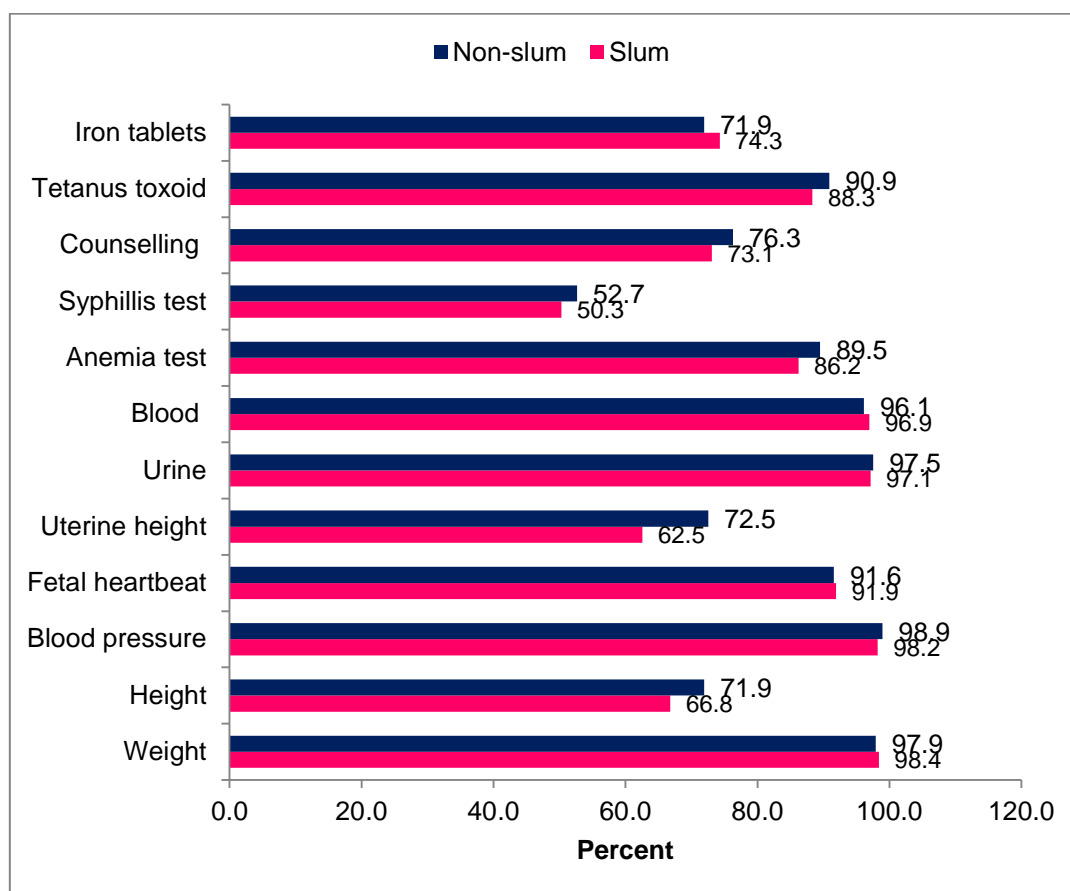
Figure 4.16   Components of ANC services received by women at least once, Addis Ababa, January 2014

4.3.2.3.2   Disparities in adequacy of ANC by demographic characteristics

Table 4.19 presents the differences in ANC utilisation i.e., the timing and number of antenatal visits and adequacy of content of services received across the selected demographic variables. Overall, young women and those with history of unintended pregnancy were less likely to initiate ANC early, to have adequate number of visits and to receive sufficient service content as well as overall adequate ANC. Currently married women and those with less number of living children were more likely to receive adequate ANC services in all aspects.

Table 4.19   Percentage distribution of ANC utilisation by demographic characteristics of women, Addis Ababa, January 2014

Demographic variables	At least four ANC visits	Early ANC visit	Adequate service content	Overall adequate ANC
Age group				
15-24	78.2**	52.5*	16.3	9.5
25-29	86.7	55.3	21.1	12.5
30-49	87.3	45.2	21.0	10.0
Number of living children				
0-2	85.5	54.2**	20.6	11.7
3-6	82.1	41.0	17.6	8.3
Current marital status				
Currently married	89.6***	54.1*	21.2	12.4
Cohabiting/living together	77.4	45.6	17.5	8.7
Other	67.4	38.8	14.6	4.9
Pregnancy intention				
Unintended	75.5***	39.1***	15.0*	5.1**
Intended	88.1	55.2	21.6	12.9

Note: (Chi-square *p<0.05; **p<0.01; ***p<0.001).

4.3.2.3.3   Disparities in ANC by social structure variables

In the study area, being more educated was positively and significantly associated with early ANC attendance, adequate number of antenatal visits, receiving sufficient antenatal services and ultimately getting overall adequate antenatal care. Similarly, women who were employed were more likely to receive adequate ANC services. With regards to ethnicity, there were differences in the adequacy of ANC but the associations were not statistically significant. Overall, Tigraways were more likely to receive overall adequate ANC followed by the Amharas compared to the other ethnic groups. However, the Oromos followed by the Amharas were more likely to receive sufficient service content (Table 4.20).

Table 4.20   Percentage distribution of ANC utilisation by social structure variables, Addis Ababa, January 2014

Social structure variables	At least four ANC visits	Early ANC visit	Adequate service content	Overall adequate ANC
Mother's educational status				
No education	75.2***	38.4***	14.4**	5.6***
Primary education	80.3	44.4	16.0	6.2
Secondary education	88.5	56.4	22.4	12.6
Tertiary education	96.2	68.1	29.8	23.8
Mother's occupation				
Unemployed	83.9	51.1	19.0	9.5**
Employed	87.4	51.3	22.3	15.2
Ethnicity				
Amhara	53.6	85.7	21.1	13.8
Guragie	43.0	86.9	18.2	7.0
Oromo	49.7	80.5	22.6	10.6
Tigrie	63.0	89.1	20.4	14.8
Others	51.7	82.2	12.8	4.8

Note: (Chi-square *p<0.05; **p<0.01; ***p<0.001).

4.3.2.3.4   Disparities in ANC by family and community resource variables

Table 4.21 shows the associations between the household and community resource variables and adequacy of ANC service. With regards to wealth quintile, there were mixed associations in the different ANC use indicators. Women who belong to the household with the highest wealth quintile were more likely to start antenatal visits early, to have at least four visits and have overall adequate ANC compared to those in the lowest wealth quintile. Surprisingly, those in the lowest wealth quintile were more likely to receive adequate service contents though the association was not statistically significant. Medical insurance coverage and non-slum residence also significantly positively associated with use of adequate ANC compared to those without medical insurance and the slum residents.

Table 4.21   Percentage distribution of ANC utilisation by community resource variables, Addis Ababa, January 2014

	At least four ANC visits	Early ANC visit	Adequate service content	Overall adequate ANC
Wealth index				
Lowest	73.6***	50.0	16.5	4.3**
Low	94.3	49.4	20.1	13.0
Middle	89.2	52.3	23.1	12.0
High	92.5	58.6	24.1	17.0
Highest	75.0	60.6	15.5	7.9
Medical insurance				
Yes	93.8	62.7	31.1*	22.0**
No	85.0	50.2	19.5	10.4
Type of resident				
Slum	83.2	48.0**	18.6	10.2
Non-slum	87.6	58.2	21.7	11.5

*Note: (Chi-square *p<0.05; **p<0.01; ***p<0.001).*

4.3.2.3.5   Disparities in ANC by health and health care variables

Figure 4.17 illustrates the association between type of pregnancy and adequacy of ANC utilisation. The result shows that high-risk pregnancy positively associated with early antenatal visit, adequate number of visits, receiving sufficient service contents and overall adequate ANC.
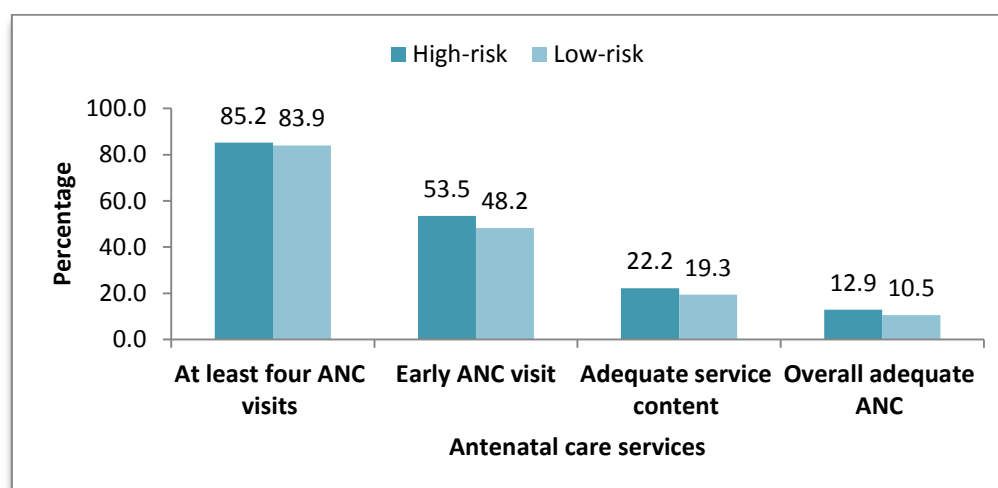

Figure 4.17   Percentage distribution of ANC utilisation by type of pregnancy, Addis Ababa, January 2014

4.3.2.3.6   Differences in places of antenatal and delivery care

Table 4.22 and Figure 4.18 show the percentage distribution of ANC and delivery care services by type of health facility or place of delivery preferred. In this study, women

96

were asked about their place of ANC follow up. The inquiry was about the majority of the ANC visits as there could be possibility of shifting from one place of care to another for the same pregnancy period.

Table 4.22 shows that more than half (52.6%) of the women who didn't have antenatal visit delivered at home compared to only 5.8% of those who had at least one antenatal visit. About 42.1% and 5.3% of those with no antenatal visit delivered at public and private health care facilities respectively.

Table 4.22 Percentage distributions of mothers by ANC status and place of delivery, Addis Ababa, January 2014

ANC visit	Place of delivery			Total (%)	N
	Home	*Public facility*	*Private facility*		
Yes	5.8	69.8	24.4	100	882
No	52.6	42.1	5.3	100	19
Total	**6.8**	**69.3**	**24.0**	**100**	**901**

Among those women who had at least one ANC visit during their last pregnancy (Figure 4.18), a substantial proportion of them (92.5%) accessed public health facilities for delivery care. On the other hand, more than two-third (69.2%) and slightly less than a quarter (24.0%) of all the study participants gave birth in public and private healthcare facilities respectively. About 6.8% of them delivered at home.

Some discrepancies were observed between women of slum and non-slum residents in seeking both antenatal and delivery care services. Both slum and non-slum women accessed ANC mainly at public health care facilities; 93.8% and 89.2% respectively. However, public health facilities were visited by higher proportion of slum women than non-slum women. On the contrary, more proportion of non-slum women (10.8%) accessed private healthcare facilities for their ANC more than slum women (6.2%). More than three-fourth of slum women gave birth at public health care facilities compared to only 54.5% of the non-slum. In comparison, higher proportion of the non-slum women (41.7%) gave birth at private facilities compared to only 15.3% of the slum residents.
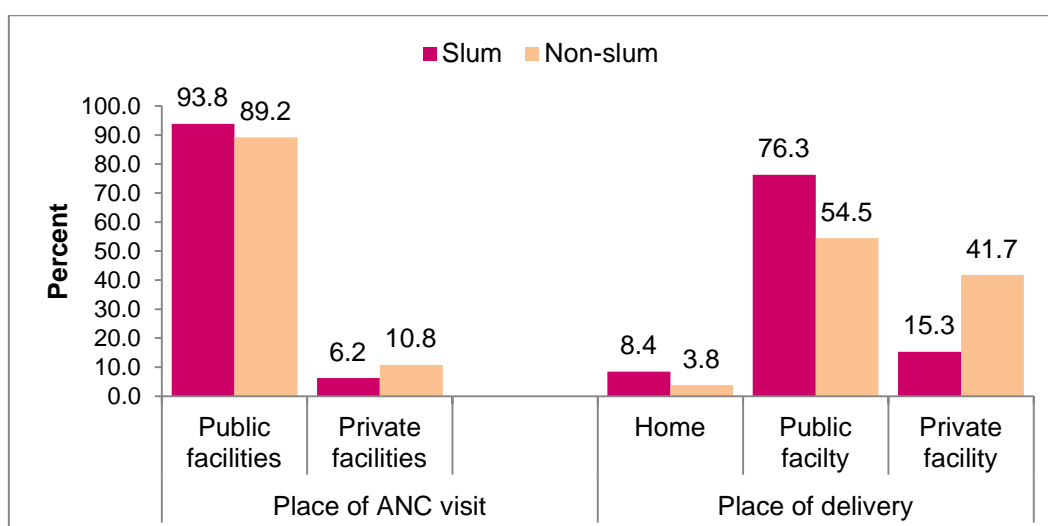
Figure 4.18   Percent of women by place of antenatal and delivery care services, Addis Ababa, January 2014

Table 4.23 presents the preferred place of delivery by those who had antenatal care follow up in the health care facilities. Not all of the ANC attendees had delivered at health care facilities. About 6.3% of the ANC attendees finally delivered at home. Only 1.7% of the private facility ANC clients delivered at home compared to 6.7% of the public facility clients. In terms of shifting between types of facility, 30.0% of the private facility ANC clients delivered at public healthcare facilities where as 22.6% of the public facility ANC clients delivered at private facilities. In comparison, it seems that public facilities retained the majority of their antenatal clients (70.7%) for time of delivery compared to the private facilities (68.3%).

Table 4.23   Percentage distributions of ANC clients by place of delivery, Addis Ababa, January 2014

Place of ANC visit	Place of delivery			Total
	Home	*Public facility*	*Private facility*	
Public facilities	6.7	70.7	22.6	100
Private facilities	1.7	30.0	68.3	100
Total	**6.3**	**67.7**	**26.0**	**100**

Figure 4.19 illustrates the differences in ANC service adequacy between public and private health care facilities. There were statistically significant differences (P=0.01) for overall ANC service adequacy between private and public health facilities. Overall, private health care facilities were better in terms of number, timing and service content. Thus, clients of private health care facilities received overall better and adequate ANC services than those at public health care facilities.

The proportions of women who had at least four visits were 91.5% for private and 85.6% for public health care facilities. The corresponding percentages of women who had initiated ANC within the first trimester were 62.7% and 49.6%. About 27.1% of the private facility attendees received the recommended basic ANC component services at least once, compared to 18.3% for public facility users. Similarly, the overall adequate use of ANC was as nearly as twice among private facility attendees (20.7%) as compared to public facility attendees (9.4%). But, in general, service adequacy was very low in both cases except the number of antenatal visits which was relatively better.
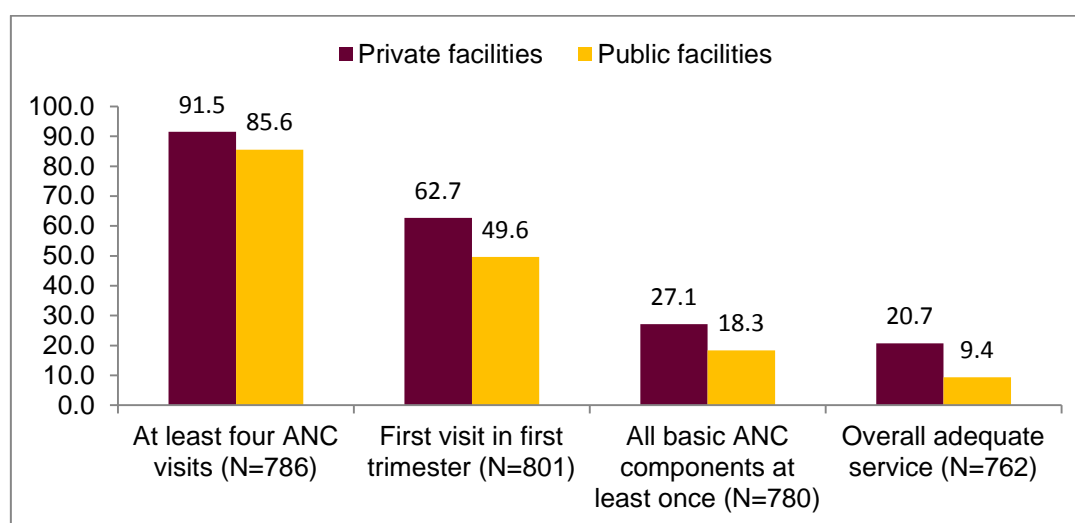
Figure 4.19   Variations in ANC service adequacy by type of health facility, Addis Ababa, January 2014

In this study, the mother's knowledge about danger signs of pregnancy showed an effect on the continuity of antenatal care and preferences to place of delivery (Table 4.24). Among all the antenatal attendees and those who were counselled about the danger signs of pregnancy, 87.6% of them had four or more antenatal visits during the last pregnancy compared to 83.0% of those who didn't receive counselling service at antenatal visit. Similarly, 94.9% of those counselled delivered at a health facility compared to 92.1% of those who weren't counselled. The later showed statistically significant association (P=0.01). Further analysis shows that 81.7% of clients of private health care facilities and 72.8% of those of the public health care facilities were counselled on danger signs of pregnancy during antenatal follow up.

Table 4.24 Antenatal visit and place of delivery by counselling status, Addis Ababa, January 2014

Counselled on danger signs of pregnancy	Number of ANC visits			Place of delivery			
	Inadequate	*Adequate*	*Total*	*Home*	*Public facility*	*Private facility*	*Total*
Yes	12.4	87.6	100	5.1	68.0	26.9	100
No	17.0	83.0	100	7.9	75.3	16.7	100
Total	**13.5**	**86.5**	**100**	**5.8**	**69.8**	**24.4**	**100**

Table 4.25 presents the reasons behind women's preference to their places of delivery. Hence preference to public health care facilities was attributed to short distance, perceived low cost service, and experienced low cost service. On the other hand, preference to private health care facilities was positively associated with short waiting time, perceived and experienced good quality of service, and perceived and experienced good approach of service provider. Influences from families, friends or husbands on women's preference for places to give birth were not significant.

Table 4.25 Reasons for choosing the place of delivery, Addis Ababa, January 2014

Reasons for choosing type of health facility	Preferred place of delivery		P-value
	Public facility	*Private facility*	
Short distance	72.7	36.4	0.000
Short waiting time	8.7	19.1	0.000
Perceived low cost service	6.1	2.4	0.037
Experienced low cost service	16.7	4.3	0.000
Perceived good quality of service	7.6	15.2	0.001
Experienced good quality of service	20.6	43.1	0.000
Perceived good approach of provider	5.7	10.0	0.034
Experienced good approach of provider	10.5	22.9	0.000
Husband's influence	3.1	3.3	0.873
Family influence	1.2	2.9	0.087
Friend's influence	3.5	3.8	0.813

4.3.2.3.7 Disparities in mode of delivery by type of residence

Figure 4.20 illustrates the percentage distribution of the mode of delivery between the two types of residents. Vaginal delivery, including instrumental or assisted delivery, was reported by 84.8% of the slum residents and 72.8% non-slum residents. Caesarean-section was used more frequently by non-slum women (27.2%) nearly twice as compared to the WHO recommended level of CS rate. The CS rate among the slum

residents was 15.2% (P=0.000). The overall CS delivery rate in Addis Ababa was 19.1%.
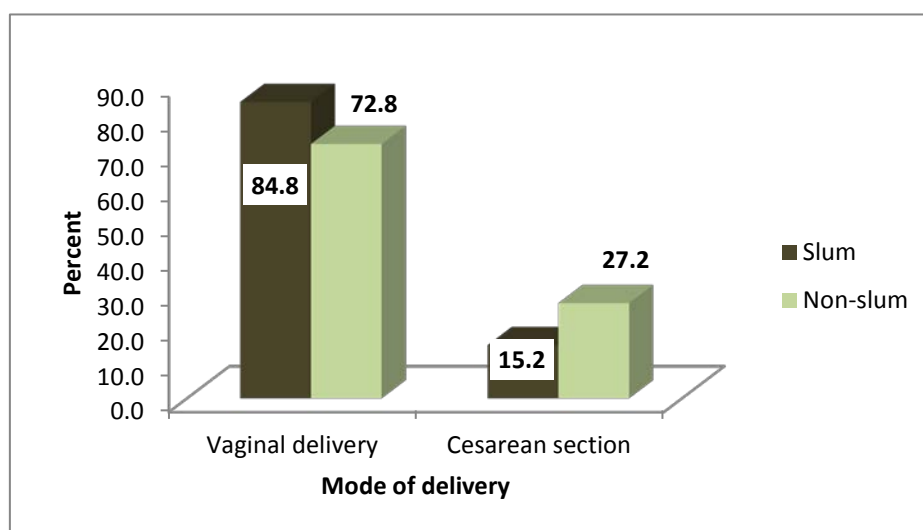
Figure 4.20   Mode of delivery by type of resident, Addis Ababa, January 2014 (N=805)

Tables 4.26 presents the differences in CS practice by place of delivery. Caesarean section was used more than three times as often in private healthcare facilities as compared to public facilities (41.1% versus 11.7%) (P=0.000).

Table 4.26   Proportion of caesarean section by place of delivery, Addis Ababa, January 2014 (n=834)

Mode of delivery	Place of delivery		Total
	Public facility	*Private facility*	
Vaginal delivery	88.3	58.9	80.8
Caesarean-section	11.7	41.1	19.2
Total	**100.0**	**100.0**	**100.0**

Table 4.27 presents the association between health insurance coverage and mode of delivery. Caesarean section was used more frequently by women who had health insurance coverage (30.4%) than those without insurance coverage for delivery services (18.1%) (P=0.010) (Table 4.27).

Table 4.27 Proportion of caesarean section by medical insurance coverage, Addis Ababa, January 2014

Mode of delivery	Health insurance		Total
	Yes	*No*	
Vaginal delivery	69.6	81.9	80.8
Caesarean section	30.4	18.1	19.2
Total	**100.0**	**100.0**	**100.0**

The reason for 91.3% of CS deliveries was reported to be medical indication. The Service Provider's influence in the absence of any medical indication contributed for 1.9% of the reasons and mother's request accounted for 6.9% of the reasons for CS (Table 4.28).

Table 4.28 Reason for caesarean section for last childbirth among mothers in Addis Ababa, January 2014

Reason for caesarean section	Frequency	Percent
Medical indication	145	91.2
Mother's request	11	6.9
Service provider's influence without medical indication	3	1.9
Total	**159**	**100.0**

Table 4.29 presents the reasons behind the mothers' request for CS in the absence of medical indication. More than half of them believe that CS is safe for the mother or the child. About 36.4% of them demanded the procedure to avoid labour pain.

Table 4.29 Reason for mother's demand for caesarean section, Addis Ababa, January 2014

Reason for preferring caesarean section	Frequency	Valid Percent
To avoid labour pain	4	36.4
Safe for the mother or child*	6	54.5
Other	1	9.1

Only one woman believes safe for the child

Only about one in three CS clients were informed about the consequences of having CS i.e., the majority (65.8%) weren't aware of the consequences of CS (Table 4.30).

Table 4.30 Information about the consequences of caesarean section, Addis Ababa, January 2014

Told about consequences of caesarean section	Frequency	Percent
Yes	55	34.2
No	106	65.8
Total	**161**	**100.0**

4.3.2.3.8 Disparities in place and mode of delivery by demographic characteristics

Table 4.31 presents the association between demographic variables and women's preferences for places to give birth and mode of delivery. The result shows that younger ages, having fewer number of children, having unintended pregnancy and cohabitation were associated with delivery at public health care facilities.

Table 4.31 Demographic variables and preferred place of delivery and mode of delivery, Addis Ababa, January 2014

Demographic variables	Place of delivery			Caesarean section delivery
	Home	*Public facility*	*Private facility*	
Age group				
15-24	9.6**	75.1	15.3	10.7***
25-29	5.8	66.9	27.3	19.4
30-49	5.8	67.7	26.5	25.1
Number of living children				
0-2	5.1**	71.7	23.2	20.2
3-6	11.7	61.7	26.6	16.0
Current marital status				
Currently married	5.5***	65.5	29.0	21.6*
Cohabiting/living together	6.1	81.7	12.2	11.8
Other	15.8	72.6	11.6	16.3
Pregnancy intention				
Unintended	13.0***	74.4	12.6	14.5*
Intended	4.4	67.3	28.2	20.8

*Note: (Chi-square *p<0.05; **p<0.01; ***p<0.001).*

4.3.2.3.9 Disparities in place and mode of delivery by social structure variables

The educational status of women significantly negatively associated with preference to delivery at home but positively with delivery at private health care facilities. The occupational status of women didn't show significant association. Ethnically, delivery at private health care facilities was more likely among the Tigraways followed by the

Amharas (Table 4.32). Similarly, caesarean section delivery was high among women with tertiary level of education, employed and the Tigraways.

Table 4.32   Disparities in place and mode of delivery by social structure variables, Addis Ababa, 2014

Social structure variables	Preferred place of delivery			Caesarean section
	Home	*Public facility*	*Private facility*	
Mother's educational status				
No education	19.8***	71.9	8.3	9.3***
Primary education	7.4	79.5	13.1	13.9
Secondary education	2.8	65.5	31.7	22.2
Tertiary education	1.5	47.8	50.7	33.6
Mother's occupation				
Unemployed	6.9	70.9	22.3	18.2
Employed	6.8	64.1	29.1	22.2
Ethnicity				
Amhara	4.8***	68.9	26.3	20.3
Guragie	7.1	75.8	17.0	17.2
Oromo	8.0	74.1	17.8	18.8
Tigrie	1.8	54.5	43.6	25.9
Others	15.2	56.5	28.3	15.4

*Note: (Chi-square ***p<0.001).*

4.3.2.3.10   Disparities in place and mode of delivery by family and community resource variables

Similar to the demographic variables, differences in preference to place of delivery and mode of delivery was observed among the family and community resource variables (Table 4.33). Delivery at private facilities and caesarean section delivery was high among women in the wealthiest household, with health insurance coverage, and non-slum residents. The associations were statistically significant.

Table 4.33   Disparities in preferred place and mode of delivery by family and community resource variables, Addis Ababa, January 2014

Social structure variables	Place of delivery			Caesarean section
	Home	Public facility	Private facility	
Wealth index				
Low	6.4	77.9	15.6	16.3
Middle	6.7	72.6	20.7	15.7
High	7.2	59.3	33.4	21.2
Health insurance				
Yes	0.0**	60.9	39.1	30.4*
No	4.7	71.6	23.7	18.2
Type of resident				
Slum	8.4***	76.3	15.3	15.2***
Non-slum	3.8	54.5	41.7	27.6

Note: (Chi-square *p<0.05; **p<0.01; ***p<0.001).

4.3.3   Factors associated with ANC adequacy

Table 4.34 presents potential factors associated with ANC service contents and overall ANC service adequacy from both unadjusted or crude and adjusted binary logistic regressions. Logistic regression modelling was undertaken to examine the net effects of set of explanatory variables over the outcome variables and the odds ratios (OR) were adjusted for all other variables with 95% confidence intervals. In this analysis, the outcome variables, adequacy of content ANC and overall adequacy of ANC services, were dichotomised with "1" being adequate and "0" being inadequate in each case. Two different models were fitted to investigate the factors predicting the adequacy of ANC services i.e., for service content and overall adequacy. The asterisks indicating statistical significance refer to the differences between the categories for the particular explanatory variable. Details about the construction of variables can be referred in Chapter 3.

While running the regression models, goodness-of-fit tests were checked. One of these is the Hosmer and Lemeshow's (H-L) goodness of fit test which is based on a chi-square test. In testing the fitness of the logistic model, if the H-L goodness-of-fit test statistic is greater than 0.05, the model is considered as a well-fitting model implying that the estimates of the model fit the data at an acceptable level. In short a good model-fit is indicated by a non-significant chi-square value. Accordingly, the H-L test for the below two models showed chi-square p-values > 0.05, which proved the goodness-of-fit of the applied models for this study at P=0.45 and P=0.55 for service content and overall adequacy models respectively. Multicollinearity and interaction effect checks

were also done by measuring Variance Inflation Factors (VIF), labelling of outliers and running cross products. Multicollinearity and interaction effects were not observed among the variables included in the models. The estimates of the crude and adjusted odds ratios are fairly similar and this shows that the variables used for adjustment are not confounding variables (STATA Corporation 2012).

Table 4.34   Factors associated with ANC service adequacy-binary logistic regression (Odds ratio-OR, 95% CI), Addis Ababa January 2014

Variables	Adequate content ANC services		Overall adequate ANC	
	COR [95% CI]	AOR [95% CI]	COR [95% CI]	AOR [95% CI]
Marital status				
Currently married	1	1	1	1
Not married (others)	0.69 [0.47, 1.01]*	0.88 [0.59, 1.32]	0.72 [0.40, 1.28]*	0.95 [0.52, 1.73]
Pregnancy intention				
Unintended	1	1	1	1
Intended	1.83 [1.23, 2.73]**	1.67 [1.09, 2.56]*	2.57 [1.41, 4.71]**	1.80 [0.95, 3.40]
Mother's educational status				
No education	1	1	1	1
Primary education	1.19 [0.68, 2.09]	1.08 [0.60, 1.94]	1.09 [0.45, 2.62]	1.02 [0.42, 2.48]
Secondary and above	1.83 [1.07, 3.15]*	1.50 [0.85, 2.64]	3.27 [1.37, 7.76]**	3.03 [1.16, 7.88]*
Place of ANC visit				
Private facilities	1	1	1	1
Public facilities	0.49 [0.29, 0.82]**	0.57 [0.33, 0.98]*	0.47 [0.25, 0.90]*	0.58 [0.30, 1.13]
Health insurance				
Yes	1	1	1	1
No	0.56 [0.32, 0.98]*	0.67 [0.38, 1.20]	NA	NA

Note: p<0.05; **p<0.01. ANC = antenatal care, CI = confidence interval, COR = crude odds ratio, AOR= adjusted odds ratio*

Relatively highly educated women and those whose last pregnancy was intended were more likely to receive the recommended ANC component services and overall adequate ANC. Women with secondary and above educational status were 1.50 times and more than three times likely to receive adequate contents of ANC services and overall adequate care respectively compared to those with no formal education. In other words, these women had higher odds of early initiation of first ANC (in the first trimester), having four or more ANC visits and receiving adequate content of ANC services.

With respect to the effect of health care system, women who had their ANC follow ups in public health care facilities were less likely to receive adequate content of antenatal services and overall adequate ANC. Hence, clients of public facilities were less likely to receive adequate contents ANC services by about 53% (OR=0.47).

4.3.4 Factors associated with delivery care utilisation

In this study, two separate models i.e., multinomial logistic regression and binary logistic regression models were fitted to investigate the potential factors influencing preferred places to give birth and mode of delivery (caesarean section) respectively (Table 4.35 and Table 4.36).

4.3.4.1 Place of delivery

Table 4.35 shows the adjusted or net effects of factors on the likelihood of giving birth at home or at private health facilities compared to delivery at public health facilities.

The results of the logit model shows that the demographic variables including age of the mother, parity (in terms of number of living children) and mother's pregnancy intention for last birth; the educational status of the mother and wealth quintile had significant contributions to the model (P<0.05). Besides, type of resident, religion and ANC adequacy were important predictors particularly for preference to give birth at private healthcare facilities.

Hence, younger women and those with 0-2 living children were less likely to deliver at home (OR=0.90 and OR=0.24) compared to older women and those with three or more living children. On the other hand, women who had unintended pregnancy for their last birth and those with no formal education were 2.1 and 3.6 times more likely to deliver at home compared to those with intended pregnancy and those with secondary and above educational attainment level respectively.

Contrary to the above finding, women with unintended pregnancy were less likely to deliver at private health facilities. Conversely we can say that women with intended pregnancy were 1.75 times more likely to deliver at private health facilities compared to those with unintended pregnancies. Similarly, women with no formal education or with primary education were less likely to deliver at private health care facilities compared to those with secondary and above education (OR=0.18 and OR=0.33 respectively).

The wealth class to which the household of the respondent belongs was a significant factor in predicting the preferred place of delivery. The lower the wealth quintile, the greater is the likelihood of delivering at home. Women belonging to the middle class wealth quintile were 2.79 times more likely to deliver at home compared to the household with high class wealth quintile. It was also found that the odds of delivery at private healthcare facilities was low among women of low wealth quintile (OR=0.56) than those in high wealth quintile. In other words, women of high class wealth quintile were 1.79 times more likely to deliver at private health facilities compared to those in the low wealth quintile household.

Differences in the preference to places for giving birth were also observed across religion. Christian women were less likely to give birth at private health facilities compared to their Muslim counterparts by about 58% (OR=0.42) i.e., the later were about 2.38 times more likely to use private health care facilities for delivery than the former.

Table 4.35   Odds ratios from multinomial logistic regression for preferences for places to give birth, Addis Ababa January 2014

Variables	Preferred place of delivery AOR [95% CI]	
	Home	*Private facility*
Age	0.90 [0.83, 0.98]*	1.02 [0.97, 1.07]
Number of living children		
0-2	0.24 [0.10, 0.56]**	1.20 [0.71, 2.03]
3-6	1	1
Marital status		
Currently married	0.70 [0.25, 1.91]	1.33 [0.61, 2.90]
Cohabiting/living together	0.51 [0.16, 1.66]	0.80 [0.32, 2.00]
Other	1	1
Mother's pregnancy intention		
Unintended	2.11 [1.03, 4.33]*	0.57 [0.34, 0.94]*
Intended	1	1
Mother's educational status		
No education	3.56 [1.38, 9.21]**	0.18 [0.08, 0.40]***
Primary education	1.20 [0.51, 2.85]	0.33 [0.22, 0.52]***
Secondary and above	1	1
Wealth index		
Low	0.63 [0.29, 1.38]	0.56 [0.37,0.82**
Middle	2.79 [1.18, 6.61]*	0.61 [0.31, 1.21]
High	1	1
Type of resident		
Slum	1.32 [0.53, 3.24]	0.35 [0.24, 0.51]***
Non-slum	1	1
Religion		
Christian	1.19 [0.51, 2.78]	0.42 [0.27, 0.68]***
Muslim	1	1
High risk pregnancy		
Yes	0.89 [0.36, 2.19]	0.77 [0.48, 1.23]
No	1	1
Adequacy of ANC services		
Inadequate	1.40 [0.31, 6.36]	0.40 [0.24, 0.67]**
Adequate	1	1

Note: ($p<0.05$; ** $p<0.01$; *** $p<0.001$). ANC = antenatal care, CI = confidence interval, COR = crude odds ratio, AOR= adjusted odds ratio*

4.3.4.2   *Mode of delivery*

Table 4.36 shows the adjusted and unadjusted odds of CS delivery as an outcome variable and potentially associated factors as explanatory variables. Logistic regression was run for both ratios for caesarean-section delivery. The model included only those women who had at least one ANC visit at health care facilities. Socio-demographic and health care variables which showed statistically significant association with the outcome variable (CS=1, Vaginal delivery=0) at significant level of $P<0.05$ were all included in the

adjusted binary logistic regression. The later helps to control possible confounding factors and to see the net effect of each independent variable on the outcome variable while controlling all other explanatory variables.

The age of the mother, her educational status, type of resident, history of high-risk pregnancy and adequacy ANC showed consistent statistically significant association with the outcome variable, CS delivery between the crude and adjusted odds ratios.

Table 4.36   Factors associated with caesarean section delivery-binary logistic regression (OR with 95% CI)

Variables	COR [95% CI]	AOR [95% CI)
Age group		
15-24	1	1
25-29	2.11 [1.25, 3.56]**	1.78 [0.96, 3.29]
30-49	2.92 [1.73, 4.93]***	2.42 [1.29, 4.55]**
Marital status		
Currently married	1	1
Not married (other)	0.50 [0.31, 0.79]**	0.86 [0.51,1.44]
Mother's pregnancy intention		
Unintended	1	1
Intended	1.60 [1.04, 2.47]*	1.26 [0.73, 2.17]
Mother's educational status		
No education	1	1
Primary education	1.58 [0.74, 3.35]	1.88 [0.74, 4.78]
Secondary and above	3.42 [1.66, 7.03]**	3.22 [1.31, 7.92]*
Type of resident		
Slum	1	1
Non-slum	2.16 [1.51, 3.08]***	1.73 [1.13, 2.65]*
Place of ANC visit		
Public facilities	1	1
Private facilities	0.99 [0.46, 2.14]*	1.47 [0.76, 2.82]
High risk pregnancy		
Yes	1	1
No	0.61 [0.41, 0.90]*	0.57 [0.36, 0.91]*
Overall adequacy of ANC		
Inadequate		
Adequate	2.24 [1.34, 3.75]**	1.86 [1.05, 3.28]*

Note: (* p<0.05; **p<0.01; ***p<0.001). ANC = antenatal care, CI = confidence interval, COR = crude odds ratio, AOR= adjusted odds ratio

Compared to young mothers of age 15-24 years, older mothers of 30-49 years had greater odds of CS delivery (OR=2.42). Similarly, the mother's educational status and type of resident were significantly and positively associated with CS delivery. Highly educated mothers and non-slum residents were 3.22 and 1.73 times more likely to have CS delivery compared to those with no formal education and slum residents respectively. Having no history of high-risk pregnancy was inversely associated with CS

delivery (OR=0.57). Women who received overall adequate ANC (timing, number of antenatal services) were more likely to have CS delivery compared to those with inadequate ANC. Mother's current marital status, pregnancy intention, and place of ANC visit didn't show consistent significant association between the unadjusted and adjusted odds ratios.

4.4   OVERVIEW OF RESEARCH FINDINGS

Overall, ANC and delivery care utilisation rates are very high in the study area. However, the number, timing and contents of ANC services and overall adequacy were below standard. The findings demonstrate significant disparities between slum and non-slum residents in relation to antenatal and delivery care utilisation. Caesarean-section rate was generally higher in the study area than the recommended level; more exaggerated among non-slum residents.

Pregnancy intention, educational status and place of ANC visits were identified as important determinant factors for adequacy of ANC in the study area. Besides, age of the woman, pregnancy intention, education, wealth quintile, history of high-risk pregnancy, adequacy of ANC, religion, and type of resident were important determinants of preferences for places to give birth and caesarean section delivery.

4.5   CONCLUSION

This chapter has presented the analysis and interpretation of the data for both ANC and delivery care utilisation. The presentation began with an introduction to the chapter followed by the descriptive and inferential statistical analyses. Inferential statistics were applied to draw inferences from the strengths of associations between dependent and independent variables. Tables and figures were used to present data from the statistical analyses.

CHAPTER 5

DISCUSSION

5.1   INTRODUCTION

In this Chapter, the findings interpreted under Chapter 4 will be discussed in detail in accordance with the research objectives and stated research questions. The findings will also be discussed in contrast with previous local, regional and global studies conducted on the same subject. The discussions are all based on quantitative descriptive research studies.

5.2   ADEQUACY OF ANTENATAL CARE IN ADDIS ABABA

There is no available research known to the researcher on the overall adequacy and related determinants of ANC based on the combined indicators from the timing of first visit, the number of visits, and content of ANC services in Addis Ababa in particular nor in Ethiopia in general. Theories or models have not been also widely applied for the selection and analysis of factors, too. Tariku et al (2010) on their study focusing on the impact of previous ANC on timing of subsequent ANC booking applied the Andersons Health Behavioural Model to conceptualise their study. However, their study was limited to only timing of ANC and was facility based. Whereas. the current study gives a more comprehensive picture of ANC adequacy and its relations to selected factors in Addis Ababa by indexing three indicators i.e., adequacy of number of antenatal visits, time for initial visit and recommended contents of services received during the ANC visits.

The coverage of ANC utilisation in terms of having at least one visit was relatively higher than the findings of other surveys (CSA and ICF International 2012:120) as well as routine administrative reports (FMOH 2013:11).   The estimates of the overall adequate use of ANC in this study, both in slum and non-slum residents, were much lower than in other studies (Tran et al 2012:5). It was however difficult to compare this study with findings of similar studies in the study area or the country in general as there has not been any study conducted using the three indicators to measure adequacy of

ANC. For both slum and non-slum residents, late initiation of the first visit to ANC and low use of the basic component services were the main reasons for the poor adequacy of ANC. The main reason for the observed large gap in the overall adequate use of ANC between slum and non-slum residents was the timing of the initial visit.

In order to achieve national goals or meet international standards, ANC services should be adequate and in line with the recommendations of national protocols or WHO guidelines. In Addis Ababa, a large gap was observed in terms of the overall ANC adequacy. The number and timing of antenatal visits and the content of services during antenatal visits matter the most in identifying pregnancy risks and management of delivery complications (Adjiwanou & LeGrand 2013:30-31). In this study, late initiation of the first visits, substandard number of visits and receiving inadequate content of services were associated more with slum residents.

Timing of the first ANC visit is an important indicator of ANC adequacy. It is recommended that women should initiate ANC as early as possible, before or on 12 weeks of gestation (WHO 1985); or within 16 weeks according to the Ethiopia National Obstetric Protocol (FMOH 2010b:13). In this study, only slightly more than half (51.1%) of the pregnant women started their antenatal visit early which was at or before the 12th weeks of gestation. This proportion is higher than the finding (40.2%) in a previous study in Addis Ababa (Tariku et al 2010:228).

Early initiation allows clients to have adequate number of visits and sufficient services (Bbaale 2011:523; Beeckman, Louckx & Putman 2010:5). In this study, 93.7% of the women who initiated ANC early had at least four ANC visit (adequate) compared to the 78.9% of the late starters. Similarly, 24.0% of the early starter received adequate service content compared to 22.1% of the late starters. The association between the timing and content of services received is not statistically significant and this might be due to the fact that most of the women might not be aware of the services or do not have control over them. This in turn may signal that the provision of the basic component services is neglected by the service providers as most of them are provided either free of charge or with minimal cost. Contrary to this, there was surprisingly high coverage of ultrasound screening at 98.3% and 89.2% for antenatal clients of public and private healthcare facilities respectively. This may be because ultrasound is good source of income for health care facilities compared to the other recommended routine

services (Section 5.3). Consequently, ultrasound services cause underutilisation of the routine biomedical services (Belizán & Cafferata 2011; FMOH 2010b:38).

Relative to the poor timing and less frequent services received, women in Addis Ababa had a good number of antenatal visits. In the study area, slum women sought ANC less often than non-slum women (85.1 versus 89.2%). The percentage of mothers who received adequate number of ANC visits in the study area is much higher than the average for urban coverage (45.5%) in Ethiopia (CSA and ICF International 2012:122). The percentage in the slum Addis Ababa is also slightly better than that of the informal settlements in Nairobi (67.7%) and Ouagadougou (22.0%) (Rossier, Muindi, Soura, Mberu, Lankande & Cabiru 2013). Though the average number of antenatal visits in both residents is higher than the recommended level in the National protocol, a significant number of women in Addis Ababa had fewer than four visits.

The reasons behind the low ANC adequacy in the study area were late first visits and poor use of basic component of antenatal services. The basic component of antenatal services was the lewest at 21.7% and 18.5% for non-slum and slum residents respectively. This agrees with a similar previous study in Uganda (Bbaale 2011:518). Considering the high frequency of visits made by the antenatal clients, the finding might signal poor service provision at the health facilities. The women may also not either be aware of the services required (Olayinka, Achi, Amos & Chiedu 2014:12-13; Yar'zever & Said 2013:8), or may not know what services to request. Selection of services might also have unaffordable economic consequences (Houweling, Ronsmans, Campbell & Kunst 2007:750-751).

Compared to non-slum residents, slum residents received poor content of ANC services including measurement of maternal height (66.8%) and uterine height (62.5%), assessment of urine sample and syphilis test (50.3%); tetanus injection (88.3%), supplementation of iron tablets (74.3%), and counselling on danger signs of pregnancy (73.1%). However, without these services, pregnancy complications including anaemia and pregnancy induced hypertension are less likely to be detected (Adjiwanou & LeGrand 2013:30-31; Houweling et al 2007:751; WHO 2002:12).

The number of antenatal visits (four or more visits), month of first antenatal visit, and individual service components received (e.g. height, weight, iron supplement, etc) are

the most common factors reported in Ethiopia EDHS 2000, 2005 and 2011 (CSA [Ethiopia] and ICF International 2012:122-125). Examination of the adequacy of service contents or combining all the three indicators has never been reported in Ethiopia. The analysis of this study has come up with interesting findings regarding utilisation of ANC based on the recommended indicators that can help in policy formulation and advocacy. Poor contents of the services and the overall inadequate ANC services might explain the maternal mortality that has not shown significant reduction in the country in recent years. To improve the effect of ANC on maternal as well as child health outcomes, raising the awareness of women about the timing of initiation of antenatal visit and at least the basic component services should be priority agenda. ANC clients should be aware of their health service rights. The government and other stakeholders should also need to ensure the compliance of service providers to national ANC recommendations.

5.3   USE OF ULTRASOUND SCREENING AND CAESAREAN-SECTION DELIVERY

In this study, the use of ultrasound and CS delivery rates were examined in relation to recommended standards. Generally both procedures were overused.

5.3.1 Ultrasound utilisation

Antenatal ultrasound scan is becoming a widely practiced component of antenatal care in developing countries despite its economic implications related to high cost of health care services (Belizán & Cafferata 2011; Sippel, Muruganandan, Levine & Shah 2011:1-2). Ultrasound scanning has potential benefits on gestational age estimation, early diagnosis of obstetric problems including fetal anomalies particularly in remote areas where early referral is needed and psychological benefit to the mother (Hofmeyr 2009:368; Sippel et al 2011:5). In developed settings, multiple trail studies show that early pregnancy ultrasound scanning has been associated with better diagnosis of twin pregnancy and reduction in the likely induction of post-term pregnancy (Belizán & Cafferata 2011; Hofmeyr 2009:368). However, its benefit in poor resource settings is not well established (Sippel et al 2011:9). Routine scans didn't also appear to reduce adverse outcomes on babies and its added value in reducing the frequency of ANC visits is not clear (Belizán & Cafferata 2011). Its usefulness at antenatal visits is still debatable and its acceptance among users is doubtful. A study in Nigeria shows that

women were not satisfied about their previous ultrasound scans and they thought the scans were unnecessary (Ohagwu, Abu, Odo & Chiegwu 2010:1, 3). Frequent ultrasound scans are poorly justified as they don't enhance perinatal outcomes (Sciortino, Ridarineni & Marjadi 2010:31).

There is no comprehensively documented evidence that shows when ultrasound was formally introduced as a possible component of ANC services in Ethiopia. It is, however, included in the 2010 National Obstetrics Management protocol. The protocol recommends ultrasound optionally that is 'when available and affordable' (FMOH 2010b:15). In the current study, in Addis Ababa, almost 90% of all pregnant women who had at least one antenatal visit had at least one ultrasound scan. Nearly one-third of them had three or more scans. The frequency increases to two-third among the non-slum residents as compared to one-third among slum residents.

The proportion of women with at least one ultrasound scan during the last pregnancy was the same (90.0%) for both high-risk and low-risk pregnant women. Nevertheless, more high-risk pregnant women (38.0%) had three or more ultrasound scanning compared to the low-risk (25.4%). In the current study, 21.6% of the women had their ultrasound scans on or after the 20th week of gestation. About 98.3% and 89.2% of the private and public health care facilities clients respectively had at least one ultrasound scan. The probability of having three or more scans was twice as much among clients going to private facilities compared to those going to public facilities. However the figures need careful interpretation as most clients of the public facilities are usually referred to private diagnostics centres just for the ultrasound exam and come back with the result to the same facility. This implies that even those women going to public facilities are subject to additional cost with regards to ultrasound.

Exploring the cause of frequent ultrasound screening in the study area was beyond the scope of this study. However, a woman's request to know foetal gender (Maaji, Ekele, Bello & Morhason-Bello 2010:13) and the economic incentives for obstetricians are possible factors particularly after a prior caesarean-section (Hou, Rakhshani, & Iunes 2014:72; Main et al 2011:10). In Vietnam, more than 80% of the pregnant women knew the gender of their unborn babies before delivery (Toan et al 2013:15). Ethiopia's National Obstetrics Management protocol is silent on this issue.

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In this study, the estimated average fee for ANC services during a single visit excluding ultrasound scan was about US$1.6 (US$1~19.2 ETB Jan. 2014) compared to an estimated average fee of US$5.2 per single ultrasound scan. For those who received adequate content of services, the cost was US$2.1 for single antenatal visit compared to the US$5.2 for single ultrasound scan. This indicates that the cumulative cost of the routine basic component services per visit is cheaper than a single ultrasound scan which results in lower income for health care facilities. The economic drive may also force service providers to be more inclined to ultrasound services than other cheaper routine services because the higher the number of visits, the more income the health care facilities will generate. There could, however, be under- or overestimation due to possible recall bias by the study participants.

In both slum and non-slum residents of Addis Ababa, antenatal ultrasound screening was better utilised than other services offered. Hence, it is important to monitor the use of antenatal ultrasound scan in both the public and private health facilities in Addis Ababa with special attention given to the latter. Service providers should also get clear guidance about the number and frequency of ultrasound scans that is recommended per type of pregnancy for categories that need basic component care and special care services. Community awareness raising activities can also be used in the campaign to reduce the frequency of unnecessary ultrasound scans.

5.3.2 Caesarean-section delivery

The National Obstetrics Management Protocol (NOMP) defines caesarean section as "the delivery of the fetus or fetuses, placenta and membranes through an incision on the abdominal and uterine wall at or after 28 weeks of gestation". As per the protocol, obstetrics reasons are the only indications for CS delivery in Ethiopia. These include foeto-pelvic disproportion (FPD), failure to progress in labour, placenta praevia, foetal malposition and mal-presentations, suspected foetal distress, cord prolapse, previous uterine incision, maternal infections (such as HIV, active Herpes simplex). Major complications and long-term risks of the procedure are also clearly stated. It has been clearly stated that the risk of maternal mortality is higher after caesarean than natural delivery (FMOH 2010b:118, 121 & 198).

World Health Organization (1985) reported that higher than 10-15% rates of caesarean section are not justifiable in any region of the globe. However, reports show that there is an alleged overuse of the procedure in many parts of the world (Gibbons et al 2011:7; Lauer, Betrán, Merialdi & Wojdyla 2010). This study finding also indicates that the CS rate in Addis Ababa (19.1%) was much higher than the expected of 10-15% rate suggesting overuse of CS delivery. The findings in this study are also higher than the reported rates in other urban areas including Africa and Asia (Ghosh & James 2010:7; Shah, Fawole, M'Imunya, Nafiou, I, Wolomby, Mugerwa, Neves, Nguti, Kublickas & Mathai 2009:4; Toan et al 2013:12) and nearly as high as the average CS rate (20%) in the developed nations (WHO 2010c).

Furthermore, women from non-slum residents had more CS delivery (27.2%) than the slum counterparts (15.2%). The rate for non-slum residents in this study is also higher than the rate reported in the 2011 EDHS for Addis Ababa (22%) (CSA and ICF International 2012:128. There is evidence indicating that the growth in CS rate is associated with socioeconomic and technological advancements (Mazzoni, Althabe, Liu, Bonotti, Gibbons, Sánchez & Belizán 2011:5; Lauer et al 2010). However, Lauer et al (2010) stated that unlike the findings from cross-sectional data, the association between income and CS rate is considerably weaker when longitudinal data are analysed. According to Gibbons et al (2011:8, 10), excess CS may imply inequalities in health or health care within or across countries.

The data being self-reported by women in this study may impact negatively, the possibility of investigating if CS was medically indicated or not. However, it was observed that as high as 6.9% of the CS rate in Addis Ababa was due to women's request in the absence of medical indication and about 2.0% was due to the service provider's influence believed to be in the absence of medical indication. This 8.9% rate of medically unjustified CS is much higher than the rate in many Asian countries including Japan, China and India among others (Lumbiganon, Laopaiboon, Gülmezoglu, Souza, Taneepanichskul, Ruyan, Attygalle, Shrestha, Mori, Hinh, Bang, Rathavy, Chuyun, Cheang, Festin, Udomprasertgul, Germar, Yanqiu, Roy, Carroli, Ba-Thike, Filatova & Villar 2010:492). This implies that at least at cross-sectional level of data, the excess CS rate in Addis Ababa is medically unjustified.

Evidences show that medical factors do not explain the increase in CS rate; and unjustified CS births are costly and unequally distributed among the population (Main et al 2011:5, 9). Gibbons et al (2011:8, 10) indicate that such excess CS should be considered unnecessary. The authors add that such unnecessary CS deliveries impose a disproportion in economic resources. In addition, medically unjustified CS deliveries increase the likelihood of maternal and neonatal morbidity and mortality, infection, pain, poor birth experience, delayed contact with the baby, increased length of hospital stay and readmission (Main et al 2011:5-8, 10; Souza et al 2010:3-17; Vivilaki & Antoniou 2008:86).

There could be various possible reasons for woman's request for CS. In this study 36.4% of the women reported fear of labor pain and more than half (54.5%) believe that CS is safe for the mother and the child. Studies from other areas also indicated fear of pain, harm to the baby during vaginal delivery, perceived safety to the mother, social influence, and negative birth stories as some of the reasons for CS preference (Adageba et al 2008:138; Ajeet et al 2011:246; Kornelsen, Hutton & Munro 2010:965-966).

When requesting for CS delivery, woman might not be aware of the short or long-term consequences of the procedure. Women's attitude and lack of sufficient information during ANC visits by the service providers was mentioned as possible reasons for the lack of awareness about the consequences of caesarean section (Adageba et al 2008:137; Gholami & Salarilak 2013:302, 306). In this study, only 34.2% of the CS clients were informed about the consequences of having CS at antenatal visit. The majority (65.8%) weren't aware of the consequences of CS. Similar proportion of women in India had very little or no information about the procedure (Ajeet et al 2011:247). An audit of multiple South East Asian countries indicated that women were not fully informed about the increased risk of maternal morbidity following elective CS (Sciortino et al 2010:31). Those who were not in favour of CS didn't opt to the procedure due to fear of operation and delay to resume to household chores (Naithani et al 2013:15).

Besides the woman's request, the physician's interest due to other factors including fear of litigation, the physician's convenience, and economic incentives have been point of argument for excess CS rates (Ghosh & James 2010:3-4; Sciortino et al 2010:31).

Physicians may also influence women's decision or preference deliberately in favour of CS delivery (Ajeet et al 2011:247). In some conditions, physician's reluctance to disregard the procedure in the absence of reasons or service providers' positive description of the procedure misleads patients towards CS (Kornelsen et al 2010:966). A study finding in Norway indicates that the perceived risks of complaints and malpractice litigations on obstetricians determine the choice of CS (Fuglenes, Øian & Kristiansen 2008:6). Similarly, in USA, Obstetricians often explain the rise in CS as due to the threat of litigation. They believe deciding CS is clear sign of demonstrating concern [for patient or family] (Vivilaki & Antoniou 2008:88).

In this study, the CS rate was much higher among private health care facilities i.e., 46.1% and 28.3% for the private for-profit and for private not-for profit respectively than for the public health care facilities (11.7%). The finding is similar to the finding from the facility based national review of CS delivery rate in Ethiopia. The review shows that 46% of the CS took place in private for-profit facilities, 22% in private not-for profit and 15% in public facilities (Fesseha, Getachew, Hiluf, Gebrehiwot & Bailey 2011:107). Nevertheless, it should be noted that 74.3% of all the institutional deliveries took place in public facilities. About 18.1% and 7.6% took place in the private for-profit and private not-for profit health care facilities. Overall, in the study area public and private facilities charged an average fee of US$62.7 and US$318.0 respectively for a single CS delivery.

The uncontrolled increase in CS delivery might have a negative impact on maternal health outcomes. It is also likely to be an additional burden on the health care system in terms of equipment and the need for skilled service providers; as well as a burden on economic resources due to high cost of care. The findings say aloud that the impact of the obstetrics management protocol in limiting the unjustified CS deliveries is not yet visible.

5.4   PREFERENCES FOR PLACES TO GIVE BIRTH

Childbirth and its process is one of the most significant life events to a woman (Etowa 2012:31-32). Hence this makes the choice of place of delivery for a pregnant woman an important aspect of maternal health care.

The place of delivery is often related to the quality of care received by the mother and infant. It is an important factor for maternal and child health care outcomes (Murthy, Murthy, Hari, Kumar & Rajashkhar 2007:149). The very time of birth and shortly thereafter is the most dangerous time in a child's life especially to mothers in the developing world (Save the Children 2010:12; Singh et al 2009:17).

In developing countries women in the urban slums have less access to reproductive health care services than the middle and upper income urban women (APHRC 2009; Murthy et al 2007:149). In the current research, 6.8%, 69.2% and 24.0% of the women gave birth at home, public health care facilities and at private health care facilities respectively. Delivery at health facilities was higher among non-slum residents of Addis Ababa than among slum residents at 96.2% and 91.6%% respectively; i.e., home delivery was as twice among slum residents as non-slum residents. The utilisation of health care facilities among the slum residents are higher than the figures reported from the slums of Nairobi where only 70.0% of slum women delivered at health facilities. However, the place of delivery may not still guarantee the quality of service. The same study from Nairobi shows that about 52% of those who reported delivery at a health facility didn't receive professional skilled assistance (APHRC 2009). A multi-country study result from Benin, Ecuador, Jamaica, and Rwanda shows that many service providers did not know the diastolic blood pressure which is indicative of severe pre-eclamsia, use of magnesium sulphate, manual removal of placenta, and basic interventions to control postpartum haemorrhage (Harvey, Blandón, McCaw-Binns, Sandino, Urbina, Rodríguez, Gómez, Ayabaca, Djibrina & the Nicaraguan Maternal and Neonatal Health Quality Improvement Group 2007:786-787). Understanding the reasons behind the differences in maternal health care services between Addis Ababa neighbouring cities is beyond the scope of this study as this may require in-depth comparative study considering the socio-economic, demographic, and cultural diversities and other differentials.

Studies also indicate that women living in poor conditions rely more on public or governmental health services than on private health services (Ibnouf et al 2007:740); or are more likely to have TBA or no trained assistant at delivery (APHRC 2009; Tann et al 2007:7) compared to women of better living conditions. The figures in this study show similar features. In Addis Ababa, more than three-fourth (76.3%) of slum resident women gave birth at public health care facilities compared to only slightly higher than

half (54.5%) of the non-slum residents. Contrary to this, a good proportion of the non-slum women (41.7%) gave birth at private facilities compared to only 15.3% of the slum residents.

Not all ANC attendees deliver at health care facilities. However, the awareness, use, and place of antenatal care services have also significant effect on the preferences to place of delivery (Ewa et al 2012:377). In this study, more than half (52.6%) of the women who didn't have antenatal visit delivered at home compared to only 5.8% of those who had at least one antenatal visit. Studies show that women with four or more ANC visits and those who started ANC visit early are more likely to deliver at health institutions (Baral et al 2012:624; De Allegri et al 2011:5; Joharifard et al 2012:7; Ochako et al 2011:7). In this study, differences were also observed in place of delivery among those who had antenatal visits. About 6.7% of the public facility ANC clients finally delivered at home compared to only 1.7% of the private facility clients. Evidences show that even in areas with a wide range of public and private health care providers, mothers have limited alternatives to seek care if health systems are characterised by high out-of-pocket payments (Kinney et al 2010:5). A study in Nigeria indicates that low service cost is associated with public hospitals for antenatal care (Ewa et al 2012:377). In a study done in Mumbai, 56.4% of those who delivered at public facilities said that delivery at government hospitals is economical (Shrivastava & Bobhate 2013:162).

Women's awareness about pregnancy complications and risks largely influence maternal care utilisation (Gabrysch & Cambell 2009:8). Each antenatal visit creates an opportunity to raise the level of awareness of pregnant mothers. Studies from multiple African countries indicate that such awareness on pregnancy risks and complications have positive effect on the number of antenatal visits and institutional delivery (Nikie'ma et al 2009:369-371). In the current study, those pregnant women who were counselled about danger signs of pregnancy at antenatal visits had four or more antenatal visits (87.1%) compared to those not counselled (82.1%). They were also more likely to deliver at health facilities (94.4%) compared to those not counselled at antenatal care visits (91.5%). Evidences from Zambia and Mali support this finding (Gabrysch & Cambell 2009:8).

In some instances, better quality of care is reported from private health care facilities but this may not guarantee for a woman's delivery to be in the same facility as the costs

deter them from using the services (Gabrysch & Campbell 2009:9). For example, in this study, 30.0% of the private facility ANC clients delivered at public health care facilities while only 22.6% of the public facility ANC clients delivered at private facilities. Comparatively, public facilities seemed to retain the majority of their antenatal clients (70.7%) at the time of delivery compared to the private facilities (68.3%). This finding differs from the study finding in an urban setting in Southern Nigeria where a lower proportion of women who received ANC at government facilities eventually delivered there while the proportion of the women who delivered at private clinics increased compared to ANC attendance (Iyaniwura & Yussuf 2009:116).

Despite the high level of ANC attendance among mothers in the study area, a good number of pregnant women especially among slum residents still chose to deliver at home. Health facility statistics also show that many women still die from complications of pregnancy and childbirth (FMOH 2011:22). This implies that concerted effort should be made to bring every pregnant woman to health facilities and provide quality ANC services. To prevent women from reverting back to home delivery, effective communication and particularly counselling of women during ANC visits about the danger signs and complications of pregnancy and child birth should be taken seriously

5.5   FACTORS INFLUENCING ADEQUACY OF ANTENATAL AND DELIVERY CARE SERVICES

5.5.1 Factors determining the utilisation of ANC services

A number of studies have indicated that multiple barriers obstruct women's access to maternal care services (Ajayi & Osakinle 2013:4; De Allegri et al 2011:5; Gabrysch & Campbell 2009:3; Olayinka et al 2014:14-15). In the current research, results of the multivariate logistic regression model indicated that only a few variables were significantly associated with adequacy of ANC utilisation. Lowe education was negatively associated with adequate ANC utilisation, while unintended pregnancy and attending public health care facilities were negatively associated with receiving adequate ANC content services.

Education is one of the key social determinants of health and health care. Women with low levels of education usually have less knowledge about ANC and poor access to the

service (De Allegri et al 2011; Long et al 2010:1214; Shrivastava & Bobhate 2013:162). In similar studies done in urban slums of Dhaka and Mumbai, educational level of the mother and the husband was identified as the major factor influencing the ANC utilisation of the mother (Kabir & Khan 2013:18; Shrivastava & Bobhate 2013:162). In the current study area, less-educated women had significantly lower overall adequate use of ANC. They initiated ANC late; had inadequate number of visits; and received poor ANC service content. The logit model for adequacy of services content also showed that the educational status of the woman is positively associated with receiving adequate content services i.e., with receiving all the basic component services at least once during the last pregnancy.

In this analysis, pregnancy intention was the only demographic characteristic identified as a factor for adequacy of antenatal service content. Women whose last pregnancy was unwanted or mistimed were less likely to receive the recommended basic components of ANC services. About 27.2% of the women had unintended last pregnancy. This variable didn't; however, show statistically significant effect on overall adequacy of ANC. Studies show that unintended births are associated with delayed initiation of antenatal care (Dibaba et al 2013:6; Exavery et al 2013:7-8). An urban based study in the Democratic Republic of Congo shows that women who had unplanned pregnancy were less likely to attend ANC services compared to those who had planned their pregnancies by themselves or jointly with partners (Ntambue et al 2012:7). Unintended pregnancy and births, both mistimed and completely unwanted ones, have been shown to have grave consequences to the mother and family and are global social and health burdens including the US (Frost, Darroch & Remez; WHO 2011:12, 14).

The balance between the private and public health care sectors is a hot debatable issue these days. Access, equity, quality, efficiency, responsiveness, adherence to national standards or guidelines, and patient outcomes were major agenda of debate (Basu, Andrews, Kishore, Panjabi & Stuckler 2012:1-14). Evidences show that ANC utilisation is associated with venue of services (Jallow, Chou, Liu & Huang 2012:2).

In the current study, the type of health care facility shows statistically significant association with antenatal service content. The finding points to a statistically significant and positive effect of women's attendance at private health care facilities on the

adequacy of content of ANC services received. Women who received ANC at public facilities were by about 43% less likely to receive all the basic component services at least once compared to attendants of private health care facilities. This is similar to a study finding in Tanzania (Adjiwanou & LeGrand 2013:32). In the Gambia, women received more sufficient services from private facilities than public facilities and were more satisfied with the services received from private facilities (Jallow et al 2012:6).

On the basis of the findings of this research, it is being suggested that specific efforts are needed to target and to raise awareness of the women of lower socio-economic status including those with lower educational status about basic antenatal care services. The unmet need in family planning with more than 27% of unintended pregnancy is a huge gap for the urban women. Strengthening the on-going family planning programme would also have greater roles on antenatal utilisation in the study area. In Addis Ababa, though the private health facilities (hospitals and clinics) outnumber that of the public clinics (FMOH 2011:55) the majority of the antenatal attendees visit public health care facilities where the quality of care as evidenced by the above findings is relatively poor (Section 4.3.2.2.2. of Chapter 4). Because public facilities are the main providers for the general population and particularly for the disadvantaged groups improving the quality of ANC at these facilities is critical. Regular monitoring mechanisms to make sure recommendations of the National Obstetrics Management Protocol are met should be put in place.

5.5.2 Factors behind preferences for places to give birth

In the literature it is established that delivery attendance and place of giving birth are related to the woman's socio-economic status, her demographic characteristics, family and community resources, and the availability of health care facilities among others (Baral et al 2012:623; Canavan 2009:33; WHO 2012c; Montagu, Yamey, Visconti, Harding & Yoong 2014:3-4; Singh et al 2009:17). The literature further shows that quality of services is key factor for choice of medical facilities (Mwabu 2008:87)

In this study, multinomial logistic regression was employed to identify factors that influence the woman's preference for places to give birth. Delivery at public health care facility was the reference category as it has the highest numeric score value. The demographic variables including age of the mother, parity (in terms of number of living

children) and mother's pregnancy intention for the blast birth; and the social structure variables including the educational status of the mother and wealth quintile had significant contributions to the model. Besides, the community variables, cultural and the health care variables including type of resident, religion and ANC adequacy were important predictors particularly for preference to give birth at private health facilities.

In the current study, the age of the woman positively associated with delivery at home. The results show that young women have lower probability of giving birth at home compared to older women. A similar finding was observed from Uganda (Kitui, Lewis & Davey 2013:6). In Nepal and India, institutional delivery was more common among young mothers compared to older ones (Baral et al 2012:624; Mahapatro 2012:29). Similarly, in urban Kenya, young women were better users of skilled professional assistance (Ochako et al 2011:7). There is also a thought that older women may consist of more traditional cohorts and may resist modern health care services (Gabrysch & Cambell 2009:4).

However, in many other studies, it was indicated that mothers of advanced age are more likely to have institutional delivery than younger mothers (Adjiwanou & LeGrand 2013:32; Toan et al 2013:12). A cross country study in Africa shows that older mothers were more likely to received advice and information about pregnancy complications from service providers than younger ones (Nikie´ma et al 2009:371). On the other hand, older women are more likely to develop risk factors like gestational diabetes mellitus and hypertension which in turn make them high-risk groups ending with institutional delivery or some times to caesarean delivery (Bener, Saleh & Al-Hamak 2011:371-2). A systematic review aiming to examine the relationship between advanced maternal age and mode of delivery indicates that the overall risk of complications during childbirth is higher among mothers of advanced age. The rate of assisted delivery is also higher among these groups (Smit, Van Wijk, Gouw & Duvekot 2012:36).

Parity is another factor identified in the current model. Women with two or less living children were more likely to deliver at public health care facilities than at home compared to those with three or more number of living children. This finding confirms previous observations in Kenya where women who had four or more deliveries were 65% less likely to deliver at health facility (Kitui et al 2013:5). A study from Entebe,

Uganda shows that primigravidae were more likely to attend government hospitals (Tann et al 2007:7).

With respect to pregnancy intention, women whose last pregnancy was unintended preferred delivery at home (OR=2.11) and those who preferred to give birth at health care facilities are less likely to go for private health care facilities (OR=0.57) given the option for public health care facility.

The educational status of the women maintained its significant effect on the preferences to the place of delivery similar to its association with adequacy of ANC and mode of delivery. In the multinomial model, women with no formal education were almost four times more likely to deliver at home compared to those with secondary and above educational level. If they use health facilities, those with no formal education and those with primary level of education were less likely to use private health care facilities by 82% and 67% respectively. Conversely, these women were 5.5 times and 3.0 times respectively more likely to deliver at public health care facilities compared to those with secondary and above education. Similar studies show that well educated mothers are more likely to go to private hospitals seeking for maternal health care (Tann et al 2007:7).

Wealth quintile of the family to which the woman belongs was also examined in relation to the place of birth. Middle class women households were more likely to deliver at home compared to those in the rich wealth quintile households. On the other hand, women in the low wealth quintile households were less likely to deliver at private health facilities compared to those in the rich wealth quintile households. A cross-country study using DHS data shows that the poorest women were over three times more likely to report giving birth at home (Montagu et al 2014:4). Studies indicate that poor women rely more on public or governmental health services than on private health care facilities (Ibnouf et al 2007:740); or are more likely to have TBA or no trained assistant at delivery (Tann et al 2007:7) compared to women of better living conditions. Studies also show that private facilities are costly to the poor although the quality of services are still questionable (Sciortino et al 2010:26).

In this study, adequacy of ANC positively correlated with giving birth at private health care facilities. Though there are limited sources which examined the effect of adequacy

of ANC as a composite indicator, available evidences show that the timing of visits, number of visits as well as content of services received show significant effect on mothers' preferences for places to give birth. Studies from Bangladesh (Pervin, Moran, Rahman, Razzaque, Sibley, Streatfield, Reichenbach, Koblinsky, Hruschka & Rahman 2012:6) and Kenya (Kitui et al 2013:5; APHRC 2009) showed that the less number of the ANC visits is the more likely to deliver at home. Inadequate services generally prevent women from seeking care during pregnancy or childbirth (WHO 2012C). From other study findings, it has been indicated that women wishing to give birth in a health facility are also those who make the most use of ANC services (Nikie'ma et al 2009:373). Each antenatal visit creates an opportunity to teach pregnant mothers how to recognise signs of pregnancy complications and how to seek for emergency obstetric care (Singh et al 2009:24). This might imply that those who visit health care facilities for antenatal follow up have higher chances of being identified and put on elective CS than those with no or inadequate ANC.

Evidence from the literature shows that cultural and traditional factors also influence women's preference to place of delivery. In this study, religion was found to determine preferences to the place of delivery. Christian women were less likely to use private health care facilities. A study from Uganda doesn't support this finding whereby Christian women were more likely to have institutional delivery (Kitui et al 2013:3, 7).

5.5.3 Factors determining use of caesarean-section delivery

The use of technology in urban settings for ANC and delivery care is a common practice both in developing and developed nations. Ultrasound scans during pregnancy, delivery care in high-tech equipped medical centres or hospitals, and use of CS are the most prominent features. These services can be obtained either from the point of medical indications or client's preference to use them. The term preference refers to "the expression of a value for alternative options for action after informed deliberation of their risks and benefits" (Bowling & Ebrahim 2001:i2).

When adequately indicated caesarean sections can be life-saving to both the mother and the foetus by preventing poor obstetric outcomes (WHO 1985). However, there is a growing concern on the increasing percentage of the procedure of live births globally (Feng, Xu, Guo & Ronsmans 2012:34; Mazzoni et al 2011:5). The risks and costs

associated with caesarean deliveries are significant, while there is little evidence for the supposed benefits ascribed to them and it is not resulting in better outcomes for mothers and their babies. Evidence shows that caesarean delivery and maternal death are significantly and positively associated (Clark, Belfort, Dildy, Herbst, Meyers & Hankins 2008:4). The rise in CS can't be explained by medical factors alone. CS is associated to the better socioeconomic conditions of communities due in tern to better accessibility to health facilities. However, the procedure is costly and unequally distributed among the population (Gibbons et al 2011:8-10; Main et al 2011:5, 7, 9).

Many factors influence the use of CS in urban areas. CS has been found to be more frequent among nulliparous women, older women, women with high risk pregnancy, and women with better educational status and economic status (Feng et al 2012:33-35; Gholami & Salarilak 2013:303; Toan et al 2013:15). In the current study, after controlling for selected demographic, socio-economic and health care factors, the odds of CS delivery were higher for older women, highly educated (secondary or above) women, non-slum residents, high-risk pregnant women and those who received adequate ANC.

Maternal age is often indicated as a proxy for health care seeking behaviour. Some evidences show that older women are more likely to use health care services including CS delivery (Adjiwanou & LeGrand 2013:32; Gholami & Salarilak 2013:304). In this study, women older than 30 years are more likely to have CS delivery compared to younger ones (aged 15-24). This finding agrees with other previous study findings in India and Vietnam where those aged 30 years and above are at least two times more likely to have CS (Ghosh & James 2010:13; Toan et al 2013:13). Their accumulated experience in using health services gives them more confidence in decision-making towards health care. They might also be told by health workers during ANC visits that older age is a risk factor (Nikie´ma et al 2009:372; Gabrysch & Campbell 2009:5). Older women have also more chance of prior CS which leads them to high chance of another CS (Mazzoni et al 2011:5). A study in Karachi, Pakistan shows that the main reason for more than 47% of the study population to have another CS was their prior CS (Karim, Ghazi, Ali, Aslam, Afreen & Farhat 2011:23). Another study in Trinidad shows that women with previous CS are 3.4 times more likely to prefer CS in future pregnancy (Ajeet et al 2011:246; Mungrue, Nixon, David, Dookwah, Durga, Greene & Mohammed 2010:390). Older age is also associated with higher risks of pregnancy complications (Hou et al 2014:70).

Higher rates of CS in urban areas are associated with availability of technologically advanced obstetric services, high rates of maternal health care utilisation and availability of private health care facilities among others (Ghosh & James 2010:20-21; Hou et al 2014:70). As there are variations between urban and rural areas, such gaps are also commonly observed among different groups of the community within urban areas like slum and non-slum residents. In the current study, non-slum women were nearly two times more likely to have CS birth. Non-slum residents are believed to be in better living conditions who can often afford the costly CS delivery (Main et al 2011:5). A study among slums of India shows that economic status and woman's financial autonomy are associated with institutional delivery (Hazarika 2009:269).

Similar to the finding of this study, evidences from other countries also show that educated women are more likely to give birth by caesarean section (Gholami & Salarilak 2013:304; Ghosh & James 2010:14). More educated women are more aware of CS than less educated ones (Ajeet et al 2011:246; Mungrue et al 2010:389). Women with higher educational status are also able to make decisions on their health care needs (Ghosh & James 2010:10). In urban China in 2008, the odds of having CS delivery was about 6.5 times more likely among those with secondary and above education compared to those with no education (Feng et al 2012:34). A hospital based study in India shows that graduate level educational status is positively correlated with preference for CS delivery (Naithani et al 2013:16). The same study shows that women with better education can understand the birth process and access information about labour pain relief which ultimately helps them go for CS delivery. Normally, women with a high-risk pregnancy should use ANC critically and they are more likely to have institutional delivery and in some cases through CS. This study confirmed that this really happens. It was found that women with history of high-risk pregnancy were about two times more likely to have CS delivery. High risk in this study refers to those women who have at least one of the following: history of spontaneous abortion, history of high-blood pressure, multipara of more than four births, history of diabetes and epilepsy. Conversely, the probability of undergoing CS delivery was 2.3 times more likely among the high-risk mothers compared to the low-risk mothers. This finding supports the results of previous findings (Toan et al 2013:12). Another study in Qatar indicates that women with gestational diabetes mellitus are at increased risk of developing pregnancy induced hypertension, pre-eclampsia, and have caesarean section delivery among others (Bener et al 2011:371-2). Women at high-risk of complications may have higher

chances of being referred timely, or may be more likely to be counselled to seek care earlier in the birthing process by service providers (Sarker, Higgins, Mridha, Ferdous, Dasgupta, Ahmed, Khan & Reichenbach 2012:63).

In the current study, the health care variable which has statistically significant association with CS delivery was the adequacy of ANC as a composite indicator for timing and number of antenatal visits and content of services received during ANC visits. Women who received adequate ANC were more likely to have CS delivery compared to those with inadequate ANC. A study in Vietnam shows that overall adequacy was positively associated with CS delivery in rural areas but the urban model didn't show any significant association (Toan et al 2013:13). This finding dictates that health education and awareness campaigns are invaluable to ensure the optimal utilization of ANC services (Gamble, et al 2007:338; Main et al 2011:5, 6). The affordability and accessibility of the services is equally important (Gibbons et al 2011:8-10; Hailu, Gebremariam & Alemseged 2010:29; Nair et al 2010:64).

5.6 CONCLUSION

In this chapter, research findings were discussed in contrast with previous studies. The presentation began with introduction followed by the general coverage of ANC and delivery care utilisation. Finally, factors influencing use of adequate antenatal care services, women's preference for places to give birth and caesarean section delivery were discussed in detail.

In general, slum and non-slum residents differ in many ways, not only in individual household characteristics but also in the general contexts of the two settings. The distinction between low socioeconomic status and inadequate ANC in the slum community and better socioeconomic conditions and adequate ANC including high use of technology products like ultrasound; and institutional delivery and in some contexts utilisation of caesarean section delivery among the non-slum residents is one way of illustrating those differences. However, it has to be kept in mind that there are also differences in utilisation of ANC delivery care services within those settings. Many factors, including those unidentified so far contribute to such gaps. The inequality in ANC and delivery care between settings does not necessarily pronounce inequity until it is proved with further research. Such undeniable differences exist everywhere. The

implication to be drawn from this research is for policy makers and programme planners to narrow the gaps between the two settings.

Chapter 6 presents the proposed framework developed based on the findings to improve services in the study area.

CHAPTER 6

PROPOSED FRAMEWORK FOR PROVIDING OPTIMAL ANTENATAL AND DELIVERY CARE SERVICES IN ADDIS ABABA

6.1   INTRODUCTION

This chapter presents a framework proposed by the researcher to help programme planners formulate measures to improve maternal health outcomes in Addis Ababa. It is developed based on the findings of the study and review of existing body of literature. A Dictionary of Public Health (Last 2007) defines a framework as "a material or abstract structure that is the basis for a more complete entity".

From the findings of the current study, the adequacy of maternal health care services provided in Addis Ababa is still inadequate. The disparities in quality of care for the different societal or community groups have been masked by the urban averages. Commonly, the coverage of antenatal care is reported in terms of the number of visits rather than timing of visits and or adequacy of service contents received. Often, those needy segments of the population are least served. This framework of action will provide the basis to devise better ways of providing optimum maternal health care using the existing resources of the city administration without any additional cost being incurred. Despite the presence of quality policies, strategies, programmes and guidelines in the country, a number of women are not receiving the recommended services in the capital for different reasons. This framework is proposed with the belief that policy makers, programme planners, and practitioners will better serve the residents of the capital city equally and equitably.

However, it has to be clear that, this framework does not serve as an accurate framework on how maternal health care services should be provided in Addis Ababa. It rather serves as a motivator for change by helping those directly responsible to understand the existing gaps on the service adequacy and to provide improved services to those who deserve. The researcher doesn't intend to change the service delivery

approach rather wants to point out those services that seem to be overlooked. This proposal is subject to expert analysis and discussion.

6.2   PURPOSE OF THE FRAMEWORK

The purpose of the framework is to help programme planners for formulation of measures to improve quality of maternal health care services in Addis Ababa.

6.3   BASIS FOR THE DEVELOPMENT OF THIS FRAMEWORK

The background information (Chapter 1), the literature review (Chapter 2), the National Obstetrics Management Protocol (FMOH 2010b), WHO guidelines for antenatal care (WHO 2002), and most importantly the current study findings (Chapters 4, 5 and 6) are the basis for the development of this frame work for action. One of the objectives of this study was to develop a framework that will help programme planners in the formulation of measures to improve maternal health outcomes in Ethiopia in general or in Addis Ababa in particular.

6.4   POLICY CONTEXT

The Ethiopian government has already taken forward a number of initiatives and policies that provide the wider picture for this framework. Maternal and child mortality issues are given prominent places in the national policies and strategies.

The government, among others, has:

- given special attention to the health needs of women and children through the Health Policy (Health Policy of the Transitional Government of Ethiopia 1993)
- formulated a comprehensive 20-year rolling Health Sector Development Plan (HSDP) (FMOH 2010a)
- developed a National Reproductive Health Strategy to tackle problems of women and children (FMOH 2006)
- developed the five year Growth and Transformation Plan, to expand quality health services (Ministry of Finance and Economic Development (MoFED) 2006)

- devised an innovative Health Extension Program including the Urban Health Extension Package to reach community

- developed the Management Protocol on Selected Obstetrics Topics (FMOH 2010b)

- Has adopted the international commitments including the global declaration of MDGs, the African Health Strategy 2007-2015, Paris Declaration on Aid Harmonisation (20050, Accra Accord on Aid Effectiveness (2008) and Abuja Declaration on Health Care Financing in Africa (FMOH 2010a)

6.5   RESEARCH CONTEXT

To the best knowledge of the researcher, there is no available evidence-based information on the overall adequacy and related determinants of ANC based on the combined indicators from the timing of first visit, the number of visits, and content of ANC services in Addis Ababa. Mostly studies have been limited to simple indicators like the number or timing of antenatal visits and sometimes the proportion of women who received single content for example, the proportion of pregnant women who received tetanus toxoid immunisation (Adjiwanou & LeGrand 2013:29; Amin et al 2010:6-7; Ntambue et al 2012:8; Ochako et al 2011:7). The most common indicator, the 'number of visits' can be a misleading indicator unless combined with the timing of initiation of the first visit and the contents of services received. One cannot detect the danger signs of pregnancy without doing the necessary history taking, physical examination or laboratory investigation. Whether a woman has received such services can't be verified only by the number of visits. This framework is developed based on the evidence from this study using a composite indicator of the timing, the number of visits and sufficiency of service contents received by service users.

6.6   RECOMMENDED STANDARDS OF ANTENATAL AND DELIVERY CARE

The construction of the indicators or outcome variables in the study was based on the following recommendations:

- The WHO recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester (WHO 2002:12).

- Information or counselling should be given to pregnant mothers about signs of pregnancy complications including abdominal pain, severe headache, and vaginal bleeding at antenatal visits.

- The basic components of ANC include, but not limited to, measurement of mother's weight and height, blood pressure, fundal or uterine height and foetal heartbeat assessment, urine and blood sample taken (blood type, haemoglobin (anaemia) and syphilis test), tetanus injection, iron supplementation, and information or counselling given about signs of pregnancy complications- abdominal pain, severe headache, vaginal bleeding (WHO 2002:10; FMOH 2010b:13).

- According to the WHO (1985), there is no clear justification for more than 10-15% caesarean section deliveries in any specific geographic region in the world. Further evidences also show that caesarean section rates beyond 15% are considered medically unjustified or unnecessary with negligible benefits for most mothers and yet costly and unequally distributed among the population (Gibbons et al 2011:8-10; Main et al 2011:5, 9).

6.7 INDICATORS EXAMINED IN THE CURRENT RESEARCH

6.7.1 Indicators of antenatal care services

Tables 6.1 and 6.2 present the summary of indicators used as outcome variables in the current study.

Table 6.1 Indicators used as outcome variables for ANC utilisation, Addis Ababa, January 2014

Indicator	Definition
Timing of first ANC visit	Percentage of pregnant women who initiated their first antenatal care visit at or before 12 weeks of gestation for the last pregnancy in the 1-3 years prior to the study
Adequate number of ANC visits	Percentage of births in the 1-3 years before the study for which a woman received four or more ANC visits for the last pregnancy
Adequate content of ANC services received	Percentage of women who received adequate contents of ANC services (12 basic component services at least once during the last pregnancy) for the last pregnancy in the 1-3 years prior to the study
Overall adequate ANC	Percentage of pregnant women who had overall adequate ANC i.e., proportion of those who fulfilled all the minimum requirements for timing of first visit, number of visits and content of services for the last pregnancy in the 1-3 years prior to the study

6.7.2 Indicators of delivery care services

Table 6.2 Indicators used as outcome variables for delivery care, Addis Ababa, 2014

Indicator	Definition
Delivery at health care facility	Percentage of last births in the 1-3 years prior to the study that were delivered at health care facilities
Caesarean section delivery	Percentage of women who gave birth by caesarean section delivery in the 1-3 years prior to the study

6.7.3 Major findings of the study

6.7.3.1 Findings on antenatal care

- Nearly half of the pregnant women initiated their first antenatal visit late, after 12 weeks of gestation

- About 86.5% of the antenatal care clients had four or more antenatal care visits during the last pregnancy

- Only one out of five of the antenatal clients received all the basic ANC component services at least once during the last pregnancy

- Consequently only one out of 10 pregnant women (ANC attendants) had overall adequate ANC during the last pregnancy

- Women in poor socioeconomic conditions tend to book late for ANC services or receive poor content of services

- Many women were not being counselled about danger signs and complications of pregnancy at antenatal visits

- Poor utilisation of ANC services among women with unintended pregnancy

- Seemingly overuse of ultrasound scanning among the better socioeconomic groups and among clients of private health care facilities

- Slum residents initiated ANC visit late, had fewer visits and received fewer services than non-slum residents

- Service users of private health care facilities receive better content of services compared to those in the public sectors

6.7.3.2 Findings on delivery care

- Caesarean section delivery rate in Addis Ababa (19.1%) is much higher than the maximum WHO recommended rate (15.5%); particularly among the non-slum residents (27.2%); clients of the private health care facilities (41.1%); currently married women (20.6%); women with secondary level of education (22.2%) and tertiary level of education (33.6%); and women who belong to the highest wealth quintile (28.2%).

- As high as 9.0% of the caesarean section rate in Addis Ababa was either due to women's request or due to the service provider's influence in the absence of medical indication

- Nearly two-third of the caesarean section clients (65.8%) weren't informed or counselled by the service providers about the consequences of caesarean section delivery.

- Preference to give birth at healthcare facilities was very high but home delivery was as twice among slum residents as compared to non-slum residents.

- Women belonging to households of the lowest wealth quintile were more likely to deliver at home.

- Public health care facilities were the main destinations for low socioeconomic groups including those with no formal education or those with primary education, unemployed, those in the lowest to medium wealth quintile, and slum residents.

- Main reasons for choosing the public health care facilities were short distance and perceived or experienced low service fee. Perceived and experienced quality of service was the main pulling factor at private health care facilities.

The bottom line is that the ANC services provided to pregnant women in Addis Ababa are inadequate. While the number of antenatal visits was relatively adequate the frequent visits do not necessarily guarantee good pregnancy outcome, do not ensure that pregnant women are initiating ANC as early as possible and receive adequate antenatal care services from the service providers. In terms of performance on provision of ANC services, the private sector performed better than the public health care facilities in all aspects but was worse performer in the rate of caesarean section delivery. Given the unexpected very high rate of caesarean section delivery, delivery services do not look as safe as they could be. Evidences show that the interventions done without

medical indications are very costly and the risk of maternal death following caesarean section is much higher than after vaginal delivery (Clark et al 2008:4; Gibbons et al 2011; Main et al 2001:5).

6.8   ELEMENTS FOR IMPROVEMENT

The researcher has outlined the following principles on which focused specific actions will bring changes in the dynamism of the maternal health care approach in the study area.

6.8.1   Using the best opportunities to deliver missed services

Many pregnant women come to the health care facilities looking for optimum services. However, the findings show that opportunities are being missed because many pregnant women receive poor information and counselling services from the service providers and return home without adequate ANC services. The researcher believes that this has to change if there is commitment to bring change in the quality of maternal health care services. The majority of ANC services should be focused as per the national protocol. This doesn't need any innovation but commitment of the service providers to serve the needy.

6.8.2   Keeping quality as a number one priority

The traditional way of focusing on the numbers cannot help in achieving set national targets and goals. Special attention should be given to the contents of ANC services provided to pregnant women in line with the number of visits. Women should be advised about the danger signs of pregnancy and its complications and they should be informed clearly when to report to the service providers. If there is failure to provide basic ANC component services, the provision of specialised services as indicated in the national protocol (FMOH 2010a:10-12) will not be achievable.

6.8.3   Targeted services to the needy

Not all community members in Addis Ababa are affected equally. Women of lower socioeconomic status including slum residents are the most disadvantaged segments of

the population in terms of receiving adequate ANC. The majority of the better-off women receive relatively adequate ANC services. The former are mainly relying on public health care facilities where the quality of services is relatively poor compared to the private sector. Therefore improving the quality of ANC services in the public facilities should be given priority.

6.8.4 Appropriate use of medical interventions

One of the most alarming findings of this study was the unacceptably high rate of caesarean section delivery among the better-off in terms of socioeconomic condition and at private health care facilities. The findings do not comply with the WHO's guidelines on the procedure. There is also possibility of overuse of antenatal ultrasound; where more than 28% of the women had three or more scans during the last pregnancy. Health service providers particularly those in the private sectors should comply with ethical and professional standards as recommended in the guidelines or protocols. Inappropriate and unnecessary use of such medical interventions would be waste of resources and implies service imbalances among members of the society.

6.8.5 Enhanced information and communication

6.8.5.1 *Improved communication and counselling at antenatal visits*

The overall pattern shown in the current research findings is that service providers do not routinely provide women with information and counselling on danger signs and complications of pregnancy as part of antenatal care. Most of the women were not aware of the danger signs or complications of pregnancy. Surprisingly, 65.8% of the caesarean section clients were not informed about the consequences of the procedure. As it is clearly stated in the National Protocol, health service providers should be aware of the client's rights when offering antenatal care services. A pregnant woman has the right to:information about her health, discuss her concerns, thoughts, and worries; know in advance about any planned procedure to be performed; privacy, confidentiality, and express her views about the services she receives (FMOH 2010b:8). The returns of providing appropriate information are enormous. The findings of this study show that women who were informed about danger signs and complications of pregnancy were more likely to have four or more antenatal visits and to give birth at health care facility.

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6.8.5.2 *Community level awareness raising activities*

The general community has to be aware of the health care services entitled to pregnant mothers during antenatal visits or delivery care. Women or the community should be informed that the risks of maternal morbidity and mortality following caesarean section are much higher than after natural or vaginal delivery. Community health volunteers and reproductive health clubs have essential roles to play on this regard.

6.8.6 Improved stewardship and regulations on service delivery

The government has to put in place strong regulatory mechanisms to prevent malpractices including inappropriate and unnecessary ultrasound scans and caesarean section delivery by service providers especially in the private health care facilities in Addis Ababa. This has to happen sooner before things get out of control. Routine data from the health care facilities should be used for monitoring and decision-making purpose. In fact, the use of such data has to start from where the data is generated. In-charge officers at health care facilities should make close follow up on such practices.

6.8.7 Improved public-private partnership and collaboration

While the primary responsibility of meeting the needs of the community lies on the government, goals and targets of ANC services in the country can be achieved through alignment of resources from local partners including non-governmental organisations and other private partners. A shared vision between the government and the private sector especially the private for-profit should be agreed on tackling some of the antenatal and delivery care challenges. The commitment of the government towards public-private partnership as stated in the HSDP-IV document (FMOH 2010a:73) should be enhanced in order to ensure an effective partnership is established for the benefit of the community and provide good quality services.

6.9   PRIORITIES FOR ACTION

Based on the reviews and analysis of the study, major areas of intervention are identified. Table 6.3 presents details of priorities for action.

Table 6.3 Summary of actions aimed to improve quality of maternal health care in Addis Ababa, May 2014

Theme of action	Purpose	Activities	Implications or outcomes
Every pregnant woman to have early access to appropriate and good quality antenatal care services	Improving timing and service content at antenatal care	• Community awareness raising activities on the benefits of early initiation of antenatal visits, before 12 weeks of gestation • Avail services locally or at accessible location • All pregnant women to receive all the basic ANC components during antenatal visits in line with national guidelines • Improve quality of service especially at government institutes where services are relatively affordable to the majority • Continuous assessment of well-being of the mother in every visit	• Early detection of high-risk pregnancy and ensuring safe delivery • Increasing the chance of institutional delivery
Information and communication	Improving the uptake of ANC and institutional delivery	• Every woman informed and counselled about danger signs and complications of pregnancy and advised what to do in case if something happens • Informed about the disadvantage of caesarean section delivery when it is without medical indication • General public awareness about the benefits of timely ANC services, institutional delivery; and also about the disadvantages of unjustified procedures or medical interventions	• Mothers will be assertive for the services they need
Enhanced family planning	Reducing unintended pregnancy	• Strengthen family planning programmes in the general community • Use antenatal units to advise women on use of contraceptives when	• Reduction in unintended pregnancy increases chance of early initiation of

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Theme of action	Purpose	Activities	Implications or outcomes
		needed	• ANC visit at health care facilities • It also increases chance of institutional delivery
Appropriate use of medical interventions or procedures at antenatal and delivery care services	Avoid unnecessary health and health care consequences and wastage of resources	• Women are given options for appropriate screening services • Women are informed about the pros and cons of undergoing procedures (caesarean section). • Women should have the opportunity for discussion and make decisions by themselves	• Recommended number of ultrasound scans should be clearly indicated in the national protocol
Professionalism a priority for service providers	Practising health care ethics	• Service providers should be aware of the services they provide to their clients • Service providers should be aware about the rights of pregnant women to information and appropriate health care • Service providers should resist when women request for medically unjustified caesarean section	• Malpractice on ultrasound and caesarean section interventions will be minimised or avoided
Government stewardship	Regulated and monitored service delivery	• Regulatory mechanisms put in place • Services provided at health care facilities to be monitored in line with recommended standards	• Clients will receive services as per the national guideline • The raising caesarean section rate to be curbed
The right to choose where and how to give birth for the benefit of the mother, child and the community	Protecting the reproductive health right of the woman	• Women counselled and informed about procedures and possible outcomes and • fully involved in the decision making process • Service providers' approach	• Service satisfaction

Theme of action	Purpose	Activities	Implications or outcomes
		to be improved • Women should be informed about the consequences of CS in the absence of medical indications. • Quality of services should be improved in public facilities • Service fee regulated by the government particularly to limit the practice of unnecessary procedures	
Public-private partnership	Provide better options for community	• Improve quality of services in partnership • Protocols to be in place for referral of mothers between facilities especially between public and private health care facilities • Regulate and monitor the quality and efficiency of services	• Private health care services to be fairly accessible by people of different social status
Postnatal care	Continuity of care	• All the services during antenatal and delivery care to have spill-over effects on the status of the mother and the child after delivery	• Avoid postnatal maternal and child morbidity and mortality
Operational research for an evidence based service improvement	Linking policy and practice through research	• Conduct regular programme evaluative research • Conduct community survey to assess gaps • Use administrative data for decision-making	• Changes to be examined • Scientifically sound measures to be formulated

6.10   IMPLEMENTATION OF THE FRAMEWORK

Since the main purpose of developing the framework is to help programme planners to formulate appropriate measures to improve quality of antenatal and delivery care services in the study area, the framework will be disseminated to the concerned bodies through different outlets including workshops and seminars and via emails. The framework is subject to expert analysis by managers, practitioners, experts from both the public and private sectors to harmonise with the already identified priorities. The

researcher believes that the framework will help implementers and stakeholders working in reproductive health programmes especially maternal health care services to adopt a more comprehensive way of measuring maternal health care services using the combined ANC indicators and its impact on maternal care outcomes.

This framework is not a standalone document rather should be used in line with the existing national policies, strategies and guidelines. It is clear that every scenario of the maternal health care services in Addis Ababa can't be captured beyond the findings of the study. However, the researcher believes the framework will help planners and implementers also to consider other options for improving maternal health care services.

6.11   RESOURCES

The researcher believes that the implementation of this framework doesn't incur additional budget on top of the existing programme in the city. Much is achievable in the short or medium-term by changing the ways of doing things putting the suggested core indicators at the heart of the maternal health care programme. There might be a need to organise a mobilisation workshop for service providers. This can be integrated with other reproductive or maternal health care related trainings or workshops. Most of the gaps can be narrowed by bringing attitudinal change on service providers, women and the general community.

6.12   CONCLUSION

This chapter presents a framework for action proposed based on evidences from the findings of the study. The framework brings together evidences from the extensive literature review, available policies and guidelines and the current findings on adequacy of antenatal care services and acceptability of medical interventions at delivery i.e., caesarean section. Respective bodies under the Federal Ministry of Health as well as Bureau of Health of the Addis Ababa City Administration are advised to use the framework as an additional resource in their efforts towards formulation of appropriate measures to improve the quality of antenatal and delivery care services for the community.

Chapter 7 presents the conclusion and recommendations made based on the findings of this research.

CHAPTER 7

CONCLUSION AND RECOMMENDATION

7.1   INTRODUCTION

This chapter presents the conclusions of the research in relation to the stated research questions and the problem statement. Summary of research findings, recommendations, and contributions of the study are discussed in this chapter. The limitations of the study are also presented.

7.2   RESEARCH DESIGN AND METHOD

Non-experimental quantitative and descriptive research was the selected methodology for this study. Addis Ababa, the study area, is divided into 10 sub Cities and each sub City is further divided into several small administrative units called Kebeles. Because of the different political or administrative structures and wider geographic areas, cluster sampling technique was employed for this study. Data was collected using structured questionnaire administered to 903 women aged 15-49 years who have experienced at least one birth in the last 1-3 years before the study. The data was entered using CSPRo then exported to SPSS version16 for analysis. Ethical clearance was obtained from the Research and Ethics Committee of the Department of Health Studies of the University of South Africa and the National Research Ethics Review Committee of the Ministry of Science and Technology, Ethiopia.

Several studies have been done to investigate maternal health care seeking behaviour globally. The most common indicators used as outcome variables so far are the number of antenatal visits, the timing of first antenatal visit and in some cases the content of antenatal services received like iron supplementation, tetanus toxoid immunisation and so on. There is no clear standard measurement method used uniformly by different researchers to assess ANC content. ANC adequacy as a composite indicator of the three common indicators which are the timing and number of visits and the content of services is rarely employed by researchers.

Based on the WHO and the national ANC standards, there are minimum requirements to ensure that a pregnant woman has received adequate number of visits initiated in early pregnancy with sufficient service components. One cannot judge whether a woman has received adequate ANC services based solely on the number of visits or time of first antenatal visit unless she received all the recommended core or basic component services. The number of visits doesn't exactly tell us what services were provided to the woman and it is difficult to assess the differences in the content or quality of services received by women from health facilities or service providers.

The current research used an indicator that combined the three indicators based on the minimum requirements indicated in the National Obstetric Management Protocol in harmony with WHO guideline. It has to be clearly stated here that because of recall bias of the mother's report, the number, timing or services received might be over-or underestimated. To reduce the recall problem, mothers were asked only about a few basic component services and information was sought only for last-born children.

7.3   SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS

The summary of the research findings are presented in line with the objectives and stated research questions as well as the main outcome variables of interest focussed in this study.

7.3.1   Adequacy of antenatal care services

With regards to the utilisation of antenatal care services, after interviewing 903 respondents, the study has come up with mixed findings. The substantial proportion of women (97.9%) visited health care facilities at least once for ANC follow up. However, there are large variations in the timing, number, content and overall adequacy of the ANC services received. Of all the ANC attendees, 86.5% of the ANC clients had four or more visits during their last pregnancy; and only slightly more than half of them (51.1%) started their first antenatal visit in the first 12 weeks of gestation. The mean timing was more than 14 weeks. Further, only about one out of five (19.8%) of the antenatal care attending clients received all the recommended basic service components or contents at least once. Consequently, the proportion of women who received overall adequate

antenatal services was very low at 10.9% mainly due to inadequate use of basic components of antenatal services.

7.3.2 Caesarean section delivery

Among the 840 women who delivered at health care facilities, 19.1% of them gave birth by caesarean section. The community level CS delivery rate among all the study respondents was 18.0%. The CS delivery rate was much higher among the non-slum residents (27.2%) compared with the slum residents (15.2%). Besides, the caesarean section rate among clients of the private health care facilities was nearly four times (41.1%) more than those done at public facilities (11.7%). The finding also clearly indicates that CS births with no medical indication are contributing to the increase in the rate of the procedure. The majority of the caesarean section clients (65.8%) were not informed or counselled by the service providers about the consequences of caesarean section delivery.

7.3.3 Preferences for places to give birth

In the current research, 96.2% of non-slum residents gave birth in health care facilities compared to 91.6% of slum residents which implies that home delivery was as twice among slum residents (8.4%) compared to non-slum residents (3.8%). Generally, in Addis Ababa a minimal percentage of women gave birth at home. Public health care facilities were the most favoured choice of delivery with 76.3% of non-slum residents giving birth in public hospitals. Comparatively, only 54.5% of the non-slum residents gave birth at public facilities.

Differences were also observed in mothers' preferences for places to give birth by their antenatal follow up status. Overall, 6.3% of the women who attended ANC at health care facilities finally delivered at home. Only 1.7% of the private facility ANC clients delivered at home compared to 6.7% of the public facility clients. In terms of shifting between types of facility, 30.0% of the private facility ANC clients delivered at public health care facilities while only 22.6% of the public facility ANC clients delivered at private facilities. In comparison, it seems that public facilities retained the majority of their antenatal clients (70.7%) at the time of delivery compared to the private facilities (68.3%).

7.3.4 Role of socioeconomic and demographic characteristics on adequacy of antenatal and delivery care utilisation

In the current research, multivariate logistic regression model identified only a few variables that are significantly associated with adequacy of ANC utilisation. Low education was negatively associated with adequate ANC utilisation, while unintended pregnancy and use of public health care facilities were negatively associated with receiving adequate ANC content services. Women with secondary and above educational status were 1.5 and 3.0 times more likely to receive adequate contents of ANC services and overall adequate care respectively compared to those with no formal education. Women whose last pregnancy was intended were 1.7 times more likely to receive all the basic components of ANC services than those with unintended pregnancies. Clients of public facilities were about 53% less likely to receive adequate contents of ANC services compared to clients of private health care facilities.

With respect to preferences to place of delivery, the multinomial logit has identified a number of demographic, social structure, health care and family and community resource variables that have statistically significant contribution to the model. Hence, young women, women with fewer number of living children, mothers with intended pregnancy, those with secondary and above education, and women belonging to higher wealth quintile household were less likely to deliver at home; while those with unintended pregnancy, mothers with no formal education and those with primary education, slum residents, those in the lowest wealth quintile, and those who received adequate ANC services were less likely to deliver at private health care facilities.

A different logit model was also fitted to examine the net effects of predictor variables on caesarean section delivery. When controlling place of ANC visit, older age (30-49), secondary and above education, non-slum residence, high-risk pregnancy and receiving adequate ANC were positively associated with caesarean section delivery.

7.4 CONCLUSIONS

Disparities in maternal health care utilisation between the socio-economic groups were very glaring, requiring urgent attention from policy makers and other stakeholders to

enable Ethiopia to meet its MDG 5. Close monitoring of the ultrasound scans is essential as the study revealed frequent use of ultrasound scans and in some incidences with no sound indication deviating from recommended standards.

It was interesting to note that most of the study respondents delivered in public health care institutions, despite the general doubts about the quality of services in these institutions. Also of note was the high use of caesarean section especially among the non-slum residents and among those who gave birth at private health care facilities. The caesarean sections done without medical indications were also alarming.

The increase in CS rate beyond the recommend upper limit has to be taken seriously by the government or city administration before it is becoming a setback despite the unreserved effort towards achieving MDG 5 through safe skilled delivery assistance among others. Studies show that unjustified CS deliveries increase the likelihood of maternal and neonatal morbidity and mortality on top of its serious economic implication on the individuals, family, the community and the health care system.

7.5   RECOMMENDATIONS

The findings of this study provided invaluable information on the adequacy of ANC with regards to the number and timing of antenatal visits and the contents of services received among women of reproductive age groups in Addis Ababa. Although there was high coverage in the number of antenatal visits with the majority having four or more visits, there are significant gaps that should be addressed in the timing of the initiation of first antenatal visit, adequacy of service components received, preferences for place to give birth and the use of caesarean section rate to improve the overall adequacy or quality of the maternal care services. On the basis of the findings, the following main recommendations have been made as an attempt to narrow the identified gaps and the recommendations are consistent with the recommended standards of the World Health Organization for Health Ministries in Sub-Saharan African countries.

7.5.1 Recommendations for policy makers, programme designers and implementers

- To improve ANC adequacy in the study area, the overall, policymaking, planning, and implementation should focus on the poor adequacy of ANC among the disadvantaged groups including the low socioeconomic groups. The ability to use health care services among women with lower educational status, women belonging to low wealth quintile households, and slum residents should be facilitated.

- The current level of adequacy of antenatal care coverage of 86.5% of women having at least four visits should be strengthened because it also increases women's chances of receiving adequate contents of ANC services and the probability of institutional delivery. For improved effectiveness, more attention should be paid to the content of care rather than number of visits as performance indicators.

- All the ANC programmes and strategies should be strengthened and access to contraceptive services and related information and communication should be improved so as to reduce the percentage of unintended pregnancies and improve ANC utilisation in the study area.

7.5.2 Recommendations to Bureau of Health of Addis Ababa City Administration

- The health care programme in the city administration should focus on improving ANC service content at all levels of the health care system particularly public facilities. Because public facilities are the main providers for the general population and particularly for disadvantaged women, to improve the quality of ANC at these facilities is essential.

- An effective monitoring system should be established to make close follow up on the strict adherence to the obstetrics protocol which will make sure that women receive the services entitled to them and avoid unjustified and unnecessary interventions such as ultrasound scans and caesarean section delivery.

- Service providers should be provided with clear guidance about the number and frequency of ultrasound scans that is recommended per pregnancy as this is not clearly indicated in the national protocol.

- The findings in this study show that caesarean section delivery without medical indication is contributing to increasing utilisation of the procedure beyond the recommended level. Hence, clear guideline for caesarean delivery practices on maternal request should be developed.

- Strong advocacy for stakeholders including service providers (obstetricians) on enhancing the quality of ANC services and the rational for the use of medical intervention should be developed.

- Enforcement of service standards is needed to enhance quality of services and reduce the provision of unnecessary and more expensive services.

- "Timing of first antenatal care visit" and "adequacy of service content" as quality measurement indicators should be stated clearly in the Health Sector Development Program document together with "the number of visits".

7.5.3 Recommendations for health care facilities and service providers

- To improve the effect of ANC on maternal as well as child health outcomes, raising the awareness of women on timing of initiation of antenatal visit and at least the basic component services should be priority agenda.

- In Addis Ababa, the private health facilities (hospitals and clinics) outnumber public facilities in huge margin. However, the majority of the antenatal attendees visit public health care facilities where the quality of care is relatively poor. Because public facilities are the main providers for the general population, and particularly for disadvantaged groups, improving the quality of ANC at these facilities is critical.

- Most of the women in the study area gave birth in public health care facilities as compared to private sectors. These preferences were attributed to distance and perceived as well as experienced low cost of care at public facilities. The pulling factors at private health care facilities are related to quality issues such as short waiting time and good approach of service providers. The high ultrasound and CS utilisation rates make services at private health care facilities more costly than public facilities. Therefore, there is a need to improve the quality of services at public facilities through enhancing the practice of professionalism among the service providers in order to reduce inappropriate and unnecessary expenses to the women.

- One of the observations from the research findings is that service providers do not provide adequate information and counselling to women about danger signs and pregnancy complications during antenatal care visits, or information may not be conveyed in a way women can grasp it easily. Therefore, efforts must be made to improve women's awareness about ANC and delivery care services through improved communication by the service providers at antenatal care units.

- Women need more information about danger signs and complications of pregnancy, the importance of core ANC services, the limited benefits of antenatal ultrasound, and the risks and benefits of CS birth. They should also be educated that use of expensive and exhaustive investigation services doesn't necessarily imply good quality services.

- Health care service providers must adhere to the national recommendations regarding the basic ANC component services, antenatal ultrasound, and the rational use of caesarean section delivery; for the latter two, more emphasis for private facilities.

- Despite the high level of ANC attendance among mothers in the study area, a good number of pregnant women especially among poor socioeconomic groups still chose to deliver at home. Health facility statistics also show that many women still die from complications of pregnancy and childbirth (FMOH 2011:22). Therefore, effort should be made to bring every pregnant woman to health

facilities by providing good quality ANC services and strengthening health education campaigns at ANC centres.

7.5.4 Recommendations to Professional Associations, NGOs and partners

- Strengthen advocacy on the right of women for health information and education, informed choices, good quality maternal health care services.

- Professional associations should advocate and collaborate with public and other private actors on improving quality of health services and reducing professional malpractices.

7.5.5 Recommendations on future research

- There should be continued effort on applied research to examine the appropriate application or use of national protocols and guidelines on service provision. For instance, the impact of the obstetrics management protocol in limiting the unjustified caesarean section delivery rate in Addis Ababa should be visible through research.

- This study describes the current level and pattern of caesarean section delivery in the study area together with associated risk factors to the procedure. Future studies need to examine the attitude of service providers and their influence to the growing CS delivery rate. In-depth investigations on the effect of CS delivery on maternal and child health outcomes should be carried out in the study area.

- Women's perception of the private sector in Addis Ababa is that it offers better quality services than the public facilities. The fact that the same providers are working in both sectors, future studies should examine whether there is real significant difference between the two sectors in terms of quality of maternal care service.

- The observed differences in the utilisation of services between public and private health care facilities including more frequent use of technological products should

be confirmed with further systematic investigations for the benefit of the community.

- Qualitative research is recommended for in-depth understanding of attitude of service users and views of service providers towards the use of antenatal ultrasound and caesarean section delivery.

- This study should be replicated in other areas of the country including rural areas using the combinations of indicators to see the levels and trends of the adequacy of ANC service and caesarean section delivery. This could also involve male partners or husbands.

7.6   CONTRIBUTIONS OF THE STUDY

This study has come up with important findings that have implications to actors at different levels including policy-makers, programme planners and practitioners or service providers as evidence base on which to build strategies or on which to focus activities to improve maternal health care delivery. The identified overall poor adequacy of antenatal care services and the high rate of caesarean section delivery will serve as inputs for formulation of appropriate strategies and measures to reach the most affected groups. The high tendency of women towards public health care facilities mainly attributed to women's seeking for low cost services and easy to reach services; and the high caesarean section delivery in the study population mainly among high socioeconomic groups and clients of the private health care sector is a concern for policy makers and programme managers as well as implementers. The low content of antenatal care services received by pregnant women including poor counselling about the danger signs and complications of pregnancy, failures to provide counselling about the consequences of caesarean section and others indicate where the service providers has to concentrate to satisfy their clients and save lives. The findings have also shown gaps that should to be addressed in future research.

7.7   LIMITATIONS OF THE STUDY

In interpreting this study's findings, it is advisable to consider some of the limitations of the study. The cross-sectional nature of the data doesn't allow making causal inferences about the relationship between adequacy of ANC and delivery care and the

risk factors. It is important to keep in mind that the analysed data includes information reported by mothers only from last pregnancies or childbirths. This study didn't collect data about the views and practices of service providers related to quality of services and use of ultrasound and caesarean section delivery. The study was also totally limited to the capital city and findings might not reflect the situation to the rest of the country.

7.8   CONCLUDING REMARKS

The aim of this study was to describe and systematically assess maternal health care seeking behaviour in Addis Ababa. The study has met the objectives and has answered the research questions.

The findings of this research indicate that standards of antenatal care services are not met in Addis Ababa. Given the differences among the different groups of the community the government has to come up with different strategies to ensure that the most affected population groups are provided with good quality services for the health care rights they are entitled to as per the National Health Policy and the health sector development programme. The public health care facilities, being the destination for most pregnant women for their antenatal and delivery care services, need to greatly improve provision of quality basic component services for ANC and by maintaining the optimal caesarean section delivery rate. The level of adequacy of antenatal care services should not be masked solely by the high coverage in the number of antenatal visits being presented by different surveys and routine reports. For an ANC service to be complete and adequate, the minimum requirements for timing and number of antenatal visits and service content should be met. Therefore, monitoring of ANC programmes should be comprehensive enough by giving due consideration to the three important ANC indicators i.e., the timing of first antenatal visit, the number of antenatal visits and the content or components of ANC services in line with the national protocol.

The caesarean section delivery rate in the capital city among non-slum residents and clients of private health care facilities presents a serious concern. Therefore, the government should play a role through improved stewardship to closely regulate the private sector on balancing cost and the quality of service delivered as well as on the alarmingly high caesarean section utilisation. The government has to take the future of maternal health care services seriously in sight of the growing private-for-profit amenities and its commercialisation.

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Annexure A: Enumeration areas selected using PPS from CSA's DHS archive

ser no	region	rcode	zone	zcode	wereda	wcode	town	tcode	c05_subcity	kebele	kcode	c08_ea	nhh
1	ADDIS ABABA	14	AKAKI KALITY	1	AKAKI KALITY	1	ADDIS ABABA	1	1	KEBELE 01/03	1	26	114
2	ADDIS ABABA	14	AKAKI KALITY	1	AKAKI KALITY	1	ADDIS ABABA	1	1	KEBELE 10/11	5	15	60
3	ADDIS ABABA	14	NEFAS SILK-LAFTO	2	NEFAS SILK-LAFTO	2	ADDIS ABABA	1	2	KEBELE 06/07/08	2	18	225
4	ADDIS ABABA	14	NEFAS SILK-LAFTO	2	NEFAS SILK-LAFTO	2	ADDIS ABABA	1	2	KEBELE 10/18	4	26	208
5	ADDIS ABABA	14	NEFAS SILK-LAFTO	2	NEFAS SILK-LAFTO	2	ADDIS ABABA	1	2	KEBELE 16/17	6	34	148
6	ADDIS ABABA	14	NEFAS SILK-LAFTO	2	NEFAS SILK-LAFTO	2	ADDIS ABABA	1	2	KEBELE 11	9	3	166
7	ADDIS ABABA	14	KOLFE KERANIYO	3	KOLFE KERANIYO	3	ADDIS ABABA	1	3	KEBELE 01/05	2	87	213
8	ADDIS ABABA	14	KOLFE KERANIYO	3	KOLFE KERANIYO	3	ADDIS ABABA	1	3	KEBELE 13/14	5	10	172
9	ADDIS ABABA	14	KOLFE KERANIYO	3	KOLFE KERANIYO	3	ADDIS ABABA	1	3	KEBELE 06	7	59	139
10	ADDIS ABABA	14	KOLFE KERANIYO	3	KOLFE KERANIYO	3	ADDIS ABABA	1	3	KEBELE 04	10	59	219
11	ADDIS ABABA	14	GULELE	4	GULELE	4	ADDIS ABABA	1	4	KEBELE 07/17	3	23	141
12	ADDIS ABABA	14	GULELE	4	GULELE	4	ADDIS ABABA	1	4	KEBELE 10/11/12	6	18	98
13	ADDIS ABABA	14	GULELE	4	GULELE	4	ADDIS ABABA	1	4	KEBELE 10/18	10	5	233
14	ADDIS ABABA	14	LIDETA	5	LIDETA	5	ADDIS ABABA	1	5	KEBELE 02/03	2	15	149
15	ADDIS ABABA	14	LIDETA	5	LIDETA	5	ADDIS ABABA	1	5	KEBELE 07/14	6	13	144
16	ADDIS ABABA	14	KIRKOS-SUB CITY	6	KIRKOS-SUB CITY	6	ADDIS ABABA	1	6	KEBELE 02/03	2	21	233
17	ADDIS ABABA	14	KIRKOS-SUB CITY	6	KIRKOS-SUB CITY	6	ADDIS ABABA	1	6	KEBELE 11/12	5	20	159
18	ADDIS ABABA	14	KIRKOS-SUB CITY	6	KIRKOS-SUB CITY	6	ADDIS ABABA	1	6	KEBELE 20/21	9	7	198
19	ADDIS ABABA	14	ARADA	7	ARADA	7	ADDIS ABABA	1	7	KEBELE 04/05	3	5	177
20	ADDIS ABABA	14	ARADA	7	ARADA	7	ADDIS ABABA	1	7	KEBELE 15/16	7	18	217
21	ADDIS ABABA	14	ADDIS KETEMA	8	ADDIS KETEMA	8	ADDIS ABABA	1	8	KEBELE 04/05	2	13	339
22	ADDIS ABABA	14	ADDIS KETEMA	8	ADDIS KETEMA	8	ADDIS ABABA	1	8	KEBELE 13/15	6	18	180
23	ADDIS ABABA	14	YEKA	9	YEKA	9	ADDIS ABABA	1	9	KEBELE 03/04	2	47	187
24	ADDIS ABABA	14	YEKA	9	YEKA	9	ADDIS ABABA	1	9	KEBELE 16/17/18	5	49	204
25	ADDIS ABABA	14	YEKA	9	YEKA	9	ADDIS ABABA	1	9	KEBELE 20/21	7	47	208
26	ADDIS ABABA	14	YEKA	9	YEKA	9	ADDIS ABABA	1	9	KEBELE 09/10	10	16	123
27	ADDIS ABABA	14	BOLE	10	BOLE	10	ADDIS ABABA	1	10	KEBELE 08/09	3	15	137
28	ADDIS ABABA	14	BOLE	10	BOLE	10	ADDIS ABABA	1	10	KEBELE 14/15	5	38	436
29	ADDIS ABABA	14	BOLE	10	BOLE	10	ADDIS ABABA	1	10	KEBELE 01	8	1	244
30	ADDIS ABABA	14	BOLE	10	BOLE	10	ADDIS ABABA	1	10	KEBELE 11	11	17	228

Annexure B: Sample sketch map of an enumeration area (EA)
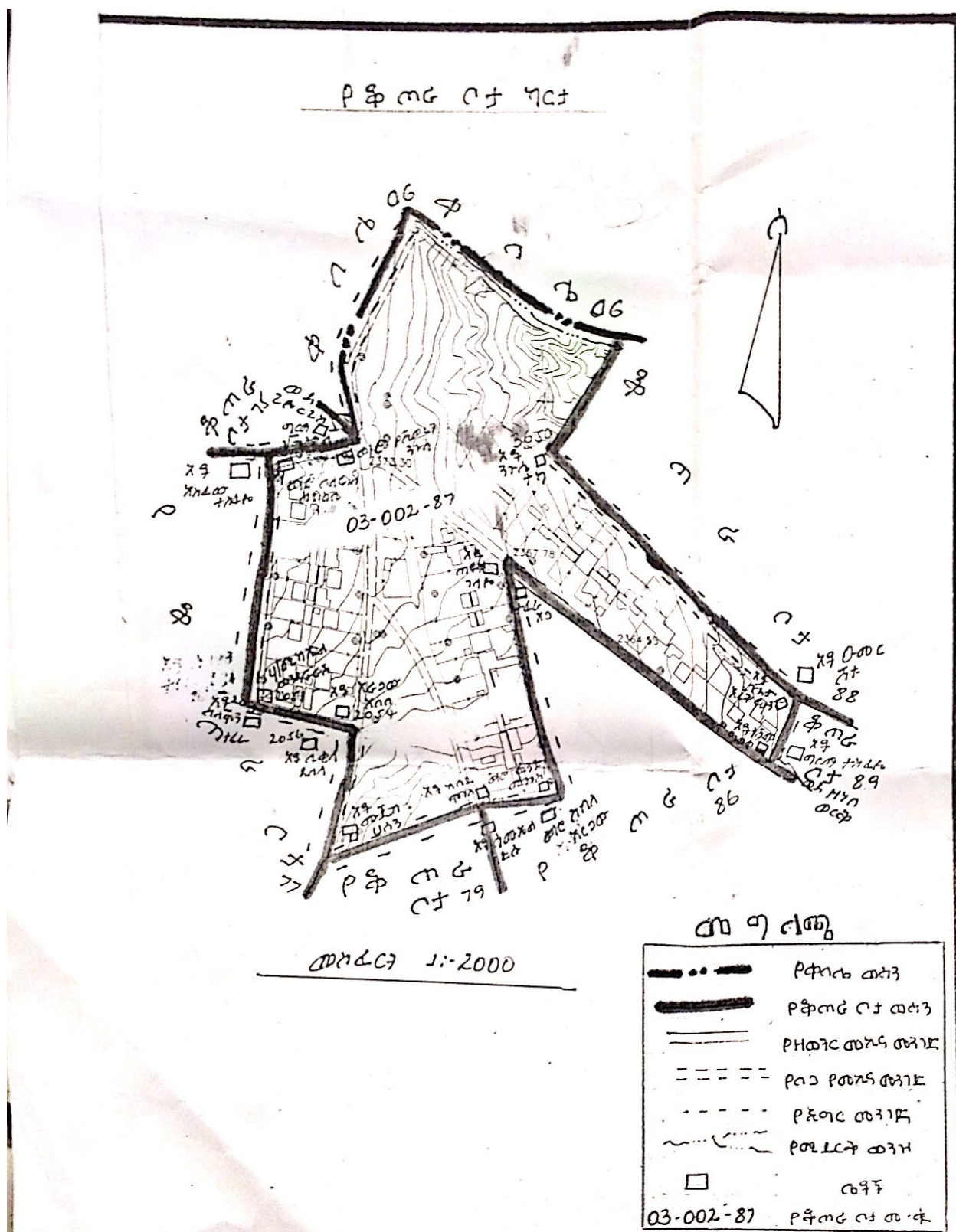
Annexure C: Letter of approval to conduct field work

Reference: A.A.H.O/2284/227
Date 22/12/2013

To whom it may concern; n.c

The Addis ... Administration
Health Bureau

Subject; Request to access Health Facilities to conduct approved research

This letter is to support Yibeltal Tebekaw to conduct research, which is titled as "maternal Health care seeking behavior in Addis Ababa, Ethiopia;.

The study proposal was duly reviewed and approved by Addis Ababa Health Bureau Ethical Clearance Committee. The principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical Committee as required.

Therefore we request the concerned to provide support to the principal investigator.

With Regards

Frie Hailu
Secretary, Ethical Clearance committee

Cc- Yibeltal Tebekaw
Addis Ababa
Ethical Clearance Committee
Addis Ababa

NB: The "subject" of the letter says to "access health facilities", this was minor mistake instead of saying "to access the community for collection"

Annexure D: Letter of request to conduct research in Addis Ababa

To   Bureau of Health

Addis Ababa City Administration

Addis Ababa, Ethiopia

Date: Nov. 18, 2013

Re: Request for approval to conduct research

I am Yibeltal Tebekaw Bayou, a registered PhD student at the University of South Africa (UNISA). I am requesting permission to conduct a study on maternal health care seeking behaviour and women's preference for places to give birth in Addis Ababa.

The main aim of this research is to describe and systematically assess women's maternal health care seeking behaviour in the study area. It is expected that the findings from the study will inform program designers and stimulate formulation of appropriate measures to improve maternal and child health outcomes in the study area.

Sincerely,

Yibeltal Tebekaw Bayou

Addis Ababa, Ethiopia

Annexure E: Ethical clearance certificate obtained from UNISA

UNISA | university of south africa

UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE

HSHDC/168/2013

Date:	6 March 2013	Student No:	4647-704-7

Project Title: Maternal healthcare seeking behaviour and preferences for places to give birth in Addis Ababa, Ethiopia.

Researcher: Yibeltal Tebekaw Bayou

Degree: D Litt et Phil Code: DPCHS04

Supervisor: Prof YJS Mashalla
Qualification: PhD
Joint Supervisor: -

DECISION OF COMMITTEE

Approved √ **Conditionally Approved** ☐

Prof L Roets
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

Prof MM Moleki
ACTING ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

Annexure F: Ethical clearance obtained from Ministry of Science and Technology of Ethiopia

The Federal Democratic Republic of Ethiopia
Ministry of Science and Technology

ቁጥር 3.10\382\06
Ref. No.

ቀን 04-02-2006
Date

To: UNISA

Re: Maternal Health Care Seeking Behavior and Preferences for Places to Give Birth in Addis Ababa, Ethiopia

Dear sir/Mr./s/Dr.

The National Research Ethics Review committee (NRERC) has reviewed the aforementioned project protocol in an expedited manner. We are writing to advise you that NRERC has granted

Full Approval

To the above named project, for a period of **one year (August 9, 2013- August 10, 2014).** All your most recently submitted documents have been approved for use in this study. The study should comply with the standard international and national scientific and ethical guidelines. Any change to the approved protocol or consent material must be reviewed and approved through the amendment process prior to its implementation. In addition, any adverse or unanticipated events should be reported within 24-48 hours to the NRERC. Please ensure that you submit progress report once in a four month and annual renewal application 30 days prior to the expiry date.

We, therefore, request your esteemed organization to ensure the commencement and conduct of the study accordingly and wish for the successful completion of the project.

With regards,

Yohannes Sitotaw

Secretary of NRERC

Cc: _ Mr Yebeletal Tebekaw(PI)

Addis Ababa

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You may Contact

Annexure G: Informed consent form

Title of the project: Maternal health care seeking behaviour and preferences for places to give birth in Addis Ababa, Ethiopia

Dear respondent: my name is _____and I am here on behalf of a registered Public Health Expert (student) named Mr. Yibeltal Tebekaw Bayou who is conducting a research for his PhD degree at the University of South Africa (UNISA). I am collecting data for his research which focuses on the maternal health care seeking behaviour and their preference to places of delivery. Your household is selected for the study. We would appreciate your assistance in completing this questionnaire. The information you will provide may not have direct benefit to you now but is extremely important to inform policy makers and program designers for stimulating discussion about formulation of appropriate measures to ensure quality in maternal health care in Addis Ababa.

The National Research and Ethics Committee of the Ministry of Science and Technology has approved that the study can be conducted in Addis Ababa at household level and the respective sub City level officials have been notified that such a study will be conducted.

The proposed study does not involve any intrusive procedures therefore; you will not be exposed to either physical or psychological harm if you decide to participate in the research project. Your name will not be documented on the questionnaire and the information you give will be kept strictly confidential and will not be shared to anyone without your consent. You are free not to accept to participate in the study and you are free to withdraw from the study at any time without any consequences.

The interview will last in less than 45 minutes. You have the right not to answer any question(s) that you are not comfortable about.

Do you have any question which you wish me to clarify? If at any time you have any question or questions to ask contact:

Mr. Yibeltal Tebekaw
Lebu Area, Nifas Silk Lafto SC.
Addis Ababa, Ethiopia
Cell phone: ███████████
E-mail: ytebekaw@gmail.com

Are you willing to participate in the study? Yes No

If you are willing to participate in the study please sign here:

…………………………………….. Date: …………………………………………….
Thank you for your time!

Annexure H: Witness to consent form

Witness to consent form

I, _____, certify that I witnessed the consent interview as above. The subject has stated that she has fully understood the purpose of the study and risks and benefits involved and that she has agreed to participate in the study.

Witness to interview: _____

Date: _____

Contact: _____

Annexure I: Structured questionnaire used for data collection

STRUCTURED QUESTIONNAIRE

IDENTIFICATION

Case Identification Number: ☐☐☐☐

Name of sub City: _____

Name of Woreda/Kebele: _____

Name of locality: _____

Name of enumeration areas: ☐☐☐

Household number: ☐☐☐☐

Date of first visit (dd/mm/yyyy): ☐☐☐

Date of second visit (dd/mm/yyyy): ☐☐☐

Interviewer's name and signature: _____ _____

Supervisor's Name and Signature: _____ _____

          Sign.   Name

Questionnaire status at the end of interview (to be confirmed by researcher):	Complete	1	
	Incomplete	2	**SKIP**

NO.	SECTION-1 HOUSEHOLD INFORMATION		
	QUESTIONS AND FILTERS	**CODING CATEGORIES**	
	NOW, I WILL ASK YOU SOME QUESTIONS REGARDING YOUR HOUSEHOLD.		
101	How many members are in your household? *(Household=people eating together)*	☐☐	
102	Does your household have:		Yes No
	Electricity?	Electricity	1 2
	Radio?	Radio	1 2
	Television?	Television	1 2
	Telephone (mobile/fixed)?	Telephone	1 2
	Personal computer (laptop/desktop)?	Personal computer	1 2
	Internet?	Internet	1 2
	Refrigerator?	Refrigerator	1 2
103	Does any one of your household member own:		Yes No
		A bajaji (three tyre motorbike)	1 2
		Animal-drawn cart?	1 2
		A car/truck?	1 2
104	Who owns the house in which your household is living?	Own house	1
		Rental from private	2

1

		Rental from gov't	3	
		Dependent	4	
		Other (specify)	5	
105	How many sleeping (bed) rooms do you have for the household members?			
106	Main floor material (observe) [Finished-polished wood, asphalt, ceramic, cement & carpet]	Natural (earth/sand)	1	
		Rudimentary (wood/bamboo)	2	
		Finished floor	3	
		Other (specify) _____	4	
107	Main material of the roof (observe) [Finished roofing-corrugated iron/metal, wood, cement, concrete]	Natural roofing (no roof/leaf)	1	
		Rudimentary (plastic/bamboo/woo	2	
		Finished roofing	3	
		Other (specify) _____	4	
108	Main material of the exterior wall (observe) [Natural wall- if no wall, orcane/trunks/bamboo/reed or dirt]	Natural wall (no wall/reeds/dirt)	1	
		Rudimentary wall	2	
		Finished wall	3	
		Other (specify)	4	
109	What is the main source of drinking water for your household?	Tap water (piped into house or yard	1	
		Protected dug well/spring/rain wate	2	
		Public tap	3	
		Other (specify) _____	4	
110	What kind of toilet facility do members of your household use?	Pour flush latrine (private or shared	1	
		Pit latrine (private or shared)	2	
		Public toilet	3	
		Other (specify) _____	4	

SECTION-2 BACKGROUND INFORMATION

SKIP

201	How old were you at your last birthday?	Age in completed years		
202	Have you ever attended school?	Yes	1	→ 204
		No	2	
203	Have you ever participated in a Basic Education Program or any other program that involves learning to read or write?	Yes	1	
		No	2	→ 205
204	What is the highest grade you completed?	Grade		
		Tech/Voc. Certificate	13	
		University/college dimploma	14	
		University/college degree or above	15	

205	What is your current marital status?	Married	1	
		Living together/cohabiting	2	
		Never married	3	
		Widowed	4	→ 209
		Divorced	5	
		Separated	6	
206	What is the highest grade your husband completed?	No education	99	
		Grade		
		Tech/Voc. Certificate	13	
		University/college dimploma	14	
		University/college degree	15	
207	What is your husband's/partner's occupation?	Not employed	0	→ 209
		Government employee	1	
		Non-governmental Organization er	2	
		Private employee	3	
		Self-employed	4	
		Other	5	
208	What is your husband's/partner's average monthly income (Birr)?			
209	What is your current job?	Not employed	0	→ 211
		Government employee	1	
		Non-governmental Organization er	2	
		Private employee	3	
		Self-employed	4	
		Other	5	
210	What is your average monthly income (Birr)?			
211	What is your religion?	Orthodox christianity	1	
		Islam	2	
		Protestant	3	
		Catholic	4	
		Traditional belief	5	
		Others (Specify)_____	6	
212	What is your ethnicity? *[Code will be given by the researcher during data entry]*	Specify _____		
	SECTION-3: MATERNITY AND MATERNAL HEALTHCARE			
301	How many living children do you have?	Number of living children		
302	Is your last born child alive?	Yes	1	
		No	2	
303	When was the date of birth for your last child/born?	Date of lastbirth		

		[dd/mm/yyyy		
		Don't know	9999	
304	At the time you became pregnant for the last birth, did you yourself actually want to become pregnant then, did you want to stay until <u>later</u>, or did you <u>not want</u> to have any (more) children at all?	Wanted by then Wanted later Wanted no more child	1 2 3	
305	Did you see anyone for antenatal care (ANC) during/for your last pregnancy/born?	Yes No	1 2 ⟶ 319	

306	Who did you see for the ANC follow up?		አዎ የለም	
		Physician/Health Officer	1 2	
		Nurse/Midwife	1 2	
		Health Extension Worker	1 2	
		Traditional birth attendant	1 2	
		Other specify _____	5	

307	How many months pregnant were you when you first received ANC for this last pregnancy?			
		Don't remember	99	

308	How many times did you receive ANC during this pregnancy?			
		Don't remember	99	

309	Where did you receive antenatal care for this pregnancy? *(Type of private HF will be verified by enumerators during data collection or by the researcher then after)*	Public hospital Public health center Public health post Private for profit health facility Private for-not-profit (hospital/clinic Private other (specify) _____	1 2 3 4 5 6	

310	What were the reasons for you to choose the above service provider? *(This doesn't work for those who received their ANC at home)*		<u>Ye</u> <u>No</u>	
		Short distance	1 2	
		Short waiting time	1 2	
		Perceived low cost of service	1 2	
		Experienced low cost of service	1 2	
		Perceived good quality of service	1 2	
		Experienced good quality of serv	1 2	
		Perceived good approach of prov	1 2	
		Experienced good approach of p	1 2	
		Husband's influence	1 2	
		Family influence	1 2	
		Friend's influence	1 2	
		Other (specif_____	8	

311	As part of your antenatal care during this pregnancy, were any of the following done for you at least once?
	Were you asked about previous history of:
	  Still births
	  Death of infant in the first week of life
	  Heavy bleeding during or after delivery
			YES NO Don't Remember	

		Still birth	1 2 9	
		Infant death	1 2 9	
		Bleeding	1 2 9	

				Ye	No	Don't Know	
	Assisted delivery (cesarean section, forceps…)	Assited delivery	1	2		9	
	Abortion (any type)	Abortion	1	2		9	
	Examination or procedure was done by the provider:						
	Weighed measured	Weight	1	2		9	
	Height measured	Height	1	2		9	
	Blood pressure measured	BP	1	2		9	
	Fetal heartbeat listened	Fetal heartbeat	1	2		9	
	Uterine height measured	Uterine height	1	2		9	
	Urine sample taken	Urine	1	2		9	
	Blood sample taken	Blood	1	2		9	
	Perform or refer for anaemia test	Anaemia test	1	2		9	
	Syphilis test	Syphilis test	1	2		9	
	HIV counseling/referred	HIV counseling	1	2		9	
	HIV test/referred	HIV test	1	2		9	
	Checked client card	Client card	1	2		9	

				Ye	No	Don't Know	
312	During this pregnancy [interventions]:						
	Were you given an anti-tetanus injection in the arm?	Tetanus toxoid	1	2		9	
	Were you given or did you buy/get any iron tablets?	Iron tablets	1	2		9	
	Did you receive any medication for intestinal parasites?	Antihelimenthes	1	2		9	
	Did you take any anti-malaria drug?	Anti-malaria drugs	1	2		9	
	Were you advised about:						
	Exclusive breastfeeding?	Exclusive breastfeeding	1	2		9	
	The benefit of breastfeeding?	Benefits of breast feeding	1	2		9	
	The benefit of family planning?	Benefits of family plannng	1	2		9	

313	During your antenatal follow up, did the provider ask you where you would like to deliver?	Yes	1	
		No	2	
		Don't remember	9	

314	Did the provider advise you to deliver at a health facility?	Yes	1	
		No	2	
		Don't remember	9	

315	How much does a single antenatal visit cost you in your client health facility? [Doesn't include transportation fee)	Amount in ETB		

316	During (any of) your antenatal care visit(s), were you counselled about the danger signs or complications of pregnancy?	Yes	1	
		No	2	
		Don't know	9	

			YES	NO	Don't Remember	
317	What are the common danger signs of pregnancy?	Fever	1	2	9	
		Swelling of hands and fac	1	2	9	
	[If the respondent doesn't know any sign, specify as "No".]	Abdomenal pain	1	2	9	
		Severe headache	1	2	9	
		Vaginal bleeding	1	2	9	
		Blurred vision	1	2	9	
		Tiredness or breathlessne	1	2	9	
		Reduced baby movement	1	2	9	
		Other specify _____			8	

318	What are the common pregnancy and/or delivery complications?		YES	NO	Don't Remember
		High blood pressure	1	2	9
		Convulsion	1	2	9
		Postpartum hemorrhage	1	2	9
		Prolonged labor	1	2	9
		Still birth	1	2	9
		Other specify _____			3

NOW I AM GOING TO ASK YOU SOME QUESTIONS REGARDING DELIVERY SERVICES

319	Where did you deliver your last child? [Not-for-profit e.g. NGO clinics] _____ Name of HF	Home	1	
		Public health facility	2	
		Private for-profit HF	3	→ 321
		Private not-for profit HF	4	
		Other (specify) _____	5	

320	Why you didn't deliver at a health facilty? (Record all the reasons mentioned) [After this skip to Q335]		Ye	No	
		High cost of service	1	2	
		Long distance	1	2	
		Long waiting time	1	2	
		No complications (experience	1	2	
		Don't trust facility	1	2	
		Unavailability of equipments	1	2	
		Unavailability of drugs	1	2	
		Unavailability of qualified servi	1	2	
		Husband didn't allow	1	2	→ 335
		Family didn't allow	1	2	
		Friend's influence	1	2	
		Previous bad experience at he	1	2	
		Little respect from health work	1	2	
		Lack of privacy	1	2	
		Fear of operation (CS)	1	2	
		Facility closed (off working hou	1	2	
		Not customary	1	2	
		Not necessary	1	2	
		Other (specify) _____		9	

321	Who attended your delivery at health facility?	Gyne-Obstetrician (specialist)	1
		Physician	2
		Nurse/Midwife	3
		Health Extension Worker	4
		Traditional Birth Attendant	5
		Other specify _____	6

322	What was the mode of delivery for your last birth?	Vaginal delivery	1 → 327
		Cesarean section	2

323	Why did you deliver by cesarean section?	Medical indication	1
		Service provider's influence witho indication	2 → 325
		I requested (preferred)	3

324	Why did you prefer c-section?	To avoid labor pain	1
		Safe for the child	2
		Safe for me (mother)	3
		Other (specify) _____	4

324	Why did you prefer c-section?	To avoid labor pain	1	
		Safe for the child	2	
		Safe for me (mother)	3	
		Other (specify) _____	4	
325	Did the service provider/physician tell you about the consequences of having C-section with or without medical indication?	Yes	1	
		No	2	
326	How much did you pay for the C-section?	Paid [ ][ ][ ]		
		Don't remember	99999	
327	How many ultrasound examinations did you have in the last pregnancy?	[ ][ ]		
328	What was the cost for one ultrasound examination?	[ ][ ][ ]		
329	How much does it cost you to go to the health facility (one way)? *(Taxi fee except contract)*	Total amount (ETB) [ ][ ][ ]		
		Don't know	999	
330	What is your means of transportation to go to the health facility for ANC or DC?	Public bus	1	
		Public taxi	2	
		Taxi (Lada) contract	3	
		Private vehicle	4	
		Footing	5	
		Other (specify) _____	6	
331	How long does it take you to go to the health facility from your house? *(Let the respondent use either minutes or hours)*	Minutes [ ][ ][ ][ ]		
		Don't know	999	
332	Did any organization paid some or all of your expenses for ANC or DC (insurance or similar program)?	Yes	1	
		No	2	
333	In total how much did you pay for all services or treatments you received during last delivery at the HF? (Include any payment like lab, medicine, etc)? *(exclude prices for ultrasound and CS if any)*	Total amount [ ][ ][ ][ ][ ]		
		Don't know	99999	
334	How did you pay for the services that you received at the facility?	Free of charge	1	
		Out-of-pocket (cash)	2	
		Credit	3	
		Other (specify) _____	4	
335	Did you visit any health facility within two days after your last delivery for postnatal care?	Yes	1	
		No	2	
		Don't remember	8	

			Yes	No	NA	
336	Have you ever experienced any of the following in your previous pregnancies or births? *(Confirm for previous history of child birth)*	Spontanous abortion	1	2		
		C-section	1	2	9	
		Pre-term birth	1	2	9	
		Neionatal death	1	2	9	
		High blood pressure	1	2		
		Diabetes	1	2		
		Epilepsy	1	2		
		Other medical conditions	1	2		

			Yes	No	DK	
337	Have you ever experienced the following in any HF in Addis Ababa: *Perceived inappropriate*: Consultation (card) fee? Laboratory investigation? Ultrasound? Cesarean section? Overprescription of drugs?	Consultation fee	1	2	9	
		Lab	1	2	9	
		Ultrasound	1	2	9	
		CS	1	2	9	
		Prescription	1	2	9	

338	Generally, would you encourage a friend/relative of yours to go to the facility where you went for your maternal care?	Yes	1	
		No	2	

SECTION-4: OTHER HEALTH RELATED ISSUES

401	Who in your family has the final say on your healthcare?	Respondent alone	1	
		Respondent and partner jointly	2	
		Respondent and other person in th	3	
		Husband or partner alone	4	
		Someone else	5	
402	How often do you read a newspaper or magazine?	Almost everyday	1	
		At least once a week	2	
		Less than once a week	3	
		Not at all	4	
403	How often do you listen to the radio?	Almost everyday	1	
		At least once a week	2	
		Less than once a week	3	
		Not at all	4	
404	How often do you watch television?	Almost everyday	1	
		At least once a week	2	
		Less than once a week	3	
		Not at all	4	

THANK YOU SO MUCH FOR YOUR COOPERATION.

Annexure A

Enumeration areas selected using PPS from CSA's DHS archive

Annexure B

Sample sketch map of an enumeration area (EA)

Annexure C

Letter of approval to conduct field work

Annexure D

Letter of request to conduct research in Addis Ababa

Annexure E

Ethical clearance certificate obtained from UNISA

Annexure F

Ethical clearance obtained from Ministry of Science and Technology of Ethiopia

Annexure G

Informed consent form

Annexure H

Witness to consent form

Annexure I

Structured questionnaire used for data collection