

**SOCIO-DEMOGRAPHIC FACTORS,KNOWLEDGE AND ATTITUDEAS
DETERMINANTS OF UTILIZATION OF ANTENATAL CARE SERVICES AMONG
PREGNANT WOMEN IN GESUSU HOSPITAL, KISII COUNTY, KENYA**

BY

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FOR THE DEGREE OF MASTER OF SCIENCE IN PUBLIC HEALTH**

SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT

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DECLARATION

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God bless you all.

DEDICATION

I dedicate this work in gratitude to my life companion, my dear husband, for his support, inspiration and lively discussions.

ABSTRACT

Pregnancy-related complications contribute to more than half of deaths among women annually. The study explored socio-demographic factors, knowledge and attitude as determinants of antenatal care services utilization among pregnant women in Gesusu Hospital, Kisii County, Kenya. The specific objectives were: to examine the relationship of socio-demographic factors and utilization of antenatal care services in Gesusu Hospital; to evaluate how knowledge on antenatal care among pregnant women attending antenatal care in Gesusu Hospital affects utilization of antenatal care services; and, to assess attitudes of pregnant women attending antenatal care in Gesusu Hospital concerning importance of antenatal care. The study was very significant because it provided evidence-based data for future policies designed to improve antenatal care services utilization. Cross-sectional research design was used. The study was conducted among pregnant women of reproductive age (15-49 years) attending antenatal care clinic at Gesusu Hospital. Fisher's *et al.* (1998) formula was used to determine the required sample size of 268 respondents. Two sampling methods were used in this study; purposive and simple random sampling. Gesusu Hospital was selected through purposive sampling because of its low ANC coverage among the seventeen health care facilities in Masaba South Sub-county of Kisii County. Simple random sampling method was used to select the respondents. Quantitative data was collected using a pre-tested, semi-structured interviewer-administered questionnaire and checklist. Data was analyzed, presented and stored using SPSS version 20. Bivariate correlation and regression was done between the independent variables and the dependent variable. Presentation was done using tables and bar graphs. The mean age was 21.6 years, with a standard deviation of 0.77918. This mean age showed that most of the mothers were still in their youth. And almost a fifth of the respondents (18.3 %) were between 10-19 years, showing that under-age pregnancies were common in the study region. A quarter of the respondents (25.4 %) were single, showing that single-parenthood is common in the study region. Only 36.2 % of the respondents knew that pregnant women should attend the antenatal clinic four times and above. Almost a tenth (9.7 %) of the respondents said that the recommended minimum of four antenatal care visits were very many showing poor attitude towards ANC. After bivariate correlation and regressions, the results showed that none of the independent variables was positively associated with the dependent variable. The study concluded that: i) none of the socio-demographic factors examined was a true determinant of utilization of antenatal services; ii) general awareness on antenatal care was low; and iii) there was an attitudinal problem towards the recommended minimum of four antenatal visits. The study recommends that i) a comprehensive longitudinal study is done to help in better understanding of the role of socio-demographic factors for sufficient ANC; ii) Kenya Ministry of Health and county governments should increase the awareness of focused antenatal care among women of reproductive age, and iii) future health education interventions should be focused on improving the attitude of pregnant women towards ANC

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LIST OF ABBREVIATIONS

AfDB — African Development Bank

AIDS — Acquired Immune-deficiency Syndrome

ANC — antenatal care

AUC — African Union Commission

FANC — focused antenatal care

HIV — Human Immunodeficiency Virus

KDHS — Kenya Demographic and Health Survey

KNBS — Kenya National Bureau of Statistics

MMR— maternal mortality ratio

MU ERC — Maseno University Ethics Review Committee

SDGs — Sustainable Development Goals

SM — Safe Motherhood

SSA — sub-Saharan Africa

UN — United Nations

UNAIDS — Joint United Nations Programmes on HIV/AIDS

UNDP — United Nations Development Programme

UNECA — United Nations Economic Commission for Africa

UNFPA — United Nations Population Fund

UNICEF — United Nations Children’s Fund

WHO — World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter deals with the background information on antenatal care; the statement of the problem; significance of the study, the objectives of the study; and the research questions.

1.2 Background information

Antenatal care (ANC) refers to the care that is given to an expectant mother from conception until the beginning of labour. It is one of the eight pillars of Safe Motherhood (SM) and a very important pillar in the SM programme. Its goal is to promote the health and survival of mothers and babies. ANC is thus a very important component of maternal health in order to identify complications and danger signs during pregnancy. Research has shown that expectant mothers who obtain sufficient ANC generally have better pregnancy outcomes than those who lack such care, both in terms of their own health and that of their babies. Research has also shown that women who receive regular ANC are far more likely to give birth with a skilled health attendant and are better able to recognize the signs of complications before, during and after delivery. The World Health Organization (WHO) recommends a minimum of four ANC visits for a woman with a normal pregnancy (Safe Motherhood, 2010; WHO, 1999).

ANC was previously under Millennium Development Goal (MDG) 5: Improve maternal health; Target 5.B: Achieve, by 2015, universal access to reproductive health; and Indicator 5.5: Antenatal care coverage (at least one visit and at least four visits). It is now under Sustainable Development Goal (SDG) 3: Ensure healthy lives and promote well-being for all at all ages; Targets 3.7: By 2030, ensure universal access to sexual and reproductive health-care services, including for family

planning, information and education, and the integration of reproductive health into national strategies and programmes (United Nations (UN), 2011; UN, 2015).

ANC from a skilled provider is important to monitor pregnancy and reduce the risk of morbidity for the mother and her baby during pregnancy and delivery. The quality of ANC can be monitored through the content of services received and the kind of information mothers are given during their visit. The Kenya Demographic and Health Survey (KDHS) of 2008-2009 shows that mothers who had more ANC visits during the pregnancy were less likely to deliver at home; showing a positive relationship between antenatal visits and skilled deliveries (Kenya National Bureau of Statistics (KNBS), (2014; KNBS, 2010).

Regular ANC is helpful in identifying and preventing adverse pregnancy outcomes when it is sought early in the pregnancy and is continued until delivery. Focused antenatal care (FANC) is the new model of antenatal clinic attendance introduced by WHO that is goal-oriented, reduces the number of required antenatal visits, and provides focused services shown to improve maternal outcomes. While being a strategy, it is also an important determinant of safe delivery which provides an opportunity for women to be educated to recognize and act on symptoms associated with potentially serious conditions like pre-eclampsia or a malarial infection and obstructed labour as a strategy for reducing maternal mortality. ANC is more likely to be effective if women begin to receive care in the first trimester (i.e. three months) of pregnancy and continue to receive care throughout pregnancy. It is possible during these visits to detect health problems associated with a pregnancy and to plan interventions. In the event of any complications, more frequent visits are advised, and admission to a health facility may be necessary (WHO, 2001).

The health status of women is an important indicator of the overall economic health and well-being of a country. Maternal health is closely linked with the survival of newborns. For every woman

who dies, about thirty others suffer lifelong injuries. FANC is one of the interventions to reduce maternal morbidity and mortality. Attending the WHO recommended four ANC visits has the strongest correlation with reducing the maternal mortality ratio (MMR) of all the other maternal health variables. The correlation between antenatal visits and MMR increases with the number of visits (African Union Commission (AUC), United Nations Economic Commission for Africa (UNECA), African Development Bank (AfDB) & United Nations Development Programme (UNDP), 2012).

Owino (2010) upholds that maternal health is a big thermometer for development and an important indicator of a country's health and economic status, emphasizing on the importance of women reproductive health services. However, because maternal health care services are usually preventive, and the women are generally not ill, it is easy for the services to be underutilized. Much work has yet to be done to assure maternal health for women worldwide. In order to reduce life-threatening risks and reduce mortality, good-quality maternal health services by trained health workers must be available and must be used. Therefore, safe motherhood strategies must be comprehensive in nature. Even when quality health services are available, other limiting factors can get in the way of women using these services, such as social, economic and cultural factors.

Many researches have shown that there is a relationship between socio-demographic factors and ANC. Such factors associated with seeking ANC services include: maternal age, education, marital status, occupation, wealth status, religion, place of residence, and history of pregnancy and delivery (Addai, 2000; Bloom, Wypij & Gupta, 2001; Magadi, Madise & Rodrigues, 2003; Rowe & Garcia, 2003; Van Eijk et al., 2006; Ngeresa, 2007; Adekanle & Isawumi, 2008; Simkhada, van Teijlingen, Porter & Simkhada, 2008; Nisar & White, 2009; Abosse, Woldie & Ololo, 2009; Muinde, 2010; Varma, Kusuma & Babu, 2011; Okutu, 2011; AUC et al., 2012; Zhao, Huang, Yang,

Pan, Smith & Xu, 2012; Roy, Mohan, Singh, Singh & Srivastava, 2013; Tsegay, Gebrehiwot, Goicolea, Edin, Lemma & Sebastian, 2013; Pandey & Karki, 2014; Emelumadu, Ekegbu, Ezeama, Kanu, Ifeadike & Onyeonoro, 2014; Chorong et al., 2016; KNBS, 2004; KNBS, 2010; KNBS, 2014).

Despite the significant role ANC plays, AUC et al. (2012) posit that many women do not have enough information on the importance of multiple antenatal check-ups, and so health providers must urge women to return for check-ups, and provide incentives for them to do so. They argue that if more women can attend the recommended four check-ups, Africa will undoubtedly see a steep fall in maternal mortality. This is because the reduction of maternal mortality requires early detection of high risk pregnancies through appropriate ANC at community level and the existence of a mechanism to ensure timely access to referral facilities. This requires that women should have adequate knowledge about pregnancy-related care and should be able to recognize the importance of ANC and its utilization.

Okutu (2011) examined the challenges women face in accessing and utilizing ANC services using the 2006 Uganda Demographic and Health Survey data. He found that utilization of health care services is more of an attitudinal and behavioural issue. Varma et al. (2011) in their study carried out in India found that most of the mothers who had not received ANC felt that it was unnecessary. They also found that women who believed that ANC was necessary were more likely to receive ANC and to do so as recommended. The results showed a lack of knowledge on the importance of ANC coupled with an attitudinal problem.

Globally, ANC coverage for at least one visit stands at 81 percent but only 55 percent of pregnant women make a minimum of four visits as recommended by the WHO. In the developed countries, ANC coverage for at least one visit is 95 percent while 87 percent attend at least four visits as

recommended. However, coverage of the recommended minimum of four ANC visits is still too low in developing countries. Just over half (56 percent) of all pregnant women in developing countries receive the recommended four ANC visits. In the developed countries, the MMR is 11/100,000 live births. The lifetime risk for maternal deaths in those countries is 1 in 3800. The data do not, however, reflect the quality of care, which is difficult to measure. It is essential to ensure a high quality of ANC so that services provided actually contribute to improved maternal health (United Nations Population Fund (UNFPA), 2012; WHO, 2012; Childinfo.org, 2012).

In Africa, ANC coverage stands at 74 percent for at least one visit. However, only 43 percent complete the recommended minimum of four visits. In sub-Saharan Africa, 69 percent of pregnant women attend at least one ANC visit, but coverage of at least four ANC visits is lower at 44 percent. This shows that the majority of pregnant women in Africa do not receive adequate ANC. The continent's average MMR was 590 deaths per 100,000 live births in 2008. The wide disparity in maternal health care indicators might explain the wide difference in MMR between the developed and developing countries (UNFPA, 2010; WHO, 2012).

A study carried out in Uganda by Okutu (2011) showed that ANC coverage was inadequate. The study found that less than half (48 percent) made four or more antenatal visits during pregnancy for their most recent births and less than 40 percent were assisted by skilled providers. Another study done in Ethiopia by Abosse et al. (2009) found that although ANC service utilization was high in the study population, four out of ten of the mothers did not have the minimum number of visits recommended by the WHO.

Muinde (2010) carried out a study in Kitui County on utilization of ANC services. The study concluded that the level of utilization of ANC services was relatively high and that socio-cultural and economic factors hindered utilization of ANC services. Chorong et al. (2016) found that

utilization and awareness of FANC services in both rural and urban health facilities among women in Malindi and Magarini sub-counties of Kilifi County continues to be low which is associated by socio-demographic characteristics, and health facility inefficiencies.

The Kenyan government at national and county level has put measures to improve maternal health. This includes setting up health facilities to offer perinatal care, training of staff, and provision of supplies. Policy guidelines have also been put in place for managerial and operational level. To promote the health and survival of mothers and babies, Kenya has adapted the WHO goal-oriented FANC package. The Ministry of Health has designed new guidelines for FANC services, placing emphasis on re-focusing ANC, birth planning and emergency preparedness. ANC visits are now used as an entry point for a range of other reproductive health services, thus promoting comprehensive integrated service delivery.

According to the 2014 KDHS, 96 percent of women with a live birth in the five years preceding the survey received ANC from a skilled provider, an improvement from 92 percent in the 2008-09 KDHS and 88 percent in the 2003 KDHS. 58 percent of women made the recommended four or more ANC visits during their pregnancy, an increase of 11 percentage points from the 2008-09 KDHS (47 percent). Urban women were more likely than rural women to have had four or more ANC visits (68 percent versus 51 percent). By region, the proportion of women having four or more ANC visits ranges from 37 percent in North Eastern to 73 percent in Nairobi. Overall, there has been only a slight improvement in the pattern of antenatal attendance by gestational age. The median gestational age at first visit has decreased slightly, from 5.9 months in the 2003 KDHS, to 5.7 months in the 2008-09 survey and 5.4 months in 2014 KDHS.

In Kenya, maternal deaths represent about 14 percent of all deaths among women age 15-49. The percentage of female deaths that are maternal varies by age from about 5 percent among women

age 45-49 to 27 percent among women age 25-29. The data indicate that the rate of mortality associated with pregnancy and childbearing is 0.51 maternal deaths per 1,000 woman-years of exposure. The estimated age-specific maternal mortality rates display a generally plausible pattern, being higher at the peak childbearing ages (20s and 30s) than in the younger and older age groups. By five-year age groups, the maternal mortality rate is highest among women age 35-39 (0.87), followed by those age 25-29 (0.73). MMR was 362 deaths per 100,000 live births during the seven-year period preceding the 2014 survey compared to 488 and 414 per 100,000 live births in 2008-2009 and 2003 respectively. In other words, for every 1,000 live births in Kenya in the seven years preceding the 2014 KDHS, approximately four women died during pregnancy, during childbirth, or within two months of childbirth. The lifetime risk of maternal death (0.015) indicates that approximately 2 percent of women, or about 1 in 67, will have a maternal death (i.e., they will die during pregnancy, during childbirth, or within two months of childbirth).

According to the 2014 KDHS, 61 percent of live births in the five years preceding the survey were delivered in a health facility; 62 percent were assisted by a skilled provider. More than half (53 percent) of women who gave birth in the two years before the survey received a postnatal care check-up in the first two days after delivery. In contrast, the 2008-09 KDHS found that two out of five births (43 percent) are delivered in a health facility, while 56 percent are delivered at home. This represents a commendable improvement in the proportion of births occurring at a health facility, from 40 percent in 2003 to 43 percent in 2008-09, and 61 in 2014.

In Kisii County, according to the 2014 KDHS, an average of 2.3 percent of mothers did not receive ANC at all compared to a national average of 4 percent. 58.7 percent completed the recommended four visits or more while 2.4 percent of the mothers started ANC at eight months or above. The

median months pregnant at first visit were 5.3. And 30 percent delivered at home compared to a national average of 39 percent.

Kisii County has nine sub-counties. Among the nine sub-counties, Masaba South sub-county had the worst performance in ANC attendance in 2012. The ANC coverage for Masaba South for at least one visit was 76 percent. However, only 37 percent completed the recommended minimum of four visits. Masaba South sub-county comprises of seventeen health care facilities. Gesusu Hospital's performance was the lowest in the sub-county. ANC coverage in Gesusu Hospital for at least one visit was 72 percent but only 28 percent completed the recommended four visits (Masaba South District Health Information Office, 2012; Masaba South District Reproductive Health Office, 2012).

Despite efforts by various agencies, mothers still start ANC late and end up not completing the four ANC visits. This warrants studying of the underlying factors for late prenatal attendance and incomplete utilization of the services offered during ANC. This study thus sought to explore the relationship of socio-demographic factors, knowledge (awareness of) and attitude (personal perception) concerning ANC as the independent variables and utilization of ANC services (denoted by the timing and number of ANC visits) as the dependent variable.

1.3 Statement of the problem

Maternal mortality and morbidity is a crucial public health concern. This is because pregnancy-related complications are a leading cause of death among women in the reproductive ages in developing countries. Proper ANC check-up and delivery under safe and hygienic conditions can significantly lessen the risk of maternal morbidity and mortality as well as neonatal deaths. However, despite the international emphasis in the last few years on the need to address the unmet health needs of pregnant women, progress in reducing maternal mortality has been slow.

Pregnancy-related complications contribute to more than half of the deaths among women annually. Every year, more than half a million women die from pregnancy-related causes and majority of these deaths occur in sub-Saharan Africa. Every minute, at least one woman dies from pregnancy and childbirth globally. On average, in developing countries, a pregnancy is 18 times more likely to end in the women's death than in developed countries. Variations in maternal mortality estimates between different regions can be attributed, to a large degree, to differences in the availability of and access to modern maternal health services. More than a decade of research has shown that small and affordable measures can significantly reduce the health risks that women face when they become pregnant. Most maternal deaths could be prevented if women had access to appropriate health care during pregnancy, childbirth, and immediately afterwards (WHO, 2012; UNFPA, 2010).

The Sustainable Development Goals target a global MMR not greater than 70 maternal deaths per 100 000 live births by 2030. In the developed countries, MMR is 11/100,000 live births. The lifetime risk for maternal deaths in those countries is 1 in 3800. In contrast, maternal health is still a grave concern for most of Africa. The continent's average MMR was 590/100,000 live births in 2008. This means that, in 2008, a woman in Africa died as a result of pregnancy or childbirth every 2.5 minutes, 24 women an hour, 576 a day, and 210,223 a year! The MMR in sub-Saharan Africa (SSA) was 920/100,000 live births and the lifetime risk for maternal death in SSA is 1 in 16 compared with 1 in 3800 in developed countries (UNFPA, 2012; UN, 2015).

Within the East Africa community member states, maternal mortality ratios in 2008 were among the highest on the continent at 740, 673, 410, and 488 deaths per 100,000 live births in Burundi, Ethiopia, Tanzania and Kenya, respectively. The total maternal deaths in Kenya in 2010 were

5,500. The lifetime risk for maternal death in Kenya is 1 in 39. The maternal deaths represent about 15% of all deaths to women of reproductive age (UNFPA, 2012; KNBS, 2010).

Globally, ANC coverage for at least one visit stands at 81 percent but only 55 percent of pregnant women make a minimum of four visits as recommended by the WHO. In the developed countries, ANC coverage for at least one visit is 95 percent while 87 percent attend at least four visits as recommended. Although progress has been achieved on ANC coverage globally, however, the percentage of women who complete the recommended minimum of four visits remains relatively low in the developing countries (56 percent). This shows that the majority of pregnant women in the developing countries do not receive adequate ANC. In Africa, ANC coverage stands at 74 percent for at least one visit. However, only 43 percent complete the recommended minimum of four visits. In SSA Africa, 69 percent of pregnant women attend at least one ANC visit, but coverage of at least four ANC visits is lower at 44 percent. This shows that the majority of pregnant women in Africa do not receive adequate antenatal care (WHO, 2012).

The 2008-09 KDHS showed that 92 percent of mothers received ANC but only 47 percent completed the recommended four visits. However, the 2014 KDHS shows that 96 percent of women with a live birth in the five years preceding the survey received ANC, an improvement from 92 percent in 2008-09 KDHS and 88 percent in the 2003 KDHS. In Kisii County, according to the 2014 KDHS, an average of 2.3 percent of mothers did not receive ANC at all compared to a national average of 4 percent. 58.7 percent completed the recommended four visits or more while 2.4 percent of the mothers started ANC at eight months or above. The county is experiencing high new infection rate of HIV/AIDS with antenatal surveillance of 8.7%.

The ANC coverage in Masaba South sub-county in 2012 for at least one visit was 76%. However, only 27% completed the recommended minimum of four visits. In 2011, 17.24% of pregnant

women developed pregnancy-related complications. Only 28% of the pregnant women who utilized ANC services in Gesusu Hospital completed the recommended four visits (Masaba South District Reproductive Health Office, 2012).

ANC is used as an entry point for a range of other reproductive health services, thus promoting comprehensive integrated service delivery is paramount. Lack of ANC is a risk factor for maternal mortality. Hence, low antenatal attendance underscores the importance of ANC and thus calls for identifying subgroups of women who do not utilize such services and in planning improvements to these services in order to increase ANC services utilization and reduce maternal mortality.

1.4 Objectives of the study

1.4.1 Broad objective

To explore socio-demographic factors, knowledge and attitudes as determinants of ANC services utilization among pregnant women in Gesusu Hospital, Kisii County, Kenya.

1.4.2 Specific objectives

1. To examine the relationship of socio-demographic factors and utilization of ANC services in Gesusu Hospital.
2. To evaluate how knowledge on ANC among pregnant women attending ANC in Gesusu Hospital affects utilization of ANC services.
3. To assess attitudes of pregnant women attending ANC in Gesusu Hospital concerning importance of ANC.

1.5 Research questions

1. How do socio-demographic factors affect utilization of ANC services in Gesusu Hospital?

2. Is there a gap in knowledge on ANC among pregnant women affecting utilization of ANC services in Gesusu Hospital?

3. What are the attitudes of pregnant women attending ANC in Gesusu Hospital?

1.6 Significance of the study

This study was very significant because utilization on ANC services was assessed using two variables (timing of ANC visit and number of visits) whereas many studies have assessed utilization of ANC services using only the number of ANC visits.

This study correlated the independent variables (socio-demographic factors, knowledge and attitude) with the dependent variable (utilization of ANC services). By elucidating the relationship, the goal was to provide suggestions for better implementation of ANC services in Gesusu Hospital, in Kisii County, in Kenya, in Africa, and all over the world. The significance of the results of this study is that maternal age, marital status, maternal education, occupation, religion, parity, knowledge and attitude all increase probability of use of ANC services during pregnancy.

The study provided evidence-based data for future policies designed to improve ANC services utilization. It provided policy makers and program administrators with a better understanding of reasons why more effort should be put in achieving better maternal health care for women all over the nation, the continent, and all over the world. The findings can be used to modify existing service delivery approaches so that the women are encouraged to seek ANC early in pregnancy and make the recommended four ANC visits, and proceed to seek skilled delivery care.

Any interested parties and institutions of higher learning can use the study as reference for further/future research work and/or as resource material.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the relevant literature is reviewed in line with the specific objectives listed in chapter one and a conceptual framework formulated.

2.2 Socio-demographic factors and antenatal care

2.2.1 Age

Many studies and reports have showed that age affects utilization of ANC services (Addai, 2000; Bloom et al., 2001; Magadi et al., 2003; Rowe & Garcia, 2003; Van Eijk et al., 2006; Ngeresa, 2007; Adekanle & Isawumi, 2008; Simkhada et al., 2008; Nisar & White, 2009; Abosse et al., 2009; Muinde, 2010; Varma et al., 2011; Okutu, 2011; AUC et al., 2012; Zhao et al., 2012; Roy et al., 2013; Tsegay et al., 2013; Pandey & Karki, 2014; Emelumadu et al., 2014; Chorong et al., 2016; KNBS, 2004; KNBS, 2010; KNBS, 2014).

A study carried out in Southern Ethiopia by Abosse et al. (2009) found that maternal age is a major predictor of ANC service utilization. Pandey and Karki (2014) in their study on socio-economic and demographic determinants of ANC services utilization in Central Nepal found that age was strongly associated with the attendance at ANC service just like Abosse et al.

Zhao et al. (2012) assessed utilization of ANC in rural-to-urban migrant women in Shanghai. Multivariate logistic regression showed that, compared with younger women, women between the ages of 25 and 30 (AOR=2.2, 95% CI=1.4-3.5) and women older than 30 (AOR=1.9, 95% CI=1.1-3.2) were more likely to have adequately utilized ANC services. Ngeresa (2007) used the KDHS

(2003) data to examine the utilization of ANC and delivery services in Kenya. She found that women who are over 35 years are likely to receive adequate ANC during their pregnancy.

Tsegay et al. (2013) in their cross-sectional study in Tigray, Ethiopia on determinants of antenatal and delivery care utilization found that there was an equal proportion of ANC users (23.5 percent) among the 16–29 years and 30–39 years age groups, whereas ANC use was very low (7 percent) in the older age group. A research carried out in India by Bloom et al. (2001) found that women with high levels of ANC attendance tended to be younger. These studies contradicting the above results by Zhao et al. (2012) and Ngeresa (2007).

However, Okutu (2011) found that there was no significant variation between younger mothers aged less than 20 years and those 35 years and above who made the recommended four ANC visits. Although many studies have shown a relationship between age and utilization of ANC services, the 2008-2009 KDHS shows that the mother's age is not strongly related to use of ANC services (KNBS, 2010).

2.2.2 Marital status

Van Eijk et al. (2006) in their community based survey on use of antenatal services and delivery care among women in rural western Kenya found that married women had higher antenatal attendance than their unmarried counterparts. Ngeresa (2007) and Simkhada et al. (2008) found similar results.

Tsegay et al. (2013) found that married (OR=2.57, 95% CI: 1.44-4.58) and divorced (OR=2.78, 95% CI: 1.31-5.89) women had a higher probability of visiting ANC services than single and widowed women. Although the prevalence of ANC in divorced women is small compared to married women, the higher ANC utilization by divorced women compared to single and widowed women was a unique finding in this study. A possible explanation might be that divorced women

are more empowered and have more autonomy than single and widowed women. Although there is not much published literature on this issue in the context of the study area, they argue that if the divorce is initiated from the woman's side, it might imply a higher level of self-reliance and autonomy in the woman.

However, Abosse et al. (2009) found marital status was not a true determinant/predictor of ANC utilization.

2.2.3 Education

A review of studies shows that education of women is positively associated with utilization of ANC services. Higher maternal education has been associated with higher antenatal attendance. This is because education leads to more decision making power for the mother within her household as well as increasing her use of modern health care (Addai, 2000; Bloom et al., 2001; Magadi et al., 2003; Rowe & Garcia, 2003; Van Eijk et al., 2006; Ngeresa, 2007; Adekanle & Isawumi, 2008; Simkhada et al., 2008; Nisar & White, 2009; Abosse et al., 2009; Muinde, 2010; Varma et al., 2011; Okutu, 2011; AUC et al., 2012; Zhao et al., 2012; Roy et al., 2013; Tsegay et al., 2013; Pandey & Karki, 2014; Emelumadu et al., 2014; Chorongo et al., 2016; KNBS, 2004; KNBS, 2010; KNBS, 2014).

Ngeresa (2007) found that generally women who are highly educated are likely to receive adequate ANC during their pregnancy. Zhao et al. (2012) found that women who had more than 10 years of education were more likely to receive adequate ANC. Okutu's (2011) study revealed that mothers with higher education are 2.3 times more likely than those with no education to make at least four ANC visits. In addition, those with primary and secondary education are 1.2 and 1.9 times respectively, more likely than those with no education to make at least four ANC visits.

Tsegay et al. (2013) found that mothers with 5–12 years of education (OR=3.18, 95% CI: 1.85-5.47) were more likely to attend ANC than non-educated and grade 1–4 mothers. Their study showed that having five or more years of education was found to be a significant predictor for both ANC use and institutional delivery.

However, Nisar and White (2009) found that education did not show any association in their study, as it may be the quality of education, which increases the likelihood of using ANC services.

2.2.4 Occupation

Adekanle and Isawumi (2008) found that unemployed women were more likely to register late for ANC. Rowe and Garcia (2003) also found that manual labourers were more likely to book late for ANC and/or make fewer antenatal visits than other women. Simkhada et al. (2008) also found a positive association between ANC and women's employment.

Okutu's (2011) study showed a marked disparity by mother's occupational status. He found that approximately three-quarters of women in professional/technical/managerial/clerical occupations reported to have received ANC services compared to less than one-third of those in agricultural industries and the self-employed. This is so because better occupations are associated with higher incomes, access to resources, and therefore, increasing the use of health facilities. Ngeresa (2007) concurs with Okutu. She found that women in the high wealth bracket are more likely to receive adequate ANC during their pregnancy than their poor counterparts. Nketiah-Amponsah et al. (2013) found similar results. A study carried out by Pandey and Karki (2014) showed that income was strongly associated with the attendance at ANC service.

However, Nisar and White (2009) found no association between working status of women and utilization of ANC services.

2.2.5 Religion

A study carried out in Ghana by Addai (2000) reported a positive association between being Catholic and the use of ANC services, and a negative association with having a traditional religion. Simkhada et al. (2008) found that women who were religious tended to use ANC more. Nketiah-Amponsah et al. (2013) found similar results.

A study carried out by Chorong et al. (2014) on the factors influencing the utilization of FANC services in Malindi and Magarini sub-counties of Kilifi County, Kenya found that religion was a determinant of utilization of ANC services. Moreover, religion, locally referred to as “Imani moja” (one faith) was found to be a factor because it required one not to seek medical attention but to rely on God to heal them. This was consistent with other studies where religion was found to be a determinant of utilization of ANC services.

However, few studies have been carried out on religion and utilization of ANC services to clearly correlate religion and ANC.

2.2.6 Parity

Studies have shown that the number of children a woman has delivered has an effect on the utilization of ANC services (Bloom et al., 2001; KNBS, 2004; Ngeresa, 2007; Simkhada et al., 2008; Nisar & White, 2009; Abose et al., 2009; Muinde, 2010; KNBS, 2010; Okutu, 2011; Tsegay et al., 2013; KNBS, 2014;).

Simkhada et al. (2008) found that parity had a statistically significant negative effect on adequate ANC attendance. Tsegay et al. (2013) state that although parity appears commonly as a major factor responsible for the utilization of ANC and institutional delivery, their study showed an inverse relationship between parity and the use of ANC services, just like Simkhada et al., 2008.

Ngeresa (2007) found that women with low parity are likely to receive adequate ANC during their pregnancy. She found that high parity women might tend to rely on their experiences from previous pregnancies and not feel the need for ANC. Due to their greater level of experience, these women might feel more confident during pregnancy and consider ANC to be less important. Okutu (2011) and the KDHS (2008-09) found similar results.

Muinde (2010) in her study in Kitui County on utilization of ANC services established that high parity women deliveries were more likely to report for ANC at an earlier gestation age. However, Emelumadu et al. (2014) found that late booking for ANC services was found to be associated with high parity contradicting Muinde's results.

2.2.7 Ethnicity

A research carried out in India by Bloom et al. (2001) found that Hindu women obtained higher levels of ANC than other ethnic groups in India. A study carried out in the United Kingdom by Rowe and Garcia (2003) found that women of Asian origin were more likely to book late for ANC than white British women.

However, few studies have been carried out on ethnicity and utilization of ANC services.

2.3 Knowledge on antenatal care

Despite the significant role ANC plays, AUC et al. (2012) posit that many women do not have enough information on the importance of multiple antenatal check-ups, and so health providers must urge women to return for check-ups, and provide incentives for them to do so. They argue that if more women can attend the recommended four check-ups, Africa will undoubtedly see a steep fall in maternal mortality. This is because the reduction of maternal mortality requires early detection of high risk pregnancies through appropriate ANC at community level and the existence of a mechanism to ensure timely access to referral facilities. This requires that women should have

adequate knowledge about pregnancy-related care and should be able to recognize the importance of ANC and its utilization.

Muinde (2010) carried out a study on utilization of ANC services among mothers in Kitui County, Kenya. One of her objective was to establish whether antenatal mothers in Central Division of Kitui County were aware of the ANC services available in the health care facilities and their health benefits. Results showed that the level of knowledge for ANC services offered was higher with an increase in the number of deliveries. This was an indication that those women with prior deliveries were more likely to report for ANC at an earlier gestation age. She also found that knowledge of the benefits of ANC influenced the utilization of antenatal services, and that the younger respondents had little knowledge about ANC services.

A study carried out in Southern Ethiopia by Abosse et al. (2009) with the broad objective of exploring the factors influencing ANC services utilization found that women lacked awareness on ANC. The study showed that ANC service utilization in the study area was 86.3 percent. However, from those who attended ANC service, 68.2 percent started ANC visit during the second trimester of pregnancy and a significant proportion (42 percent) had less than four visits.

Nisar and White (2009) in their study carried out to found out the factors affecting utilization of ANC among reproductive age group women (15-49 years) in an urban squatter settlement of Karachi found that 49 percent of the study subjects did not receive ANC. Among them 28 percent reported that they did not know it was important. Tsegay et al. (2013) in their cross-sectional study carried out in the Tigray region of Ethiopia found that 28.2 percent did not attend ANC because they lacked awareness on the benefits of ANC.

Varma et al. (2011) carried out a study in India which reported the utilization of ANC services by women living in tribal and rural areas in the district of Visakhapatnam, Andhra Pradesh, India.

They found that most of the mothers who had not received ANC said they were not aware of ANC showing lack of knowledge about ANC. A study carried out by Pandey and Karki (2014) to determine the factors affecting attendance of ANC services in Nepal showed that more than half of the women (52.3 %) were not aware of the consequences of lack of ANC.

A study carried out by Chorong et al. (2014) on the factors influencing the utilization of FANC services in Malindi and Magarini sub-counties of Kilifi County, Kenya found that there was a high level of awareness; 91.5 percent of the respondents reported having heard of FANC. The major independent predictor for lack of awareness was being unemployed (OR=9.94, 95%CI 2.02, 48.94, p=0.005). In the rural area, awareness was found to be higher among Catholics (77.8 percent) compared to Muslims (42.1 percent) while in the urban areas, 22 percent of Muslims and 57.9 percent of Catholics exhibiting awareness of FANC. The level of awareness was higher among the educated in both rural (71.7 percent) and urban (28.3 percent) health facilities. When asked on when one is expected to start ANC, 50.4 percent of the respondents stated the fourth month of pregnancy while 5.9 percent indicated second month, 13.2 percent in the first month while 13.5 percent reflected the third month of pregnancy. Regarding start of ANC at first trimester, the level of awareness was higher in urban facilities (36.6 percent) than rural facilities (9.5 percent).

Overall, there is evidence of a gap in knowledge in all these studies.

2.4 Attitude towards antenatal care

Existing literature on ANC has scarce information on attitude of clients. A study carried out by Chorong et al. (2014) on the factors influencing the utilization of FANC in Kilifi County established that a real woman (“mchejeri”) does not have to seek medical attention during pregnancy because pregnancy is not a disease. They also found that sometimes women acquired

an ANC booklet in case need arises for them to deliver in the hospital because it will be asked by the hospital staff.

Okutu (2011) examined the challenges women face in accessing and utilizing ANC services using the 2006 Uganda Demographic and Health Survey data. He found that utilization of health care services is more of an attitudinal and behavioural issue. Ngeresa (2007) examined the 2003 KDHS report on utilization of ANC and delivery services in Kenya. She found that high parity women tended to rely on their experiences from previous pregnancies and not feel the need for ANC attendance. Due to their greater level of experience, these women feel more confident and perceive ANC as less important.

Van Eijk et al. (2006) found that in western Kenya, pregnancy is often perceived as a natural process of life and thus women, families and communities underestimate the importance of ANC, perceiving it as unnecessary. Abose et al. (2009) found that women who considered pregnancy as a risky event were more likely to seek ANC than those considering it risk free. Regarding the reason for not attending ANC, 65.3 percent of the mothers responded that they were apparently healthy during their last pregnancy thus no need for ANC, perceiving ANC as not important.

Varma et al. (2011) in their study carried out in India found that most of the mothers who had not received ANC felt that it was unnecessary. The results show a lack of knowledge on the importance of ANC coupled with attitudinal issues. Tsegay et al. (2013) found that among those who did not attend ANC, the most frequently mentioned reasons were “not feeling sick” (32.7 percent), and “feeling shame” (16.7 percent), showing an attitudinal problem.

From the above studies, it is evident that there was an attitudinal problem among the respondents.

2.5 Utilization of antenatal care services

Many studies have been done on the utilization of ANC services (Addai, 2000; Bloom et al., 2001; Magadi et al., 2003; Rowe & Garcia, 2003; Van Eijk et al., 2006; Ngeresa, 2007; Adekanle & Isawumi, 2008; Simkhada et al., 2008; Nisar & White, 2009; Abosse et al., 2009; Muinde, 2010; Varma et al., 2011; Okutu, 2011; AUC et al., 2012; Zhao et al., 2012; Roy et al., 2013; Tsegay et al., 2013; Pandey & Karki, 2014; Emelumadu et al., 2014; Chorong et al., 2016; KNBS, 2004; KNBS, 2010; KNBS, 2014).

According to the 2014 KDHS, 96 percent of women with a live birth in the five years preceding the survey received ANC from a skilled provider, an improvement from 92 percent in the 2008-09 KDHS and 88 percent in the 2003 KDHS. 58 percent of women made the recommended four or more ANC visits during their pregnancy, an increase of 11 percentage points from the 2008-09 KDHS (47 percent). Urban women were more likely than rural women to have had four or more ANC visits (68 percent versus 51 percent). By region, the proportion of women having four or more ANC visits ranges from 37 percent in North Eastern to 73 percent in Nairobi. Overall, there has been only a slight improvement in the pattern of antenatal attendance by gestational age. The median gestational age at first visit has decreased slightly, from 5.9 months in the 2003 KDHS, to 5.7 months in the 2008-09 survey and 5.4 months in 2014 KDHS.

In Kisii County, according to the 2014 KDHS, an average of 2.3 percent of mothers did not receive ANC at all compared to a national average of 4 percent. 58.7 percent completed the recommended four visits or more while 2.4 percent of the mothers started ANC at eight months or above. The median months pregnant at first visit were 5.3. And 30 percent delivered at home compared to a national average of 39 percent.

Kisii County has nine sub-counties. Among the nine sub-counties, Masaba South sub-county had the worst performance in ANC attendance in 2012. The ANC coverage for Masaba South for at least one visit was 76 percent. However, only 37 percent completed the recommended minimum of four visits. Masaba South sub-county comprises of seventeen health care facilities. Gesusu Hospital's performance was the lowest in the sub-county. ANC coverage in Gesusu Hospital for at least one visit was 72 percent but only 28 percent completed the recommended four visits (Masaba South District Reproductive Health Office, 2012).

A study carried out in Uganda by Okutu (2011) showed that ANC coverage was inadequate. The study found that less than half (48 percent) made four or more ANC visits during pregnancy for their most recent births and less than 40 percent were assisted by skilled providers. A study carried out in Southern Ethiopia by Abosse et al. (2009) found that ANC service utilization in the study area was 86.3 percent. But although the ANC service utilization was high in the study population, four out of ten of the mothers did not have the minimum number of visits recommended by World Health Organization.

A study carried out in Ghana by Nketiah-Amponsah et al. (2013) found that wealth status, age, ownership of health insurance (especially for rural women), educational attainment, birth order, religion and administrative region of residence are significant predictors of the intensity of ANC services utilization. In particular, the utilization rate increases in wealth status. The authors also found significant statistical relationship between residence and ANC utilization. This finding reinforces the differences in health facilities between the rural and urban areas of Ghana.

Muinde (2010) in her study in Kitui County on utilization of ANC services established that those women with prior deliveries were more likely to report for ANC at an earlier gestation age. Pandey and Karki (2014) found that only 47.7 percent of the respondents attended at least one ANC visit

which was lower than the national average of 58.3 percent in Nepal. The percentage of pregnant women attending at least four ANC visits was found to be 30.7 percent which was lower than the national data available (50.1). The mean number of ANC visits was 3.8835 (SD 1.42) against 4, the recommended number of checkups under safer motherhood program.

Emelumadu et al. (2014) established that more than half (55.4 percent) of the respondents surveyed booked for ANC in the second trimester of their pregnancy. Most women attended their first ANC consultation during the preceding pregnancy was after the first trimester and 31.5 percent of them had less than four ANC visits prior to delivery. Roy et al. (2013) in their study to determine utilization of ANC services in India found that 85.5 percent of the respondents surveyed were found to have attended at least three ANC visits. Significant difference was found between those who attended three ANC visits and those who did not in terms of age, socio economic status, and timing of registration. On multiple regression, only age (OR = 2.107, 95% CI = 1.132 – 3.923) and timing of registration (OR = 2.817, 95% CI = 1.487 – 5.338) were found to be the predictors for three ANC visits.

Chorongo et al. (2016) found that 35 percent of women went ahead to complete the recommended 4 minimum visits as recommended by World Health. Women seeking rural ANC services started at 2nd or 3rd trimester (OR=5.40 95% CI 2.97-10.06, $p < 0.001$) while those in urban setup started at 1st trimester. Among the women who were aware of FANC, only 27 percent utilized its services. Tsegay et al. (2013) found that the proportion of women who received ANC for their recent births was 54 percent. Nisar and White (2009) found that only 51 percent of the respondents had received ANC in their most recent pregnancy while the rest (49 percent) did not receive ANC at all.

Zhao et al. (2012) found that many migrant women in Shanghai did not receive adequate ANC and initiated ANC later than the optimal first 12 weeks of pregnancy. They established that women

who were previously pregnant but did not deliver were more likely to have made five or more ANC visits. They also found that, compared to their lower-income counterparts, women from high-income households were more likely to have received ANC during the optimal first 12 weeks of pregnancy. Poor ANC utilization was associated with low socio-economic status, education, and certain demographic factors.

Overall, all these results reveal that there is a gap in the utilization of ANC services.

2.6 Conceptual framework

The concepts discussed in this chapter are socio-demographic factors, knowledge and attitude concerning ANC as the independent variables, and utilization of ANC services as the dependent variable. The concepts have been put into a conceptual framework (figure 2.1).

The framework was adapted from Kroeger's (1983) health care utilization model. Kroeger states that extensive literature on health-seeking behaviour in developing countries is reviewed within an open-ended classification framework. The review shows a polarity between two major approaches, socio-medical and anthropological. The former emphasizes services factors such as accessibility, costs, acceptability, whereas the latter focuses primarily on etiological concepts and world views. Kroeger proposed that research on health-seeking behaviour in developing countries is of both theoretical and practical relevance.

Kroeger's (1983) model has three sets of explanatory variables that determine the use of health care services; a) Predisposing factors (characteristics of the pregnant woman), b) Need factors (characteristics of disorder/illness and peoples' perceptions) and c) Enabling factors (characteristics of the health care system) that make a logical sequence to predict health care service use. The need factors represent the most immediate cause of ANC services utilization. The

enabling factors refer to the socio-medical approach, while the predisposing and need factors refer to the anthropological approach.

This study adapted an anthropological approach to Kroeger's model whereby only the predisposing and need factors were conceptualized. And, although pregnancy is not an illness, its possibility of an adverse outcome is treated as a symptom for ANC services utilization. The conceptual framework is drawn in the next page, depicting the relationship between the independent variables and the dependent variable. The predisposing factors are the characteristics of the subject; in this study, the socio-demographic factors. The need factors are ANC and people's perception of it; in this study, knowledge and attitude on ANC.

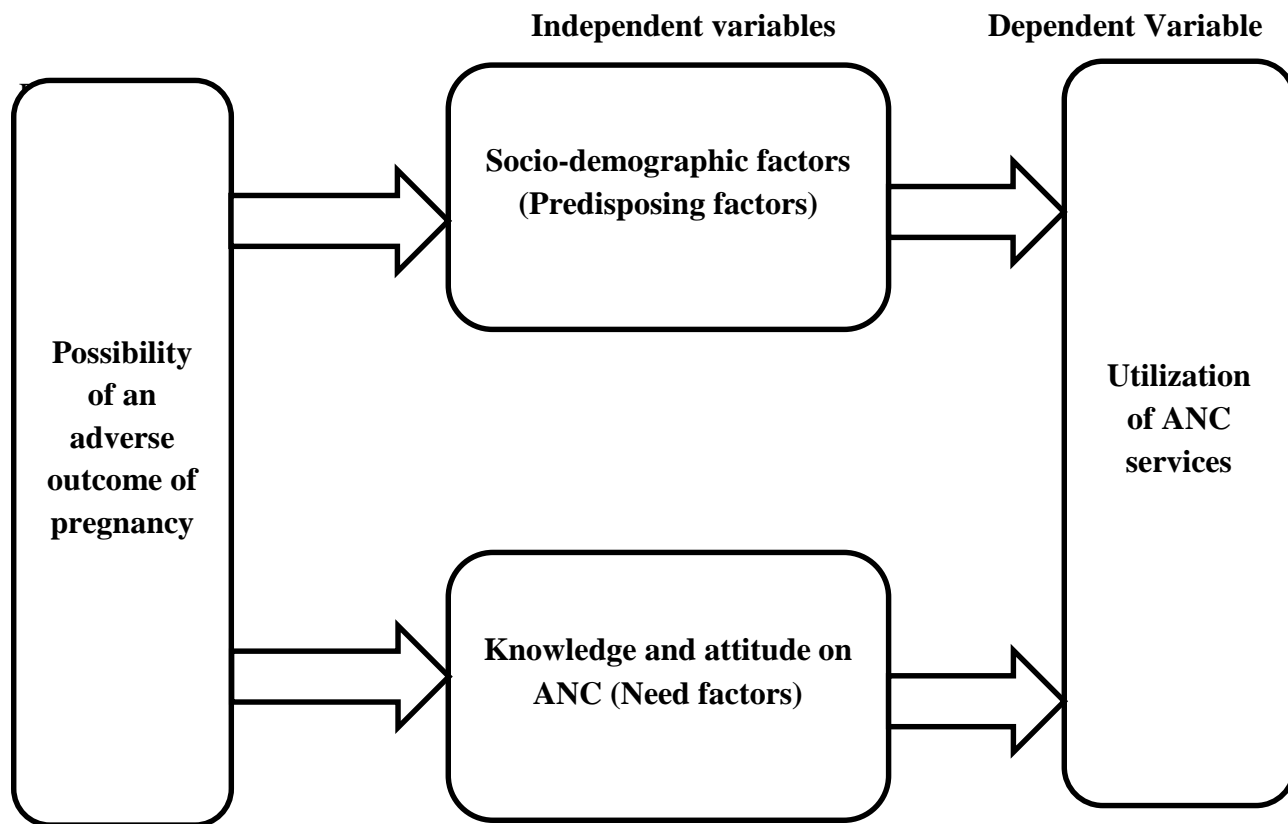


Figure 2.1: Conceptual framework

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section gives a description of the methodology for the study. The study area, research design, study population, sample size, sampling method, data collection, analysis, presentation, processing and storage, ethical considerations, study limitations and biases are discussed.

3.2 Study area

The study was carried out in Gesusu Hospital, Gesusu Location, and Kisii County, Kenya. Kenya (appendix I) is situated in the eastern part of the African continent. The country lies between 5 degrees north and 5 degrees south latitude and between 24 and 31 degrees east longitude. The equator passes at the middle, separating the upper and lower parts almost equally. Kenya borders Ethiopia (north), Somalia (northeast), Tanzania (south), Uganda (west), and South Sudan (northwest). The Indian Ocean is on the eastern side. The coastline houses the port of Mombasa, which enables Kenya and several other countries, including Uganda, Rwanda, and South Sudan, to engage in global trade. The country is administratively divided into 47 counties. It has a total of 582,646 square kilometres, of which 571,466 square kilometres are the dry land area. Most of the land area (80 percent) is arid or semi-arid, and only 20 percent is arable. Kenya has a population of about 50 million people.

Kisii County (appendix II) is a county in the former Nyanza Province in the southwestern Kenya. It is one of the 47 counties in Kenya courtesy of the new constitution of Kenya 2010 which created the new county system of governance. Its capital and largest town is Kisii. The county is inhabited mostly by the Abagusii. It shares common borders with Nyamira County to the north east, Narok County to the south and Homabay and Migori Counties to the west. The county lies between

latitude 0 30' and 1 0' south and longitude 34 38' and 35 0' east. It covers an area of 1,302 kilometres squared. Politically, the County is organized into 9 constituencies namely: Bobasi, Bonchari, Bomachoge Chache, Bomachoge Borabu, Kitutu Chache North, Kitutu Chache South, Nyaribari Chache, Nyaribari Masaba, and South Mugirango. Based on the 2009 Population and Housing Census, the county population is 1,152,282. With a growth rate of 2.1 percent, the population is projected at 1,362,779 with 650,982 males and 711,797 females by 2017. The population is served by the following health facilities: 32 community health units, 84 dispensaries, 28 health centres and 14 hospitals. According to the 2014 KDHS, an average of 2.3 percent of mothers did not receive antenatal care at all compared to a national average of 4 percent. 58.7 percent completed the recommended four visits or more while 2.4 percent of the mothers started antenatal care at eight months or above. This calls for identifying subgroups of women who do not utilize such services and in planning improvements to these services in order to increase ANC services utilization and reduce maternal mortality.

Gesusu Location (appendix III) borders Ibanchoire and Kerema locations in the north; Ikenye location to the east; Masabo location to the west; and Nyacheiki location to the south. Gesusu lies between latitude 00 50' and south and longitude 34 39' east. Gesusu Location has a total population of about 17,828 people. The area is basically an agricultural region.

Gesusu Hospital is situated in Getacho sub-location (appendix III), Gesusu Location, Kisii County, Kenya, along Keroka-Nyagusu Road. The hospital is a sub county hospital. It offers promotive, preventive, curative and rehabilitative services to a target population of about 17,828 people. It's the only hospital in Gesusu Location. It was purposively selected because of its low ANC coverage. This low coverage warranted exploring the underlying factors for late prenatal attendance and incomplete utilization of the services offered during ANC.

3.3 Research design

Cross-sectional design was used in this study.

3.4 Study population

The study was conducted among pregnant women of reproductive age (15-49 years) attending ANC clinic at Gesusu Hospital. According to Masaba South District Reproductive Health Office (2012), the proportion of women of reproductive age (15-49 years) who are pregnant at any time in a given region is normally 5% of the total population. The target population for this study was thus 891 (5% of 17,828).

3.4.1 Inclusion criteria

1. Women of reproductive age (15-49 years) who were pregnant and attended ANC clinic at Gesusu Hospital during the study period.
2. Women of reproductive age (15-49 years) who were pregnant and attended ANC clinic at Gesusu Hospital during the study period; and reported that they had lived in Gesusu Location for at least one year prior to the study.
3. Women of reproductive age (15-49 years) who were pregnant and attended ANC clinic at Gesusu Hospital during the study period; and reported that they had lived in Gesusu Location for at least one year prior to the study; and were willing to participate in the study.

3.4.2 Exclusion criteria

1. Women of reproductive age (15-49 years) but who were not pregnant during the study period.
2. Women of reproductive age (15-49 years) who were pregnant but reported that they had lived in Gesusu Location for less than one year prior to the study.

3. Women of reproductive age (15-49 years) who were pregnant and attended ANC clinic at Gesusu Hospital during the study period; and reported that they had lived in Gesusu Location for at least one year prior to the study; but were unwilling to participate in the study.

3.5 Sample size determination

The objective of sample size determination was to calculate the sample needed and thus produce a representative sample in order to reduce bias and to measure a given proportion with a degree of accuracy at a given level of statistical significance. To provide a sample of participants for this study, Fisher, Laing, Stoeckel and Townsend (1998) formula was used to determine the required sample size.

Thus,

$$n = \frac{z^2 pq}{d^2}$$

Where,

n = the desired sample size (if the target population is greater than 10,000)

z = the standard normal deviate at the required confidence level (usually set at 1.96, which corresponds to 96% confidence level)

p = the proportion in the target population estimated to have the characteristics being measured (if there is no estimate available, then 50% (0.5) is used)

q = 1.0 - p (1.0 - 0.5)

d = the level of statistical significance set (maximum tolerable error, usually set at 5% or 0.05)

Thus,

z = 1.96

p = 50% (0.5)

$$q = 50\% (0.5)$$

$$d = 5\% (0.05)$$

Hence,

$$n = \frac{1.96^2 (0.5) (0.5)}{(0.05)^2} = 384 \text{ respondents}$$

If N (the target population) is less than 10,000 (in this study the target population is 891), the required sample size will be smaller. Thus, the final sample estimate (nf) was calculated using the following formula:

$$nf = \frac{n}{1 + (n / N)}$$

Where,

nf = the desired sample size (when the population is less than 10,000)

n = the desired sample size (when the population is more than 10,000)

N = the estimate of the target population size (in this case = 891)

Thus,

$$nf = \frac{384}{1 + (384/891)} = 268$$

3.6 Sampling methods

Two sampling methods were used in this study; purposive and simple random sampling.

Gesusu Hospital was selected through purposive sampling because of its low ANC coverage among the seventeen health care facilities in Masaba South Sub-county of Kisii County.

Simple random sampling method (fishbowl technique) was used to select the respondents whereby clients were requested to pick a piece of paper from a box containing 623 NOs and 268 YESs. Only those clients who picked a YES participated in the study.

3.7 Data collection

3.7.1 Research team

The research team comprised of five research assistants and one supervisor. The research assistants were recruited from Kenya Medical Training College, Nyamira Campus through balloting. The supervisor was the investigator herself. The role of the supervisor was to train the research assistants, supervise the data collection process and perform quality checks.

Intensive training of the research assistants by the supervisor was done for three days on interviewing skills, how to fill in the research tools, research ethics, and their roles and responsibilities.

3.7.2 Data collection tools

Data was collected using a pre-tested, semi-structured interviewer-administered questionnaire and checklist.

The questionnaire (appendix V) comprised of both open-ended and close-ended questions. The questionnaire was designed in both English and Ekegusii because those are the languages most of the respondents understood. It collected information on the specific objectives or the independent variables. It comprised of three sections: section 1 was on socio-demographic profile containing seven questions (i.e. age, marital status, level of education, occupation, religious affiliation, parity, and ethnicity); section 2 was on knowledge on ANC and containing four questions (i.e. why an expectant woman needed to seek ANC, when to initiate ANC, how many ANC visits should be made, and the services offered during ANC attendance); and section 3 was on attitude towards ANC containing two questions (i.e. whether ANC was important and opinion on the recommended minimum of four ANC visits).

The checklist (appendix V1) collected information on the dependent variable (i.e. utilization of ANC services). It comprised of two questions; question 1 enquired about the gestation of the first ANC visit, and question 2 enquired about the number of the current visit. Information about the two questions was checked from the respondents' ANC booklets then filled into the checklist.

3.7.3 Validity and reliability of the data collection tools

The questionnaires and checklists were pre-tested before the actual study was conducted to determine their validity and reliability. Ten percent of the sample size was used to pre-test the data collection instruments in Masimba Hospital. Masimba Hospital was selected because its clientele is similar to that of Gesusu Hospital and lies in the same sub-county. Adjustments were done to correct any mistakes and ambiguity noted in order to reduce errors, and to enhance the validity and reliability of the tools. One of the adjustments that was done was to translate the questionnaire into Ekegusii so that it could be easily understood by the Kisiis who were the majority in the region.

3.7.4 Data collection procedure

After obtaining ethical approval, the research assistants were then selected and trained. The research team then pre-tested the data collection tools and adjustments were made. Data were collected between July 2015 and October 2015. This was the period which enabled capturing all the required 268 participants. The participants were interviewed to study their socio-demographic characteristics, knowledge on ANC, attitudes towards ANC and pattern of utilization of ANC services using the pre-tested semi-structured questionnaires and checklists.

3.7.5 The consenting process

Every client who attended the ANC clinic during the data collection period was contacted by a research assistant who introduced him/herself to the client and explained that a study on ANC

attendance was being carried out in that clinic. The research attendant then found out if the client met the inclusion criteria. All the clients who met the criteria but had not participated in the study in prior visits were requested to pick a piece of paper from a box containing 623 NOs and 268 YESs. Clients who picked a NO did not participate in the study and thus were thanked and allowed to proceed with other services.

For clients who picked a YES, before engaging them in the interview, they were appropriately informed about the survey's intentions and how their personal information and survey responses were to be used and protected. The research assistants were truthful and furnished as much information as possible and the respondents were able to provide informed voluntary consent through signing the consent form (appendix IV).

3.8 Data analysis and presentation

Data was processed, analyzed, presented and stored using SPSS version 20. Presentation was done using tables and bar graphs.

For socio-demographic factors, descriptive summary statistics such as frequencies and percentages were computed for categorical characteristics of the women, and mean and standard deviation for continuous variables. Association between socio-demographic characteristics and pattern of utilization of ANC services was measured using bivariate correlation to identify factors associated with utilization of ANC services. Logistic regression was performed to identify significant predictors, all at 5% level of significance.

The variables on knowledge on ANC were presented in frequencies and percentages. Test of association with utilization of ANC services was carried out using correlation and regression. The variables on attitude towards ANC were presented in frequencies and percentages.

Utilization of ANC services was assessed using frequencies, percentages and means of gestation at the first visits and the number of visits. Test of association of the independent variables with utilization of ANC services was carried out using bivariate correlation and regression.

3.9 Ethical considerations

The study was approved by Maseno University and an approval letter to conduct the research issued by the School of Graduate Studies on 6th July, 2015 (appendix VII). The approval letter from Maseno University was presented to the Department of Research of The Kisii Teaching and Referral Hospital, Kisii County, and an approval letter for data collection in Gesusu Hospital issued on 10th July, 2015 (appendix VIII).

Participation was voluntary for all the selected women. Before the interview, the interviewer explained in detail the purpose of the study, content of the questionnaire, informed the respondents on confidentiality of their responses and of their free choice to withdraw from the study during the interview. A written and signed consent was obtained from all the respondents using an informed consent form. To maintain confidentiality, the interview was conducted in privacy. Research results were reported accurately and honestly and the study findings communicated to all the interested parties.

3.10 Study limitation

The methodological nature of the cross-sectional study design limited the causality inference of the study variables.

CHAPTER FOUR

RESULTS

4.1 Introduction

In this chapter, the results of the study are analyzed, presented and interpreted.

A total of 268 respondents were interviewed. The response rate was thus 100 percent.

4.2 Socio-demographic characteristics of the respondents

A total of 268 respondents were interviewed and their socio-demographic characteristics are shown in table 4.1.

The age group between 20-29 years was the majority, accounting for slightly above half (50.7%). A reasonable percentage of the respondents were between 10 and 19 years (18.3 %) showing that under age pregnancies is common in this region. Majority (66.1%) of the respondents were married. However, a quarter of the respondents (25.4 %) were single, showing that single-parenthood is common in the region.

Those who had completed secondary education (i.e. secondary complete and tertiary) accounted for 51.9%. However, those who had gone beyond secondary education to tertiary education accounted for only 15.7 %. Those who had attained primary education and below were 78 (28.1 %), which showed there is low level of education in the region. Only 33 respondents (12.3%) were formally employed. Students/pupils were 18 (6.5 %) denoting an adverse effect on the education sector in the region when girls fall pregnant while in school.

A total of 128 respondents (47.8%) were Seventh Day Adventists. This was expected because it is the prominent religion in the region. The majority (51.9%) had two or three children before this current pregnancy. This was expected because the majority of the respondents were between 20-

29 years. Majority of the respondents (70.2 %) were from the Gusii community. This was expected because Abagusii is the prominent ethnic tribe in the study area.

Table 4.1: Socio-demographic characteristics of the respondents (n = 268)

Characteristics	Frequency	Percentage
Age		
10-19 years	49	18.3
20-29 years	136	50.7
30-39 years	72	26.9
40 years and above	11	4.1
Marital status		
Married	177	66.1
Single	68	25.4
Widow	17	6.3
Divorced/separated	6	2.2
Level of education		
None	3	1.1
Primary incomplete	31	11.6
Primary complete	44	16.4
Secondary incomplete	51	19
Secondary complete	97	36.2
Tertiary	42	15.7
Occupation		
Homemaker	56	21
Farming	104	38.8
Formal employment	33	12.3
Business woman	57	21.4
Student	4	1.5
Pupil	14	5
Religion		
No religion	7	2.6
Seventh Day Adventist	128	47.8
Catholic	79	29.5
Muslim	3	1.1
Protestant	51	19
Parity		
1 or no child	62	23.1
2or 3 children	139	51.9
4 or 5 children	61	22.8
6 or more children	6	2.2
Ethnicity		
Kisii	188	70.2
Luo	22	8.2

Kalenjin	4	1.5
Maasai	25	9.3
Kikuyu	21	7.8
Kamba	6	2.2
Borana	2	0.8

Table 4.2 shows the means for age and parity. Mean age was 21.604 years (with a standard deviation of 0.77918), which showed that the mothers were relatively young; while the mean for parity was 2.0336 deliveries (with a standard deviation of 0.75127) which showed that the respondents had few children.

Table 4.2: Mean for age and parity (n = 268)

Variable	Mean	Standard deviation
Age	2.1604	0.77918
Parity	2.0336	0.75127

4.3 Knowledge on antenatal care

The results on knowledge on antenatal care are shown in table 4.3 below.

The results showed that 12 (4.5%) of the respondents sought antenatal care merely to get an ANC card in order to avoid being harassed by midwives during delivery. This shows that they did not understand the importance of ANC. As for the time the respondents thought a pregnant woman should start antenatal care, 146 of the respondents (54.5%) thought a pregnant woman should start antenatal care between four to five months. However, records from their cards showed that those who actually started antenatal care in the fourth and fifth months were only 115. Those who thought they should start clinic in the sixth to seventh month were 53 compared to 105 who actually started antenatal care in the two months, showing a lack of knowledge on when to start antenatal care.

Only 36.2 % of the respondents knew that pregnant women should attend the antenatal clinic four times and above. This showed that the remaining 63.8 % did not know the recommended number

of antenatal care visits. This deduction was made despite the fact that each of the respondents mentioned a number of services offered during ANC attendance e.g. HIV counselling and testing, injection tetanus toxoid, physical examination, issuing of mosquito nets, deworming, and laboratory testing of blood and urine.

Table 4.3: Knowledge on antenatal care (n = 268)

Variable	Frequency	Percentage
Reason for seeking antenatal care		
To get ANC card to avoid being harassed by midwives during delivery	12	4.5
To detect, treat and prevent complications during pregnancy	93	34.7
To get advice on how to care for the pregnancy	82	30.6
To know about the growth and wellbeing of the baby	68	25.4
To get vaccinations	13	4.8
Time to start antenatal care		
As soon as she suspects she is pregnant	61	22.8
At 4-5 months	146	54.5
At 6-7 months	53	19.7
At 8 months and above	8	3
Number of visits for antenatal care		
1	3	1
2	32	12
3	136	50.8
4 or more	97	36.2

4.4 Attitude towards antenatal care

The results on attitude towards antenatal care are shown in table 4.4 below.

A total of 97.4 % of the respondents felt that antenatal care was important, showing a positive attitude towards antenatal care.

Concerning opinion on the recommended minimum of four antenatal care visits, 51 (19 %) and 26 (9.7 %) of the respondents said that they were many and very many respectively, showing some degree of poor attitude towards ANC.

Table 4.4: Attitude towards antenatal care (n=268)

Variable	Frequency	Percentage
Opinion whether antenatal care is important		
Yes	261	97.4
No	0	0
Don't know	7	2.6
Opinion on the recommended minimum of 4 antenatal visits		
Very few	0	0
Few	12	4.5
Average	179	66.8
Many	51	19
Very many	26	9.7

4.5 Utilization of antenatal care services

Utilization of ANC services was evaluated using the women's gestation at first visit (timing) and the number of visit during the study period. These two variables were checked from the ANC booklets and filled in the checklists.

Table 4.5 shows the means for gestation at first ANC visit and number of visits. The average months for the first ANC visit was 5.45 which showed that mothers reported late for the first visit; while the mean for number of visits was 2.23 which indicated inadequate number of visits compared with the recommended minimum of four ANC visits.

Bivariate correlation of timing of ANC and number of visits was positive (0.154) at 95 % CI. Regression of the two showed an OR of 0.024 (AOR=0.020) with a standard error of the estimate of 1.45928. This regression results shows that only 2.4 % of timing explain the number of visits.

Table 4.5: Means for gestation at first visit and number of visits (n=268)

Variable	Mean	Standard deviation
Gestation at first ANC visit	5.4515	1.47179
Number of visits	2,2472	1.13005

4.5.1 Gestation at first antenatal care visit (timing)

Figure 4.1 shows the respondents' gestation of the pregnancy at first visit (in months).

Almost half of the respondents (48.1 %) started ANC in their fifth or sixth month of pregnancy. 4 (1.5 %) of the respondents actually started ANC in their last (ninth) month of pregnancy!

Overall, 244 (91 %) of the respondents started ANC from four months and above. Only 24 (9 %) of the respondents started ANC as recommended within the first trimester (i.e. first three months of pregnancy).

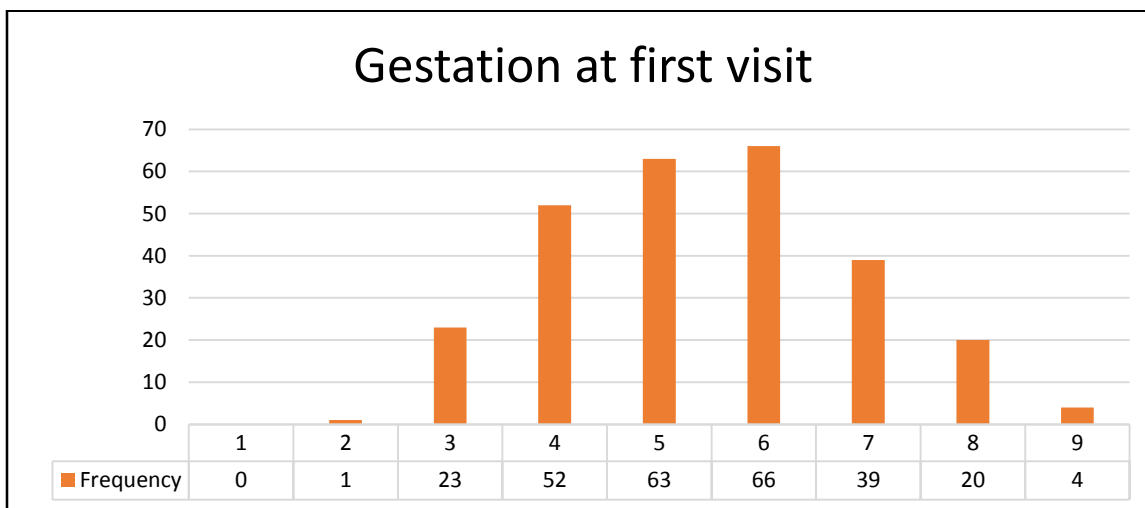


Figure 4.1: Bar charts for gestation at first visit in months (n = 268)

4.5.2 Number of antenatal care visits

Table 4.6 shows the respondents' number of visits during the study period.

Only 28 (10.4 %) of the respondents had attained the recommended minimum of four ANC visits during the study period.

Table 4.6: Number of visits during the study period (n=268)

Number of visit	Frequency	Percentage
1	76	28.4
2	86	32.1
3	78	29.1
4	19	7.1
5	4	1.5
6	4	1.5
7	1	0.3

4.5.3 Correlation results

Bivariate correlation was computed using the SPSS (Version 20) software tool. The results were at 95% and 99% confidence interval.

Table 4.7 shows the correlation of the independent variables with timing of antenatal care visits; while table 4.8 shows the correlation of the independent variables with the number of antenatal care visits.

All the variables in table 4.7 had a negative correlation with timing of antenatal care visits except marital status, parity and knowledge of timing of ANC.

Table 4.7: Correlation of independent variable with timing of antenatal care visits

Variable	Timing of antenatal care visit		
	P value	95% CI	99% CI
Age	-0.259	-	0.000
Marital status	0.067	0.276	-
Level of education	-0.192	-	0.002
Occupation	-0.145	0.017	-
Religion	-0.271	-	0.000
Parity	0.328	-	0.000
Knowledge of timing of ANC	0.068	0.267	-
Knowledge of number of visits recommended	-0.032	0.599	-

In table 4.8, all the variables had a negative correlation with the number of antenatal care visits except age, parity and knowledge of timing of ANC.

Table 4.8: Correlation of independent variables with number of antenatal care visits

Variable	Number of antenatal visits		
	P value	95% CI	99% CI
Age	0.121	0.048	-
Marital status	-0.289	-	0.000
Level of education	-0.263	-	0.000
Occupation	-0.180	-	0.003
Religion	-0.023	0.714	-
Parity	0.006	0.926	-
Knowledge of timing of ANC	0.507	-	0.000
Knowledge of number of visits recommended	-0.519	-	0.000

4.5.4 Regression results

Linear regression analysis was done to all the independent variables that had a positive correlation with the dependent variable to find out the amount of the variance explained or predicted by the independent variables.

Table 4.9 shows regression analysis for marital status, parity and knowledge of timing of ANC with timing of ANC visits. For marital status, the OR of 0.004(AOR=0.001) showed that marital status predicted only 0.4 % (AOR=0.1 %) of the variance in the timing of ANC. For parity, the OR of 0.108 (AOR=0.104) showed that parity predicted 10.8 % (AOR=10.4 %) of the variance in the timing of ANC. For knowledge on timing of ANC, the OR of 0.005 (AOR=0.001) showed that knowledge on timing of ANC predicted only 0.5 % (AOR=0.1 %) of the variance in the timing of ANC.

Table 4.9: Regression of independent variables with timing of ANC visits

Independent variable	Odds Ratio (OR)	Adjusted Odds Ratio (AOR)	Std. Error of the Estimate
Marital status	0.004	0.001	1.47127
Parity	0.108	0.104	1.39280
Knowledge on timing of ANC	0.005	0.001	1.47114

Table 4.10 shows regression analysis for age, parity and knowledge of timing of ANC with number of ANC visits. The OR of 0.015 (AOR=0.011) for age showed that age predicted only 1.5 % (AOR=1.1 %) of the variance in the number of ANC visits. For parity, the OR of 0.000 (AOR=-0.004) showed that 0 % (AOR=-0.4 %) of the variance in the number of ANC visits was predicted by parity; while for knowledge on timing of ANC, the OR of 0.257 (AOR=0.254) showed that knowledge on timing of ANC predicted 25.7 % (AOR=25.4 %) of the variance in the number of ANC visits.

Table 4.10: Regression of independent variables with number of ANC visits

Independent variable	Odds Ratio (OR)	Adjusted Odds Ratio (AOR)	Std. Error of the Estimate
Age	0.015	0.011	1.12387
Parity	0.000	-0.004	1.13216
knowledge on timing of ANC	0.257	0.254	0.97593

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the results of this study as presented in the previous chapter.

5.2 Socio-demographic factors and antenatal care

5.2.1 Age and utilization of ANC services

In this study, the modal age group was 20-29 years. The mean age was 21.6 years, with a standard deviation of 0.77918. This mean age showed that most of the mothers were still in their youth. Almost a fifth of the respondents (18.3 %) were between 10-19 years, showing that under-age pregnancies were common in the study region.

On bivariate analysis, results showed that the correlation between age and timing of ANC was -0.259; while correlation between age and the number of antenatal visits was 0.121. The P-value of -0.259 for correlation between age and timing showed that age is negatively correlated with the gestation at which women started ANC. This means that there was an inverse relationship between age and timing of ANC i.e. as age increased, timing of ANC decreased and vice versa. This result implies that older women were more likely to start ANC earlier than their younger counterparts and vice versa.

On the other hand, age and the number of ANC visits were positively correlated, albeit weakly (0.121). This indicated that as age increased, the number of ANC visits increased as well and vice versa; implying that older women were more likely to have more ANC visits than their younger counterparts and vice versa. However, when linear regression was done, age had an OR of 0.015 (AOR=0.011), with a standard error of the estimate of 1.12387. This showed that age explained

only 1.5 % (AOR=1.1 %) of the variance in the number of ANC visits. The rest (98.5 %) of the variance in the number of ANC visits could not be explained by the age of the respondents. Thus, age is not a significant predictor of the number of ANC visits.

A study done by Nisar and White (2009) revealed that 40.5 % of the mothers were young with a modal age of 25-29 years. The mean age (standard deviation) of the respondents was 27.8 (5.6) years. Their result of the mean age is much higher than that found in this study (21.6 years). They also found that age showed a significant association with use of ANC services; they found that women who were 25 years or more were more likely to attend ANC clinic than women who were less than 25 years. Zhao et al. (2012) found that, compared with younger women, women between the ages of 25-30 and women older than 30 were more likely to have adequately utilized ANC. Ngeresa (2007) found that women who are over 35 years are likely to receive adequate ANC during their pregnancy. These findings concur with the results of this study.

Pandey and Karki (2014), Abosse et al. (2009), Bloom et al. (2001), and Tsegay et al. (2013) found that younger women were more likely to receive ANC than older women, contrasting with my findings. However, Okutu (2011) found that there was no significant variation between younger mothers aged less than 20 years and those 35 years and above who made the recommended four ANC visits.

Although many studies have shown a relationship between age and utilization of ANC services, the 2008-2009 KDHS shows that the mother's age is not strongly related to use of ANC services, concurring with the results of this study.

The correlation and regression results of this study showed that although age is related to the utilization of ANC services, it is not a strong predictor of utilization of ANC services. Thus, age is not a true determinant of utilization of ANC services.

5.2.2 Marital status and utilization of ANC services

Majority (66.1 %) of the respondents were married. However, a quarter of the respondents (25.4 %) were single, showing that single-parenthood is common in the study region.

Bivariate correlation between marital status and timing of ANC was slightly positive (0.067) showing that married women were more likely to start ANC earlier than their unmarried, divorced and separated counterparts. This, in my view, is partially due to support from partners and social acceptability of pregnancy which encourage attendance of ANC. Adolescents, unmarried, divorced and separated women normally hide their pregnancy to avoid social embarrassment, delaying their initiation of ANC visits. However, when regression analysis was done, marital status had an OR of 0.004 (AOR=0.001) with timing of ANC. This showed that marital status explained only 0.4 % (AOR=0.1 %) of the variance in the timing of ANC. The rest (99.6 %) of the variance in the timing of ANC could not be explained by the marital status of the respondents. Thus, marital status is not a significant predictor of timing of ANC.

On the other hand, correlation of marital status with the number of ANC visits was negative (-0.289) showing that marital status and number of ANC visits are inversely related. This showed that married women were unlikely to attend more ANC visits than their unmarried, divorced and separated counterparts. This means being married does not translate into more attendance of ANC clinic, or, by implication, completion of the recommended minimum of four ANC visits.

Van Eijk et al. (2006), Ngeresa (2007) and Simkhada et al. (2008) found that married women had higher ANC attendance than their single, separated or divorced counterparts. Tsegay et al. (2013) found that married and divorced women had a higher probability of visiting ANC services than single and widowed women. These studies contradict with the results of this study.

In conclusion, although the results of this study showed that married women are more likely to start ANC earlier, they are unlikely to attend antenatal clinic more frequently than their unmarried, divorced or separated counterparts. Thus, this study concurs with Abosse et al. (2009) who found that marital status was not a true predictor/determinant of ANC utilization.

5.2.3 Education and utilization of ANC services

The results showed that those who had attained primary education and below were 28.1 %, indicating that there is low level of education in the region.

On bivariate analysis, correlation of level of education and timing of ANC was negative (-0.192). This means that as level of education increased, timing of ANC reduced and vice versa; a true reflection of what should actually happen. On the other hand, level of education and number of ANC visits were negatively correlated (-0.263). This means that as level of education increased, the number of ANC visits reduced and vice versa. This, in my view, shouldn't be the case because education is associated with more appreciation of the importance of ANC; hence, women with higher education should attend more ANC visits than their uneducated or lowly educated counterparts. Furthermore, education increases women's knowledge on where and how the best health care can be accessed and enhances women's capability of making autonomous decisions.

Women with higher level of education were found to be likely to attend more ANC visits and earlier in their pregnancy (Addai, 2000; Bloom et al., 2001; Rowe & Garcia, 2003; Magadi et al., 2003; Van Eijk et al., 2006; Adekanle & Isawumi, 2008, Simkhada et al., 2008; Abosse et al., 2009; Muinde, 2010; Ngeresa, 2007; Varma et al., 2011; Okutu, 2011; Nketiah-Amponsah et al., 2013; Pandey & Karki, 2014; Zhao et al., 2012; Tsegay et al., 2013). For example, Okutu's (2011) study revealed that mothers with higher education are 2.3 times more likely than those with no or lower education to make at least four ANC visits.

However, Nisar and White (2009) found that education did not show any association in their studies, contrasting with other studies. They argue that it may be the quality of education (not just the years of schooling), which increases the likelihood of using ANC services. The results of this study contradict with the above results. The study found the level of education to be a determinant for early timing of ANC since an increase in the level of education was found to increase the likelihood of starting ANC early. However, the level of education was inversely related to the number of ANC visits.

In conclusion, education was found not to be a true determinant of utilization of ANC services. This is because, although women with higher level of education were found to start ANC earlier in their pregnancy, they were unlikely to attend more ANC visits.

5.2.4 Occupation and utilization of ANC services

In this study, only 12.3% of the respondents were formally employed. Students/pupils were 6.5 % denoting an adverse effect on the education sector in the region when girls fall pregnant while in school.

Bivariate analysis showed that correlation of occupation and timing of ANC was negative (-0.145). This implies that women with better paying jobs were more likely to start ANC earlier than their unemployed or lowly employed counterparts and vice versa. This result is very realistic and a true reflection of what should actually happen. This is because women with better paying occupations/jobs should start ANC earlier than those unemployed or have low paying jobs given their higher economic empowerment.

On the other hand, occupation and number of ANC visits were negatively correlated (-0.180) as well. This implies that as women get better occupations, the number of ANC visits reduce, and vice versa. This, however, shouldn't be the case because better occupations are associated with

higher economic and decision-making power which enables women to make the correct decisions for themselves and follow them through.

Adekanle and Isawumi (2008), Rowe and Garcia (2003), Ngeresa (2007) and Okutu (2011) found that unemployed women and those with low paying jobs were more likely to register late for ANC, concurring with the results of this study. However, Nisar and White (2009) found no association between working status of women and utilization of ANC services.

In conclusion, this study found occupation not to be a true determinant of utilization of ANC services because a better occupation doesn't increase the likelihood of attending more ANC visits.

5.2.5 Religion and utilization of ANC services

The impact of religion in determining utilization of ANC services lies in the fact that it plays a significant role in shaping beliefs, norms and values. For example, Islamic injunctions encourage male domination; thus constraining women's power and autonomy, limiting their ability to make important decisions, and restricting their movement. However, there are very few studies that have been done on the correlation between religion and the utilization of ANC services to conclusively posit the relationship.

Overall, Christians in this study accounted for 96.3 %. 2.6 % of the respondents had no religious affiliation, while only 1.1 % were Muslims.

Bivariate analysis of religion and timing of ANC, and religion and the number of ANC visits were negative, -0.271 and -0.023 respectively. The negative correlation between religion and timing of ANC means that the more the woman is religious, the earlier she is likely to start ANC and vice versa; while the negative correlation between religion and number of ANC visits means that the more the woman is religious, the higher the likelihood of attending less ANC visits and vice versa.

Simkhada et al. (2008) and Nketiah-Amponsah et al. (2013) found that women who were religious tended to use ANC more contrasting with the results of this study.

A study carried out by Chorongo et al. (2014) found religion to be a determinant of utilization of ANC services. Religion, locally referred to as “Imani moja” (one faith), was found to be a factor since it required one not to seek medical attention but to rely on God to heal them. This was consistent with other studies where religion was found to be a determinant of utilization of ANC services, although they do not posit the exact correlation between religion and ANC.

In conclusion, the results of this study show that the more the woman is religious, the earlier she is likely to start ANC. However, she is unlikely to attend more ANC visits compared to her less religious counterparts. Thus, religion is not a true determinant of utilization of ANC services.

5.2.6 Parity

The study found that the mean for parity was 2.0336, with a standard deviation of 0.75127.

Bivariate analysis of parity with the timing of ANC was positive (0.328). This means as parity increased, timing of ANC increased; that is, the higher the parity, the higher the likelihood of starting ANC late and vice versa. When linear regression was computed, parity had an OR of 0.108 (AOR=0.104) with a standard error of the estimate of 1.39280. This showed that parity explained 10.8 % (AOR=10.4 %) of the variance in the timing of ANC. However, the OR is significant.

On the other hand, correlation between parity and number of ANC visits was positive too (0.006), albeit weakly. Although this P-value is statistically not very significant, it is a positive indication nonetheless. It showed that as parity increased, the number of ANC visits increased and vice versa. However, when linear regression was computed, parity had an OR of 0.000 (AOR=-0.004) with a standard error of the estimate of 1.13216. This OR is insignificant and showed that parity didn't explain the variance in number of NC visits.

Studies have shown that the number of children a woman has delivered has an effect on the utilization of ANC services (Simkhada et al., 200; Bloom et al., 2001; Nisar & White, 2009; Abosse et al., 2009; Muinde, 2010; KNBS, 2004; KNBS, 2010; KNBS, 2014; Ngeresa, 2007; Okutu, 2011).

Tsegay et al. (2013) state that although parity appears commonly as a major factor responsible for the utilization of ANC services, their study showed an inverse relationship between parity and the use of ANC services concurring with Simkhada et al. (2008) who found that parity had a statistically significant negative effect on adequate ANC attendance. However, their findings contrast with the results of this study.

Ngeresa (2007) found that women with low parity are likely to receive adequate ANC during their pregnancy. She argues that high parity women might tend to rely on their experiences from previous pregnancies and not feel the need for ANC. Due to their greater level of experience, these women might feel more confident during pregnancy and consider ANC to be less important. Okutu (2011) and the KDHS (2008-09) found similar results. However, the results of this study on correlation between parity and number of ANC visits was positive (0.006), albeit weakly. But when linear regression was computed, parity had an OR of 0.000 (AOR=-0.004) which showed that parity couldn't be relied upon to predict the number of ANC visits.

In conclusion, although parity showed an OR of 10.8 % (AOR=10.4 %) with timing of ANC, it however showed no (OR=0.000) prediction with the number of ANC visits i.e. parity didn't explain the variance in number of NC visits. Hence, parity is not a true predictor/determinant of utilization of ANC services.

5.3 Knowledge on antenatal care

Knowledge on ANC was assessed using three variables: knowledge on the reasons why mothers attend antenatal clinic in order to gauge whether they understood the importance of ANC; knowledge on the time when ANC should be started; and knowledge on the number of ANC visits that a mother should make.

5.3.1 Knowledge on importance of ANC

The results showed that 4.5% of the respondents sought ANC merely to get an ANC card in order to avoid being harassed by midwives during delivery. This showed that they had insufficient knowledge on the importance of ANC. Chorong et al. (2014) found similar results. They established that sometimes women acquire an ANC booklet in case need arises for them to deliver in the hospital because it will be asked by the hospital staff. These results agree with AUC, UNECA, AfDB and UNDP (2012) that posit that despite the significant role ANC plays, many women do not have enough information on the importance of multiple antenatal check-ups, and so health providers must urge women to return for check-ups, and provide incentives for them to do so. They argue that if more women can attend the recommended four check-ups, Africa will undoubtedly see a steep fall in maternal mortality.

Tsegay et al. (2013) found that 28.2 % of the respondents did not attend ANC because they lacked awareness on the benefits of ANC. Pandey and Karki (2014) found that 52.3 % of the respondents were not aware of the consequences of lack of ANC. Muinde (2010) found that knowledge of the benefits of ANC influenced the utilization of ANC services, and that the younger respondents had little knowledge about ANC services. Nisar and White (2009) found that 49 % of the study subjects did not receive ANC. Among them 28 % reported that they did not know it was important. Varma

et al. (2011) found that most of the mothers who had not received ANC said they were not aware of ANC showing lack of knowledge about importance of ANC.

All these studies concur with the findings of this study, that mothers in most parts of the world do not have sufficient knowledge on ANC.

5.3.2 Knowledge on timing of ANC

As for the time the respondents thought a pregnant woman should start ANC, 54.5 % thought a pregnant woman should start ANC between four and five months. However, records from their cards showed that those who actually started ANC in the fourth and fifth months were 19.4 % and 23.5 % respectively, a total of only 42.9 %. Those who thought they should start clinic in the sixth and seventh month were 19.8 % compared to 39.2 % who actually started ANC in the two months, showing insufficient knowledge on when to start ANC.

Bivariate analysis of knowledge of timing of ANC and the actual timing of ANC was positive, although very weak (0.068). This result means that as knowledge on timing of ANC increased, timing increased as well and vice versa. However, linear regression for knowledge on timing of ANC and timing of ANC showed an OR of 0.005 (AOR=0.001) with a standard error of the estimate of 1.47114. This showed that knowledge on timing of ANC explained only 0.5 % (AOR=0.1 %) of the variance in the timing of ANC; which was very insignificant.

Bivariate analysis of knowledge of timing of ANC and the number of ANC visits was strongly positive (0.507). This showed that as knowledge on timing of ANC increased, the number of ANC visits increased tremendously as well, and vice versa. However, linear regression for knowledge on timing of ANC revealed an OR of 0.257 (AOR=0.254) with a standard error of the estimate of 0.97593 which showed that knowledge on timing of ANC explained 25.7 % (AOR=25.4 %) of the variance in the number of ANC visits. This OR is significant.

Chorongo et al. (2014) found that 91.5 % of the respondents had heard of FANC. However, when asked on when one is expected to start ANC, 50.4 % of the respondents stated the fourth month of pregnancy, 5.9 % indicated second month, 13.2 % in the first month, while 13.5 % said the third month of pregnancy. Regarding start of ANC at first trimester, the level of awareness was higher in urban facilities (36.6 %) than rural facilities (9.5 %). Abosse et al. (2009) found that 68.2 % of those who attended ANC clinic started ANC visit during the second trimester of pregnancy. These results concur with the findings of this study; that many women do not know when exactly to start ANC.

5.3.3 Knowledge on number of ANC visits

Only 36.2 % of the respondents knew that pregnant women should attend the antenatal clinic four times and above. The remaining 63.8 % did not know the recommended number of ANC visits, showing insufficient knowledge on the number of ANC visits recommended.

Bivariate analysis of knowledge of number of recommended visits and timing of ANC was negative (-0.032). This result showed that as knowledge of number of ANC visits recommended increased, timing decreased and vice versa. This is very realistic and actually what should happen; that is, more knowledge on the number of recommended visits should translate on starting ANC clinic early to achieve the recommended number of visits. Correlation analysis of knowledge of number of ANC visits recommended and number of ANC visits was negative (-0.519) as well. This showed that as knowledge on number of ANC visits recommended increased, the number of antenatal visits decreased and vice versa. This is perplexing and unacceptable because it is expected that more knowledge on the number of ANC visits recommended should translate into increase of number of ANC, that is, the higher the knowledge on the recommended visits, the higher the likelihood of more ANC visits.

Chorongongo et al. (2014) found that 62% of the mothers were of the opinion that four ANC visits are recommended compared with 36.2 % of the respondents in this study.

5.4 Attitude towards antenatal care

Attitude in this study was assessed using two variables; opinion on whether ANC is important, and opinion on the recommended number of ANC visits. 97.4 % of the respondents felt that ANC was important, showing a positive attitude towards importance of ANC. Concerning opinion on the recommended minimum of four ANC visits, 19 % and 9.7 % of the respondents said that they were many and very many respectively, showing a degree of poor attitude towards ANC.

Roy et al (2013) found that lack of perception about the importance of ANC ultimately precipitated in inadequate utilization. Chorongongo et al. (2014) in their study in Kilifi County found that women from that community have the opinion that a real woman does not have to seek medical attention during pregnancy because pregnancy is not a disease showing that they consider ANC unimportant. Varma et al. (2011), Van Eijk et al. (2006), Ngeresa (2007), Okutu (2011) and Aboesse et al. (2009) found similar results.

Aboesse et al. (2009) found that women who considered pregnancy as a risky event were more likely to seek ANC than those considering it risk free. Regarding the reason for not attending ANC, 65.3 % of the mothers responded that they were apparently healthy during their last pregnancy thus no need for ANC, perceiving ANC as not important. Tsegay et al. (2013) found that among those who did not attend ANC, the most frequently mentioned reasons were “not feeling sick” (32.7 %), and “feeling shame” (16.7 %), showing an attitudinal problem.

Although the findings of this study showed that 97.4 % of the respondents felt that ANC was important, however, there was an attitudinal problem towards the recommended minimum of four ANC visits, thus a likelihood of not completing the recommended number of visits.

5.5 Utilization of ANC services

In this study, the utilization of ANC services was evaluated using the women's gestation at first visit (timing) and the number of visit during the study period. These two variables were checked from the ANC booklets and filled in the checklists.

5.5.1 Timing of antenatal care

Results showed that none of the respondents started ANC in the first month, 0.4 % started in the second month, 8.6 % started in the third month, 19.4 % started in the fourth month, 23.5 % started in the fifth month, 24.6 % started in the sixth month, 14.5 % started in the seventh month, 7.5 % started in the eighth month, while 1.5 % started in the ninth month. Only 9 % of the respondents started ANC in the first trimester (i.e. 0 to three months of pregnancy); 67.5 % started in the second trimester (i.e. four to six months) and 23.5 % started in the third and last trimester (i.e. seven to nine months).

Overall, 91 % of the respondents started ANC in their second and third trimesters; so only 9 % of the respondents started ANC as recommended. The mean gestational age was 5.4515, with a standard deviation of 1.47179.

On bivariate analysis of the independent variables with timing of ANC, the variables marital status, parity and knowledge on timing of ANC were the only ones that had a positive correlation with timing of ANC visit; while age, education, occupation, religion, and knowledge on number of ANC visits were negatively correlated with timing of ANC as already discussed in the relevant sections above.

Linear regression of the three variable that had a positive correlation with timing of ANC showed that marital status had an OR of 0.004 (AOR=0.001), parity had an OR of 0.108 (AOR=0.104),

and knowledge on timing of ANC had an OR of 0.005 (AOR=0.001) showing that only parity had a significant level of prediction with timing of ANC services.

In Kenya, there has been only a slight improvement in the pattern of antenatal attendance by gestational age. The median gestational age at first visit has decreased slightly, from 5.9 months in the 2003 KDHS, to 5.7 months in the 2008-09 survey and 5.4 months in 2014 KDHS. In Kisii County, 2.4 % of the mothers started ANC at eight months or above. The median months pregnant at first visit were 5.3. For this study, the mean gestational age was slightly higher (5.4515) than the national average.

Emelumadu et al. (2014) established that more than half (55.4 %) of the respondents surveyed booked for ANC in the second trimester of their pregnancy. Chorongo et al. (2016) found out that 68 % of the mothers started ANC visits in the second trimester of their pregnancy. Abosse et al. (2009) found that 79 % of their respondents had started ANC during the second trimester of pregnancy as well. All these results, like the results of this study, show that the majority of the mothers start ANC in their second semester.

5.5.2 Number of antenatal care visits

A total of 28.4 % of the respondents were in their first visit, 32.1 % in their second visit, 29.1 % in their third visit, 7.1 % in their fourth visit, 1.5 % in their fifth visit, 1.5 % in their sixth visit, and finally 0.3 % in their seventh visit. Overall, only 10.4 % of the respondents had attained the recommended minimum of four ANC visits during the study period.

According to the 2014 KDHS, 58 percent of women made the recommended four or more ANC visits during their pregnancy, an increase of 11 percentage points from the 2008-09 KDHS (47 percent). Urban women were more likely than rural women to have had four or more ANC visits

(68 percent versus 51 percent). Despite high attendance of at least one ANC visit in Kenya, the uptake of FANC is proportionally low.

In Kisii County, 58.7 % completed the recommended four visits or more. In Masaba South sub-county, only 37 percent completed the recommended minimum of four visits. In Gesusu Hospital, only 28 percent completed the recommended four visits in 2012. For this study, the attainment of the recommended minimum of four ANC visits was low. Only 10.4 % of the respondents had attained the recommended minimum of four ANC visits during the study period.

In Nepal, the percentage of pregnant women attending at least four ANC visits was found to be 30.7 % which was lower than the national data available (50.1 %). The mean number of ANC visits was 3.8835 (Pandey and Karki (2014). Okutu (2011) found that less than half (48 %) made four or more ANC visits during pregnancy for their most recent births. Abosse et al. (2009) found that ANC service utilization in the study area was very high (86.3 %). However, four out of ten of the mothers did not have the minimum number of visits recommended by World Health Organization. Emelumadu et al. (2014) found that 31.5 % of the respondents had less than four ANC visits prior to delivery. All these studies show that ANC coverage was inadequate.

Chorong et al. (2016)) argues that even though maternal mortality has decreased over the years and increasing number of women do use ANC services during pregnancy, many women still do not follow the recommendation of four visits or more. They found that only 32 % of their respondents had made the recommended four ANC visits or more.

Overall, all these results reveal that there is a gap in the utilization of ANC services.

5.5.3 Timing of antenatal care and number of visits

Early booking is important, since it implies that encouraging early registration will ensure completion of the recommended minimum of four ANC visits.

For this study, the bivariate correlation of timing of ANC and number of visits was positive (0.154) at 95 % CI. This indicates that as timing increased, the number of visits increased and vice versa. However, bivariate regression of the two showed an OR of 0.024 (AOR=0.020) with a standard error of the estimate of 1.45928. This regression results shows that only 2.4 % of timing explain the number of visits. This percentage of 2.4 % is insignificant, meaning there are other confounding variables.

Zhao et al. (2012) found that many migrant women in Shanghai did not receive adequate ANC and initiated ANC later than the optimal first 12 weeks of pregnancy. Chorongo et al. (2016) found that only 32 % of the respondents made the recommended four visits for ANC. Their study further established that there was an association between starting the ANC visits early and completing the stipulated four visits. This was because early gestational age at the first visit gave the mother ample opportunity and increased awareness to attend the recommended minimum of four visits. They found that utilization of FANC services shown through completion of four ANC visits in both rural and urban health facilities was low.

Abosse et al. (2009) found that ANC service utilization in the study area was 86.3 %. However, from those who attended ANC service, 68.2 % started ANC visit during the second trimester of pregnancy and a significant proportion (42 %) had less than four visits. Emelumadi et al (2014) found that there were obvious gaps of delayed booking for ANC services and inadequate ANC attendance.

Overall, there is an association between starting ANC visits early and completing the recommended minimum of four ANC visits. This study found that timing was poor, and consequentially, there was poor utilization of ANC services at Gesusu Hospital. However, despite the strength of this study in collection of data that was done by well-educated and trained

interviewers in face-to face communication, the cross-sectional nature of the study limited the ability to draw any causal inferences and residual confounding resulting from other socio-demographic, economic and psychosocial related determinants cannot be ruled out.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The following conclusions have been drawn from this study:

- i) On the socio-demographic factors, none of the variables of maternal age, marital status, maternal education, occupation, religion and parity are true determinants of utilization of antenatal services.
- ii) General awareness on ANC is low. There was insufficient knowledge on the importance of ANC, timing and the number of antenatal visits recommended.
- iii) There is an attitudinal problem towards the recommended minimum of four antenatal visits.

6.2 Recommendations

- i) The cross-sectional nature of my study limited the ability to draw any causal inferences and residual confounding resulting from other socio-demographic and psychosocial related determinants. Hence, a comprehensive longitudinal study is recommended as it will help in better understanding of the role of socio-demographic factors for sufficient ANC.
- ii) Kenyan Ministry of Health and county governments should increase the awareness of focused antenatal care among women of reproductive age, especially on the importance of antenatal care, timing of antenatal care and the recommended number of antenatal visits.
- iii) As part of measures to ensure successful implementation of safe motherhood programme, future health education interventions should be focused on improving the attitude and encouraging pregnant women to register for antenatal care early and to have at least four antenatal visits prior to delivery. Full adoption and implementation of focused antenatal care therefore provides a viable option for addressing this challenge.

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APPENDIX I: MAP OF KENYA



Map of Kenya showing the location of Kisii County in red.

APPENDIX II: MAP OF KISII COUNTY



Map of Kisii County showing the neighbouring counties.

APPENDIX IV: INFORMED CONSENT FORM

(To be read and explained in the language that is understood by the respondent)

Title of the study: Socio-demographic factors, knowledge and attitude as determinants of utilization of antenatal care services in Gesusu Hospital, Gesusu Location, Kisii County, Kenya.

Institution: Maseno University

School: School of Public Health and Community Development

Programme: Master of Public Health

Approving Body: Maseno University and Department of Research of Kisii Teaching and Referral Hospital

Principal Investigator: Kariuki Pauline Njoki

Supervisors: Prof. Rosebella Onyango and Prof. David Sang

INTRODUCTION

This questionnaire is for gathering information on the determinants of utilization of antenatal care services in Gesusu Hospital.

This study is for academic purposes, but it will also be of great help to those who formulate policies and programmes to improve maternal health care services in Gesusu Hospital. The survey may take 10-15 minutes. The information you provide will be kept strictly confidential.

You are among those chosen to participate in this study. Your participation in this survey is voluntary. You can decide to participate or not, or choose not to answer any individual question. You can also withdraw your consent at any time without any repercussions on you. However, I hope you will participate since your views are very important.

Do you agree to participate in this study?

Yes

No

Signature of respondentDate

Name of the interviewer

Signature.....Date.....

THANK YOU FOR YOUR WILLINGNESS TO PARTICIPATE.

APPENDIX V: QUESTIONNAIRE (ENGLISH/EKEGUSII)

SERIAL NO:

INSTRUCTIONS

- Do not write your name; this is an anonymous questionnaire (toika erieta riao).
- Please circle the most appropriate response, or write your answer in the provided space (chora esako ase richibu gose orike richibu ase omositari).
- Please answer all the questions truthfully (chibu amaswari onsi boronge kabisa).

SECTION 1: SOCIO-DEMOGRAPHIC PROFILE

1.1 Age of the respondent (emioka yao)

1=10-19 years

2=20-29 years

3=30-39 years

4=40 years and above

1.2 Marital status (enyuomo)

1=Married (ninywomire)

2=Single (tindanywomwa)

3=Widow (nakweretwe)

4=Divorced/Separated (twatiganete)

1.3 What is your highest completed level of education (ngai gwasomete mpaka)?

1=None (tinsometi)

2=Primary incomplete (tingoreti eburemari)

3=Primary complete (nakorete eburemari)

4=Secondary incomplete (tingoreti esekondari)

5=Secondary complete (nakorete esekondari)

6=Tertiary (specify) (esekondari gochia igoro)

1.4 Occupation (egasi)

1=Homemaker (tindi gokora gasi)

2=Farming (omoremi)

3=Formal employment (ndikire)

4=Business woman (ebiasara)

5=other (specify) (egasi ende?)

1.5 Religious affiliation (obokeresito)

1=No religion (timbwati kanisa)

2=Seventh-day Adventist (SDA)

3=Catholic (omokatholeki)

4=Muslim (omoiseramu)

5=other (specify) ekanisa ende?

1.6 Parity i.e. number of children you have delivered, whether alive or dead (abana baria kwaiboire baka bari bakure)

1=0-1

2=2-3

3=4-5

4=6 and above

1.7 Ethnicity/tribe (ekabira).....

SECTION 2: KNOWLEDGE ON ANTENATAL CARE

2.1 Why does an expectant woman need to seek antenatal care (ninki abangi'na bare morito babwenete kogenda ekeriniki)?

1=to get ANC card to avoid being harassed by midwives during delivery (konyora ekati ye ekeliniki abasista tibabaomania ekero giokoibora)

2=to detect, treat and prevent complications in pregnancy (gochekia, okorwaria na ogotanga emechando ekero bare morito)

3=to get advice on how to care for the pregnancy (konyora obosemia buna oborito bokorendwa)

4=others (esababu ende?).....

2.2 When is a pregnant woman expected to initiate antenatal care (ndi omokungu ore morito abwenete gochaka kogenda ekeriniki)?

1=As soon as she suspects she is pregnant (obwango boria akageire nga' nare morito)

2=at 4-5 months (emetienyi ene baka etano)

3=at 6-7 months (emetienyi sita baka saba)

4=at 8 months and above (emetienyi nane gochia igoro)

2.3 How many antenatal visits is a pregnant woman expected to make during pregnancy (ngarenga omokungu ore morito abwenete kogenda ekeriniki ataraibora)?

1=none (tari gochia)

2=1(rimo)

3=2 (kabere)

4=3 (gatato)

5=4 or more (gose goetania kane)

2.4 List the services offered during ANC attendance (rika ebinto bigokorwa ekero omokungu achiere ekeriniki)

.....
.....

**SECTION 3: ATTITUDE TOWARDS THE RECOMMENDED FOUR ANC VISITS
(EBIRENGERERIA GOCHIA ASE CHIKIRINIKI INYE CHIRIA CHITAKEIRE)**

3.1 In your opinion, is antenatal care important (ase amaoni ao, chikiriniki nchibwate eng'echo?)

1=Yes (eee)

2=No (yaya)

3=don't know (timanyeti)

3.2 What is your opinion on the minimum of four antenatal care visits recommended by the World Health Organization/Government of Kenya (amaoni ao narari gochia ase chikiriniki inye chiri chitakeire na WHO/eserekari ya Kenya)?

1=Very many (echio echietanetie)

2=Many (echio nechinyinge)

3=Average ((echio mbuya chire)

4=Few (echio nechinge)

5=Very few (echio nechinge mono)

THANK YOU (MBUYA MUNO)!

APPENDIX VI: CHECKLIST

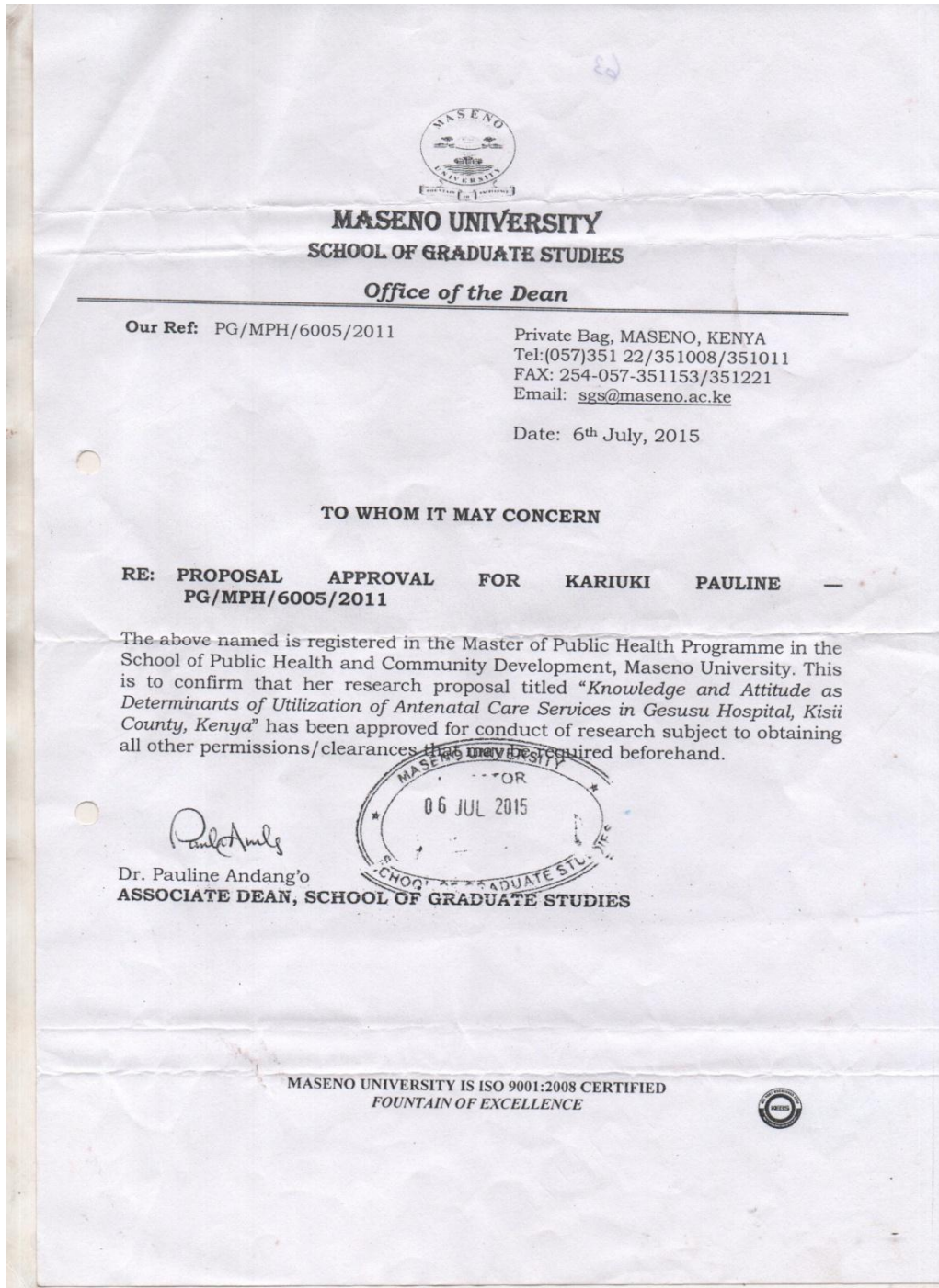
This checklist is used to fill in data from the ANC cards.

1. What is the gestation at first visit (in months)?
2. What number of visit is today?

*****THE END*****

THANK YOU AND GOD BLESS.

APPENDIX VII: APPROVAL FROM MASENO UNIVERSITY



APPENDIX VIII: APPROVAL FROM KISII COUNTY

MINISTRY OF HEALTH



Telegramme "medical" Kisii
Telephone: (058) 31310 Kisii
Email: kisiihospital@gmail.com
Web: www.kisiihospital.org.ke

DEPARTMENT OF RESEARCH
THE KISII TEACHING & REFERRAL HOSPITAL
P.O. BOX 92
KISII

REF. NO.

DATE: 10th July, 2015

KARIUKI PAULINE NJOKI

RE: DATA COLLECTION


The research department has received your proposal titled:

"Knowledge and attitude as determinants of utilization of antenatal care services in Gesusu Hospital, Kisii County."

The following are our comments:-

You are allowed to proceed with the research. No fee shall be charged.

Ensure a copy of the final report is submitted to us for retention and use.


DR. E.B. MANSANTA -MBChB(UoN), MPH(Epidem) (JOUST),
PGDPM(KIM), applied epidem & Bio (UoN)
DEPARTMENT OF RESEARCH



CC:
CHIEF EXECUTIVE OFFICER
KISII TEACHING & REFERRAL HOSPITAL

SMOH – MASABA SOUTH