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FACTORS ASSOCIATED WITH LATE ANTENATAL CARE BOOKING AMONG PREGNANT WOMEN IN NDOLA ZAMBIA

Mable Musonda Chewe

A Dissertation submitted in partial fulfillment of the requirements for the degree of Master of Science in Nursing

The University of Zambia

July, 2015

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DECLARATION

I, **Mable Musonda Chewe**, hereby declare that this dissertation represents my own work and has not been presented either wholly or in part for a degree at the University of Zambia or any other University. I further declare that all the sources I have cited have been indicated and acknowledged using complete references.

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CERTIFICATE OF APPROVAL

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ABSTRACT

Background: The World Health Organization Focused Antenatal care model states that every pregnant woman is at risk of complications and recommends early an ANC visit, of which the first should be during the first 12 weeks of pregnancy. High proportions of pregnant women book for ANC late and are at risk of poor pregnancy outcomes.

Aim: The aim of this study was to determine the factors associated with late antenatal care booking among pregnant women in Ndola District.

Methods: A quantitative paradigm using cross-sectional design was carried out. A simple random sample of 305 pregnant women attending antenatal clinic at seven (7) systematically selected clinics between May and July 2015 was selected. Pretested and structured interview schedule was used to capture information from pregnant women on demographic profile, obstetric characteristics and utilization of antenatal care services. Data from the completed questionnaires were entered into Epidata (2008) and finally analyzed with Stata 10.1. Multivariate logistic regression analysis was carried out to examine factors associated with late antenatal care booking among pregnant women in Ndola Zambia.

Results: Overall (n=305), mean (SD) age was 26.4 (CI, 25.7-27.1). Majority (86.56) of the participants booked for antenatal care after 12 weeks and 13.44% booked for antenatal care before 12 weeks gestation. Maternal age, marital status and parity were associated with late ANC booking. Pregnant women aged 25-29 were 79% (OR=0.21, p=0.039) and 40-44 were 99% (OR=0.01, p=0.010) less likely to book late compared to teenage mothers. Single mothers were 73% *(OR=0.27, p=0.034),* less likely to book late compared to the reference category married mothers. Pregnant women with 1-2 children, were 3.8 times *(OR=3.76, p=0.023)* and 3-4 children were 8.2 times (*OR=8.19, p=0.48)* more likely to book late for ANC compared to the reference group of pregnant mothers without children.

Conclusions: The results from this study suggest that late booking remains significantly high despite availability and free antenatal care services to all pregnant women. Therefore there is need to increase public awareness and enhance the value of early ANC booking.

Key words: Antenatal care, Late Booking, Gestation age, Risk Factors.

DEDICATION

To my best friend and husband Mwamba Festors Chewe, your unconditional love, encouragement, patience and perseverance have contributed to my success.

To my four children: Mwamba, Mwila, Chewe and last born son Mulenga, you endured so many days and nights without mum, your loneliness helped me to work hard. I love you so much.

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ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care.
ART	Anti-Retroviral Therapy
ARV	Antiretroviral Drugs
BP	Blood Pressure
DHMT	District Community Health Office
ERES	Excellence in Research Ethics and Science
FANC	Focused Antenatal Care
HBM	Health Belief Model
HBP	High Blood Pressure
HCP	Health Care Provider
HIV	Human Immunodeficiency Virus.
HMIS	Health Management Information Systems
IPT	Intermittent Presumptive Therapy
ITN	Insecticide Treated Nets
LMP	Last Menstrual Period
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MTCT	Mother-to-Child Transmission
NCDMCH	Ndola Community Development Mother And Child Health
PCR	Polymerase Chain Reaction
PMTCT	Prevention of Mother-to-Child Transmission
UNAID	United Nations Joint Program on HIV/AIDS
UNICEF	United Nations Children's Fund
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

CHAPTER ONE

1.0 Introduction

1.1 Background information

Early Antenatal care booking and regular follow-up usually provides opportunities for delivering health information and interventions (through early detection of modifiable preexisting medical conditions like Heart disease, Diabetes Mellitus, Hypertensive disorders, HIV/AIDS, and severe anemia) that can significantly enhance the health of the mother and fetus (Banhart 2008). On the contrary, opportunities to provide information and other interventions pertaining to their reproductive health and the health of their unborn child are missed when a woman initiates ANC in late time of her pregnancy (Tadesse et al., 2014).

The World Health Organization (WHO) Focused ANC (FANC) model states that every pregnant woman is at risk of complications and recommends early an ANC visit, of which the first should be during the first trimester. The visit is used to classify pregnant women into two groups based on previous history of pregnancy, current pregnancy state, and general medical conditions. The FANC approach requires that pregnant women attend antenatal care services four times during the course of pregnancy. Pregnant women eligible to receive routine ANC (basic component) and those who need special care on average account for 25% of all pregnant women initiating ANC (WHO, 2010). Low ANC coverage, few visits, and late booking are common problems throughout Sub-Saharan Africa posing difficulty in accomplishing the WHO recommendation (Adekanle, 2008).

The WHO antenatal care model guidelines recommend that timely booked mothers be offered screening for HIV infection which helps early detection and prevention of transmission of HIV infection to the child (Oladokun, 2010). Mothers who attend antenatal care after 12 weeks miss the opportunity of early detection of HIV and STDs, malaria and anaemia prophylaxis, health education and treatment or prevention of diseases (Kisuule et al., 2013).

According to WHO (2010), 49% of pregnant women in low and middle-income countries did not attend the minimum number of antenatal care (4) visits recommended by the WHO to prevent or manage the complications of pregnancy and support safe delivery. In addition, 74% were not tested for HIV and 63% of those who tested positive did not receive

antiretroviral for the prevention of mother-to-child transmission of HIV. Of the infants born to mothers with HIV infection, 85% did not receive a diagnostic HIV test and 65% of those who were infected with HIV did not receive antiretroviral prophylaxis. These service delivery gaps largely account for the fact that an estimated 330 000 infants were born with HIV infection in 2011 (WHO, 2010).

About 800 women die from pregnancy or childbirth-related complications around the world every day. In 2013, 289 000 women died worldwide during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. Of this, 99% of maternal deaths occur in developing countries where 85% of the populations live. More than half of these deaths occurred in sub-Saharan Africa (WHO, 2013).

Improving maternal health is 1 of the 8 Millennium Development Goals (MDGs) adopted by the international community in 2000. Under MDG-5, countries are committed to reducing maternal mortality by three quarters between 1990 and 2015. In sub-Saharan Africa, a number of countries have halved their levels of maternal mortality since 1990. In other regions, including Asia and North Africa, even greater headway has been made. However, between 1990 and 2013, the global maternal mortality ratio declined by only 2.6% per year. This is far from the annual decline of 5.5% required to achieve MDG-5 (WHO, 2013).

While there are potential benefits to be gained from some of the elements of ANC and these benefits are most crucial for developing countries where maternal morbidity and mortality levels are high, the recommended first visits by skilled providers is received by few pregnant women in sub-Saharan countries (Delva, 2010).

High proportions of women in Africa and Zambia initiate ANC late and are at risk of poor pregnancy outcomes (Aliderlietsn, 2007). Comparatively, 79.9% booked late for ANC in Niger Delta (Ebeidbe, 2004) and in Tanzania more than 80% initiated ANC later than 17 weeks (Mrisho, 2009). Furthermore, in Malawi 91% of the women initiate ANC after the fourth month of pregnancy and Lilongwe in particular, 81 % book late for ANC (Chiwaula, 2011).

Zambia, with its high maternal mortality ratio (MMR) of 398 maternal deaths per 100, 000 live births, is ranked among the 40 countries in the world with high maternal mortality

(WHO, 2013). Although maternal mortality has been declining, from 440 in 2010 to 398 per 100,000 live births in 2014, the decline is insufficient to reach the 2015 target of 162.3 deaths per 100,000 live births. The leading direct causes of maternal mortality include postpartum haemorrhage, pregnancy-induced hypertension, puerperal sepsis, unsafe abortions and obstructed labour (Munjanja et al., 2007).

The Zambia Demographic Health Survey (2013-2014) indicates that 96% of pregnant women received ANC services from a skilled health provider (doctor, clinical officer, nurse, or midwife). Coverage is higher in urban areas (99%) than rural areas (94%). However, only 19% attended ANC by their fourth month (ZDHS, 2014) representing 81% of late antenatal booking.

More than 90% of women attending first antenatal care (booking) are tested for HIV, Banda et al, (2012)**.** The plan to scale-up PMTCT services includes: maintaining antenatal care utilization above 90%, increasing the percentage of women attending the first ANC by 12 weeks gestation and improving adherence to antiretroviral therapy by HIV positive women to 90% (Ministry of Health- PMTCT, 2010). With the implementation of combined ART, it was observed that there was dramatic decrease in rates of perinatal MTCT of HIV to as low as 0.3%. The risk of HIV is low in women who receive standard ART during pregnancy and achieve undetectable viral load at delivery (Religuet et al., 2014). It is anticipated that a significant number of HIV exposed babies who eventually test HIV positive with the PCR test at six weeks of age, are likely to be children born to mothers who did not get ARV treatment at the correct time due to late ANC booking. Furthermore, babies born at home to mothers living with HIV are probably more likely to have not received any PMTCT services. A complete lack of or late initiation of combined ART to mother and child has serious implications for maternal and child mortality proportions (Religuet et al., 2014).

Banda et al., (2012)**,** stated that despite antenatal care services being provided free of charge in Zambia, only 19% of women attend antenatal care by their fourth month of pregnancy, as recommended by WHO. In urban settings where the health services are distant from the population, 21% of mothers seek the service before four months of gestation and 18% in rural districts make their first ANC visit before the 4th month of pregnancy.

The antenatal period provides excellent opportunities to reach pregnant women with preventive and curative care and it revealed that, the higher the level of care obtained during

pregnancy, the higher the use of safe delivery service will be. This strong positive association between level of care obtained during pregnancy and the use of safe delivery care might help explain why antenatal care could also be associated with reduced maternal mortality (Kirk, 2006).

The aim of this study therefore was to establish the proportion of women who were booked at the recommended time and identify factors contributing to late entry to ANC.

1.2. Statement of the Problem

The antenatal care clinic is a key entry point for pregnant women to receive a broad range of health promotion and preventive services. Focused antenatal care has been found to be most effective in preventing adverse pregnancy outcomes and is an essential component of the quality of care for all pregnant women. ANC is most effective when sought before 12 weeks gestation and consistently throughout pregnancy (WHO, 2010).

The Ndola HMIS report (2013) indicated that 87% of pregnant women accessed ANC services during their pregnancy. However, this was usually after 12 weeks of pregnancy (late gestation). The existing HMIS data at Ndola DHO shows that late initiation of ANC among pregnant women has been persistent from 2011 to 2013.

Table 1: ANC Booking in the 1st 12 weeks, by Pregnant Women in Ndola

YEAR	TOTAL NO. OF PREGNANCIES	EARLY<12WEEKS	LATE>12WEEKS
2011	12,110	21%	79%
2012	12,987	14%	86%
2012	11,310	12.6%	87.4%

Source: Ndola Community Development Mother Child Health Register (2011-2013)

Table 1 shows the proportions of late antenatal care booking from 2011 to 2013. The proportion of pregnant women booking for ANC after the 12 week of gestation has been increasing from 79% in 2011 to 87.4% in 2013.

When women initiate ANC after 12 weeks (late), they have an increased risk of poor pregnancy outcomes, maternal and neonatal mortality. The existing HMIS data at Ndola Central Hospital shows that pregnant women and their new born babies experienced bad pregnancy out comes during 2012 to 2013 period. In 2012, Ndola Central (3rd level

Referral) Hospital reported 28 maternal deaths and 181 still births. Among the causes of maternal deaths were postpartum haemorrhage 32.1% (9/28 mothers), followed by sepsis 21.4% (6/28 mothers), anemia 14.2% (4/28 mothers), abortions 7.1% (2/28 mothers), eclampsia 7.1% (2) and 17.8% (5/28 mothers) died from others causes during pregnancy, labour and puerperium.

However, data from NCH shows that little had changed over the year, in 2013 the hospital recorded 21 maternal deaths and 71 still births. Postpartum haemorrhage remains the leading cause of maternal mortality, accounting for 38% (8/21mothers), abortion 0.05% (1/21mother), eclampsia 19% (4/21 mothers), 14.2% (3/21 mothers), sepsis 9.2% (2/21 mothers) and 14.2 (3/21 mothers) died of other causes.

This indicates that when women book late for ANC, they miss out the intended benefits of ANC which include early identification and management of pre-existing health conditions and complications of pregnancy to prevent life-threatening maternal and neonatal conditions. In view of this background, there is need to identify the factors associated with late booking to ANC.

1.3 Study Justification

Antenatal care is one of the means to reduce maternal mortality and morbidity with interventions and information that promote the health, wellbeing and survival of mothers and their babies. According to the MDG-5, no woman should die during pregnancy, while giving birth or during puerperium (WHO, 2010). This study determined the factors associated with late booking for ANC since not much literature had established affirmative factors responsible for late ANC among pregnant women in Ndola and the findings would influence reproductive health policy.

This study focused on understanding the pregnant women's beliefs about health problems during pregnancy, perceived benefits of antenatal care and barriers to access of care. Therefore, it was hoped that the findings of this study would be of use to health policy makers and other stakeholders for developing healthy public policies as regards integrated reproductive health. Programme managers would able to develop strategies to promote early booking for ANC services. The health care providers would also be able to improve service provision to pregnant women within their facilities and at community level. Consequently,

the findings helped the researcher to identify gaps and specific areas of research in maternal health.

1.4 Research question

What factors lead to late ANC booking among pregnant women in Ndola?

1.4.1 Research objectives

General objective

The general objective of this study is to determine the factors associated with late ANC booking among pregnant women in Ndola.

Specific objectives

The specific objectives of this study are to:

1. To establish the timing of the first ANC visit by pregnant women
2. Identify possible barriers to early utilization of ANC services
3. To establish the association between late ANC booking and associated demographic factors and potential barriers among pregnant women attending ANC clinic in Ndola district.

1.4 Operational Definition

Antenatal care: is the care that is given to a pregnant woman and her unborn baby throughout the pregnancy, until the time she delivers.

Antiretroviral Therapy (ART): These are antiviral drugs or medicines used in the treatment of AIDS patient with antiretroviral drugs

Booking: Is the first time a pregnant woman has baseline assessments done by a healthcare.

Early Antenatal booking: This is when a pregnant woman attends antenatal care for the first time at least before 12 weeks of pregnancy.

Gestational Age: is defined as the age of the foetus as calculated from the Last normal menstrual period (LMP) if the woman is sure of her dates and as estimated by abdominal ultrasound.

HIV: Human Immunodeficiency Virus, this is the virus that causes HIV infection and AIDS.

Late antenatal booking: this when a pregnant woman presents herself to the antenatal clinic for the first time, any time after the 12^{th} week of pregnancy.

Maternal mortality: is the death of a pregnant woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

1.6. Research Variables and Cut Off points

The dependent variable which was used to determine the factors associated with late antenatal care booking was 1st ANC Attendance (Table 2).

Table 2: Variables, Cut Off Points and Indicators

Variables	Type	Cut- Off Points	Indicators	Question/s
	Dependent variable 1st Antenatal Attendance	Before 12 weeks After 12 weeks	Early ANC attendance Late ANC attendance	Question number 20, 21, 24 and 25.
Independent variables				
Parity	Categorical	Nullipara Prime para Multipara Grandmulti-para	None 1-2children 3-4children > 5 children	Question number 7, 8 and 9
Age	Categorical	Adolesecnt Teenagers Youths Elderly	Below 20yrs 20-24yrs 25-35yrs 36-44yrs	Question number 1.
Marital status	Categorical	Single Married Divorced Widowed	1 2 3 4	Question number 35
Attitude of staff towards pregnant women	Categorical	Positive Negative	Non-judgmental Judgmental	Question number 37
Intention to get pregnant	Dichotomous	Had intention No intention	Yes No	Question number 11, 12 and 13.
Knowledge of the benefits and right time for ANC booking	Categorical	High Medium No knowledge	Three (2) points Two (1) points No (0) point	Question number 19, 20, 21, 22 and 25.

1.8 Conceptual Model

The Health Belief Model (HBM)

This study used the Health Belief Model. The HBM is a psychological health behavior change model developed to explain and predict health-related behaviors, particularly in regard to the uptake of health services. The health belief model was developed by Irwin Rosenstock in 1966 and has been identified as one of the earliest and most influential models in health promotion (Rosenstock, 1966).

The model suggests that people's beliefs about health problems, perceived benefits of action and barriers to action and self-efficacy explain engagement (or lack of engagement) in health-promoting behavior. A stimulus, or cue to action, must also be present in order to trigger the health-promoting behavior.

Assumptions of the Health Belief Model

According to Campus (2005), the HBM is based on the following four assumptions:

1. **Perceived Severity**

Perceived severity refers to subjective assessment of the severity of a health problem and its potential consequences. The HBM proposes that individuals who perceive a given health problem as serious are more likely to engage in behaviors to prevent the health problem from occurring (or reduce its severity). Perceived seriousness encompasses beliefs about the disease itself (whether it is life-threatening or may cause disability or pain) as well as broader impacts of the disease on functioning in work and social roles.

The assumption was that if pregnant women perceived the consequences of attending ANC late as serious, they would strive to book early for antenatal care.

2. Perceived Susceptibility

Perceived susceptibility refers to subjective assessment of risk of developing a health problem. The model predicts that individuals who perceive that they are susceptible to a particular health problem will engage in behaviors to reduce their risk of developing the health problem. Individuals with low perceived susceptibility may deny that they are at risk of contracting a particular illness and are more likely to engage in unhealthy, or risky,

behaviors. Individuals who perceive a high risk that they will be personally affected by a particular health problem are more likely to engage in behaviors to decrease their risk of developing the condition.

In line with this, if pregnant women perceived themselves and their unborn children to be at risk of complications of pregnancy, labour and delivery, they would take action because they perceived their own susceptibility.

3. Perceived Benefits

Health-related behaviors are also influenced by the perceived benefits of taking action. Perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behavior to decrease risk of disease. If pregnant women as individuals strongly believe that early antenatal care booking will reduce susceptibility to a health problem or decrease its seriousness, then they will be likely to engage in early antenatal care booking regardless of objective facts regarding the effectiveness of the antenatal care service thus promoting their health and that of their unborn babies.

4. Perceived Barriers

Health-related behaviors are also a function of perceived barriers to taking action. Perceived barriers refer to an individual's assessment of the obstacles to behavior change. Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health-promoting behavior. In other words, pregnant women who perceive barriers to early antenatal care booking such as perceived inconvenience for example long waiting time at the health center and delay in recognizing that one is pregnant are likely to book late for antenatal care.

Modifying Variables

Individual characteristics, including demographic, psychosocial, and structural variables, can affect perceptions (perceived seriousness, susceptibility, benefits, and barriers) of health-related behaviors. Demographic variables include age, sex, race, ethnicity, and education, among others. Psychosocial variables include personality, social class, and peer and reference group pressure, among others. Structural variables include knowledge about a given disease and prior contact with the disease, among other factors.

Therefore modifying variables such as age, marital status, education, occupation and parity that affect health-related behaviors indirectly by affecting perceived seriousness, susceptibility, benefits, and barriers may as well affect the time when pregnant decide to book for antenatal care.

Cues to Action (Motivation)

The health belief model posits that a cue, or trigger, is necessary for prompting engagement in health-promoting behaviors. Cues to action can be internal or external. Physiological cues such as pain is an example of internal cue to action. External cues include events or information from close others, the media, or health care providers promoting engagement in health-related behaviors.

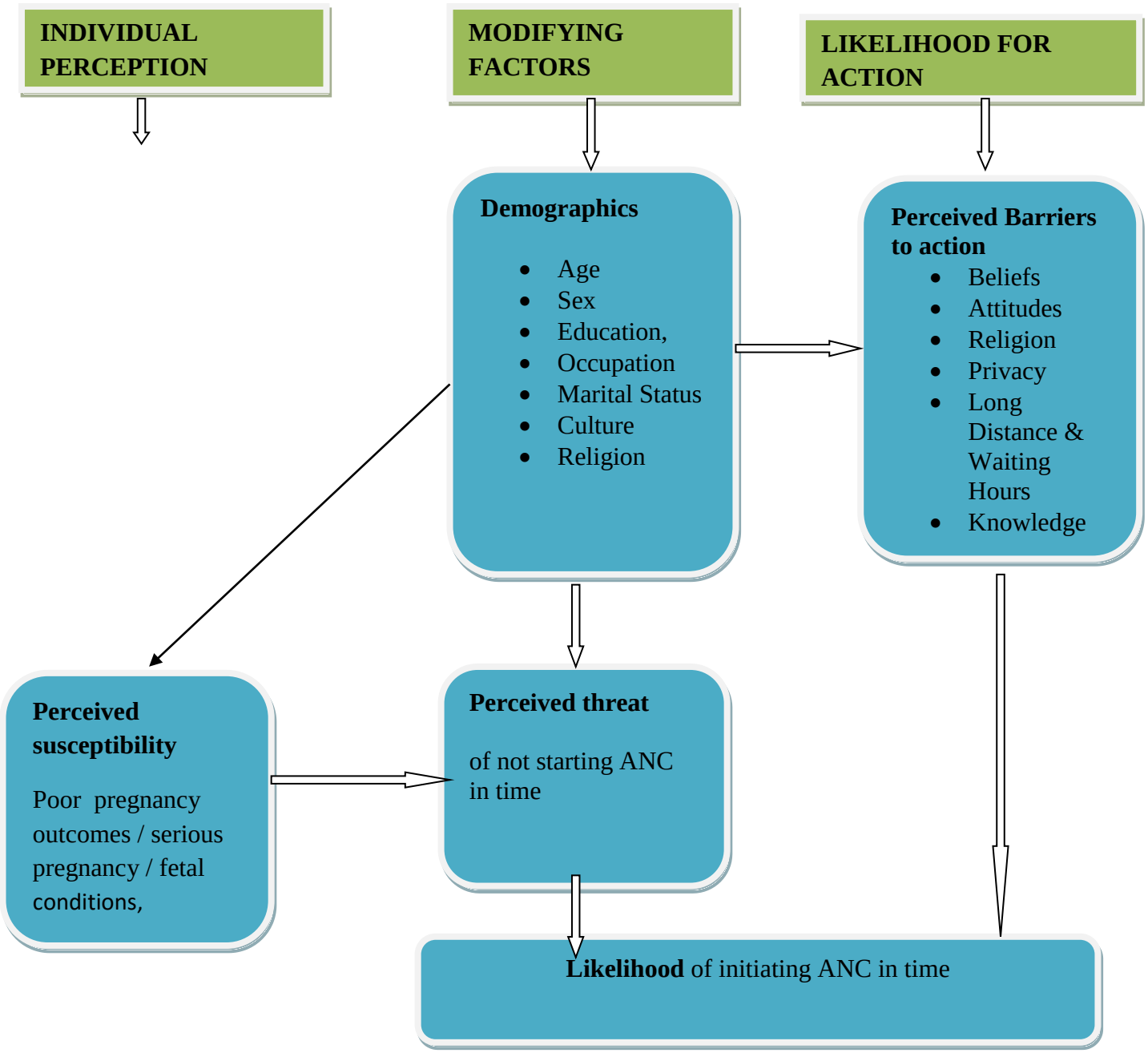
The level of awareness and knowledge about ANC attendance in the first 12 weeks gestation by women needed to be identified. Thus the relationship between utilization of ANC services in the first 12weeks of pregnancy and knowledge was determined.

Self-Efficacy

Self-efficacy refers to an individual's perception of his or her competence to successfully perform a behavior. Developers of the model recognized that confidence in one's ability to effect change in outcomes (self-efficacy) is a key component of health behavior change.

Application of HBM in this study helped to recognize, the prime motivation for pregnant women to initiate ANC in the first 12weeks gestation and the perception that they are susceptible to bad pregnancy outcomes or serious pregnancy conditions. Similarly, the model established the perceived threat of adverse maternal or neonatal outcome that could motivate pregnant women to initiate ANC early.

Figure 1: Illustrates the Health Belief Model of determinants of late booking for Antenatal care.



The adapted Health Belief Model of the study (Glanz et al., 2002)

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Literature review is a process of inspecting what other authors have written about a research problem and ways of approaching it. It is an examination of books, journal articles, dissertations, government reports, unpublished manuscripts, newspapers with reference to the selected research problem (Burns & Grove, 2009). Sources of literature for this study included published articles from computerized database such as Google scholar and PubMed to access Medline data base, books from the University Library and MoH documents.

In this study, the literature review focused on identifying factors associated with late booking for antenatal among pregnant women from works done by other researchers. A review of literature guided the author on gaps that still existed on this topic (Burns et al., 2005). The literature has been reviewed and presented according to the study variables which were late antenatal booking and associated factors with late booking for antenatal care.

2.2 Timing of Antenatal Care Booking (Initial visit)

Antenatal care is a form of preventive medicine that allows pregnant women to maintain a state of good health throughout pregnancy, and to improve their chances of having a safe delivery of healthy infants. To achieve this aim, it is a widely held belief that pregnant women need to book early preferably before 14 weeks gestation, (Okunlola, 2008).

However, in most parts of the world studies have indicated late booking to antenatal clinic. Corbett (2014) in New Zealand found that only 17% of pregnant women booked for antenatal care before 18 weeks gestation. Late booking for antenatal care in that country was associated with socio-demographic factors, social deprivation, and inadequate social support. On the contrary, a study among the pregnant women attending antenatal care in England revealed that only a small proportion (5%) of pregnant women initiate or book late for their antenatal care (Rowe et al., 2008).

In United Kingdom, it was found that delayed access to antenatal care (late booking) is linked to increased mortality and morbidity for mother and baby. Alderliesten (2007) found that 17% of the women who died from direct or indirect causes booked for maternity care after 22

weeks gestation, had missed more than 4 routine antenatal visits or didn't seek care at all. In a similar study in Italy, under-attending and late booking for antenatal care was associated with adverse pregnancy outcomes. Florida et al., (2014) revealed that late antenatal booking was 32.9% and was associated with detectable HIV RNA in late pregnancy and complications of delivery were more common with late booking (8.2%). This condition was associated with younger age, diagnosis of HIV during pregnancy and less antiretroviral exposure.

In developing countries such as Nigeria, study findings revealed among others that late booking is still a common practice in the developing countries with average gestational age at booking being 23 weeks, and only 14% of the women booked before the end of first trimester (Okunlola, 2008). Nulliparity or low parity was found to be the only factor that favored early booking. However, gestational age at booking as a sole factor for predicting the pregnancy outcome was found to be insignificant as the outcome was same for early and late bookers, (Adegbola, 2009). Another study, in Ibadan, revealed similar result that 14.1% booked before 14 weeks. The study showed that illness in the index pregnancy and nulliparity were the only factors found to significantly favor early booking (Ayinde, 2011). Yet another study in the same country Nigeria, also noted late booking as the general trend in that country with the mean booking age being 20.3 weeks (Adekanle et al., 2008).

In Ghana, women were generally starting ANC around the third or fourth month of pregnancy, whereas women in Kenya and Malawi were often reported to make their first visit at around the sixth or seventh month (Pell et al., 2013). Pell and others, in their study on factors associated with antenatal initiation among pregnant women discovered that women talked about the gestational age of their pregnancies often measuring the progression in months. Although primegravidae, particularly young women and adolescents were less certain, generally, women became aware of their pregnancy as a result of one or two months of amenorrhea, this affected the time when they initiated ANC. In the same study it was further found that gestational age had a varied impact on ANC initiation across the sites.

Gestation age is one of the factors that influence the time of antenatal booking. Study findings by Kisuule et al., (2013) in Uganda, showed that though over 90% of pregnant women attend antenatal care at least once, only 48% make four or more antenatal care visits during their entire pregnancy and only 21% of women made their first antenatal care visit before the fourth month of pregnancy. This implies that 79% of pregnant women report late

for their first antenatal care visit. According to Kisuule, the results showed that 72.7% of the study participants did not know the right gestation age at which a pregnant woman should start attending antenatal care.

In Tanzania, the majority of pregnant women initiated antenatal care attendance at an average of five (5) gestational months. Perceived poor quality of care, late recognition of pregnancy and not being supported by the husband or partner were identified as factors associated with a later antenatal care enrolment. However, primiparity and previous experience of a miscarriage or stillbirth were associated with an earlier antenatal care attendance. Adolescent pregnant women started antenatal care no later than adult pregnant women despite being more likely to be single (Gross, 2012).

Similarly, more than half the women were booking well into the second trimester in South Africa. One study showed that 53.5% of these pregnant women booked after 20 weeks (Shisana et al,. 2010). Furthermore, a review in Limpopo province showed that only 2.9% of the women booked before 20 weeks. The majority, 58.3% booked in the second and third trimester (Ngomane et al., 2010). In another province in South Africa, Kwazulu-Natal, it was found that only 9% of the women booked in their first trimester while the majority, about two thirds, only did so in their second trimester (Hoque et al., 2008).

To confirm the findings of the above studies, Basu et al., (2009) in a retrospective record review in South Africa, women booking early (up to 14 weeks) were compared with women booking late (from 15 weeks onwards). It was discovered that a total of 6% women booked in the early trimester and 94% booked late respectively. To assess women's experience of public antenatal care services and reasons for late antenatal care attendance in inner-city Johannesburg, South Africa, Solarin, (2013) discovered that ANC attendance was high (97 %) with 46 % seeking care before 20 weeks gestation. Among the 198 women who sought care, 19.2 % were asked to return more than a month later, resulting in a 3-month delay in being booked into the clinic for these women. Additionally 49 % of women reported no antenatal screening being conducted when they first sought care at the clinic. Delay in recognizing pregnancy (21.7 %) and lack of time (20.8 %) were among the reasons women gave for late attendance.

The prevalence of late ANC attendance was 72% and 68.6% in rural and urban districts respectively, in Zambia (Banda, 2012). The study showed that pregnant women in rural areas were 2.2 times more likely to start ANC late because of misconceptions while in urban late ANC attendance was 2.9 times higher due to cultural beliefs than misconceptions.

2.3 Factors Associated with Late Antenatal Care Booking

Researchers have identified and analyzed the main factors that affect early booking to antenatal clinic in developed and developing countries. The related factors include age, marital status, educational level, cultural beliefs, employment, parity, intention to get pregnant, knowledge, attitude, economic status, health insurance and travel time (McDonald, 2011). These factors either single or interdependently affect the timing of antenatal booking.

A meta-analysis of barriers to accessing antenatal care in the United Kingdom (UK) indicated that age seems to play a role in determining access to antenatal care. The study findings revealed that younger women, particularly teens and adolescents, booked late. Further findings revealed that women were unaware of the symptoms of pregnancy and therefore only realize that they are pregnant in the second and third trimester (Downe, 2008).

On the contrary, other similar studies found no evidence of an association between age and initiation of ANC. Gross et al., (2012) found no evidence of delayed initiation of ANC by adolescents in south-eastern Tanzania in their comparative study between pregnant adolescents and adults. It was noted that although adolescent women initiated ANC slightly earlier than older women, with a mean of 5 months, multiparous adolescents started ANC considerably later than their counterparts, with a mean of 5.5 months. According to Fekede (2011), Women in the age group 15-24 were more likely to attend ANC 2.75 times larger than that of women in the age group 25-34. Furthermore, women of white ethnicity and women who experienced previous fetal loss booked significantly early while primigravidae booked significantly late (Basu et al., 2009).

Studies have revealed that parity influences late booking to antenatal clinic. In England, primiparous women of high obstetric risk were 13.4% more likely to initiate antenatal care after 10 weeks of gestation than a low risk reference group and 34.3% more likely to initiate antenatal care after 18 weeks of gestation This association between high obstetric risk status

and late initiation of antenatal care was not replicated among multiparous women (Kupek et al., 2002).

Studies have also documented the association between education and booking for ANC. Adekanle (2008), found that women with primary education or none tended to register later than those who had secondary education and above. Other study findings supported Adekanle (2008) for example Adeyemi (2007) in his study discovered that 60% of the mothers were educated beyond secondary school level and only 44.3% of the clients booked late. Late booking was thrice as common in multiparae as in nulliparae. Variables that were significantly associated with time of booking included educational level of the husband, parity, previous miscarriage and medical problem in the index pregnancy. Conclusions from various studies were that, in developing countries such as Nigeria, the majorities of the women (52.1%) were middle class, while 87.5% have a secondary or tertiary education. Compared to women of low literacy level, educated women bear fewer children and achieve better child survival, because they avoid early marriages, teenage pregnancy, and high parity because they attend antenatal and postnatal more frequently. A study done in Kwale district, Kenya also revealed similar results that women with secondary education or above were more likely to attend ANC (Brown et al., 2008).

Contrary to all these findings mentioned about education and first ANC visit, a study by Gross et al., (2012) found no evidence of an association between education and early or late timing of ANC. In another related study in Ethopia, Fekede and Marrian (2011), revealed that about 76.7% of the women attended antenatal care and 23.3% had not attended at all. Literacy status, income, gravidity, religion and occupation showed statistically significant association with utilization of antenatal care. However, marital status, ethnicity and parity showed no statistically significant association with antenatal care utilization. About 42.8% of the attendants made their first antenatal visit in the 3rd trimester of pregnancy. Out of the total studied women, only 6.5% had the recommended four visits.

Still other studies further revealed that pregnant women and teenagers with unplanned pregnancies may have a negative attitude towards their pregnancy and, for this reason they may seek ANC much later than would older married women. Tariku et al., (2010) a study carried out in Addis Ababa, Ethiopia, they discovered that women with planned pregnancies tended to book early. In line with these finding with a study conducted in Tanzania, it was noted that although the literature reports various factors associated with ANC initiation such

as parity and age, pregnancy intentions for women is yet to be recognized as a possible predictor of timing of ANC initiation (Mbaruku et al., 2011). According to Mbaruku and others, 49.3% of the women intended to become pregnant, 50.7% (34.9% mistimed and 15.8% unwanted) became pregnant unintentionally. While ANC initiation in the 1st trimester was 18.5%, so was 71.7% and 9.9% in the 2nd and 3rd trimesters respectively. Another study in South Africa showed that women might not want to become pregnant for fear of potential HIV infection in their children or the fear that these children may be orphaned. Pregnant women had also expressed concern that, once pregnant, they might be more vulnerable to violence and abandonment by their partners, family and community (Cooper et al., 2007).

Generally, the utilization of modern antenatal care in most parts of sub Saharan Africa such as Nigeria indicates that the majority (79.9%) of those who present at antenatal care do so late, Ebeigbe (2004). On the contrary, it was found that age, parity, level of education, social class, previous fetal loss, and previous obstetric complications did not differ significantly between women who booked early and those who booked late.

In a separate study, Adenkale and Isawumi (2008) discovered that a history of previous obstetric complications (stillbirth, caesarean section, eclampsia, and intrauterine death) had no significant association with gestational age at the start of ANC. However, women with no previous history of caesarean section (81.9%) tended to book later than those who had this history (75%). In addition, women who had no problems in their previous pregnancies (81.7%) were more likely to book ANC late than those who had problems (75.8%).

Barriers to access of antenatal care were numerous ranging from personal reasons to health service provision. Long waiting times are seen as barriers to attending Ante-natal care in some parts of the world. A study in Australia noted that one of the biggest contributors for dissatisfaction was long waiting times (Laslett et al., 1997). Once there is a perception that there is going to be unnecessary delays at the clinic, it may serve as a deterrent for pregnant women from attending the ante-natal clinic. Some people may simply not have the time to wait for long hours as other important duties like work or taking care of the family and home take precedence reported Laslett.

In addition, Matua (2004), stated that inadequate knowledge about ANC and the benefits derived from it for the women and newborns has negatively influenced utilization. Sometimes pregnant women especially adolescents, may not be aware of the problems that

results from not attending ANC. Furthermore, lack of knowledge about dangers of not seeking health care in pregnancy and delivery, including inability to make independent decisions were major barriers to seeking health care among pregnant women in Uganda. In addition the other reason influencing late initiation of ANC in Lilongwe was lack of knowledge on the proper time to initiate ANC (88.8%). Pregnant women and key informants were not conversant when pregnant women are supposed to start ANC; they indicated around 4th to 5th months of gestation when the midwife could feel it or early when one is sick (Chiwaula, 2011)

According to Chiwaula (2011), in Malawi, late ANC attendance was due to long distance to health facility and 34.4% of the women reported that they walked more than 5kms to the ANC. As a result they preferred to start ANC late in order to make few visits. In a related study, Mubyazi (2010) in Tanzania, reported that women identified the key limiting factors for women's use of ANC services as costs in terms of money and time associated with accessing ANC clinics, the presence of more or less official user-fees for some services within the ANC package service providers' application of fines, penalties and blame when failing to adhere to service schedules.

A study done in Zambia, Mpongwe district revealed a similar result that distance influences the delay to start ANC (Banda et al., 2012). Interestingly, the time associated with travelling long distances to ANC clinics and ITN retailers and with waiting for services at clinic-level was a major factor of discouragement in the health seeking behaviour of pregnant women because it seriously affected their domestic responsibilities (Banda et al., 2012).

Healthcare workers' attitudes play a great role in determining how a woman perceives the ante-natal clinic services. When healthcare worker attitude is negative, forms a barrier to accessing ante-natal care. In a review of literature, Frizelle found that the South African health system is characterised by coercive relationships particularly between nurses and their clients (Frizelle at al., 2009).
A study in Zambia on the depth of the friction between the nurse and client, one of the clients indicated that: "*Sometimes when we come to the clinic we find good hearted nurses; but others are rough even the way they examine you is painful. If you complain about that they throw away your file…"* Once the perception that the healthcare workers have a nasty attitude

has spread in the community, women are likely to delay their attendance at the ante-natal clinic. The damage that this causes is often difficult to reverse (Minon et al., 2010).

Another important barrier may be the effects of culture. In many African societies, pregnancy is often not disclosed early as there is fear that witchcraft may be used to terminate the pregnancy. Skinner et al., (2003), discovered that in some cultures, it was inappropriate for the mother in law to be informed of pregnancy until it could be seen. This would make it difficult for a pregnant woman living at the homestead of her mother in law to make a trip to the local ante-natal clinic without arousing her suspicions.

However, a study by Agus (2012), from West Sumatra Indonesia, revealed that three-quarters of respondents (77.9%) received ANC more than four times, out of which 22.1% received ANC less than four times. Women who were encouraged by their family to receive ANC had statistically significant higher traditional belief scores and initiated ANC early compared to those who encouraged themselves.

2.4 Conclusion

The literature review set the stage for understanding late booking for antenatal care and the utilization of antenatal services in general. This chapter covered a broader review of literature on late ANC booking and factors affecting the decision by pregnant women to initiate ANC in the first 12weeks. It is clear that low and middle income countries still experience late ANC booking even though this is crucial for survival of both the pregnant woman and her unborn child. This study enabled health care providers to review the antenatal care service provision for pregnant women in Ndola to ensure early antenatal care booking. This would consequently improve the outcome of pregnancy for both the mother and her unborn baby.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is the entire strategy for the study, from the identification of the problem to the final plans of data collection (Castillo, 2009). It is essentially all procedures that researchers apply to describe, explain and predict phenomena and give the work plan of the research.

This chapter describes the research methodology that includes the study design, study setting, study population, sample selection, data collection instruments, data collection techniques, ethical consideration and pre-testing.

3.2 Study design

The study employed a cross-sectional quantitative approach aimed at examining factors that are associated with late booking for antenatal care in Ndola district. This design helped the investigator to quantify attitudes, opinions, behaviors, and other defined variables and generalize results from a larger sample population (Polit & Beck, 2008),

3.3 Study setting

The study was conducted in Ndola district, the provincial headquarters for the Copperbelt province of Zambia. There are 24 public health centres and 2 hospitals that provide maternal, child and newborn health services. The clinics or study sites were Mushili, New masala, Railway surgery, Palmodzi, Twapia, Chipokota mayamba and Chipulukusu. The participants were seen at Maternal Child Health department in the selected health centers as they came for their antenatal booking visits.

3.4 Target Population

In this study, the target population was all pregnant women attending antenatal care, aged between 15 to 45 years at the selected health facilities in Ndola district during the period of study.

3.5 Study population

The study population comprised all pregnant women attending their antenatal booking visit and follow up during the time of data collection and who met the sampling criteria.

3.6 Sample Selection

Sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study. In this study, 7 out of 24 health facilities were selected to participate using systematic sampling. All the 24 clinics were arranged in alphabetical order with a sampling frame of 1 to 3. Pregnant women who participated in the study were then selected by simple random sampling. Small and identical pieces of paper with numbers written on them from one to the number of patients on that day were put in a box after folding them. The numbers represented the pregnant women as listed on the sampling frame. The pieces of paper were then mixed thoroughly together by shaking the box. Then one piece of paper was blindfold picked at a time without replacement until five participants were selected per day and finally the required sample size for the study was reached. The method ensured that each patient had an equal chance of being included in the sample and this was feasible in terms of time, human, financial and material resources.

3.6.1: Inclusion criteria

- Pregnant women who had come to the clinic to initiate ANC or for follow-up visits
- Residents of the study areas
- Willing to give informed consent

3.6.2: Exclusion criteria

- Pregnant women who came to the clinic to seek health services other than ANC
- Non-residents of the study areas
- Not willing to give consent.

3.6.3: Sample size

In order to calculate number of pregnant women sampled to estimate the proportion of pregnant women who booked late for ANC to within 5% of true population proportion with 95% confidence the following formula was used. It was computed using Open Epi--Epidermiological calculator version 3. The calculation is as shown below.

Sample Size Calculation for Frequency in a Population

Population size (for finite population correction factor or fpc)(N): 1390

Hypothesized % frequency of outcome factor in the population (p): 50%+/-5

Confidence limits as % of 100(absolute +/- %) (d): 5%

Design effect (for cluster surveys-DEFF): 1

Confidence Level (%) **95%**

Sample Size **302**

Equation

Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]

Therefore, **302** eligible pregnant women at their antenatal visit were selected to participate in the study.

3.7.0 Data collection tools

3.7.1 Structured interview schedule (Appendix IV)

Structured interview schedule was used for data collection (see appendix V). It solicited information from pregnant women on demographic profile, obstetric characteristics and utilization of antenatal care services.

In this study, a pre tested interview schedule, one in English and another translated into Ichibemba was used to collect data. This was because some of the respondents might have not gone far in education while others might not be very comfortable with the local language. Data was collected over a period twelve weeks. The tool comprised questions that were both open and closed ended. Closed ended questions allowed quick recording of responses and saved on time (Basavanthappa, 2007). Open ended questions allowed free response and therefore information was more and valid (Basavanthappa, 2007). The structured interview

schedule comprised of three (3) sections: socio-demographic characteristics, obstetrics characteristics and predictors of late booking for antenatal care.

Basavanthappa (2007) states that the shortcomings of using an interview schedule are that the presence of the interviewer may prevent the interviewee from giving precise and accurate responses if the interviewee is not verbally expressive, and that research assistants need to be trained in data collection. This challenge was minimized by creating rapport with the participants, ensured uniform understanding and recording of responses. Assistant researchers were used also in the pilot study to note any areas where there would be need for more emphasis.

3.8: Data collection technique

The data collection techniques that were used for this study were face to face interviews. The purpose of the study was truthfully explained to each participant. The study participants were interviewed using an interview schedule, translated into Ichibemba and another one in English. Each study participant was interviewed either in a private place for 20 to 30 minutes. All interviews were conducted between 09:00 and 16:00 hours. Sorting out and checking for completeness of questionnaires was done before participants could leave the Antenatal clinic. Self-introduction was made by the researcher and research assistants to each participant before starting each interview to create rapport and make participants relax. Interviewers were expected to follow instructions on interview schedule to standardize the interview technique. Questions were expected to be asked the way they were written, without influencing the answers. Questions not understood were merely repeated without paraphrasing them or indicating the direction of the answer. All responses were recorded right away to avoid missing any of them. At the end of each interview, respondents were given time to ask questions, which were answered accordingly. Respondents were thanked at the end of each interview.

3.9: Pre-test

Pre-testing of the data collecting tools was done at clinical sites that were not participating in the study. 10% (equivalent to 31 participants) of the sample size was used to pilot the study and the respondents were selected using simple random sampling. The purpose of the pre-test was to; identify any part of the instrument that is difficult to understand or misinterpreted by the respondent, determine clarity of the instrument, determine whether the sequencing of questions is effective, determine acceptability of questions and willingness to respond or

answer questions, detect any errors in the questionnaire for the main study and assess the appropriateness and clarity of questions.

3.9.1: Validity

The validity of the instrument used in this study was maintained by ensuring that all aspects of variables pertaining to late booking for antenatal care were included in the questionnaire for the respondents. The tool contained clearly phrased questions for the participants to respond and to understand. To ensure validity, all the independent variables as well as the confounders were considered in this study by capturing them in the interview schedule during data collection and data analysis.

3.9.2: Reliability

Reliability of the questionnaire was measured by pre-testing it. During the pre-test, participants were asked if there were any questions they did not understand. This allowed room for alteration of the questionnaire if necessary. Open-ended questions in the questionnaire provided an opportunity to participants to add their own ideas thereby bringing out issues not thought of when designing the data collection tool.

3.10 Ethical considerations

The research proposal was submitted to Ethical approval and permission was sought from the Excellence in Research Ethics and Science (ERES) Converge for clearance and permission to conduct the study. Permission was obtained from Ndola District Medical Superintendent to conduct the research from their health facilities. Written consent was obtained from all participants before the interview. Consideration was made to those who would like to consult their spouses. The information that was collected was kept confidential. No names were indicated, however, the questionnaires had serial numbers for the purpose of data entry. The pregnant women were interviewed one at a time in a room for them to feel secure and confident. Considering that the participants were pregnant, the interviewers ensured that each interview lasted about 20 to 30 minutes and not longer than that period of time to prevent fatigue. The pregnant women were assured that they had a right to access health care at no cost and that they would still be attended to regardless of their answers. To prevent halo effect, clerks instead of nurses were recruited as research assistants for data collection. The participants were informed that participation in the study was purely on voluntary basis.

3.12 Data analysis

Following data collection, the pre-coded interview schedule was double checked for completeness, consistency, legibility and accuracy daily. Numerical codes were used on the interview schedule. The flaws on the interview schedule were corrected.

Epidata data management software (Laurinsen and Bruus, 2008), was used for the design and entry of the questionnaire data. Epidata is favoured for database design and entry because Spreadsheets (e.g., Excel, SPSS Data Editor) are prone to error, data corruption and mismanagement and lacking data controls, have limited programmability and suitable only for small and teaching projects. Epidata is public domain software with excellent controlled data entry, good programmability suitable for research and field use. The data was then exported and analysed in Stata 10.1 (StataCorp 2008). All quantitative data analysis was performed in Stata 10. Excel was employed for the tabular and graphical display of analysis results.

The dependent variable ANC attendance was later dichotomized into late and early booking Univariate analysis of ANC attendance and the factors associated with late ANC booking was carried out to describe the variables. Bivariate analysis of Late ANC booking and each of the independent variables was carried out to ascertain association and "causality". Pearson's Chi-Squared (X^2) was used to determine whether there was an association between Late ANC booking and categorical predictors and the Student's t-test was used for continuous predictors. These tests primarily helped to identify the potential predictors of Late ANC booking.

Multivariate logistic regression was used to determine true predictors of Late ANC booking. The predictors considered statistically significant were entered into the regression model to control for confounders. A *p*-value of < 0.05 was considered statistically significant. The odds ratio (OR) = 1, implied factors do not affect the odds of Late ANC booking OR > 1, factors associated (effect) with higher odds of Late ANC booking and OR < 1, implied factors associated (effect) with lower odds of Late ANC booking and the CI of 95 per cent was set.

CHAPTER FOUR

4. DATA ANALYSIS AND PRESENTATION OF STUDY FINDINGS

4.1.0 Introduction

Three hundred and five (305) pregnant women participated in the study. The questionnaires were administered by research assistants in seven (7) selected ANC clinics within Ndola district and the response rate was 100%. The results have been presented in frequency tables and figures according to the sequence and sections of the interview schedule.

Table 3: Socio-demographic characteristics of the study population (n=305)

Mothers demographic characteristic	Frequency	Percent (%)
Pregnant mother's Age group (yrs)		
15-19	47	15.41
20-24	88	28.85
25-29	83	27.21
30-39	78	25.57
40-45	9	2.96
Total	**305**	**100**
Education		
None	15	4.92
Primary	123	40.33
Secondary	143	46.89
Tertiary	24	7.87
Total	**305**	**100**
Marital status		
Married	256	83.93
Single	44	14.43
Divorced	3	0.98
Widowed	2	0.65
Total	**305**	**100**
Employment		
Employed	39	12.79
Unemployed	266	87.21
Total	**305**	**100**
ANC Clinics/study sites		
Mushili	64	20.98
Chipokotamayamba	60	19.67
New Masala	43	14.10
Chipulukusu	42	13.77
Pamodzi	33	10.82
Railway Surgery	34	11.15
Twapia	29	9.51
Total	**305**	**100**

The Socio-demographic characteristics of the pregnant women captured during recruitment are shown in Table 3. Table 3 shows the demographic characteristics of the study population. All the participants indicated their age. The age range was between 15 and 39 years.

Majority of pregnant women were aged between 20 – 24 years (n=88, 28.85%) representing 57.7%. The mean age (years) of the participants in this study was 26.4 (95% CI, 25.7-27.1). One hundred and forty three (46.89%) of the participants had attained secondary school level of education, indicating that they completed Grade 12 and 87.21% (n=266) women were unemployed. In this study it was discovered that the majority of the participants were married (n=256, 83.93%), 14% single, 0.98 divorced and 0.66 were widowed. Mushili clinic had a highest number of participants (n=64, 20.98%) while Twapia had a lowest number of participants (n=29, 9.5%).

Figure 2: Timing of Antenatal Care Booking (Initial visit) among Pregnant women in Ndola (n=305)

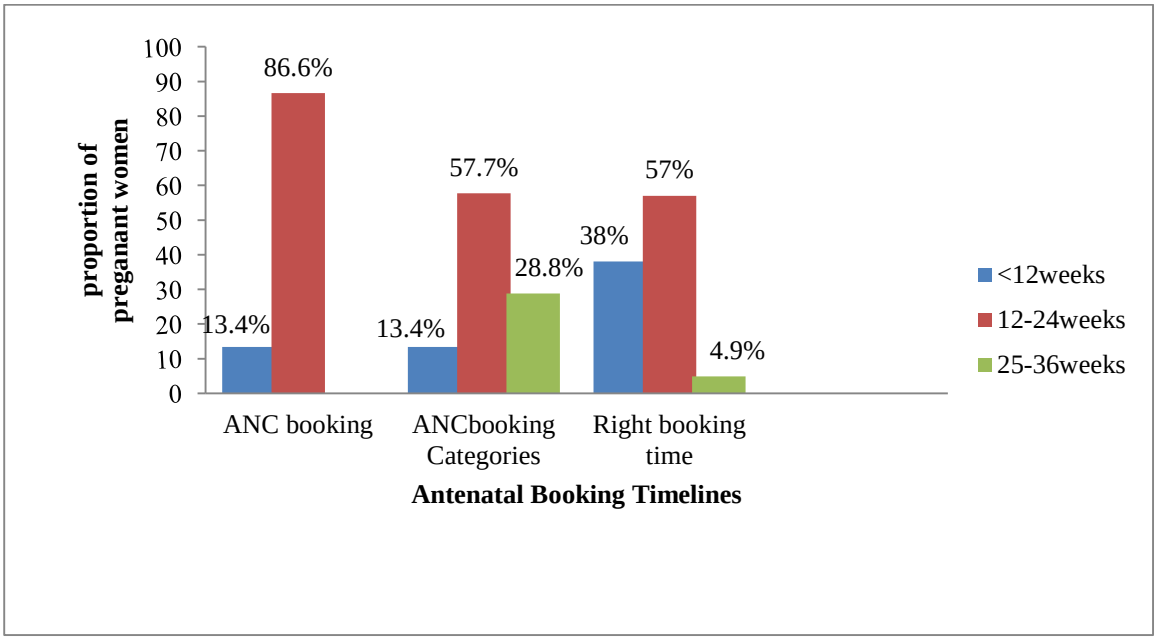


Figure 2 shows the prevalence of late antenatal booking among the pregnant women. The findings of this study indicate that 86.6% booked for ANC late, after 12 weeks gestation while 13.4% booked for ANC before 12 weeks gestation. The timing of antenatal care booking shows that out of 305 pregnant women included in this study, the majority 57.7% started their first antenatal care visit in the second trimester booked for ANC in the third trimester. However responding to the question on the best time to book for antenatal care, 38% felt that the first 12 weeks of pregnancy was the best time for pregnant women to book for antenatal care

Table 4: Obstetric characteristics of the Participants (n=305)

Mother's demographic characteristics	Frequency	Proportion (%)
Parity		
None	108	35.41
1-2	132	43.28
3-4	54	17.70
>5	11	3.61
Total	**305**	**100**
Planned pregnancy		
Not planned	110	39.1
Planned	195	63.9
Total	**305**	**100**
Pregnancies with complications		
Uncomplicated	280	91.8
Complicated	25	8.2
Total	**305**	**100**
Number of abnormal pregnancies		
One	27	8.85
Two	10	3.28
Three	3	0.98
>Four	2	0.66
None	263	86.23
Total	**305**	**100**
Specific complications (n=25)		
HBP	12	48.00
Diabetes	2	8.00
Bleeding	7	28.00
LBP	1	4.00
Asthma	2	8.00
Ectopic	1	4.00
Total	**25**	100
None	280	91.80
Total	**305**	**100**

Table 4 shows the obstetric characteristics of the pregnant women who participated in the study. Almost half of the women in the study population had 1 to 2 children 132 (43.3%). The larger proportion of participants indicated that their pregnancies were planned (n=195, 63.9%), while 39.1% (110) had no intentions of becoming pregnant. A history of complicated

pregnancies was reported by 8.2% (25) of the participants and 8.85% (27) had at least one abnormal pregnancy. Responding to specific complications experienced during pregnancy, 48% (n=12) of the participants indicated that Hypertension is the most outstanding problem during pregnancy, followed by bleeding in pregnancy 12 (28%).

Reason given by the Participants for Late ANC Booking

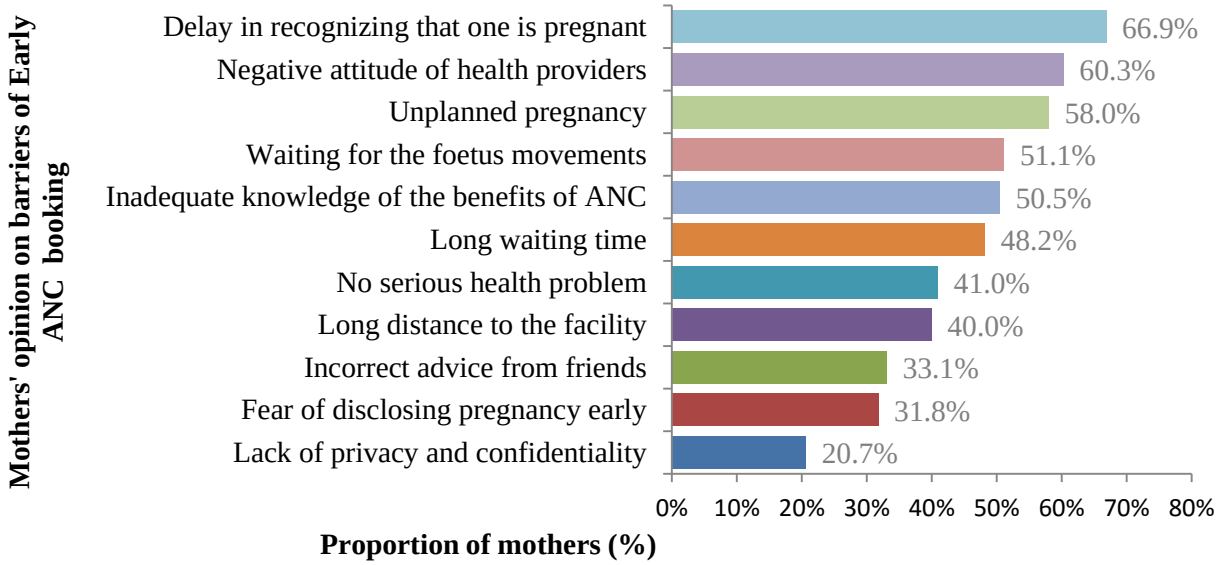


Figure 3: Reason given by the Participants for Late ANC Booking (n=305)

Figure 3 shows the numerous reasons given by the women for late antenatal care booking. The results of this study demonstrated that one of the outstanding barriers to early antenatal booking is delay in recognizing that one is pregnant (66.9%). The second major reason included the negative attitude of health providers and these constituted 60.3% of the study population. Unplanned pregnancy (58.0%), waiting for foetal movements (51.1%) and long waiting time (48.2%) are the main reasons why women book late for antenatal care.

Opinions on Problems of Late ANC Booking

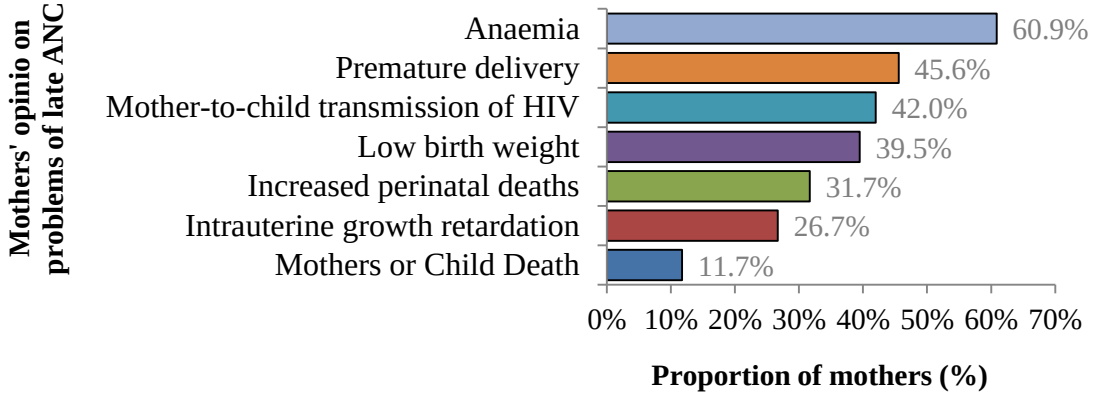


Figure 4: Opinions on Problems of Late ANC Booking (n=305)

Majority of the participants (60.9%) responded that late booking for antenatal care result into anaemia and only 11.7% pointed out maternal or child death as a consequence of late antenatal booking.

Table 5: Socio-demographic characteristics of the Participants associated with late ANC Booking

The relationship between Socio-demographic characteristics and ANC booking was measured using Pearson's Chi-squared test and the results are presented in table 6.

Independent variables	Early ANC Booking No. (%)	Late ANC Booking No. (%)	p- value (0.05)
Age			
20-24	38(43)	262(57)	
25-29	64(21)	241(79)	**0.039**
30-39	103(34.7)	201(66.3)	
40-44	1(0.01)	304(99.9)	**0.010**
Marital status			
Single	82(27)	222(73)	**0.033**
Married	110(36)	195(64)	
Divorced	67(22)	238(78)	
Widowed	46(15)	259(85)	
Employment			
Unemployed	39(12.8)	266(87.2)	0.241
Employed	266(87.2)	39(12.8)	
Education			
Primary	123	40.33	
Secondary	143	46.89	0.122
Tertiary	15	4.92	
None	24	7.87	
Overall	**305**	**100**	

(Source: Author's own analysis, 2015)
Pearson's Chi-Squared Test, *Indicates significant *p*-value at $p < 0.05$.

Table 6 shows that late ANC booking was more common in all those aged between 25 to 29 and the elderly, above 40 years old.

Table 6: Obstetric characteristics of the study population associated with late ANC Booking

Independent variables	Early ANC Booking No. (%)	Late ANC Booking No. (%)	p-value (0.05)
Parity			
None	108(35.4)	197(64,6)	
1-2	132(43.3)	173(56.7)	**0.021**
3-4	54(17.7)	251(82.3)	**0.049**
>5	11(3.6)	294(96.4)	
Planned pregnancy			
No	110(36.1)	195(63)	
Yes	195(63.9)	110(36.1)	0.947
Pregnancies with Complications			
No	280(91.8)	25(8.2)	
Yes	25(8.2)	280(91.8)	0.386
Number of Pregnancies			
One	27(8.8)	278(91.2)	
Two	10(3.28)	295(96.4)	
Three	3(0.98)	302(2)	0.779
>Four	2(0.66)	303(99.3)	
None	263(86.23)	42(13,8)	
Specific complications			
HBP	12(48)	283((88)	
Diabetes	2(0.6)	303(99.4)	
Bleeding	7(2.7)	297(97.3)	0.294
LBP	1(0.3)	304(99.6)	
Asthma	2(0.6)	303(99.4)	
Ectopic	1(0.3)	304(99.6)	
None	280(91.8%)	25(8.2%)	
Overall	**305(100%)**		

(Source: Author's own analysis, 2015)

Pearson's Chi-Squared Test, *Indicates significant *p*-value at $p < 0.05$.

Table 7 shows that there was an association between parity and late ANC booking.

Binary Logistic Regression determining the Demographic and Obstetric Factors Associated with late ANC booking.

Binary logistic regression analysis was used to determine the true predictors of Late ANC booking as well as to control for confounding factors. The results of the univariate logistic regression revealed that age, parity and marital status were associated with Late ANC booking as shown in table 7.

Table 7: Binary Logistic Regression Determining Factors Associated with Late ANC booking

Predictor	Odds Ratio	95% CI		p-value
Age				
20-24	1.11	0.40 -	3.04	0.841
25-29	0.86	0.32 -	2.32	0.769
30-39	2.56	0.76 -	8.57	0.129
40-44	0.35	0.07 -	1.74	0.199
Married				
Married	**0.25**	**0.12 -**	**0.53**	**0.000**
Employment				
Employed	1.49	0.61 -	3.65	0.380
Education				
Primary	0.60	0.07 -	4.98	0.640
Secondary	0.35	0.04 -	2.82	0.327
Tertiary	0.50	0.05 -	5.31	0.565
No. Pregnancies				
3-4	1.68	0.77 -	3.63	0.190
>5	1.35	0.44 -	4.15	0.601
Parity				
1-2	**2.71**	**1.28 -**	**5.74**	**0.009**
3-4	4.60	1.32 -	16.09	0.017
>5	0.72	0.18 -	2.94	0.649
Planned Pregnancy				
Planned	1.84	0.95 -	3.57	0.071
Medical Complication	1.86	0.42 -	8.21	0.412
Time Aware Of Pregnancy				
2 months	0.87	0.38	2.01	0.745
3 months	0.54	0.22	1.31	0.174

Multivariate Logistic Regression Model of Factors Associated with Late ANC Booking among Pregnant Women

The multivariate logistic regression model was the final analysis done in order to examine the effect each independent variable had on the ANC booking time for pregnant women while controlling for the other variable as confounders. Logistic regression analysis was used as opposed to linear regression because the outcome (dependent) variable (late ANC booking) was a binary or dichotomous variable assuming the values 1 or 0 (1=Late booking or 0=Early Booking) and not a continuous numeric variable. Odds Ratio measures of effect were obtained as described in table 8.

All the variables were considered for entry into the multivariate logistic regression model. The results of the multivariate logistic regression analysis to predict whether the ten variable factors; that is age, marital status, employment, parity, education, number of pregnancies, intentions of pregnancy, medical complication during pregnancy, knowledge of the right booking time and the time when a pregnancy was discovered. The level of significance was set at *p* value=0.05.

Table 8: Multivariate Logistic Regression Model of Factors Associated with late ANC Booking among Pregnant Women

Independent variables		Odds Ratio	95% Confidence interval	T-test statistic	p- value (0.05)
Age	Mother's Age (ref: 15-19)				
	2=20-24	0.43	0.13- 1.47	-1.34	0.179
	3=25-29	**0.21**	**0.05 – 0.92**	**-2.07**	**0.039**
	4=30-39	0.34	0.14 - 0.95	-1.05	0.295
	5=40-44	**0.01**	**0.01- 0.29**	**-2.58**	**0.010**
Marital status	Mother's Marital Status (ref: 1 =Married)				
	2 =Single	**0.27**	**0.08 – 0.91**	**-2.13**	**0.033**
Employment	Mother's occupation status (1 =Employed)				
	2=Unemployed	2.25	0.58 - 8.74	1.17	0.241
Education	Mother's highest education level (1 =None)				
	2 =Primary	0.05	0.00 - 2.17	-1.57	0.117
	3 =Secondary	0.05	0.00 - 2.25	-1.55	0.122
	4 =Tertiary	0.09	0.00 - 6.09	-1.12	0.262
No. of pregnancies	Number of pregnancies(ref: =1-2)				
	2=3-4	0.58	0.17 - 2.01	-0.86	0.386
	3= >5	1.59	0.06 - 40.44	0.28	0.779
Parity	Number of children (1=None)				
	2=1-2	**3.80**	**1.22 - 11.81**	**2.27**	**0.021**
	3=3-4	**8.31**	**1.01 - 68.60**	**2.05**	**0.049**
	4 = >5	1.07	0.03 - 45.44	0.03	0.961
Planned pregnancy	Intended to get pregnant (ref: 0=No)				
	1=Yes	0.97	0.34 - 2.72	-0.07	0.947
Medical complication	Medical complications with pregnancy (0=No)				
	1=Yes	3.00	0.38 - 23.39	1.05	0.294
Aware of pregnancy	When discovered pregnancy (ref:1=1month)				
	2=2months,	0.81	0.27 - 2.46	-0.37	0.714
	3=3months;	0.37	0.12 - 1.16	-1.71	0.088
Booking time	Know Right time to Book for ANC (0=No)				
	(1=Yes)	0.94	0.38 - 2.32	-0.890	0.894

(Source: Author's own analysis, 2015)

Table 8 shows all the factors that were entered into the logistic regression model to identify the odds of entry into ANC, these include: age, education, marital status, occupation, employment, parity, number of pregnancies, number of children, pregnancy intentions, medical conditions during pregnancy and knowing the right time to book for antenatal care. The following factors were found to be significant: **age, marital status and parity**.

After adjusting for the confounding effects of the rest of the independent variables, mothers in the age categories 25-29 (79%) and 40-44 (99%), respectively, were less likely to book late compared to teenage mothers (reference age group 15-19). This age effect was statistically significant. Compared to older mothers, the teenage mothers appear to be at risk of late ANC booking/attendance.

After adjusting for the confounding effects of the rest of the independent variables, single mothers were 73% less likely to book late (compared to the reference category married mothers). This effect was statistically significant *(OR=0.27, p =0.034).*

On the other hand, after adjusting for the confounding effects of the rest of the independent variables, pregnant mothers with 1-2, and 3-4 children were 3.8 and 8.2 times more likely to book late for ANC compared to the reference group of pregnant mothers without children. This effect was statistically significant *(OR=3.76, p=0.023 and OR=8.19, p=0.48,* respectively). However, there was no significant difference in attendance timeliness between attendance in the reference group (mothers with No children) and those with parity>5.

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

Early commencement of ANC by pregnant women as well as regular visits has the potential to affect maternal and foetal outcome positively (WHO, 2010). However, results of this study indicate that women often book late for ANC, after the first trimester and do not benefit fully from the ANC services. Drawing on quantitative data, the aim of the study was to determine the factors associated with late antenatal care booking among pregnant women in Ndola district of the Copperbelt Province of Zambia.

5.1 Social-demographic Characteristics of the Participants

Most of the participants were aged 20 to 24 years and above. In this study maternal age was associated with late ANC booking. Pregnant women who were aged 25-29 were 79% (OR=0.21, p=0.039) and 40-44 were 99% (OR=0.01, p=0.010) less likely to book late compared to teenage mothers. Similarly, Trinh (2006) in Australia found maternal age to be a significant predictor of late antenatal care booking. However, the result is inconsistent with studies done in some developing countries. Berhamu and Tekelab (2014) in Ethiopia reported that women aged 25 years and above were three times more likely to register for ANC late compared to those who were less than 25 years. Banda et al., (2012) in Zambia, also noted that maternal age was not associated with late antenatal care booking.

This study denotes that, compared to older mothers, the teenage mothers appear to be at risk of late ANC booking. The reason is that teenage mothers lack information about the right time and importance of antenatal booking and are more likely to have unplanned pregnancies. Another reason is what 66.9% of participants indicated, that they may delay in recognizing that they are pregnant. In contrary, Tadesse (2014) in Ethiopia, reported that age was associated with early booking. Women more than 30 years were more likely to book for ANC earlier than older women. On the other hand, older women may have more experience and information about the importance of early ANC booking than teenage women. Therefore awareness and other intervention aimed at teenage mothers will significantly improve overall early attendance of ANC.

Marital status was generally a barrier to early ANC. In this study, single mothers were 73% *(OR=0.27, p=0.034),* less likely to book late compared to the reference category married mothers. This is an interesting finding; perhaps single mothers get more support from the

family or probably they make own independent decisions, while married mothers only depend on husbands. Indeed 16% percent of married mothers cited “Waiting for permission from husbands as a personal challenge for not booking ANC early”.

5.2 Timing of Antenatal Booking (Initial Visit) among the Pregnant Women

The study attempted to determine the proportion of women who booked for ANC late. The results of this study showed that 86.6% booked for ANC late, after 12 weeks gestation and only 13.4% booked for ANC before 12 weeks gestation. This result is very low compared to the recommendation of WHO which states that every pregnant woman should start the first ANC within 12 weeks of pregnancy (WHO, 2010). Late ANC booking is consistent with other studies both in developed and developing countries such as Zhao et al., (2010) in Shanghai (80.3%), Adekanle (2008) in Nigeria (81.5%) and Basu et al., (2009) in South Africa (94%). The study result is consistent with the ZDHS (2014), which states that coverage is higher in urban areas (99%) than rural areas (94%), however, only 19% attended ANC by their fourth month representing 81% of late antenatal booking. This shows that both in rural and urban areas, many pregnant women do not know the right gestation age at which to book for antenatal care, although they know the importance of ANC.

On the contrary, this study result is remarkably higher in that the findings from developed countries and some developing countries where the vast majority of pregnant women present early for ANC. Rowe et al., (2008), reported that only 5% of pregnant women book late for their ANC in England. Forty one percent (41%) late antenatal booking was reported in Australia by Trinh (2006). Inadequate knowledge on the right time of when to start antenatal care, lack of awareness about the health benefits of early ANC and late recognition of pregnancy may influence timing of ANC.

According to this study finding, majority of the participants (57.7%), attended ANC in the second trimester of pregnancy and 28.9% initiated ANC in the third trimester respectively. The proportion of participants who booked for ANC late is generally similar compared with the study done in Lesotho by Phafoli et al., (2007) where the majority (71.43%) started visiting the antenatal clinic during the second trimester, while 28.57% started antenatal care during the third trimester. This shows that delay in deciding to seek antenatal care is common among pregnant women in the sub-Saharan Africa, contrary to the recommendation by WHO (2010) that every pregnant woman should book for antenatal within the first 12 weeks of pregnancy. This denotes that community based interventions are needed to improve the outreach of antenatal care services so as to enhance early ANC booking among pregnant women.

5.3 Obstetric Factors Associated with the Study Population

Consistent with other studies parity was generally associated with late antenatal booking in this study. Pregnant mothers with 1-2 children, were 3.8 times *(OR=3.76, p=0.023)* and 3-4 children were 8.2 times (*OR=8.19, p=0.48)* more likely to book late for ANC compared to the reference group of pregnant mothers without children. However, there was no significant difference in attendance timelines between attendance for the reference group (mothers with no children) and those with parity more than five. This is in line with studies conducted in Ethiopia by Tadesse et al., (2014), Magadi at al., (2000) in Kenya and Tariku (2010) in Addis Ababa. The studies revealed that women with single parity and above were more likely to book for antenatal care late. A similar study by Banda et al., (2012) in Zambia established that there was a tendency of initiating ANC late amongst women of high parity and gravidity in both rural and urban communities.

The possible explanation could be that perhaps the experience of child bearing and rearing makes mothers feel that they really don't need to book early, or maybe they are too busy caring for a larger family to book early. In addition, knowledge and experience from previous pregnancies and births mighty make mothers feel that early antenatal care is not necessary. This clearly suggests that antenatal health education messages on early booking that pregnant women received in their previous pregnancies are ineffective in modifying their behaviour.

5.3 Reasons given by the Participants for Late ANC booking

The study established reasons that are associated with late antenatal care booking. The reasons that were indicated by the majority of the respondents (more than 50%) were delay in recognizing that one is pregnant (66.9%), negative attitude of health providers (60.3%), unplanned pregnancy (58%), waiting for the foetal movements (51.1%) and inadequate knowledge of the benefits of ANC (50.5%.

Delay in recognizing that one is pregnant was found to be associated with late ANC booking (66.9). Delay could mean that pregnant women do not know the signs of pregnancy. The same reason was highlighted in a study by Tariku et al., (2010) and Gross et al., (2012) as a cause of attending ANC late. Further findings revealed that women were unaware of the symptoms of pregnancy and therefore only realize that they are pregnant in the second and third trimester (Downe, 2008). Another interesting finding of this study was that 31.8% of the study population booked for ANC late because they wanted to delay making their pregnancy

public or were afraid of perceived enemies who may harm the pregnancy. This is similar to what Ndidi (2011) in Nigeria discovered.

In addition, the result of this study showed that pregnant women with unplanned pregnancy (58%), delayed going for antenatal care booking. This result is consistent with study finding by Banda et al (2012) in Zambia. The study indicated that wanted pregnancies are more cared for by pregnant women and their spouses, thus enabling women to book early. Mbaruku et al., (2011) in Tanzania indicated another reason that women with unplanned pregnancies may initially tend to deny their pregnancy and conceal it from others.

Negative attitude of health providers was another reason women indicated for delayed antenatal care booking. In this study, 60.3% of pregnant women indicated negative attitude of health care providers as a barrier to early ANC booking. This is consistent with a study done by Frizelle at al., (2009) in South Africa. It can be concluded that healthcare workers' attitudes play a great role in determining how a woman perceives the ante-natal clinic services. When healthcare worker attitude is negative, it forms a barrier to accessing ante-natal care as a pregnant might feel humiliated and discouraged to seek antenatal care services.

Knowledge of the benefits of early antenatal care is key in early antenatal care booking and utilization. In this study 50.5% of pregnant women expressed adequate knowledge of the benefits of early antenatal care booking. However, only 13.4% booked for antenatal care in the first 12 weeks of pregnancy. This result is similar to the findings of Chiwaula (2011) in Malawi. The participants were not conversant of the right time to start ANC and 51.1% indicated that the right time for antenatal booking is when a pregnant woman could feel the foetal movements. This shows that knowledge of importance of ANC has limited effect on early ANC booking. Thus 50.4% of women indicated increased community awareness about the right time for antenatal care booking at growth monitoring points for children targeting mothers who are not yet pregnant. This finding was supported by studies done in Addis Ababa and Niger Delta Nigeria, which showed that the major reason for late antenatal booking was the misconception that about the early antenatal visit.

Another factor influencing late ANC booking was long waiting time at the health facility. Forty eight percent (48.2%) of the participants expressed concern regarding the time management at the health center. The concerns related to long waiting time are synonymous

with the findings in a study conducted in Lesotho by Phafoli et al., (2007). It is generally unfair to find women reporting so early at the ANC clinic and only to be attended to after eight long waiting hours. This is probably why 41% of the participants felt that coming early to the clinic was a waste of time if they had no serious health problem. This is in line with the study findings by Ndidi (2010), the findings of his study suggested that most women book late for antenatal care because of a belief that there are no advantages in booking for antenatal in the first three months of pregnancy.

5.4 Relationship between Health Belief Model and the study results

This study used the Health Belief Model. The model suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, explain engagement or lack of engagement in health-promoting behavior.

This study established a low perceived risk of pregnancy outcome or consequences of attending ANC late as serious. Previous obstetric complications such as hypertension, bleeding, diabetes mellitus, anemia, low birth weight and increased intrauterine deaths had no influence on the timing of ANC booking. According to this study finding, majority of the participants (57.7%), attended ANC in the second trimester of pregnancy, 28.9% initiated ANC in the third trimester and only 13.4% reported at the right time in the first 12 weeks of pregnancy respectively. The reasons pregnant women gave seem to be based on the perception that health problems during pregnancy occur in late pregnancy and early ANC is primarily to detect or treat serious diseases. This explains the belief that pregnant women do not need to book for ANC early if they do not have any health problem that needs gynecological or obstetrical intervention.

In this study only 13.4% of pregnant women who booked for ANC in the first weeks of pregnancy, perceived a high risk that they would be personally affected by a particular health problem and more likely to engage in early ANC booking to decrease their risk of developing health problem during the course of pregnancy.

Perceived severity refers to subjective assessment of the severity of a health problem and its potential consequences as theorizes by HBM. In this study, participants indicated the outcomes of late antenatal care booking as aneamia (60.9%), premature delivery (45.6%), MTCT of HIV (42%), low birth weight (39.5%), increased perinatal deaths (31.7%),

intrauterine growth retardation (26.6%) and maternal deaths (11.7%). This study established that pregnant women had a high perceived severity of the outcomes of late antenatal booking however, this had no influence on gestational age for ANC booking. Knowing the seriousness of late ANC booking did not motivate them to book for antenatal care early so as to prevent these complications from occurring. The other reason could probably be that because most of the pregnant women (60.9%), thought of aneamia as a major negative outcome. If they thought of maternal mortality, they could probably book early for antenatal care.

The model used in this study helped to establish that good perception of the benefits of early ANC was not a factor for an early ANC visit. Ninety-nine percent (99%) of pregnant women who perceived ANC booking in the first 12 weeks were more likely to report in the second and third trimester of pregnancy

Perceived barriers to early ANC booking have been identified as parity, maternal age and marital status. Others include delay in recognizing that one is pregnant, long waiting time, negative attitude of health providers and inflexible working schedules. There is need to emphasize the benefits of early ANC at the clinics so that mothers can outweigh the perceived barriers in order for behavior change to occur. In addition the study found that 60% of the pregnant women were aware and knowledgeable about ANC attendance in the first 12 weeks and were motivated by the partners (58%) and friends (20%). Only 8% of the pregnant women got information about ANC booking in the first 12 weeks from the health care providers. This denotes that the right time of ANC booking is not stressed by the health care providers themselves and so women do not have the right information about when to book for ANC.

5.5: Implications of the Study Findings to Nursing

5.5.1 Nursing education

The study found that 60% of the pregnant women were aware and knowledgeable about ANC attendance in the first 12 weeks. They were motivated by the partners (58%) and friends (20%). However, Only 8% of the pregnant women got information about ANC booking in the first 12 weeks from the health care providers. Health care providers should increase public awareness on early antenatal care booking and mass media communication on modern antenatal care services to encourage women to initiate ANC in time. In addition, health care providers should formulate IEC materials with emphasis on the right time for ANC booking targeting teenage mothers and non-pregnant women.

5.5.2 Nursing administration

This study shows that there is late antenatal care booking (86%) among pregnant women consistent with the findings of the ZDHS 2013/2014 which indicates (19%). The policy makers and reproductive health coordinators should do continuous monitoring, evaluation and review of the ANC strategies.

5.5.3 Nursing research

The study examined the factors associated with late antenatal care booking. There is need to do future research on satisfaction of ANC services by pregnant women. This will help to solicit information on pregnant women's perception and attitudes towards early antenatal care booking.

5.5.4 Nursing practice

The findings of this study showed that only 8% of the pregnant women got information about ANC booking in the first 12 weeks from the health care providers. At each antenatal appointment, healthcare professionals should offer consistent information and clear explanations, and should provide pregnant women with an opportunity to discuss issues and ask questions. In addition, all women should receive appropriate written information early in pregnancy about the likely number, timing and content of antenatal appointments associated with different options of care. This will promote early antenatal booking in the subsequent pregnancies.

5.6: Conclusion and Recommendation

5.6.1 Conclusion

The current study determined the factors associated with late ANC booking among pregnant women in Ndola district. The results of this study suggest that late booking remains significantly high n=264(86.7%) despite availability of free antenatal care services to all pregnant women. Maternal age, parity and marital status were found to be significant factors that affect ANC booking. Pregnant women who book late for ANC are not well-informed about the right gestation age at which they should make their first ANC visit and the importance of early attendance at antenatal care. There is need to orient nurses and midwives to pay special attention to particular groups such teenage mothers, higher parity and those that are married, as these are the significant factors associated with late antenatal booking. This study has provided information and the possible factors associated with late ANC booking among pregnant women in the study area.

5.6.2 Recommendations

As a measure to improve early ANC booking among pregnant women in Ndola, the following recommendations may improve service utilization and ANC booking in the first 12 weeks of pregnancy:

1. Ministry of Health needs to provide health education messages targeting the teenage mothers through media and community sensitisation.
2. Ndola District health office should train more community health care givers to increase awareness in the community and give adequate information on the right time for ANC booking.
3. The Nurses and Midwives should emphasise the benefits of early ANC booking to non-pregnant women so that they know the right time for ANC booking before they become pregnant.
4. Nurses and Midwives should be equipped with proper communication skills to ensure efficient service delivery to the teenager at the youth friendly corners.

5.6.3 Future Research

Future research should focus on identifying specific concerns of pregnant women who book late for ANC and investigating the relationship between parity and late ANC booking.

5.6.4 Limitations of the Study

In order to determine the accurate gestation age, abdominal ultrasound was needed, however in this study, ultrasound was not done on all pregnant women because of the high costs. Women who were not able to remember their exact last normal menstrual period, abdominal ultra sound was required to ascertain the gestation age. Additionally, the study included only urban participants who have more access to services and information hence the views of pregnant women in Ndola rural were not considered in this study.

5.6.5 Dissemination and utilization of findings

The results of the study were presented to the Department of Nursing Sciences, School of Medicine, University of Zambia (UNZA). Then, the results were later presented at the postgraduate seminar week on 15th to 19th June, 2015 held at UNZA School of Medicine. The results will also be presented to various stake holders involved in the provision of maternal health services at various fora such as, workshops and conferences. Ndola District Community Development Mother and Child Health which was the study site was given a copy of the study results report. The results were published in African Journal of Midwifery. In addition, five copies of the bound research report were printed and submitted to the following;

1. Department of Nursing Sciences
2. UNZA Medical Library and Main Library
3. Ministry of Health
4. Ministry of Community Development Mother and Child Health
5. Researcher

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Appendix 1
INFORMATION SHEET

Topic: FACTORS ASSOCIATED WITH LATE BOOKING FOR ANTENATAL CARE AMONG PREGNANT WOMEN IN NDOLA DISTRICT.

Introduction

My name is Mable Musonda Chewe, I am a nurse by profession and student of Masters of Science in Nursing at the University of Zambia. I am conducting a study on **Factors Associated with Late Booking for Antenatal care among Pregnant Women here in Ndola.** I will very much appreciate your participation in this study.

Purpose of the study

The purpose of the study is to examine the factors associated with late booking for antenatal care among pregnant women in Ndola districts. This will help in the formulation of policy and strategies to promote early antenatal care utilization. The study will explore the reasons why pregnant women book late for antenatal care.

Participation

Your participation in this study is entirely voluntary. You are under no obligation to participate or not to participate and you are free to withdraw without any consequences. If you choose to participate, you will be required to sign the consent form and answer questions outlined in the questionnaire. You are also free not to answer questions that you think are too personal or otherwise. Furthermore, your responses will be recorded in the space provided in the questionnaire for analysis and interpretation of the research findings.

Risks and discomforts

The study does not involve any obvious risks to you, however, you may experience the discomfort and stress of sitting and answering questions.

Benefits

There is a direct benefit for you by participating in this study. The information that will be obtained will help in improving the utilization of antenatal care services and promoting the health of the mother and the newborn.

Confidentiality

I would like to reassure you that your personal information that you will entrust me with will not be disclosed to any other third party unless legally required to do so and with your consent. Your identity will be kept anonymous by using a number to identify you instead of your name.

Appendix II

INFORMED CONSENT FORM

The purpose of this study has been explained to me. Having understood the benefits and that participation is on voluntary basis, I therefore agree to take part in the study.

I_____ (Names)

Participant's Signature: _____ Date: _____

(Participant's right thumb print if unable to sign)

Interviewer"s Signature: _____ Date: _____

Persons to contact for problems or questions

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Appendix III

ISAMBILILO LISHINTILILE PALI: IMILANDU SHIMO ISHILENGA BANA MAYO BAMO ABALI PABUKULU MUNO NDOLA UKANA LEMBESHA BWANGU KUCHIPATALA.

- **Ukuilondola**

  Ishina lyandi ninebo Mable Musonda Chewe, ndi nurse encito mbomba kabili ndelundapo amasambililo yandi pesukulu ilikalambalya muno Zambia . Ndefwailisha milandu shimo ishilenga bana mayo abali pabukulu uku kana lembeshya bwangu ku ciputulwa cabumi icilolekesha pali bena muno Ndola. Nalatasha mukwai nga cakuti mwabulamo ulubali muli ukukulanshanya.

- **Umulandu tulelanshanishisha.**

  Umulandu tulelanshaninshisha wa kwishiba imilandu shimo ishilenga bana mayo bamo abali pabukulu ukukana lembesha bwangu kuci putulwa cabumi icilolekelsha pali bana mayo muno mu Ndola. Neci calatwafwa ukupanga amafunde yamo kabili no kusanga inshila shimbi ishingalenga bana mayo abali pabukulu balelembesha bwangu kuchiputulwa ca bumi icicilolekelesha pali bena. Ukulanshanya kwesu kwala langilila sana ukwishiba imilandu shimo ishilenga bana mayo bamo abali pabukulu ukukana bangilila ukulembesha kucipatala.

- **Ukubulamo ulubali**

  Ukubulamo ulubali kwenu muli uku kulanshanya ala kwakuitemenwa. Muli abantungwa ukulandapo nangu iyo, kabili kuti mwaleka ukubulamo ulubali inshita ili yonse ukwabula ukumipela umulandu uli onse.

  Ngachakuti mwasalapo ukubulamo ulubali mwalakabilwa uku saina fomu wakusuminishsa no kwasuka amepusho ayapekanishiwe. Nakabili muli abantungwa ukukana asuka amepusho ayo mulemona kwati yapalwenufye nangu kamofye nga mwafwaya. Mukulandapo, ukwasuka kwenu twakulalemba muli fomu ipekanishiwe umuli amepusho, pakuti twali twaliceceta kabili no kulondolola uku kufwailisha.

- **Ubusanso**

  Ukulanshanya kwesu, tamuli ubusansoo ubulebimbwamo imwe lyo, pa mbali yaico kuti mwa yumfwa ububi nangu ukunaka pamulandu wakwikalisha kabili no kwasuka amepusho.

- **Ubunonshi**

  Tamuli indalama nangu amalipilo ayali yonse muli lisambililo. Lelo mukulungatika iciliconse pali uku kulanshanya kwesu naimwe, ilyashi twala senda pamo lyala twafwa ukumona ukuti imitangatile yabana mayo abali pabukulu nabana abafyalwa pantanshi mufiputulwa fyabumi yaba iyakwafwa.

- **Inkama**

  Ndemweba icinecine ati ifi mwalanjeba fyonse pano ukubika nefya palwenu tafya kalandwe kumuntu uli onse kano fye nga mwansuminishya mwebene. Nshabofye ishina lyenu lelo nala bomfya inambala pamo ngecakumishibilako.

Appendix IV

FORM WAKUSUMINISHAPO

Imifwaile ya uku kulanshyanya nailondolowa bwino kuli ine. Pambali yakumfwikisha pafyakufumamo nasanga ukuti ukubulamo ulubali muli ukulanshyanya kwa kuitemenwafye, kabili nasumina ukubulamo ulubali.

Ine …….(ishina lyakwe)

Ukusaina……

Ubushiku……

Ukufwatika ngataishiba ukulemba

Uleipusha……..

Ubushiku ……..

Uwakwipusha ngakuli ubwafya – akeyala pesamba

Mable Musonda Chewe
0955 451152
0965 451152

Appendix V: STRUCTURED INTERVIEW SCHEDULE

Questionnaire No: **Serial number:** ☐☐☐

FACTORS ASSOCIATED WITH LATE BOOKING FOR ANTENATAL CARE AMONG PREGNANT WOMEN IN NDOLA DISTRICT.

Health facility:_____ **Interview Date:_____**

Instructions to the Interviewer

1. Introduce yourself to the participant
2. Explain the purpose of the interview.
3. Assure respondent of anonymity and confidentiality.
4. Ensure the participant signs consent form.
5. Tick in the appropriate box or space corresponding to the respondent.
6. For the open-ended questions, please write the responses clearly and legibly in the space provided.

Section A:

Socio-Demographic Characteristics

1. Age in years----------

    1. Below 20 ☐
    2. 20-24 ☐
    3. 25-29 ☐
    4. 30-34 ☐
    5. 35-39 ☐
    6. 40 and above ☐

2. Marital status
    1. Married ☐
    2. Single ☐
    3. Divorced ☐
    4. Widowed ☐
3. Occupation
    1. Employed ☐
    2. Not employed ☐
4. Level of education

    1. Never been to school ☐
    2. Primary ☐

3. Secondary
4. College/university

5. What is the husband's occupation? (Skip this question, if client is not married).

1. Formal employment
2. Informal employment

6. What is your religion?

1. Christianity
2. Islam
3. Hinduism
4. Others specify----------

Section B: Obstetric Characteristics

7. How many pregnancies have you had? (Including your current pregnancy). If the answer is **none** skip to question 8

1. 1 to 2
2. 3 to 4
3. Above 5

8. How many children do you have?

1. None
2. 1 - 2
3. 3 – 4
4. Above 5

9. How old is your last child?

1. Below 1 year
2. 2 to 4 years
3. 3 to 5 years
4. Above 5 years

10. When was your last normal menstrual period?----------

11. Did you intend to become pregnant?

1. Yes
2. No

12. Were you on any family planning method? If the answer is NO skip to question 14.

1. Yes ☐
2. No ☐

13. If so which one? ----------

1. Barrier ☐
2. Hormonal contraceptive ☐
3. Natural ☐
4. Mechanical ☐

14. On your previous pregnancies, how many were abnormal/complicated deliveries?

1. One ☐
2. Two ☐
3. Three ☐
4. Above four ☐
5. None ☐

15. On your previous pregnancies how many miscarriages did you have?

1. One ☐
2. Two ☐
3. Three ☐
4. Above four ☐
5. None ☐

16. On your previous pregnancies how many were stillborn?

1. One ☐
2. Two ☐
3. Three ☐
4. Above four ☐
5. None ☐

17. Did you have any medical problems or complications during your past pregnancy? (For example high blood pressure, diabetes mellitus, bleeding)

1. Yes ☐
2. No ☐

If yes, specify----------.

18. On your previous pregnancies, how many were normal vaginal deliveries?

1. One ☐
2. Two ☐
3. Three ☐
4. Above four ☐
5. None ☐

Section C: Awareness of early booking to Antenatal clinic.

19. For your current pregnancy when did you find out that you were pregnant?

1. At 1 month ☐
2. 2 months ☐
3. 3 months ☐
4. 4 months ☐
5. after 5 months ☐

20. How old is/was your pregnancy on your booking ANC visit? (Indicate gestation age in weeks)

1. Below 12weeks ☐
2. 13weeks to 24weeks ☐
3. 25weeks to 36weeks ☐

21. What was the main reason for your seeking antenatal care late, after the first three months of pregnancy?

1. Was not aware of the pregnancy ☐
2. It is not traditional to make public the pregnancy too early ☐
3. Not necessary ☐
4. Was not aware of when I should start ☐
5. Had no transport/too far ☐
6. Poor quality of service ☐
7. Other specify ☐

22. Where you aware of the right time to book for antenatal?

1. Yes ☐
2. No ☐

23. Who motivated you to book for ANC?

1. Husband/spouse ☐
2. Friend ☐
3. Media ☐
4. Health provider ☐
5. TBA ☐
6. Others (specify) …….. ☐

24. What can be done to motivate pregnant women to start antenatal care early (during 1-3 months of pregnancy)?

1. Health education to clinic attendees ☐
2. Community mobilization ☐
3. IEC material ☐

4. Male involvement ☐
5. Improved attitude of health care workers ☐
6. Outreach clinics ☐

7. Other, specify ----------

25. When is the pregnant woman supposed to start antenatal care?

1. Below 12 weeks ☐
2. 13 to 24 weeks ☐
3. 25 to 36 weeks ☐

What are the benefits of ANC for a pregnant woman? State whether Yes, No or Not sure.

	Benefits	**Yes**	**No**	**Not sure**
26	For establishment of a helping relationship with the provider			
27	For the health provider to interview, examine and identify pre-existing health conditions.			
28	For the health provider to teach, counsel and test the pregnant woman for HIV.			
29	Birth preparedness and complication planning such as birth and emergency plan, infant feeding counseling, antiretroviral for HIV.			
30	For the pregnant women to receive preventive interventions like; Immunization, Iron, SP, ITNs, Vit A, hookworm treatment.			

31. What problems could a pregnant woman encounter if she starts antenatal care late?

a) Low birth weight
b) Increased perinatal deaths
c) Anaemia
d) Intrauterine growth retardation
e) Pre mature delivery
f) Mother-to-child transmission of HIV
g) Other (specify)_____

Section D: Barriers to Early Booking For Antenatal care

Do you accept or not that the following factors may result in **late start** of antenatal care by pregnant women?

	Barrier	Yes	No	Not sure
32	Long distance to the facility			
33	Long waiting time			
34	Lack of privacy and confidentiality			
35	Negative attitude of health providers			
36	Inadequate knowledge of the benefits of antenatal care.			
37	Delay in recognizing that one is pregnant.			
38	No serious health problem			
39	Unplanned pregnancy.			
40	Waiting for the foetus movements			
41	Fear of disclosing pregnancy early due to cultural/religious beliefs			
42	Incorrect advice from friends, relative or partner on the best time to start antenatal			

Section E: Personal challenges in booking early to Antenatal Clinic

Do the following factors make it difficult for you to use antenatal care services offered at the clinic?

	Challenge	Yes	No	Not sure
43	Inflexible clinic schedules			
44	Unable to get time off work to attend antenatal care.			
45	Unable to find someone to take care of the other children when coming for antenatal care.			
46	Fear of the HIV test being positive.			
47	Delays in attending to clients by health workers.			
48	Waiting to get permission for ANC Husband/partner or family.			
49	Lack of privacy			

50. What strategies do you think could be put in place to enhance early antenatal booking for pregnant women?

……..……
……..……
……

Thank you

Appendix VI

IMILANDU ILENGA BANAMAYO ABALI PA BUKULU UKUKANA LEMBESHA BWANGU KU CIPUTULWA CABUMI ICILOLEKELESHA PALIBENA MU NDOLA

Iciputulwla cabumi :…… Ubushiku: …….
Numbala: ----------

Imitantikile

1. Ilondololeni mwebene
2. Londololeni ifi mwisambililo
3. Moneni ukutila namayo nalemba muli fomu wakusuminishanyapo
4. Chongeni mukabokoshi akali mupepi ne casuko
5. Amepusho yakulondolola, lembeni bwino-bwino pakuti tubelenge

Ulubali A:

1. Bushe muli nemyaka inga?
    1. Iinono pali 20 ☐
    2. 20 ukufika ku 24 ☐
    3. 25 ukufika ku 29 ☐
    4. 30 ukufika ku 34 ☐
    5. 35 ukufika ku 39 ☐
    6. ukucila 40 ☐

2. Bushe mwalikwata abena mweni?
    1. Palyupwa ☐
    2. Bashimbe ☐
    3. Balilekana ☐
    4. Balifwilwa ☐

3. Incito babomba
    1. Balabomba ☐
    2. Tababomba ☐

4. Apo bafika mumasambililo
    1. Tababapo kusukulu ☐
    2. Isukulu lya ku primary ☐
    3. Isukulu lya ku secondary ☐
    4. Isukulu lyaku college /university ☐

5. Bushe abena mwenu babomba incite nshi?
    1. Balaibombela abene ☐
    2. Balabomba mu kampani ☐

6. Cilonaganino nshi mupepako?
    1. Bena christu ☐
    2. Bena Islam ☐
    3. Ba Hindu ☐
    4. Fimbi, lumbuleni…….

Ulubali B:

7. Mwakwatapo amafumamo yanga?
    1. Umubo nangu babili ☐
    2. Batatu nngua bane ☐
    3. Ukucila basano. ☐

8. Mwakwata abana banga?
    1. Takuli ☐
    2. Tabakwata ☐
    3. Umo nangu babili ☐
    4. Batatu nangu bane ☐
    5. Abacilile pali bane ☐

9. Umwana wakulekelesha ali ne mwaka inga?
    1. Umwaka umo ☐
    2. Ibili nangu itatu ☐
    3. Ine nangu isano ☐
    4. Ukucila basano ☐

10. Nilisa mwalekesheko ukuya kumweshi?.....

11. Bushe mwalekabila ukukwata ifumo?
    1. Emukwayi ☐
    2. Awe iyoo ☐

12. Bushe mwali bomfeshyepo inshila imo iya kucingilila ukukana kwata ifumo libili – libili.
    1. Emukwayi ☐
    2. Awe iyoo ☐

13. Ngacakutila mwalibonfyapo, muti nshi?

1. Umupila ☐
2. Utubulungwa twakunwa ☐
3. Ukependafye inshiku ☐
4. Ukubika akela mucisa ☐

14. Pamafumo yakunuma niyanga mwaketeko ubwafya?

1. Limo ☐
2. Yabili ☐
3. Yatatu ☐
4. Yane ☐
5. nangulimo ☐

15. Bushe kuli amafumo ayapitilile? Niyanga?

1. limo ☐
2. Yabili ☐
3. Yatatu ☐
4. Ukucila yane ☐

16. Pamafumo yakunuma nibanga abana abafwilile mumala?

1. Umo ☐
2. Babili ☐
3. Batatu ☐
4. Ukucila bane ☐

17. Bushe mwalikwetepo ubwafya pefumo pamo nga ubulwele bwakusunda-sunda, icilopa, nangula umulopa ukubutukisha?

1. Emukwayi ☐
2. Awe iyoo ☐
3. Namwalikwete, londololeni.....

18. Pamafumo yakunuma, bushe yonse mwalipuswike bwino, tabamulepwile pamala?

1. Umukumo ☐
2. imiku ibili ☐
3. BImiku itatu ☐
4. Ukucila imiku ine ☐

Ulubali C:

19. Bushe mwaishibe pa myeshi inga ukuti muli pabukulu?

    1. Umo ☐
    2. ibili ☐
    3. Itatu ☐
    4. Ukucila imyeshi ine ☐

20. Lyali imilungu inga ifumo lintu mwaile umuku wakubalilapo kucipmo?

    1. Milungu ukucepaka pali 12 ☐
    2. Milungu pakati ka 13 na 24 ☐
    3. Milungu pakati 26 na 36 ☐

21. Ngacakutila tamwaile ku cipimo pamyeshi itatu, mulandu nshi?

    1. Tabaishibe kuti bali pabukulu ☐
    2. Tentambi ukubilisha ifuma talilamoneka ☐
    3. Takuli ubwafya ☐
    4. Tabaishibe inshita yakutendeka icipimo ☐
    5. Ubwafya ne myendele ☐
    6. Imibombele tayawama ☐
    7. Imilaund imbi, londololeni…… ☐.

22. Bushe mwalishiba inshita lintu namayo uuli pabukulu alingile ukulembesha kucipimo?
    1. Ee ☐
    2. Iyoo ☐

23. Nibani ba mukoseleshe ukuya lembesha ku cipatala ?

    1. Balume ☐
    2. Banandi ☐
    3. Nipa mulabasa ☐
    4. Babomfi bakucipatala ☐

24. Finshi ubuteko bulingile ukucita pakukoselesha banamayo ukuya ku cipimo?

    1. Ukubasambilisha ☐
    2. Bashikulwifwe ukuibimbamo ☐
    3. Ukuwamya imibombele yakufipatala ☐
    4. Ukukonkela banamayo mumayanda yabo ☐

    5. Fimbi, londololeni…….

25. Bushe nililali lintu namayo uuli pabukulu afwile ukutampa icipimo?

1. Milungu ukucepaka pali 12 ☐
2. Milungu pakati ka 13 na 24 ☐
3. Milungu pakati 26 na 36 ☐

Bunonshi nshi bwaba muli namayo uli pabukulu palwa fipatala?

SN	**Ubunonshi**	**Ee**	**Iyo**	**Nshishibe bwino**
26	Enshila tusanga ukupanga bu cibusa naba mufiputulwa fya bumi			
27	Pamo ngaba mufiputulwa fyabumi balamwipusha, ukumisambililapo kabili no numona amafya yengesa pabumi bwenu kuntanshi			
28	Ababomfi ba mufipatala ukulosha kuli bana mayo abali pabukulu balabafunda, ukulanshya kabili no busuma bwa kupimisha akashishi ka HIV.			
29	Ukupekanisha imipapile ya mwana kabili namafya ayengasako pakupapa, kabili ifya mukupimisha, nefyo twingalanshanya pafya konsha umwana no kumepela umuti wakucingilila umwana ukwanbula kashishi ka HIV.			
30	Pamo nga bana mayo abali pa bukulu kuti mwapokelelamo inshila shimo isho mwingaicingigililamo pamo nga ishi; immunization, Iron, sp, ITNs, Vit A, Hookworm treatment.			

31. Mafyanshi yamo ayo na mayo uli pabukulu engapitamo nga cakuti talembesha bwangu kucipatala.

1. Ukufina kwa mwana kulabwelela panshi ☐
2. Utulaso ☐
3. Ukufyala umwana ukwabula ukukwanisha imwyenshi ☐
4. Umwana ukwambukila akashishi ka HIV ukufuma kulinyina ☐
5. Fimbi (Lungatikeni) ☐

Ulubali D:

Ilyo mwalefwaya ukutampa ku cipatala , bushe ifili pesamba apa efyali ubwafya ubukalamba nangu iyo?

	Ubwafya	**Ee**	**Iyo**	**Nshishibe bwino**
32	Intafu iitali ukufuma kucipatal			
33	Ukupembela inshita iitali			
34	Ukubulilwa inkama			
35	Imicitile yababomfi iibi			
36	Ukukanaishiba ifishinka			
37	Ukukanaishiba bwangu ukuti lifumo			
38	Ngatakuli ubulwele ubulu bonse			
39	Ifumo telwakwenekela			
40	Ukulolela umwana uksamba mumala			
41	Umwenso wakuti ifumo lishibikwe			
42	Ukupoka amano yabufi ku banensu, balupwa nangu abenamwandi			

Ulubali E:

Mafya nshi yambi ukufuma muncende mwikala ayengalenga mwafilwa ukuya kucipatala?

	Amafya	**Ee**	**Iyo**	**Nshishibe bwino**
43	Inshita yalipiwa taicinja iyoo			
44	Nshisuminishiwa uluusa kuncito			
45	Nshawata uwakushala naba pang'anda			
46	Umwenso wakupimisha HIV			
47	Ababonfi balakokola sana ukututangata			
48	Mpembela ukupoka ulusa ku benewandi			
49	Ukubulilwa inkama pacipatala			

50. Nimunshila nshi imbi iyoo mwingatemwa ukumona uki ababuteko bawamyako imibombela kucipimo cabanamayo?.....
……
……
……

NATOTELA SANA MUKWAI.

Appendix VII: Study Budget

BUDGET CATEGORY	UNIT COST (ZM)	QUANTITY	TOTAL (ZMK)
STATIONERY			
1.Realms of paper	35.00	10 reams	350.00
2. Pens	1.00	10 pens	10.00
3. Pencils	1.00	10 pencils	10.00
4. Rubbers	1.00	5 rubbers	5.00
5. Note books	10.00	3	30.00
6.Correction fluid	15.00	notebooks	45.00
7. Stapler	30.00	3 bottles	90.00
8. Staples	10.00	3	30.00
9. Lift bags	100.00	3 boxes	300.00
11.Printer cartridge	1,000.00	3	2,000.00
12. Flash disc	200.00	2	200.00
		1	
	50.00	1	50.00
SUBTOTAL			**3,100**
Personnel allowance			
1.Research assistants	50.00	2x30 days	3,000.00
2.Principal investigator	50.00	1x30 days	1,500.00
4.Training research assistants	50.00	3x5 days	180.00
• Biscuits and soft drinks	15.00	3x5 days	225.00
•Lunch allowance	50.00	3x5 days	750.00
			8,655

Transport Fuel (Petrol)	11.00	4ltsx30days	1,650.00
SUBTOTAL			**1,650.00**
Other services 1.Ethics committee 2. Photocopying proposal 3. Photocopying questionnaire 4. Translating questionnaire	1000.00 3.00 3.00 250.00	1 1x60 pages 300x12 pages 1	250.00 180.00 3,600.00 250.00
SUBTOTAL			**5,030.00**
1.Drinks and biscuits for FGD participants	15.00	10	150.00
SUBTOTAL			**150.00**
TOTAL			**15,585.00**
CONTIGENCY	10%		**1,558.50**
GRAND TOTAL			**17,143:50**

Justification for the budget

1. **Stationery**

The 10 reams of bond paper were used for the research proposal development and the final report. Paper was also required to make extra copies of the proposal for submission to the Research Ethics committee and the Board of Graduate studies. The flash disc was for storage of research data. Other accessories such as pens, pencils rubbers, stapler and staple and note books were required for the routine collection of research data.

2. **Personnel Lunch Allowances**

Data collection was conducted during the working days when antenatal care services were provided. Therefore the researcher and the assistants needed transport and lunch allowance. Data collection was allocated 30 days to allow adequate time for administration of questionnaire.

3. **Secretarial services**

Secretarial services were needed to format and bind the research proposal. The research ethics handling fee was a requirement of the research ethics committee which approved the study.

4. **Transport**

Fuel was needed to take researcher and assistants to the data collection sites.

5. **Contingency**

Contingency fund which was 10% of the budget was required for any extra costs due to inflation and for any eventualities.

Appendix VIII

Research Project Management

Gantt chart

	Responsible person	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015
Finalize research proposal	Principal investigator (PI)									
Approval by supervisors	Dr. M. Maimbolwa									
Presentation to grand forum	PI									
Approval by research ethics com.	Ethics committee									
Developing questionnaire	PI									
Data collection	PI									
Data analysis	PI and statistician									
Report writing	PI									
Submit report to supervisor	PI									
Rewrite final report	PI									

Appendix IX : Application Letter for Authority

The University of Zambia

School of Medicine

Department of Nursing Sciences

P.O Box 50110
Telegrams: UNZA, Lusaka
UNALUZA 44370
Telephone: 252453
Fax: +260-1-250753

The Medical Superintendent
Ndola District Health Office
Ndola.

UFS. The Head of Department
Department of Nursing Sciences
University of Zambia
School of Medicine
P.O. Box 50110
Lusaka

Dear Sir/Madam

REF: PERMISSION TO CONDUCT A STUDY IN NDOLA URBAN DISTRICT HEALTH CENTERS.

With regards to the reference above, I am hereby requesting for permission to undertake a study entitled **"Factors Associated with Late Booking for Antenatal Care among Women in Ndola District."** I am a student pursuing a Master of Science in Nursing, majoring in Maternal and Child Health at the University of Zambia.

The information that will be obtained from this study will help in identifying strategies that will promote early antenatal booking thus preventing maternal and neonatal morbidity and mortality.

Yours Faithfully

Mable Musonda Chewe

0965 451152