DETERMINANTS OF MATERNAL HEALTH SERVICES UTILIZATION IN HLOGOTLOU AREA AT SEKHUKHUNE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA

by

BALOYI MKATEKO HAPPINESS

MINI DISSERTATION

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SUPERVISOR: Dr E Maimela

CO-SUPERVISOR: Dr TS Ntuli

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DEDICATION

This dissertation is dedicated to my mother **Mangole Tinyiko Gloria** and my lovely husband **Mabunda Surprise** and beloved family **Lordwin** and **Victoria Maluleke** for their continuous support throughout my studies.

DECLARATION

I declare that **DETERMINANTS OF MATERNAL HEALTH SERVICES UTILIZATION IN HLOGOTLOU AREA AT SEKHUKHUNE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA** submitted to the University of Limpopo for the degree of Masters of Public Health is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Baloyi Mkateko Happiness   **Date: 26 May 2021**

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ABSTRACT

Background: South Africa's poor maternal health indicators have resulted from weak maternal health services delivery, including access to quality family planning, skilled birth attendance, emergency obstetric care, and postnatal care for mothers and new-borns. Maternal deaths and disabilities remain a major public health problem in developing countries and maternal mortality is the health indicator which shows the greatest gap between the rich and poor countries. There are global achievements which are substantial reduction in global maternal mortality and an increase in the proportion of childbirths occurring in health facilities. On annual basis there are maternal health outcomes which occurs and these include an estimated 139 million births, an estimated 289 000 women die during pregnancy, childbirth or soon after and lastly an estimate 2.6 million will have stillbirths and 2.9 million infants will die in the first month of life. The purpose of the study was to determine the factors driving maternal health services utilization in rural areas of Limpopo Province.

Methodology: The current study was done at Hlogotlou area in Sekhukhune district of Limpopo province and it used a quantitative research approach, that was descriptive cross-sectional study to determine the factors driving maternal health services utilization. The structured questionnaire was used to describe the knowledge levels of pregnant women on utilizing the antenatal services and to describe the utilization of prenatal services by pregnant women. The sampling method was random. The total number of 450 pregnant women participated in the study and all of them were analysed. Data were analysed using STATA version 12 and descriptive statistics were used to describe the data wherein categorical variables, frequencies and percentages were reported. Differences between groups (teenagers, adolescents, adults) were analysed using univariate logistic regression.

Results:

A total of 450 pregnant women were interviewed majority of women were in the age group 21-25 years, single, unemployed had a secondary educational level. Socio-economic status was assessed using a household wealth index and majority of the pregnant women in the current study were in the medium socio-economic status at 66.4% and majority of the women were using social grants 67.8%. Majority of women get information pertaining to antenatal care from televisions followed by those who

received information from leaflets, radio and those who did not receive information from anywhere at 37.1%, 23.1%, 22.7% and 16.9% respectively. There was a statistical significance difference between those who initiated first antenatal care visit before 12 weeks and after 12 weeks at *p-value=0.007*. Majority of pregnant women who used televisions as source of information for maternal health care, majority of them were found to be initiating antenatal care after 12 weeks at as compared to those who used radio and leaflets or newspapers as they initiated antenatal care before 12 weeks.

Majority of pregnant women in the current study were aware of the antenatal care services rendered at the clinics and they were aware of the fact that antenatal care services rendered at the clinics could assist in detecting the complications related to pregnancies and also reported that these services could reduce the maternal and neonatal morbidity including maternal mortality. There was an understanding of the importance of antenatal care amongst the pregnant women. The predictors of utilization of maternal health services were young age, lower educational level pregnant women who were not married were pregnant women who were in the low socio-economic status. The young pregnant women were 2.2 times more likely to plan their pregnancies and 1.8 times more likely to discuss their pregnancies with their partners or spouses. Pregnant women who were married at a young age were 0.4 times less likely to lack the knowledge about existing for antenatal care at the clinics. Pregnant women with lower educational level were 6.8 times more likely to lack the knowledge about existing for antenatal care at the clinics. Pregnant women who were not married were 2.1 times more likely to go for the first antenatal care booking in the first trimester (1-12 weeks). Pregnant women who were in the low socio-economic status were 1.4 times more likely to lack the knowledge about existing for antenatal care at the clinics and 1.3 times more likely to report that barriers to accessing antenatal care services was either culture, religion or language barrier.

Conclusion:
The findings of this study highlight the need to address the structural socio-economic drivers of maternal health care utilizations in rural areas of Limpopo Province, South Africa. Timely entry to antenatal care was low in the study area. In order to improve the situation, it is important to provide community-based information, education and

communication on antenatal care and its right time of commencement. In addition, empowering women and implementing the proclamation designed for the age at marriage should be mandatory up to the local level. Our findings suggested that policies enhancing improved education could benefit health awareness.

Key concepts

Antenatal care, maternal health care services, pregnant women, utilization.

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LIST OF ACRONYMS

ANC	:	Antenatal Care.
DIS	:	District Information System.
EMLM	:	Elias Motswaledi Local Municipality.
FHDC	:	Faculty Research and Higher Degree Committee.
MMR	:	Maternal Mortality Ratio.
NDH	:	National Department of Health.
OLS	:	Ordinary Least Squares.
PMTCT	:	Prevention of Mother-To-Child Transmission.
PNC	:	Postnatal Care.
RMNCH	:	Reproductive Maternal Newborn and Child Health.
SDG	:	Sustainable Development Goals.
SES	:	Socio Economic Status.
SHCSRC	:	School of Health Care Sciences Research Committee.
STD	:	Sexually Transmitted Diseases.
TREC	:	Turfloop Research Ethics Committee.
WHO	:	World Health Organization.
WMA	:	World Medical Association.

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1. CHAPTER ONE (INTRODUCTION & BACKGROUND)

1.1 INTRODUCTION

The pillars of safer motherhood revolve around the antenatal care (ANC) consultations, skilled attendance at birth, and postnatal care (PNC). The efficacy of these is proven in the prevention of obstetrical risks but their use is still lacking and large gaps still exist between the rich and poor countries on the utilization of these services (ML, Malonga, Dramaix-Wilmet & Donnen, 2012). Utilization of maternal health services is associated with improved maternal and neonatal health outcomes. While available evidence indicates limited benefit from traditional antenatal care services, focused antenatal care provides opportunity for early detection of diseases and timely treatment. It also provides opportunities for preventive health care services such as immunization against neonatal tetanus, prophylactic treatment of malaria through the use of intermittent presumptive treatment approach, and HIV counselling and testing (Babalola & Fatusi, 2009). Maternal deaths and disabilities remained a major public health problem in developing countries and maternal mortality was the health indicator which shows the greatest gap between the rich and poor countries (Luexay, Malinee, Pisake & Helene, 2014). There were global achievements which were substantial reduction in global maternal mortality and an increase in the proportion of childbirths occurring in health facilities (Souza, Gulmezoglu, Vogel, Carroli, Lumbiganon, Qureshi, Costa, Fawole, Mugerwa, Nafiou & Neves, 2013).

According to Susuman and Tsawe (2015) South Africa was working very hard to reduce maternal mortality. The South African Department of health had adopted several initiatives to reduce the maternal mortality rate, and thus move closer to the 2015 Sustainable Development Goals (SDG) 5 of reducing maternal mortality by at least 75%. Maternal mortality was higher for women living in rural areas and those living in poorer communities. The current maternal mortality rate for South Africa was estimated at 300 maternal deaths per 100 000 live births. Nevertheless, South Africa had high maternal mortality rates, which were rising and this presents major challenges in terms of the country's prospects of achieving the Sustainable Development Goals 15 (Mulaudzi, Phiri, Peu, Mataboge, Ngunyulu & Mogale, 2016).

On annual basis there were maternal health outcomes which occurs and these include an estimated 139 million births, an estimated 289 000 women died during pregnancy, childbirth or soon after and lastly an estimate 2.6 million had stillbirths and 2.9 million infants died in the first month of life (Renfrew, McFadden, Bastos, Campbell, Channon, Cheung, Silva, Downe, Kennedy & Malata, 2014), (Srivastava, Avan, Rajbangshi & Bhattacharyya, 2015). Chelangat (2016) indicated that high maternal mortality rate was one of the major maternal health concerns in developing countries including South Africa. National guidelines for maternity care were made available to all health facilities in order for health professional to use those guidelines to help reduce maternal death in South Africa. As result 92% of pregnant women were attending Antenatal Care (ANC) services, 91% of all pregnant women were giving birth in a facility with a skilled birth attendant and 21% national caesarean section rate was being meet.

In the last two decades South Africa had made significant progress in the improvement of maternal health and reduction of maternal mortality. South Africa maternal mortality ratios as from 1990-2015 were 369/100 000 in 2007 to 138/100 000 (National Department of Health, 2013). South Africa mortality ratio in 1990 was 150/100 000 live births. A 75% reduction from this level gives the Sustainable Development Goals 5 target of 38/100 000 in 2015. However, South Africa failed to reach the SDGs 5 target with a performance of 138/100 000. Now building in the momentum generated by SDGs 5 and established a transformative new agenda for maternal health toward ending preventable maternal mortality; target 3.1 of SDGs 3 was to reduce global Maternal Mortality Ratio (MMR) to less than 70/100 000 live births by 2030 (National Department of Health, 2013).

Furthermore, the 2011 data revealed that a significant reduction (13%) in the MMR, to 153/100 000 live births in Limpopo Province. However, Sekhukhune District in Limpopo Province reported shocking maternal mortality of more than double the national coverage of 292,2/100 000 in 2012/13, followed by Mpumalanga Province with 178,8/100 000. Kwa-Zulu Natal at UMgungundlovu and Uthugela were also performed poorly (Dlamini, 2015).

Adgoy (2018) indicated that high maternal mortality rate was one of the indications of disparities between wealthy and poor countries. High maternal mortality rate was an indication of poorly structured and functioning health care systems and deeply rooted gender inequalities that leave women with less power, limited control over resources, poor decision-making, restriction on access to social support and health care services. Every region had shown progress, although levels of maternal mortality remain unacceptably high in Africa.

Mulaudzi et al., (2016) said that improving maternal and child health was one of the South African National Department of Health's main priorities particularly as research had shown that around four out of ten (40%) maternal deaths were preventable if women were given proper care. It was therefore based on these background that this study would like to investigate the determinants of maternal health services utilization in Hlogotlou area at Sekhukhune District of Limpopo Province focusing on both socio-demographic and health care system related factors. Therefore, there was a need to understand maternal perception of care and satisfaction with services as perceived quality was a key determinant of service utilization (Srivastava et al., 2015). Limpopo Province reported 130.2/100 000 live birth MMR in 2016, which was above the country target of 115/100 000 live birth. Sekhukhune District of Limpopo Province had recorded the worst maternal mortality rate of 292/100 000, in 2015/16. Sekhukhune District recorded the highest MMR in the country 266.8/100 00 live birth in 2016/17.

1.2 RESEARCH PROBLEM

Maternal mortality remains a crucial indicator reflecting the capacity of health systems around the globe to deliver preventive, promotive and curative health services. In 2014, the World Health Organization (WHO, 2016) estimated that more than half a million maternal deaths took place worldwide, with the majority of these deaths occurring in Africa (Delivery, 2016).

According to Khanam and Jafrin (2017) they indicated that approximately 536 000 maternal deaths occur annually, of which over 95% occur in Sub-Saharan Africa and Asia.

Africa had the highest burden of maternal mortality in the world and sub-Saharan Africa was largely responsible for the dismal maternal death figure for the region, contributing approximately 98% of the maternal deaths for region. Antenatal care provides opportunity for early detection of diseases and timely treatment. This also provides opportunities for preventative health care services such as immunization against neonatal tetanus, prophylactic treatment of infectious diseases and HIV counselling with an aim of protecting the unborn child.

Considering global and national interests in the SDGs and South Africa's high level of maternal mortality, understanding the factors affecting maternal health services utilization in rural areas was crucial. Studies on the use of maternal care services have largely overlooked community and other contextual factors. If the utilization of proper maternal care could be ensured, majority of the death would not occur. Despite improvements, pregnancy-related complications remained the leading cause of death and disability among women of childbearing age (Khanam et al., 2017). According to Massyn, Day, Peer, Padarath, Barron and English (2014) the maternal mortality rate in Sekhukhune was mainly attributable to the low utilization of maternal health care services, because there were demand-side barriers that inhibit women from seeking antenatal care, delivery and postnatal care services, including lack of information about when to obtain treatment and women's awareness of potentially life-threatening conditions.

The problem was that although the antenatal clinics were available in Sekhukhune District, Elias Motswaledi, pregnant women were not utilizing the antenatal services because maternal mortality was still increasing. Government implemented free maternal care in June 2013 but still the maternal mortality ratio was still unacceptably high (Massyn et al., 2014). Therefore, endeavors to explore comprehensively the underlying factors behind low utilization of maternal health care services among the areas of women. In order to decrease these mortality rates, regular antenatal care had to be instituted or reinforced which can only be achieved through identifying factors causing low utilization of antenatal care services.

1.3 LITERATURE REVIEW

Literature review is the source of data in the study. It provides the broad understanding of the information that is available relating to a problem that has been researched. Literature review will be discussed in full details in chapter 2.

1.4 PURPOSE OF THE STUDY

1.4.1 Aim of the study

To determine the factors driving maternal health services utilization in rural areas of Limpopo Province.

1.4.2 *Objectives of the study*

- To describe the knowledge levels of pregnant women on utilizing the antenatal services in Hlogotlou areas of Limpopo Province.
- To describe the utilization of prenatal services by pregnant women in Hlogotlou areas of Limpopo Province.

1.5 RESEARCH QUESTION

What are the determinants that promote adequate maternal health services utilization in Hlogotlou area at Sekhukhune District of Limpopo Province, South Africa?

1.6 RESEARCH METHODOLOGY

Research methodology is discussed in chapter 3 and the elements include research design, study area, study population, sample size, inclusion criteria, exclusion criteria, questionnaire, data collection procedure, pilot study, data analysis, validity, reliability, bias as well as ethical considerations.

1.7 SIGNIFICANCE OF PROPOSED RESEARCH

This study would contribute to the improvement of the quality of maternal health service to pregnant women by identifying factors that either positively or negatively affect the utilization of maternal health service, pregnant women in Hlogotlou areas of Sekhukhune District. Knowledge gained from the findings of this study would be used to formulate

strategies for improving the provision of maternal health services to pregnant women by promoting factors that enhance utilization of maternal health service.

1.8 CONCLUSION

This chapter, introduction and background discussed and the research problem. The overall purpose and the objectives of the study were covered. The research questions were identified and significance of proposed research discussed as well. The next chapter (chapter 2) will deal with the related literature review that the researcher consulted in trying to relate the concept being researched to the evidence.

2 CHAPTER TWO (LITERATURE REVIEW)

2.1 Introduction

This study deals with the theoretical background against which the study was conducted. In view of the purpose of the study, it has been divided into the following sections: maternal health services, factors that determine utilization of the maternal health services and theoretical and conceptual framework.

2.2 What are maternal health services

According to Nesane, Maputle and Shilubane (2016) maternal healthcare service comprises a wide range of health services provided to mothers before pregnancy, during pregnancy, during labour and after giving birth. These health services include: preconception care, antenatal care, prevention of mother-to-child transmission (PMTCT) of HIV, safe delivery (intrapartum care) and emergency obstetric care/ management of obstetric complications (Dickson, Darteh, Kumi-Kyereme & Ahinkorah, 2018; Kimani, 2019). However, for the purposes of the present study, maternal health services refer to family planning, antenatal care, preconception care, prenatal and postnatal care.

2.2.1 Family planning

According to Green, Robles, Bathala and Herzer (2013) they describe family planning as the decision-making process by couples, together or individually on the number of children that they would like to have in their lifetime and the age interval between children. This means that both halves of a couple have equal rights to decide on their future fertility (Davis & Khosla, 2020). In planning their future children, partners need to have the right information on when and how to get and use methods of their choice without any form of coercion. Such planning therefore helps mothers and their children enjoy the benefits of birth spacing and having planned pregnancies.

2.2.2 Antenatal care

According to Dickson, Darteh and Kyereme (2017) they indicated that antenatal care is one of the three most essential care given to women during pregnancy and a key indicator of the SDGs 3 target 3.1 reducing the global maternal mortality ratio to less than 70 per 100, 000. The main aim of the antenatal care is to prepare women for birth and motherhood as well as manage, check, identify and alleviate the three types of health problems during pregnancy that affect mothers and babies. They include complications of pregnancy itself, pre-existent conditions that worsen throughout the pregnancy period and the effects of unhealthy lifestyles.

2.2.3 Preconception care

According to Goshu, Liyeh and Ayele (2018) they indicated that preconception care is the entire range of measures designed to promote the health of the expectant mother and her child which includes screening of different disease either communicable or noncommunicable, environmental hazards and toxins, illegal drugs, nutrition and folic acid intake, weight management, genetic conditions and family history, tobacco and alcohol use, vaccinations and family planning including treatment and counselling before being pregnant.

2.2.4 Prenatal and Postnatal

2.2.4.1 Prenatal care

According to Viellas, Domingues, Dias, Gama, Filha, Costa, Bastos and Leal (2014) they indicated that prenatal care is an important component of health care for women during pregnancy. Practices routinely performed during this care are associated with better perinatal outcomes. According to recommendations of the Minister of Health, prenatal care should be through the incorporation of welcoming reception, development of educational and preventive actions without unnecessary interventions, early detections of diseases and identifications of gestational risk.

2.2.4.2   Postnatal

According to Belachew, Taye and Belachew (2016) they indicated that postnatal care is a care provided to women and their babies within 42 days after delivery. A large proportion of maternal and neonatal deaths occur during the first 48 hours after delivery and these first two days following delivery are critical for monitoring complications arising from the delivery. Postnatal care is one of the most important maternal health-care interventions for prevention of illnesses and deaths during the postnatal period. Postnatal care is regarded as one of the most important maternal healthcare services for the prevention of impairments and disabilities resulting from childbirth.

2.3. FACTORS THAT DETERMINE UTILIZATION OF MATERNAL HEALTH SERVICES

According to Byrne, Hodge, Jimenez and Morgan (2014) they indicated that geography can pose serious challenges to the delivery of health services and is a well-documented marker of inequity in health outcomes. Examples of hard-to-reach populations in low and lower-middle income countries include remote island communities, sparely populated desert settlements and mountainous landscapes. The geographical challenges frequently result in very limited access to reproductive, maternal, newborn and child health (RMNCH) services and a higher risk of mortality. Barriers to health service utilization have been categorised into access, availability, acceptability and cultural and traditional preferences, confidence in care and quality of services, health awareness and knowledge and affordability.

According to Bart, Bigdeli, Annear and Damme (2011) they indicated that utilization of health care is used as an operational proxy for access to health care. Access has four dimensions: availability, geographic accessibility, affordability and acceptability. Barriers to accessing health services can stem from the demand side and/or the supply side. Demand-side determinants are factors influencing the ability to use health services at individual, household or community level, while supply-side determinants are aspects inherent to the health system that hinder service uptake by individuals,

households or the community. The need to differentiate demand-side from supply-side barriers is related to the formulation of appropriate interventions.

2.3.1 Socio-cultural factors determining maternal health service utilization

2.3.1.1 Women's decision-making power within the family

According to Hou and Ma (2012) they indicated that women with more decision-making power may be more likely to use maternal health services. In Pakistan, if a woman has little decision-making power in her household and her husband or the household head discourages her from using maternal health services, she will be unlikely to use those services. Sometimes women's decision about whether to seek services are not in their own control but are influenced by others in their families and household, thus it is important to look at how other household members decision-making power can influence women's behaviour.

2.3.1.2 Beliefs and practices about food

According to Nisha, Rock, Roger, Ankita, Ashish, Delwin, Shanbhag and Goud (2017) they indicated that nutrition plays a quint essential role with regard to maternal and child health. In India, most food practices and tradition have stemmed from deeply rooted tradition and customs. Beliefs are crucial in the acceptance, rejection and promotion of certain food items. Most mothers agreed that green leafy vegetables, rice, less spice, bread, ragi, jowar, groundnuts powder, meat, eggs, fruits like apple, mosambi, sapota improves the health of mother and child.

2.3.1.3 Early marriage

According to Adedokun, Adeyemi and Dauda (2016) they define child marriage as a young person less than 18 years is still widely practiced in many parts of the world but remains prevalent in countries of Africa, Latin America and the Caribbean as well as Southern Asia and predominantly affects girls. In Nigeria, the practice of child marriage is deeply entrenched in tradition, culture and religion and the country has one of the highest rates of child marriage in the

world, with estimated 42% of girls married before 18 years. Consequences and risks of early marriage is that child-brides are often likely to be forced into sexual activities and commence child bearing early and are at higher risks of complications arising from these such as heavy bleeding, fistula, infections, anaemia, eclampsia, obstructed labour and obstetric fistula, all due to the physical and sexual immaturity.

2.3.2 Socio-economic factors determining maternal health service utilization

2.3.2.1 Women's education

According to Dimbuene, Adjei, Amugsi, Mumah, Izugbara and Beguy (2018) they indicated that well educated women are more responsive to new health-enhancing ideas and this strengthens the demand side of health. Education increases their capacity to recognize illness symptoms and the desire to seek appropriate health care and a certain quality of health is demanded, although this may be determined by availability of health services. Women's education improves literacy, which in turn is associated with a wide range of positive health outcomes as a result of advantaged health literacy, conceptualized as the degree to which individuals have the capacity to obtain. Women process and understand basic health information and services needed to make appropriate health decisions.

2.3.2.2 Employment

Maternal employment means more family income, which has positive effects on child development, especially among children of low income families and long leave period may have a negative effect on future maternal earnings profiles. Today more mothers with young children are in paid work than before. Early maternal employment may deprive children of continuity in infant care, time and attention, it may impede the development of secure infant bonding as well as the opportunity of extended breastfeeding, all of which are associated with a number of cognitive, emotional and health benefit (Huerta, Adema, Baxter, Corak, Deding, Gray, Han & Waldfogel, 2011).

2.3.2.3 *Women's access and control over family material resources*

According to Sanneving, Trygg, Saxena, Mavalankar and Thomsen (2013) they indicated that women's position in the household and in the community influences women's access to contraceptives, use of abortion services and health care-seeking behaviour during pregnancy and delivery but as for adolescents they face barriers in accessing contraceptives and reproductive health services.

In summary, gender norms restrict the social power of women in the setting, influencing the access to maternal and reproductive health care, which is likely to have an impact on maternal and reproductive health outcomes.

2.4 CONCLUSION

This chapter discussed relevant literature on family planning, antenatal care, preconception care, prenatal and postnatal care, women's decision-making power within the family, beliefs and practices about food, early marriage, women's education, employment, women's access and control over family material resources and as well as conceptual framework. The research methodology will be described in the next chapter.

3. CHAPTER THREE (RESEARCH METHODOLOGY)

3.1. Introduction

This chapter focuses on and describes the design used in the study. The methodology and the approach followed in conducting the study are discussed. The main elements of the research methodology include the research design, setting, population, sample, data collection data, data collection technique, dealing with the biases, pilot study as well as ethical considerations.

3.2. Research design

The study used a quantitative research approach. Khaldi (2017) indicated that quantitative research is defined as a means for testing objective theories by examining the relationship among variables. These variables in turn, can be measured typically on instruments, so that numbered data can be analysed using statistical procedures. The choice of this research approach was chosen by the fact that the purpose of the study was to determine the factors driving maternal health services utilization in Hlogotlou areas of Limpopo Province.

Hemed and Tanzania (2015) describe cross-sectional study as an observational study which measure simultaneously the exposure and health outcome in a given population and in a given geographical area at a certain time. The researcher chosen the type of study because the data about determinants of maternal health services was collected only on one occasion. Cross-sectional survey design is the study which examines several group of participant at one point in time and was used to collect primary data on pregnant women through an instrument in a form of questionnaire from healthcare facilities in Elias Motswaledi Local Municipality, Sekhukhune District in Limpopo Province.

Nassaji (2015) indicated that descriptive research design is a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way. It was often used as a pre-cursor to quantitative research designs, the

general overview giving some valuable pointers as to what variables are worth testing quantitatively.

3.3. Study area

The study was conducted at primary health care facilities. Clinics were Hlogotlou, Goedgedacht, Magukubjane and Sephaku and they provide comprehensive primary health care services as prescribed by the National Department of Health of South Africa in Elias Motswaledi Local Municipality (formerly greater Groblersdal). The services rendered at primary health care are as follows: Women's reproductive health, Management and prevention of genetic disorders and birth defects, Integrated management of childhood illness, Management of asthma, Diseases prevented by immunisation, Adolescent and youth health, Management of communicable diseases, Cholera and diarrhoeal disease control, Dysentery, Helminths, Sexually Transmitted Diseases (STD), HIV/AIDs, Malaria, Rabies, Tuberculosis, Leprosy, Prevention of hearing impairment due to otitis media, Rheumatic fever and rheumatic heart disease, Trauma and emergency, Oral health, Mental health, Victims of sexual abuse domestic violence and gender violence, Substance abuse, Chronic diseases and geriatrics, Diabetes, Hypertension, Rehabilitation services, Community level water & sanitation, Community level home-based care, Directly observed treatment strategy, Integrated nutrition programme, School health services and Community based rehabilitation. The staff compliments: Operational manager, Professional nurses (6), Enrolled nurses (2), Enrolled nurse assistants (4), Dental department: Dentist (1), Dental therapist (2), Dental assistant (2), Dietician (1), Data captures (2), Pharmacy assistant (1), Social workers (2), Mobile program (5), School health program (4) total overall 38 staff at Hlogotlou clinic. The municipality is located in the Sekhukhune District Municipality of Limpopo Province, South Africa and the seat of Elias Motswaledi Local Municipality is Groblersdal. The Elias Motswaledi Local Municipality (EMLM) was established in 2000 as a category B municipality as determined in terms of municipal structures act (1998).

The municipality is situated about 180 kms from Polokwane, 135 km from Pretoria and 150 kms from Nelspruit. The EMLM is predominately rural in nature with a high

unemployment rate resulting in high poverty levels and is linked with many other places through shared environmental, social and economic systems and structures. The municipality evolved as an amalgamation of the former Moutse Transitional Local Council, Hlogotlou, Tafelkop, Zaaiplaas, Motetema and other surrounding areas in the year 2000. The municipality was named after the struggle hero Elias Motswaledi who was sentenced to life imprisonment on Robben Island with the former president of Republic of South Africa, Nelson Mandela. It also serves a considerable population 17488 and in addition, these clinics provides antenatal care services to pregnant women.

3.4.   Study population

A population is a group of individual's persons, objects or items from which samples are taken for measurement for example a population of presidents or professors, books or students (Hanlon et al., 2011). The target population for this study were all pregnant women aged 18-40 years of age attending the aforementioned clinics during the study period. Antenatal care (ANC) registries in each 4 clinics were used in conjunction with the District Information System (DIS) to obtain the total number of Antenatal 1st visits. A complete data for a 12 months' period between January-December 2017 pregnant women was used in each clinic helped by personal communication with information officer.

Health facility name	Antenatal 1st visit
Hlogotlou Clinic	400
Goedgedacht Clinic	174
Magukubjane Clinic	125
Sephaku Clinic	264

3.4.1. Inclusion criteria

Pregnant women between the aged 18 years and above. The study allowed the assessed pregnant women at Hlogotlou clinic, Magukubjane clinic, Goedgedacht clinic and Sephaku clinic. These participants were those who

signed informed consent and purely volunteered to participate and they were the targeted group for maternal health services utilization.

3.4.2. Exclusion criteria

Pregnant women between the aged 18-40 years of age who were critically ill, because the information might not be accurate. Female patients younger than 18 years old or older than 40 years old. The study was not allowing those who didn't sign informed consent and those who showed signs of emotional distress. A professional nurse who obtained verbal and written consent to participate in the study was the one to assist the researcher to identify pregnant women who were critically ill since while they were the ones who checked their vital signs and to check antenatal cards/ booklet whether the participant fallout from the age ranges. Participant who showed signs of crying was referred to the relevant professionals.

3.4.3. Sampling

Hanlon and Larget (2011) indicated that sampling is the act, process or technique of selecting a suitable sample or a representative part of a population for the purpose of determining parameters or characteristics of the whole population. The purpose of sampling was to draw conclusions about populations from samples, by using inferential statistics which enables us to determine a populations characteristic by directly observing only a portion (or sample) of the population.

Random sampling is an equal chance of selecting each unit from the population being studied when creating the sample. The aim of the random sampling was to reduce the potential for human bias in the selection of cases to be included in the sample and it can only be carried out if the list of the population is available and complete (Mujere, 2016). This study used a random sampling method which is a probability sampling which involves all participants who met the inclusion criteria. A random sampling is a probability sampling which provides the unbiased and better estimate of the parameters if the population is homogeneous (Singh &

Masuku, 2014). The choice of this sampling method was necessary since while the participants had an equal chance of being selected. Random numbers were chosen using a random number table. Random number tables were used to determine the pregnant women to be selected for the sample. Pregnant women were allocated numbers from 1 to 200. Every pregnant woman who met the inclusion criteria whose number occurs in the random number table were selected until the sample size was achieved per four facilities (Mujere, 2016).

3.4.4. Sample size

Hanlon et al (2011) say that sample size is the number of people who are included in the sample through a process of sampling. To estimate a sample size a formula below was used to calculate sample size (Singh et al., 2014).

$$n = \frac{N}{1 + N(e)^2}$$

Where

- n is the sample size
- N is the population size of patients attending antenatal 1st visit
- e is the sampling error (5%)

With an error margin of 5% and 95% confidence intervals considered. Response rate was the number of completed or returned survey instruments (questionnaires, interviews, etc.) divided by the total number of persons who would have been surveyed if all had participated. The sample was distributed proportional to the size of the population in each health per facility.

Distribution of sample size per facility.

Hlogotlou Clinic	Magukubjane Clinic
$n = \frac{400}{1+400(0.05)^2}$	$n = \frac{125}{1+125(0.05)^2}$
$n = \frac{400}{1+1}$	$n = \frac{125}{1+0,3125}$
n=**200**	n=**95**

Goedgedacht Clinic	Sephaku Clinic
$n = \dfrac{174}{1+174(0.05)^2}$	$n = \dfrac{264}{1+264(0.05)^2}$
$n = \dfrac{174}{1+0,435}$	$n = \dfrac{264}{1+0.66}$
n=**121**	n=**159**

3.5. Data Collection

3.5.1. Questionnaire

A questionnaire adapted from several studies (Akunga, Menya & Kabue, 2014; Geta & Yallew ,2017; Mahajan & Sharma, 2014; Tarekegn et al., 2014). A questionnaire was divided into two sections, section A includes background characteristics and section B addresses the different aspects of utilization of maternal health services by individual pregnant women (see **Annexure 5**). The pre-validation of questionnaire was done by sending a draft to the supervisor for expect (an experienced clinician from the field) and by piloting. The questionnaire was translated into local language which is Sepedi (see **Annexure 6**).

3.5.2. Data collection procedure

The data collection was conducted at Magukubjane on Monday, the pregnant women go for antenatal services, then Hlogotlou on Tuesday, Sephaku on Wednesday and Goedgedacht on Thursday. A professional nurse obtained verbal and written consent to participate in the study from the pregnant women. After agreeing to participate, the researcher was responsible for administering a questionnaire to be filled anonymously before leaving from the clinics. The filling of questionnaire was not interfering with the services of antenatal and the researcher checked if all the items in the questionnaire have been completed as instructed.

3.5.3. Pilot study

Dikko (2016) indicated that pilot study is defined as a mini version of a research or a trial run conducted in preparation of a full-scale study and may be conducted specifically to pre-test a research instrument. The questionnaire was pre-tested on a small sample size of 10% of study population of pregnant women aged18-35 years of age. It helped to make modifications to the questionnaire. The pilot study was done at Magukubjane clinic which is different from the study site and it helped to evaluate if the questions answered the research questions. The pilot study helped to check if the participants understand the questions and also to determine the time needed to complete the questionnaire in the actual study.

3.6. Data analysis

Stata version 12 was used for data analysis. Descriptive statistics were used to describe the data. For categorical variables, frequencies and percentages were reported. Differences between groups (teenagers, adolescents, adults) were analysed using univariate logistic regression. For continuous variables, mean and standard deviation was used to present the data while analysis was performed using univariate Ordinary Least Squares (OLS) regression. For those continuous variables that was abnormally distributed, median and interquartile ranges were used to present the data while the analysis was performed using the non-parametric test, Kruskal-Wallis. The relationship between the various demographic, clinical and healthcare resource used characteristics and health-related quality of life as measured by SF-12 were evaluated using OLS regression (categorical and continuous variables) and Pearson's correlation co-efficient test (continuous variables). An a priori two-tailed level of significance was set at the 0.05 level and statistical analyses were conducted using STATA version 11.1 (STATA Corporation, College Station, TX).

3.7. Bias

Simundic (2013) indicated that bias is any trend or deviation from the truth in data collection, data analysis, interpretation and publication which can cause false conclusions. Bias was likely to be introduced when the participants were given a

questionnaire with language that they are not familiar with and to reduce this and thus, the questionnaire was translated into Sepedi. For possible response bias participants were assured that the information was confidential and that participation was anonymous. Researcher bias was minimized by ensuring that the researcher remains neutral when participants were filling the questionnaire, so that they were not influenced by his/her body expression and opinions. Measurement bias was minimized by giving accurate questionnaire, ensuring that instructions was clear, pre-test questionnaire and checking the completeness of it.

3.8. Internal and external validity of the study

3.8.1. Validity and Reliability

Marshall and Rossman (2014) indicated that validity is the extent to which any measuring instrument measures what it is intended to measure and not something else. There are different types of validity. In the study, the researcher used face and content validity. Face validity were established by requesting two expects (an experienced clinician from the field and registered nurse) to looked at the instrument and confirm if it is measuring the construct what it is supposed to measure. This study checked the content validity of research instruments to be used.

3.8.2. Reliability

Kapur and Pecht (2014) describe that reliability is the extent to which an experiment, test or any measuring procedure yields the same result on repeated trials. Bacon (2013) describes reliability as the state of being reliable and reliable as something that can be relied upon or is dependable. Reliability in this study was linked to the clarity and consistency of the research instrument. To ensure clarity, the instrument was pre-tested by giving the instrument on a small size of 10% of study population of pregnant women in the Sekhukhune District to complete to establish the clarity of the questions and to reduce ambiguities. These pregnant women were not included in the main study.

3.9. Ethical considerations

3.9.1. Permission

The approved proposal together with the ethical clearance from TREC was submitted to Limpopo Department of Health to get permission to conduct the study in the province and permission to collect data within four clinics were requested from Department of Health Sekhukhune District (see **Annexure 2**).

3.9.2. Measures to protect participant's confidentiality, privacy and anonymity

Medical research must protect the life, health, dignity, integrity, privacy and confidentiality of research participant's personal information (World Medical Association, 2013). Information provided by the participants were kept confidential, stored and only the researcher and research supervisor/co-supervisor had accessed to the storage system i.e. hard drive, compact disc and file for hard copies. Participant's identity was not revealed during research report writing or presentation and if participants gave permission, pseudonyms were used. To maintain anonymity of participants, participants were not requested to write down their names as well as identity number on the questionnaire. Questionnaires was numbered participant 1 until participant 450.

3.9.3. Autonomy and respect for person's and right to privacy and dignity

The researcher respected and acknowledged the intrinsic worth, dignity and sense of value of the participants even to honour the right to make their own informed choices. Consent was voluntary, informed, written and needs to be gained before enrolment in a study except in certain situations such as where potential participants were critically ill. Informed consent was given to a participant in a study and they must understand, appreciate and voluntarily agreed to what is proposed. It is based on the principle of respect, dignity is a valuable moral standard for health care decision at the bedside as it embodies a very concrete and context and specific vision of the patient as a person (Andorno & Pele, 2015).

3.9.4. Informed consent

The pregnant women selected were informed of the purpose of the research and how it was conducted. The researcher gave participants a written informed consent to sign before participating in the study (see **Annexure 3**). The participants were duly informed that their participation in the research was purely voluntary and there was no any punitive measure taken against those who declined to participate and neither was there any reward for participation.

3.9.5. Minimisation of risks

There were no foreseeable risks to the participants as no samples i.e. No blood was drawn from participants. Participants who showed signs of emotional distressed was referred accordingly for proper counselling and psychological support to the counsellors qualified psychologist at the referral hospital St Ritaz and social workers were available at Hlogotlou clinic.

3.10.   Conclusion

The focus of this chapter was to outline various aspects of methodology that had been applied in conducting this study. The sample and the sampling technique were explained. Ethical principles that had been followed were discussed and ethical considerations were also covered. The data-collection tool, which consisted of a questionnaire was described. The next chapter covers the analysis of data.

4. CHAPTER FOUR (PRESENTATION OF FINDINGS)

4.1. Introduction

This chapter describes the analysis of the data and the interpretation of the research findings, which were guided by the research question posed in the study. The data was analysed to determine the factors driving maternal health services utilization in rural areas of Limpopo Province.

4.2. Data management and analysis

After the data collection process was finalized, the completed database was securely stored. The information was captured on a Microsoft Excel spreadsheet then stored on a compact disc for confidentiality and privacy reasons. Descriptive statistical analysis was undertaken using the Stata 11 for Windows (64-bit x86-64) programme in order to identify frequencies and percentages of answers to the research questions. The statistical significance of the relationships between the selected variables was determined using the t-test. The level of significance was set at 0.05.

4.3. Research results

4.3.1. Socio-demographic characteristics of pregnant women

A total of 450 pregnant women were interviewed and Table 4.1 below presents the socio-demographics of the women who participated in the current study and the majority of women were in the age group 21 - 25 years at 29.3% followed by age group 26 - 30 years, 31 - 35 years, less than or equal to 20 years and lastly 36 - 40 years at 23.6%, 17.3%, 17.1% and 12.7% respectively. Majority of the participants were single at 73.8% followed by those who were married at 25.3%. Those who were divorced and widowed were both at 0.4%. Majority of the women were unemployed at 70.2% followed by those who employed at 14.9%, the current study revealed that majority of women had a secondary educational level at 68% followed by those with tertiary educational level at 27.1%. Socio-economic status was assessed using a household wealth index and majority of the pregnant women in the current study were in the medium socio-economic status at 66.4% followed by low socio-ecominic status and high socio-economic status at 31.3% and 2.2% respectively. Lastly, majority of the women were using social grants 67.8%.

Table 4.1: Demographics information of women who participated in the study

		No	(%)
Age in years			
	≤ 20	77	17.1
	21 – 25	132	29.3
	26 – 30	106	23.6
	31 – 35	78	17.3
	36 –40	57	12.7
Married at Age			
	≤ 20	10	2.2
	21 – 25	43	9.6
	26 – 30	41	9.1
	31 – 35	16	3.6
	36 –40	6	1.3
	>40	334	74.2
Marital status			
	Single	332	73.8
	Married	114	25.3
	Divorced	2	0.4
	Widowed	2	0.4
Work status			
	Employed	67	14.9
	Temporary jobs	30	6.7
	Self-employed	37	8.2
	Unemployed	316	70.2
Educational level			
	Illiterate	11	2.4
	Primary	11	2.4
	Secondary	306	68.0
	Tertiary	112	27.1
Socio-economic status			
	Low	141	31.3
	Medium	229	66.4
	High	10	2.2
Social Grant			
	Yes	305	67.8
	No	145	32.2
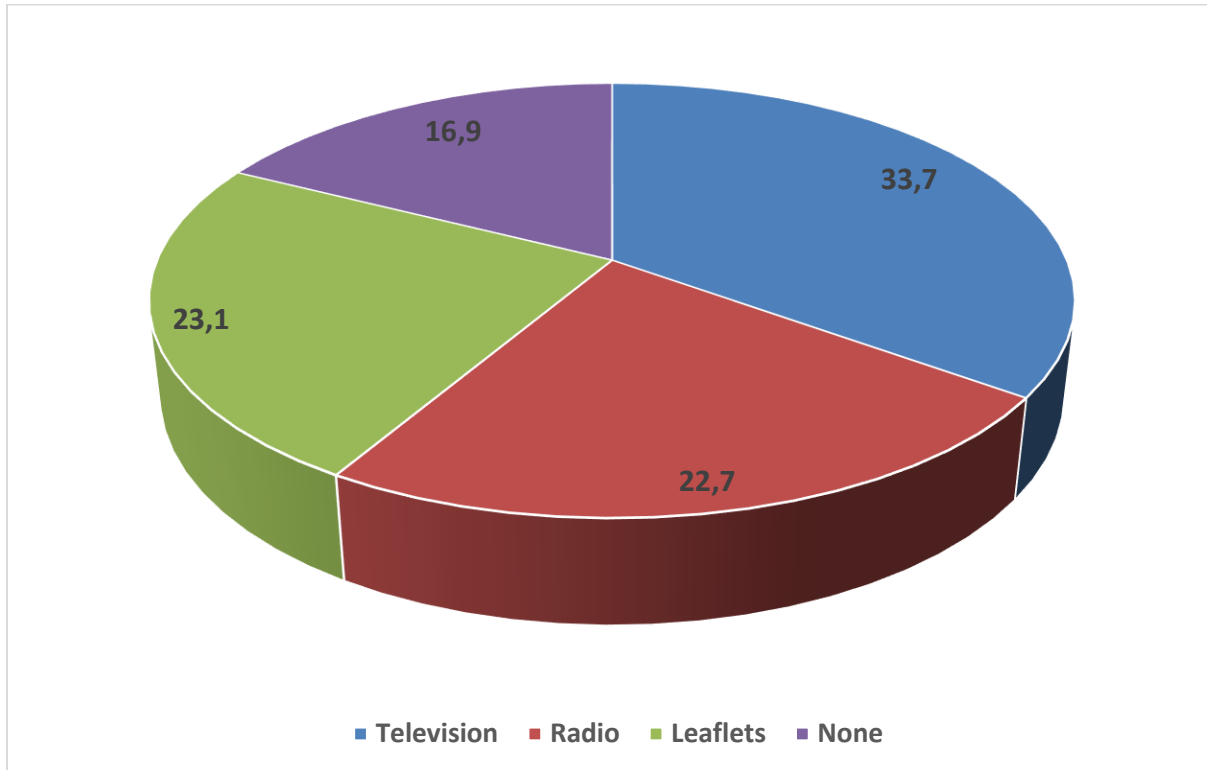
Figure 4.1: Source of information dissemination pertaining antenatal care

The knowledge levels of the pregnant women who participated in the current study has been presented in Figure 4.1 above. This shows that majority of women got information pertaining to antenatal care from televisions at 37.1% followed by those who received information from leaflets, radio and those who did not receive information from anywhere at 23.1%, 22.7% and 16.9% respectively. Table 4.2 presents the source of information dissemination pertaining antenatal care stratified by timing of initiation of the first antenatal care visit, pregnancy planning and discussions with the partner/spouse. There was a statistical significance difference between those who initiated first antenatal care visit before 12 weeks and after 12 weeks at *p-value=0.007*. There was no statistical significance difference in the pregnancy planning and those had or did not have discussions with their partners/spouse about pregnancies.

Majority of pregnant women who used televisions as source of information for maternal health care, majority of them were found to be initiating antenatal care after 12 weeks at 41.2% as compared to those who used radio and leaflets or newspapers as they initiated antenatal care before 12 weeks at 26.9% and 25% respectively, again majority of pregnant women who used televisions as source of information for maternal health care, majority of them were found to be carrying a planned pregnancy at 37.6% followed by those who used radio and leaflets or newspapers at 25.8% and 21.8% respectively. Lastly, majority of pregnant women who used televisions as source of information for maternal health care, majority of them were found not to be discussing their pregnancies with the partners or spouses at 40.9%.

Table 4.2: Source of information dissemination pertaining antenatal care stratified by timing of initiation of the first antenatal care visit, pregnancy planning and discussions with the partner/spouse

Source of information dissemination pertaining antenatal care	timing of initiation of the first antenatal care visit		pregnancy planning		discussions with the partner/spouse	
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
	Before 12 weeks	After 12 weeks	No	Yes	No	Yes
Television	93 (34.7)	75 (41.2)	66 (36.9)	102 (37.6)	54 (40.9)	114 (35.9)
Radio	72 (26.9)	30 (16.5)	32 (17.9)	70 (25.8)	32 (24.2)	70 (22.1)
Leaflets	67 (25.0)	37 (20.3)	45 (25.1)	59 (21.8)	27 (20.5)	77 (24.2)
None	36 (13.4)	76 (16.9)	36 (20.1)	40 (14.8)	19 (14.4)	57 (17.9)
P value for trend	0.007		0.146		0.551	
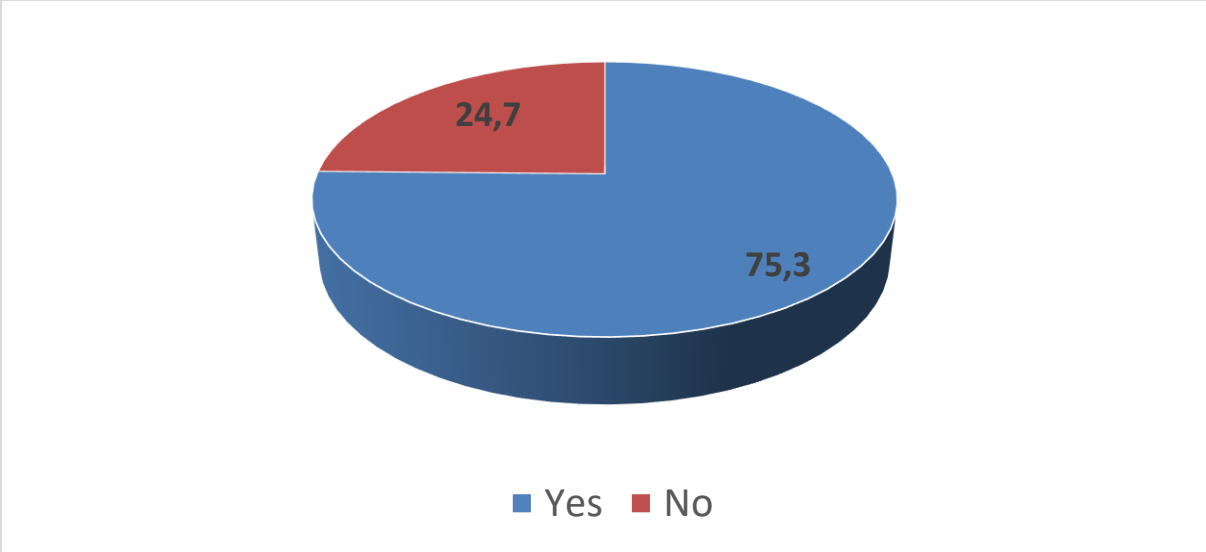
Figure 4.2: Knowledge of antenatal care services rendered at the clinics

Majority of pregnant women in the current study were aware of the antenatal care services rendered at the clinics at 75.3% as presented in Figure 4.2 above. Majority of the pregnant women (92.9%) reported that they were aware of the fact that antenatal care services rendered at the clinics could assist in detecting the complications related to pregnancies and also 94% reported that these services could reduce the maternal and neonatal morbidity including maternal mortality as presented in Figure 4.3 below.
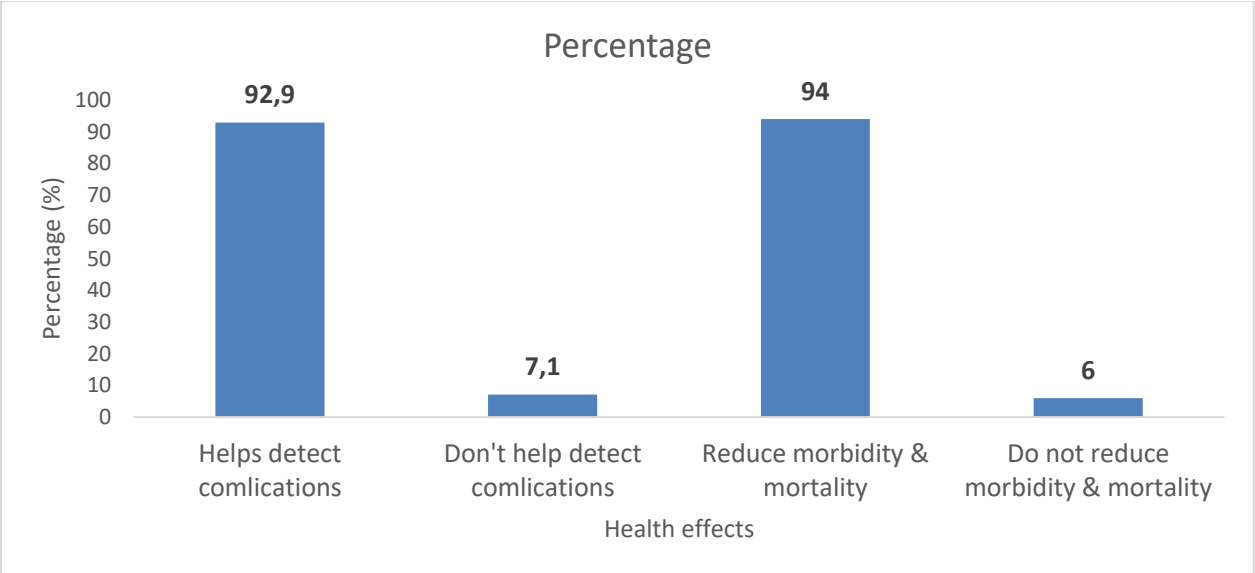
Figure 4.3: Knowledge of antenatal care services rendered at the clinics stratified by knowledge of complications

Table 4.3: Knowledge of antenatal care services rendered at the clinics stratified by age of participants and known complications

		Age in years					
		≤20	21 – 25	26 – 30	31 – 35	36 – 40	p-
		n (%)	n (%)	n (%)	n (%)	n (%)	value
Know services rendered							
Detect complications							<0.001
	Yes	19 (21.1)	34 (37.8)	13 (14.4)	16 (17.8)	8 (8.9)	
	No	8 (38.1)	7 (33.3)	4 (19.1)	2 (9.5)	0 (0.0)	
Reduce morbidity							<0.001
	Yes	48 (14.7)	85 (26.0)	89 (27.2)	58 (17.7)	47 (14.4)	
	No	2 (16.7)	6 (50.0)	0 (0.0)	2 (16.7)	2 (16.7)	
Don't know services rendered							
Detect complications							0.295
	Yes	50 (15.2)	87 (26.5)	87 (26.5)	57 (17.4)	47 (14.3)	
	No	0 (0.0)	4 (36.4)	2 (18.2)	3 (27.3)	2 (18.2)	
Reduce morbidity							0.575
	Yes	23 (24.0)	36 (37.5)	13 (13.5)	16 (16.7)	8 (8.3)	
	No	4 (26.7)	5 (33.3)	4 (26.7)	2 (13.3)	0 (0.0)	

Table 4.3 above presents the knowledge of antenatal care services rendered at the clinics stratified by age of participants and known complications. Amongst those women who knew the services rendered at the clinics there was a statistical significance difference between the age groups at *p-value= <0.001*. Majority in the age group 25 - 34 years knew that the antenatal services rendered at the clinics can assist in detecting the complications related to pregnancies followed by those at age groups ≤20 years, 31 - 35 years and 26 - 30 years at 21.1%, 17.8% and 14.4% respectively. The lack of knowledge in the antenatal services rendered at the clinics to assist in detecting the complications related to pregnancies decreased with increasing age from 38.1% in age group ≤20 years to 33.3%, 19.1% and 9.5% in age groups 21 - 25 years, 26 - 30 years and 31 - 35 years respectively. Amongst those women who did not know the services rendered at the clinics, majority (26.5%) who were in the age groups 21 - 25 years and 26 - 30 years knew that the antenatal services rendered at the clinics can assist in detecting the complications related to pregnancies followed by those at age groups 31 - 35 years, ≤20 years and 36 - 40 years at 17.4%, 15.2% and 14.3% respectively.

The knowledge of antenatal care services rendered at the clinics if they assist in reducing both morbidity and mortality related to maternal and neonatal is also presented in Table 4.3 above. Amongst those women who knew the services rendered at the clinics there was a statistical significance difference between the age groups at *p-value= <0.001*. Majority (27.2%) in the age group 26 - 30 years knew that the antenatal services rendered at the clinics can assist in reducing both morbidity and mortality related to maternal and neonatal. This was followed by those at age groups 21 - 25 years and 31 - 35 years at 26% and 17.7% respectively. In this category of participants, majority (50%) did not know that antenatal care services rendered at the clinics could assist in reducing both morbidity and mortality related to maternal and neonatal. Amongst those women who did not know the services rendered at the clinics, majority (37.5%) who were in the age groups 21 - 25 years knew that the antenatal services rendered at the clinics could assist in reducing both morbidity and mortality related to maternal and neonatal followed by those at age groups ≤20 years, 31 - 35 years and 26 - 30 years at 24%, 16.7% and 13.5% respectively.

Table 4.4: Health facilities descriptions

		No	(%)
Health Care Distance			
	< 1 km	70	15.6
	1 – 5 Km	144	32.0
	6 – 10 km	171	38.0
	≥ 10 km	65	14.4
Mode of Transport to facility			
	Walk	145	32.2
	Bus	10	2.0
	Taxi	279	62.0
	Own transport	16	3.6
Health Care Quality			
	Inadequate	61	13.6
	Moderate	218	48.4
	Adequate	171	38.0
Availability of health care providers			
	Yes	412	93.6
	No	29	6.4
Community awareness to health information			
	Inadequate	73	16.2
	Moderate	222	49.3
	Adequate	155	34.4
Cost to access service			
	Affordable	341	75.8
	Not affordable	109	24.2

Table 4.4 above presents the health facilities descriptions which shows that majority of the participants were travelling a distance between 6 and 10 kilometres to a health facility at 38% followed by those who travelled between 1 and 15 kilometres, less than a

kilometre and more than 10 kilometres at 32%, 15.6% and 14.4% respectively. The mode of transport which was used by majority of the participants to reach the health facilities was taxi at 62% followed by those who walked to the health facilities at 32.2%. Those who used own transport and those who used a bus were at 3.6% and 2% respectively. Majority of the pregnant women rated the health care quality at the health facilities as moderate at 48.4% followed by those who rated the health care quality as adequate and inadequate at 38% and 13.6% respectively. Majority of pregnant women at 93.6% reported that the health care providers are available at the health facilities and also majority of pregnant women reported that the community awareness about health information was moderate at 49.3% followed by adequate and inadequate community awareness about health information at 34.4% and 16.2% respectively. Lastly, majority of the pregnant women reported that the costs to access the health services are affordable at 75.8%.
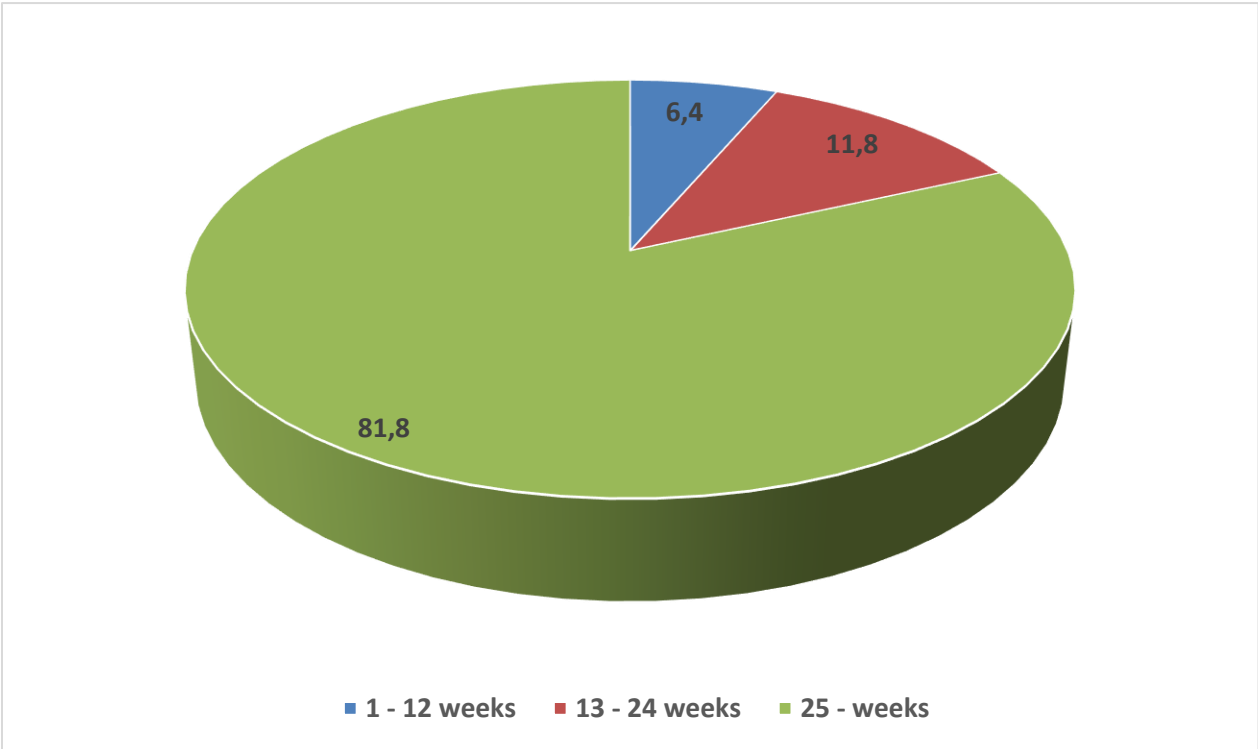
Figure 4.4: First antenatal bookings for participants

Figure 4.4 above presents the proportion of pregnant women who attended their first antenatal care booking. This shows that majority had attended at the age of 25 weeks and above at 81.8% followed by those who attended at gestational age of 13 - 24 weeks and 1 - 12 weeks at 11.8% and 6.4% respectively.

	≤20	21 − 25	26 − 30	31 − 35	36 − 40
■ 1 - 12 weeks	37,9	41,4	17,2	0	3,5
■ 13 - 24 weeks	15,8	41,5	15,1	24,5	3,8
■ 25 - weeks	15,8	26,6	25,3	17,7	14,7
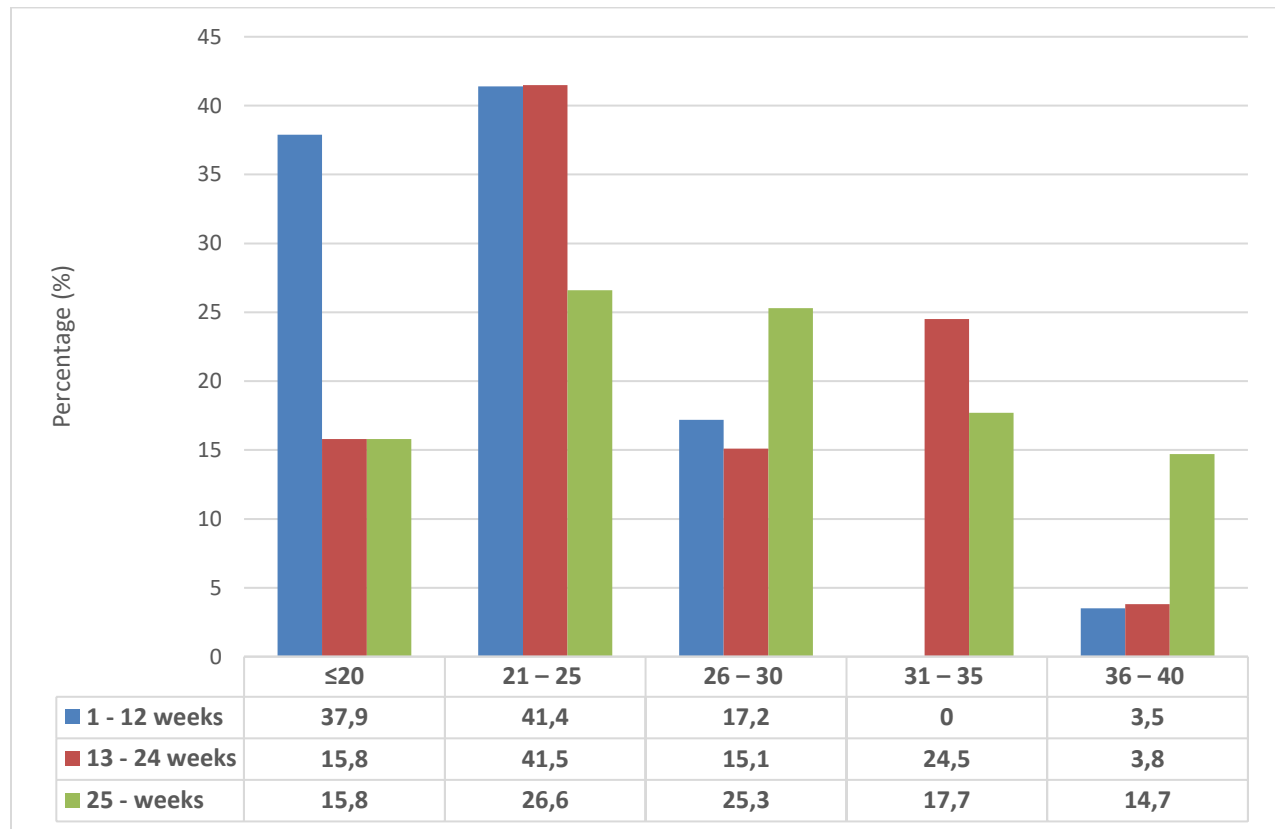
Figure 4.5: First antenatal bookings for participants stratified by age group

Figure 4.5 above presents the proportion of pregnant women who attended their first antenatal care booking stratified by age group. Approximately 38% of women in the age group ≤20 years had attended their first antenatal care booking at the gestational age of between 1 week to 12 weeks. In the age group 21 - 25 years majority of women attended their first antenatal care bookings at gestational age between 13 weeks and 24 weeks at 41.5% followed by age 1 week to 12 weeks and 25 weeks and above at 41.4% and 26.6% respectively. In the age group 26 - 30 years majority of women attended their first antenatal care bookings at gestational age 25 weeks and above at 25.3% followed by those at gestational age between 1 week and 12 weeks and between 13 weeks and 24

weeks at 17.2% and 15.1% respectively between 13 weeks and 24 weeks at 41.5% followed by age 1 week to 12 weeks and 25 weeks and above at 41.4% and 26.6% respectively. In the age group 31 - 35 years none of the participants had attended antenatal care clinic at pregnancy between 1 week and 12 weeks while majority in this age group had attended antenatal care clinic at gestational age between 13 weeks and 24 weeks at 24.5%.

Table 4.5 below presents the factors contributing to first antenatal bookings for pregnant women and this looked into patterns of antenatal care bookings, attitude of health care workers, lack of knowledge of pregnant women, barriers of accessing health services and women's decision-power to maternal health issues. The lack of knowledge of pregnant women, barriers of accessing health services were statistically significant associated with the timing of first antenatal bookings for pregnant women at *p-value 0.048* and *0.006* respectively. With regard to the patterns of antenatal care bookings, majority of pregnant women reported that their reasons for booking late in the third trimester (25 weeks and above) were that they were attending bookings per appointment days at 84.8% followed by when having complications. Approximately 86% of pregnant women reported that they did not have a reason for attending first antenatal care bookings late in the third trimester. The positive attitudes of health care workers did not influence the first antenatal care bookings as approximately 82% of pregnant women booked in the third trimester. The lack of knowledge of pregnant women of antenatal care services contributed to the late first antenatal care booking of approximately 77% of the women in the third trimester. Considering the barriers for not accessing health services, language barrier was the most contributing factors for pregnant women to book late in the third trimester at 83.5% followed by cultural beliefs, religious beliefs and illiteracy at 78.7%, 74.6% and 71.1% respectively. Women's decision-power was not significantly associated with timing of first antenatal bookings for pregnant women.

Table 4.5: Factors contributing to first antenatal bookings for pregnant women

	Overall	1 - 12 weeks	13 - 24 weeks	25 - weeks	*P-value*
Patterns ANC bookings					
Appointment days	197 (43.8)	12 (6.1)	18 (9.1)	167 (84.8)	
Having complaints	231 (51.3)	17 (7.4)	32 (13.9)	182 (78.8)	0.360
No reason	22 (4.9)	0 (0.0)	3 (13.6)	19 (86.4)	
Attitude of HCW's					
Positive	397 (88.2)	22 (5.5)	47 (11.8)	328 (82.6)	0.102
Negative	53 (11.8)	7 (13.2)	6 (11.3)	40 (75.5)	
Lack of knowledge					
Yes	250 (50.0)	1 (8.9)	20 (13.3)	175 (77.8)	0.048
No	250 (50.0)	9 (4)	23 (10.2)	193 (85.8)	
Barriers accessing services					
Illiterate	83 (18.4)	8 (9.6)	16 (19.3)	59 (71.1)	
Culture	75 (16.7)	7 (9.3)	9 (12.0)	59 (78.7)	
Language	85 (18.9)	3 (3.5)	11 (12.9)	71 (83.5)	0.006
Religious	67 (14.9)	6 (8.9)	11 (16.4)	50 (74.6)	
None	140 (31.1)	5 (3.6)	6 (4.3)	129 (92.1)	
Women's decision-power					
Yes	36 (8.0)	2 (5.6)	6 (16.7)	28 (77.8)	
No	414 (92.0)	27 (6.5)	47 (11.4)	340 (82.1)	0.632
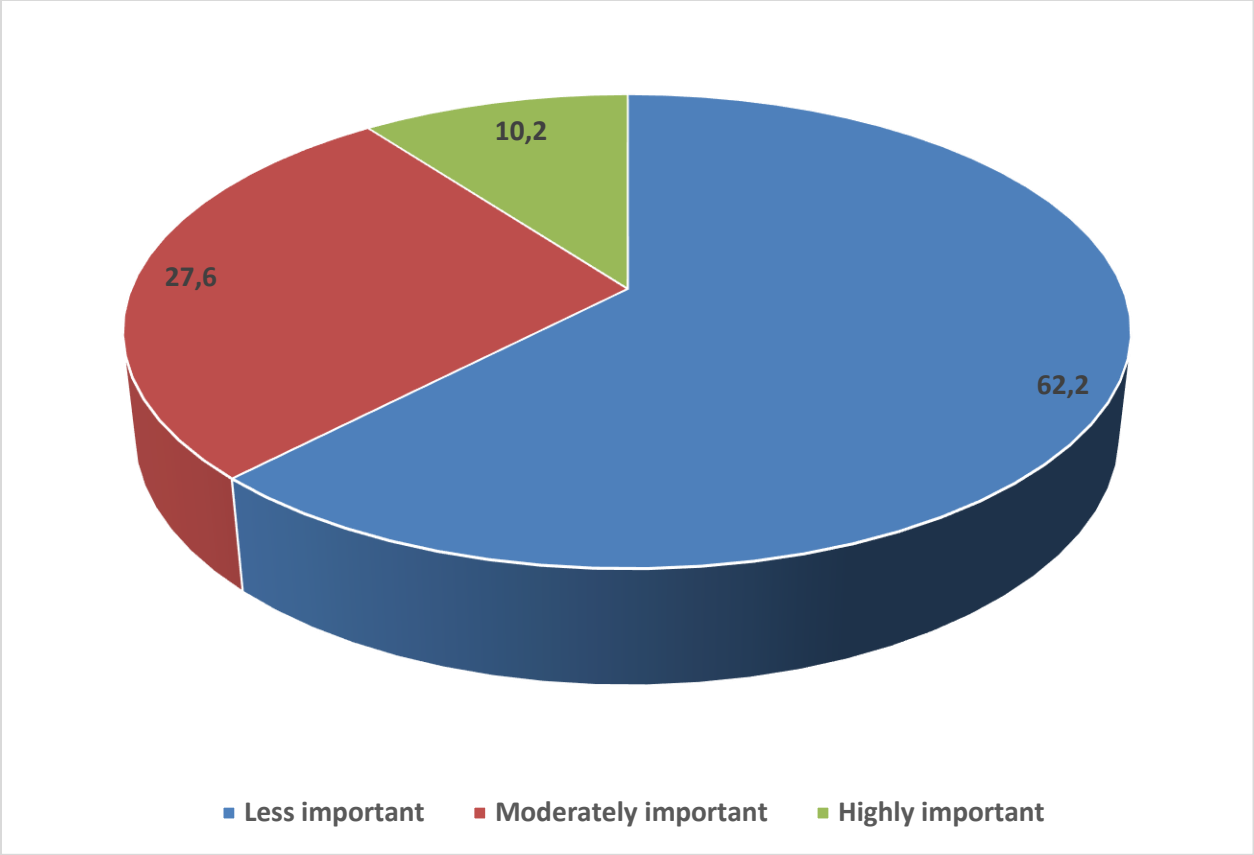
Figure 4.6: The understanding of importance of antenatal bookings for pregnant women

The understanding of the importance of antenatal care for pregnant women is presented in Figure 4.6 above and it shows that majority of the pregnant women regard antenatal care services less important at 62.2% followed by moderately important and highly important at 27.6% and 10.2% respectively.

Table 4.6: Patterns of attendance of antenatal bookings for participants

		Less important	Moderately important	Highly important	P-value
ANC visits in previous pregnancy					
	Only 1 visit attended	14 (22.2)	20 (31.8)	29 (46.0)	
	2 – 3 visits attended	2 (2.7)	25 (33.8)	47 (63.5)	
	4 – 6 visits attended	4 (4.2)	21 (21.9)	71 (74.0)	<0.001
	>6 visits attended	1 (0.8)	12 (9.8)	109 (89.3)	
	None	13 (13.7)	32 (22.7)	50 (50.6)	
ANC follow up is good for mother & foetus					
	Agree	34 (7.6)	108 (24.1)	306 (68.3)	0.045
	Disagree	0 (0.0)	2 (100.0)	0 (0.0)	
Timing of accessing ANC					
	1st trimester	17 (5.5)	68 (22.2)	222 (72.3)	
	2nd trimester	2 (4.3)	10 (21.3)	35 (74.5)	0.001
	3rd trimester	2 (11.1)	4 (22.2)	12 (66.7)	
	Anytime	13 (18.6)	24 (34.3)	33 (47.1)	

Table 4.6 above presents the understanding of the importance of antenatal care for pregnant women stratified by antenatal care visits in the previous pregnancy, antenatal care follow-up being good for the mother and the foetus and lastly the timing of accessing antenatal care. The antenatal care visits in the previous pregnancy has shown a statistically significant difference at *p-value<0.001*. Approximately 89% of pregnant women reported they attended antenatal care for more than 6 times and it was highly important. This was followed by those who reported that they attended antenatal care between 4 and 6 times, 2 and 3 times and those who attended only once at 74%, 63.5% and 46% respectively. Majority of pregnant women reported that antenatal care follow-up is good for the other and foetus then regarded this as highly important at 68.3% followed those who reported that it is moderately important at 24.1%. Majority of pregnant women reported that accessing antenatal care services during the second trimester is highly important at 74.5% followed by those who reported that attending at 1st trimester, third trimester and anytime at 72.3%, 66.7% and 47.1% respectively.

The predictors of utilization of maternal health services are presented in Tables 4.7a and 4.7b below. The young pregnant women were 0.4 times less likely to report that community awareness to health information is adequate within their communities and they were 2.2 times more likely to know the services rendered at the antenatal clinics and lastly, they were 2 times more likely to report that antenatal care helps to reduce morbidity and mortality related to pregnancies (maternal and neonatal). Pregnant women with lower educational level were 0.3 times less likely to know the services rendered at the antenatal clinics and they were 0.2 times less likely to report that antenatal care helps to reduce morbidity and mortality related to pregnancies. Pregnant women who were not married were 4.2 times more likely to report that community awareness to health information is adequate within their communities and 0.4 times less likely to report that antenatal care helps to reduce morbidity and mortality related to pregnancies. Pregnant women who were in the low socio-economic status were 0.6 times less likely to report that quality of health care in the health facilities was inadequate. These women were also 0.4 times less likely to be reported that community awareness to health information is adequate within their communities, 0.5 times less likely to report that antenatal care helps to reduce morbidity and mortality related to pregnancies and lastly, 0.2 times less likely to report that antenatal care helps to reduce morbidity and mortality related to pregnancies.

The young pregnant women were 2.2 times more likely to plan their pregnancies and 1.8 times more likely to discuss their pregnancies with their partners or spouses. Pregnant women who were married at a young age were 0.4 times less likely to lack the knowledge about existing for antenatal care at the clinics. Pregnant women with lower educational level were 6.8 times more likely to lack the knowledge about existing for antenatal care at the clinics. Pregnant women who were not married were 2.1 times more likely to go for the first antenatal care booking in the first trimester (1 - 12 weeks), then 0.4 times less likely to plan their pregnancies and 0.5 times less likely to discuss their pregnancies with their partners or spouses. Lastly, these women were 1.6 times more likely reported that barriers to accessing antenatal care services was either culture, religion or language barrier. Pregnant women who were in the low socio-economic status were 1.4 times more likely to lack the knowledge about existing for antenatal care at the clinics and 1.3 times

more likely to report that barriers to accessing antenatal care services was either culture, religion or language barrier.

Table 4.7a**:** Univariate logistic regression to determine predictors of utilization of maternal health services

Variables	Health facility distance	Quality of care	Community awareness	ANC services rendered	ANC detect pregnancy complications	ANC reduce morbidity &mortality
Age 18 – 25years	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
≥26 years	0.9 (0.7 – 1.4)[a]	0.8 (0.5 – 1.5)[a]	0.4 (0.2 – 0.9)[*]	2.2 (1.4 – 3.4)[***]	1.8 (0.8 – 3.6)[a]	2.0 (0.9 – 4.6)[*]
Marital age 18 – 25years	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
≥26 years	1.1 (0.6 – 1.9)[a]	1.2 (0.6 – 2.4)[a]	0.7 (0.1 – 3.1)[a]	1.7 (0.9 – 3.1)[a]	1.4 (0.5 – 3.9)[a]	–
Educational status High	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Low	1.6 (0.7 – 4.0)[a]	0.7 (0.2 – 1.8)[a]	0.5 (0.1 – 2.7)[a]	0.3 (0.1 – 0.7)[*]	0.2 (0.1 – 0.5)[**]	–
Marital status Married	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Other	1.3 (0.9 – 2.0)[a]	1.1 (0.6 – 1.9) [a]	4.2 (1.7 – 9.9)[**]	0.8 (0.5 – 1.4) [a]	0.6 (0.3 – 1.4) [a]	0.4 (0.1 – 1.0)[*]
Socio-economic status High	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Low	1.1 (0.8 – 1.7)[a]	0.6 (0.4 – 1.0)[*]	0.4 (0.2 – 0.9)[*]	0.6 (0.4 – 1.0) [a]	0.5 (0.2 – 1.0)[*]	0.2 (0.1 – 0.5)[**]

Values are reported as odds ratios (95%CI); [*] significant *at p<0.05;* [**] significant *at p<0.005;* [***] significant *at p<0.001,* [a]Not significant

Table 4.7b**:** Univariate logistic regression to determine predictors of utilization of maternal health services

Variables	Timing of 1st ANC visit	Planned pregnancy	Discussing pregnancy with partner/spouse	Attitude of HCW's	Lack of knowledge of ANC services	Barriers to access ANC services
Age						
18 – 25years	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
≥26 years	0.7 (0.5 – 1.1)[a]	2.2 (1.5 – 3.2)[***]	1.8 (1.2 – 2.7)[*]	1.1 (0.6 – 2.0) [a]	1.1 (0.8 – 1.6)[a]	0.8 (0.5 – 1.2) [a]
Marital age						
18 – 25years	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
≥26 years	0.7 (0.4 – 1.3) [a]	0.7 (0.4 – 1.2)[a]	1.2 (0.6 – 2.1)[a]	0.6 (0.2 – 1.7)[a]	0.4 (0.2 – 0.8)[*]	1.0 (0.5 – 2.1) [a]
Educational status						
High	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Low	0.8 (0.3 – 2.0)[a]	1.0 (0.4 – 2.3)[a]	0.5 (0.2 – 1.1)[a]	–	6.8 (2.0 – 23.4)[**]	1.0 (0.3 – 3.1) [a]
Marital status						
Married	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Other	2.1 (1.3 – 3.2)[**]	0.4 (0.2 – 0.6)[***]	0.5 (0.3 – 0.8)[**]	0.7 (0.3 – 1.3) [a]	0.8 (0.5 – 1.2) [a]	1.6 (1.0 – 2.6)[*]
Socio-economic status						
High	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Low	0.8 (0.5 – 1.2) [a]	0.9 (0.6 – 1.3) [a]	1.0 (0.7 – 1.5) [a]	0.8 (0.4 – 1.4) [a]	1.4 (1.0 – 2.2)[*]	1.3 (0.8 – 2.3)[**]

Values are reported as odds ratios (95%CI); [*] significant *at p<0.05;* [**] significant *at p<0.005;* [***] significant *at p<0.001,* [a]Not significant

4.4. Overview of research findings

The findings of this study highlight the need to address the structural socio-economic drivers of maternal health care utilizations in rural areas of Limpopo Province, South Africa. Timely entry to antenatal care was low in the study area. In order to improve the situation, it is important to provide community-based information, education and communication on antenatal care and its right time of commencement. In addition, empowering women and implementing the proclamation designed for the age at marriage should be mandatory up to the local level. Our findings suggested that policies enhancing improved education could benefit health awareness.

4.5. Conclusion

In this chapter, the results of the study were presented and interpreted. The next chapter discusses these findings and compares the findings of this study to the relevant literature.

5. CHAPTER FIVE (CONCLUSION AND RECOMMENDATIONS)

5.1. Introduction

In the previous chapter, the findings of this study were presented and interpreted. In this chapter, the results of this study are discussed and compared to the relevant literature. The chapter is divided into the following sub-sections:

- Introduction
- The socio-demographics of participants
- The knowledge levels of pregnant women on utilizing the antenatal services
- The utilization of prenatal services by pregnant women and determinants of health services utilization
- The study limitations
- Conclusion and recommendations.

5.2. Socio-demographics of women who terminated pregnancies

The current study findings revealed that the majority of women were in the age group 21 - 35 years which concurs with a study conducted in Ethiopia (Tarekegn, Lieberman & Giedraitis, 2014). Majority of the women were unemployed in the current study which differs from the findings of a study conducted in Nigeria where almost a third of the women were unemployed (Ononokpono & Odimegwu, 2014). The current study findings revealed that majority of women had a secondary educational level at 68% which is higher that a study conducted in Uganda by 44% and more than half of the women were married in the Ugandan study which differs from the current study findings (Rutaremwa, Wandera, Jhamba, Akiror & Kiconco, 2015). In a study conducted in Ethiopia most of the pregnant women did not have any formal education and most were either married or lived with a partner (Tarekegn et al., 2014) which differs from the current study findings. The current study findings have revealed that socio-economic disparities in utilization of maternal health services exist which is similar to several studies conducted in Sub-Saharan Africa and India (Banke-Thomas, Banke-Thomas & Ameh, 2017; Dey, Hay, Afroz, Chandurkar, Singh & Dehingia et al., 2018; Iacoella & Tirivayi, 2019). Regarding household economic status, about half one-third of the pregnant women were from poorest economic status as compared to half of the pregnant women in a study conducted in Bangladesh (Yaya, Bishwajit, Ekholuenetale & Shah, 2017).

5.3. The knowledge levels of pregnant women on utilizing the antenatal services

Mass media is critical in disseminating public health information, improving health knowledge and changing health behaviours (Zamawe, Banda & Dube, 2016). In the current study, majority of women got information pertaining to antenatal health care services from televisions which concurs with a study conducted in Swaziland (Tsawe, Moto, Netshivhera, Ralesego, Nyathi & Susuman, 2015). Likewise, access to information in this rural part of Limpopo Province is mainly through mass media such as television, leaflets or newspapers and radio which is similar situation in rural Tanzania (Zawane et al., 2016). The Internet plays a major role for pregnant women in seeking knowledge and for getting in touch with like-minded women. The information is available at all hours and can be accessed anywhere. The information provides the women with a sense of control and confidence but the large amount of information available can also be overwhelming. In the current study, pregnant women were not using internet as a source of information and this could be attributed to the low levels of tertiary education as compared to a study conducted in Sweden in which almost all of the pregnant women in the study used the Internet as a source of information and more than half had a tertiary education qualification (Bjelke, Martinsson, Lendahls & Oscarsson, 2016).

Exposure to mass media provides increased awareness and knowledge, as well as changes in attitudes, social norms and behaviours that may lead to positive public health outcomes (Asp, Pettersson, Sandberg, Kabakyenga & Agardh, 2014). The current study findings revealed that majority of pregnant women who used televisions as source of information for maternal health care majority of them were found to be initiating antenatal care after 12 weeks which is in contrary to a study conducted in southern Ethiopia in which pregnant women who had media access TV/radio, initiated ANC within recommended time twice more likely when compared to those who had not (Geta & Yallew, 2017). In another study conducted in Ethiopia, listening to radio and reading leaflets or newspapers was associated with early initiation of antenatal care visits (Yaya, Bishwajit, Ekholuenetale, Shah, Kadio & Udenigwe, 2017) which concurs with the findings of the current study.

Health communication has contributed to an increase in family planning use through education and mass media as a means to increase health literacy (Kim, Haider, Hancock & Boudreaux, 2019). The current study findings revealed that pregnant women were exposed to some form media such as television, radio, leaflets or newspapers to get information related to maternal health care services which concurs with a study conducted in Nepal (Gautam & Jeong, 2019). Those who were never exposed to any form of media in this study were very few as compared to the study in Nepal (Gautam & Jeong, 2019). In the current study, majority of pregnant women in the current study were aware of the antenatal care services rendered at the clinics and they were aware of the fact that antenatal care services rendered at the clinics could assist in detecting the complications related to pregnancies and these services could reduce the maternal and neonatal morbidity including maternal mortality. This is in contrary to the study findings from Tanzania which reported that one one-third of pregnant women didn't know the complications related to pregnancies (Lilungulu, Matovelo & Gesase, 2016). Antenatal care is an effective tool to reduce both infant and maternal mortality rates (Gupta, Shora, Verma & Jan, 2015).

5.4. The utilization of prenatal services by pregnant women and determinants of health services utilization

Universal access to health care requires service availability and accessibility for those most in need of maternal and child health services. Women often bypass facilities closest to home due to poor quality (Escamilla, Calhoun, Winston & Speizer, 2018). Distance (or travelling time) to health care facilities is one of the major barriers to health care use, more especially in rural South Africa, where health facilities are often located further away from a large number of residents (Tsawe & Susuman, 2014). This situation is similar in the current study wherein most of the pregnant women had to travel between 6 and 10 kilometres to a health facility which is a long distance to seek maternal health care and this can be a barrier to complete use of maternal health care services, especially in rural areas where there is a low socio-economic status among such populations.

The findings of the current study revealed that majority of the pregnant women rated the health care quality at the health facilities as moderate which concurs with

a systematic review which was done in developing countries (Srivastava, Avan, Rajbangshi & Bhattacharyya, 2015). Very few pregnant women in the current study rated the health care quality as inadequate and health care providers are available at the health facilities which differs from the study conducted in Kenya (Banchani & Tenkorang, 2014).

Lack of community involvement implies that most of the public health mass media interventions are externally determined (Zamawe, Banda Dube, 2016) and in the current study, majority of pregnant women reported that the community awareness about health information was moderate. This suggests that community driven mass media interventions are effective in improving uptake of maternal health care services in limited resource settings. Majority of pregnant women had attended their first antenatal care at gestational age of 25 weeks and above while very few attended antenatal visit during the first three months which concurs with the findings from a study conducted in Tanzania (Lilungulu et al., 2016).

Antenatal care service which is among strategies to maintain maternal and foetal wellbeing is strongly recommended to be initiated early during pregnancy. Majority of pregnant women aged 25 and below were commencing antenatal care within the recommended time compared to their counter parts which concurs with a study conducted in North West Ethiopia (Gudayu, Woldeyohannes & Abdo, 2014). The lack of knowledge of pregnant women, barriers of accessing health services were statistically significant associated with the timing of first antenatal bookings for pregnant women which concurs with a study by Hagey et al., (2014) and Gebremeskel et al., (2015).

With regard to the patterns of antenatal care bookings, majority of pregnant women reported that their reasons for booking late in the third trimester (25 weeks and above) were that they were attending bookings per appointment days at 84.8% followed by when having complications. Approximately 86% of pregnant women reported that they did not have a reason for attending first antenatal care bookings late in the third trimester.

The positive attitudes of health care workers in the current study did not influence the first antenatal care bookings as approximately majority of pregnant women booked in the third trimester. This differs with the findings from a study conducted in Papua New Guinea by Andrew et al., (2014) as the attitude of health care workers was a main concern but women were generally satisfied with their care. The lack of knowledge of pregnant women of antenatal care services contributed to the late first antenatal care booking which is also supported by studies by Hagey et al., (2014) and Gebremeskel et al., (2015). Considering the barriers for not accessing health services in the current study, language barrier was the most contributing factors for pregnant women to book late in the third trimester which concurs with study findings by Ali et al., (2018).

In the current study, maternal age, educational level and marital status were significantly associated with utilization of maternal health care services which concurs with a study finding in Nigeria (Ajaero, Odimegwu, Ajaero & Nwachukwu, 2016). The young pregnant women were more likely to plan their pregnancies and more likely to discuss their pregnancies with their partners or spouses. This is supported by findings from a study conducted in in Papua New Guinea by Davis et al., (2018) as some men accompanied their pregnant partners to the antenatal clinic and wait outside, very few men participated in antenatal consultations.

Our study findings demonstrated that child married women were less likely to receive maternity care services than the women who married during their adulthood. This finding is consistent with previous studies conducted in India and elsewhere (Godha, Hotchkiss Gage, 2013; Godha, Gage, Hotchkiss & Cappa, 2016; Paul & Chouhan, 2019). In the current study, pregnant women who were not married were more likely to report that community awareness to health information is adequate within their communities and this concurs with findings from study conducted in Ghana by Adu et al., (2018).

5.5. Limitations of the study

This review has several limitations that need to be considered. One potential limitation of this study could be only quantitative assessment of service utilization which relied on self-reporting from pregnant women. Secondly, the sample size of

the data was limited although we had increased the sample size by including as many years as we can, the basic unit of observation was still a sub-district.

5.6. Conclusion

The findings of this study highlight the need to address the structural socio-economic drivers of maternal health care utilizations in rural areas of Limpopo Province, South Africa. Timely entry to antenatal care was low in the study area. In order to improve the situation, it is important to provide community-based information, education and communication on antenatal care and its right time of commencement. In addition, empowering women and implementing the proclamation designed for the age at marriage should be mandatory up to the local level. Our findings suggested that policies enhancing improved education could benefit health awareness. Poverty elimination and income generation programs among women are also likely to improve awareness about community health clinics in the target population. Special policy attention is required to address the regional variation of awareness about primary health care clinics to improve the uptake of maternal health services; its determinants and the perception of users about these services.

5.7. Recommendations

5.7.1. Policies

These findings suggest the need for targeted interventions for women of child-bearing age to access reproductive health interventions to prevent unintended pregnancies. Community engagement and social awareness could play a very crucial role to help promote maternal health thereby impacting the overall maternal health of these women in the future. The policy-makers should also advocate for prioritizing accessibility and such awareness raising activities targeting underserved communities such as women residing in rural hard to reach areas like Limpopo Province.

5.7.2. Health facilities

Many pregnant women are attending their first antenatal care in the 2nd or 3rd trimester which is not beneficial to the health system. Our findings suggested that policies enhancing improved education could benefit health awareness. The current rate of ANC visits among pregnancy women in the study area are

undoubtedly low because of poor improvement in reproductive health services, individual ignorance and lack community unawareness increase. Currently, antenatal care visits still remain burden in all pregnant women and as well as those who expecting to be pregnant, this need an effort globally as well as in Limpopo Province of South Africa to eliminate the concept of not understanding the important of antenatal care visit in the near future. However, the initiation of the program of antenatal care services at facility level requires good knowledge and awareness of appropriate preventive measures among the general public to ensure positive health behaviour changes and reproductive health seeking habits in both partners.

5.7.3. Research

Antenatal Care use of skilled delivery attendants and postnatal care (PNC) services are key maternal health services that can significantly reduce maternal mortality. Understanding the factors that affect service utilization helps to design appropriate strategies and policies towards improvement of service utilization and thereby reduce maternal mortality. Further studies are needed to investigate factors that affect utilization of maternal health services at a larger scale in rural areas of Limpopo Province.

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ANNEXURES

Annexure 1: Research time frame

GOAL	ACTIVITY	PERIOD OF COMPLETION	RESPONSIBLE PERSON
1.Submit research proposal for ethical clearance.	Complete research proposal, prepare for research proposal presentation scheduled for 12 April 2019.	08-11April 2019	BALOYI MH
2. Pilot the measuring instrument i.e. Questionnaire.	Administer the questionnaire at Makugubjane clinic and later review the questionnaire for corrections and adoption.	2020	BALOYI MH
3. To collect data.	Administer research questionnaire to research participants.	2020	BALOYI MH
4. To analyse data collected, write research findings and discussion chapter as well as recommendation and conclusion section.	To use the program to analyse data collected; do regression analysis; write draft for findings, discussion, recommendations and conclusion chapters.	2020	BALOYI MH
5. Compile the mini-dissertation and submit to supervisors for feedback. Prof-reading of the dissertation and formatting.	To write the research in past tense in a coherent form and send the document to writing centre for editing and IT department for formatting of the document.	2020	BALOYI MH
6. Submit mini-dissertation to the supervisors.		2021	BALOYI MH

Annexure 2: Letter requesting permission to conduct research

<div align="right">

Ms Baloyi Mkateko Happiness

P.O Box 427

Khomanani

0933

07 April 2020

</div>

The Sub-district Manager

Hlogotlou clinic

Dear Sir/ Madam

Permission to conduct research

I (University of Limpopo MPH student) would like to be granted permission to collect data on the following research title: Determinants of maternal health services utilization in rural areas of Sekhukhune district, Limpopo Province.

Data will be collected from all pregnant women from 18-35 years of aged attending Antenatal care at Hlogotlou clinic.

The proposal for the study is attached herewith and it will be submitted to the university research committee for approval and endorsement. I hereby commit myself to observe relevant ethical and legal issues pertaining to performance of research studies.

I hope that my application will receive your expeditious consideration.

Researchers signature……………………………   Date: 07/04/2020

Contact number: 081 4861 292

Annexure 3: Consent form in English

Study Title: Determinants of maternal health services utilization in rural areas of Greater Sekhukhune District of Limpopo Province, South Africa

I have read the aims and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I understand that participation in this study is completely voluntary and that I may withdraw from it at any time and without supplying reasons. This will have no influence on the regular treatment that holds for my condition neither will it influence the care that I receive from my regular doctor.

I know that this study has been approved by the University of Limpopo Research Ethics Committee (TREC) and the Provincial Department of Health Ethics Committee. I am fully aware that the results of this study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby given consent to participate in this study

Name of patient   Signature of patient

Place   Date: Witness

Statement by the Researcher
I provided verbal information regarding this study
I agree to answer any future questions concerning the study as best as I am able
I will adhere to the approved protocol

Name of Researcher: Signature…………   Date: Place:

Annexure 4: Consent form in Sepedi

Hlogothuto: Mabaka ao a hlohleletšago tshumišo ya di tirelo tša maphelo a bomme metse magaeng ya Sekhukhune District, Porofenseng ya Limpopo, Afrika Borwa.

Ke badile maikemišetšo le maikaelelo a thuto ye. Kaba ka fiwa sebaka sa go botšiša dipotšišo. Ka fiwa le nako ye e lekanego go nagana ka thuto ye. Ke kwešiša maikemišetšo le maikaelelo a thuto ye. Ga se ka gapeletšwa go tšea karolo ka mokgwa ofe goba ofe.

Ke kwišiša gore go tšea karolo mothutong ye ke ka boithaopo, e bile nka ikgogela morago nako efe kappa efe. Ntle le go fa mabaka. Se ka se amane le hlahlobo goba kalafo yeo ke ihwetšago gotšwa ngakeng yaka ya ka mehla.

Ke a tseba lego lemoga gore dithutonyakishišo tše di dumeletšwe ke ba lekgotlakomiti la dinyakishisho ka Unibesiting ya Limpopo (TREC), le ba lekgotlakomiti ka kgorong ya tša maphelo profenseng ya Limpopo. Ke tloga ke lemoga le go kwishisha gore dipoelo tša dinyakishisho tše di tlo shomiswa mabaka ao amanago le dithuto tša bo ramahlale ebile di ka šomishiwa go dira dingwalwa. Ke dumelelana le seo, efela g eke thspišwa gore ditaba tša ka di ka se phatlalatšwe.

Ga bjale ke dumela go tšea karolo mo dithutonyakishishong tše.

_____   _____
Leina la mokgathatema   Mosaeno wa mokgathatema
_____   _____   _____
Lefelo   Latšatši   Hlatse

Bohlatse ka monyakishishi

Ke fane ka tshedimošo mabapi le thuto ye.

Ke dumela go araba potšišo ye nngwe le ye nngwe mabapi le thuto ye ka moo nka kgonago ka gona.

Ke dumelelana le go tshepiša go latela tshepidišo yeo e filwego mabapi le thutonyakishisho ye.

Annexure 5: Questionnaire in English

DETERMINANTS OF MATERNAL HEALTH SERVICES UTILIZATION IN HLOGOTLOU AREA AT SEKHUKHUNE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA.

All information herewith provided will be treated confidentially. It is not necessary to indicate your name in this questionnaire.

INSTRUCTIONS

1. Please answer all questions by providing an "X" in the dotted lines corresponding to the chosen alternative or by writing your opinion in the space provided.
2. Please answer all questions as honestly and objectively as possible.
3. Answer according to your own personal opinion and experience.

SECTION A: BACKGROUND CHARACTERISTICS OF ACTUAL UTILIZATION OF MATERNAL HEALTH SERVICES.

Q.No.	Questions and Filters	Category Coding
1.	How old are you?	18-20…………………….....1 21-25.………………………2 26-30.………………………3 31-35.………………………4 36-40.………………………5
2.	Religion.	Christian…………………….1 Other………………………..2
3.	What is the highest level of school you attended?	Illiterate……………………..1 Primary………………………2 Secondary…………………..3 Tertiary………………………4
4.	What is your current marital status?	Single……………………….1 Married………………………2 Divorced…………………….3 Widowed…………………….4
5.	How old were you when you got married?	…………………………years
6.	How many children do you have?	……………………children
7.	Current employment status.	Employed ………………..…1 Temporary jobs……………..2 Self-employed………………3 Unemployed…………………4

8.	Husband's education	Illiterate…………………….1
		Primary……….……………2
		Secondary…..…..…………3
		Tertiary…….………………4
9.	Husband's occupation.	Employed……………………1
		Unemployed…..……………2
		Self-employed…..…..……..3
		Other……….………………4
10.	Indicate average household income.	R 1000,00- 2000,00………..1
		R 3000,00- 4000,00………...2
		R 5000,00- 9000,00………..3
		R 10 000,00-19000,00……..4
		R 20 000,00 & above……….5
11.	Household wealth.	Poorest 1000,00-2000,00….1
		Poorer 3000,00-4000,00…...2
		Middle 5000,00-9000,00…...3
		Richer 10 000,00-19000,00..4
		Richest 20 000,00 &above...5
12.	Do you receive social grant?	Yes…………………………...1
		No………………………….0
13.	Socio-economic status (SES).	Low…………………………...1
		Medium……….……………2
		High……………………….3
14.	How far is the nearest healthcare facility from your home?	Less than 1 km………………1
		1-5 km………….…………...2
		6-10 km……….……………3
		More than 10 km…………….4
15.	How do you travel to this facility?	Walk…………………………1
		Bus……………………………2
		Taxi..…………………………3
		Own Car..……………………4
16.	Quality of care in the facility.	Inadequate…………………..1
		Moderate……….……………2
		Adequate………………….3
17.	Availability of health care providers.	Yes……………………………1
		No………..………………….2

18.	Community awareness to health information.	Inadequate......................1 Moderate........................2 Adequate........................3
19.	Cost to access service.	Affordable.......................1 Not affordable…….................0
20.	Your residential setting.	Urban.............................1 Rural.............................2 Peri-urban........................3
21.	Source of information dissemination pertaining antenatal care.	Television........................1 Radio.............................2 Leaflet...........................3 None..............................4
22.	The timing of initiation of the first antenatal care visit?	Before 12 weeks.................1 After 12 weeks....................2
23.	Was the pregnancy planned?	Yes..............................1 No…..............................0
24.	Was the pregnancy discussed with the partner/spouse?	Yes..............................1 No…..............................0
25.	You first heard of antenatal care through….	Friends...........................1 School............................2 Hospital/ Clinic..................3 Others............................4
26.	Do you know the service rendered at antenatal clinic?	Yes..............................1 No................................0
27.	Antenatal care helps detect complications during pregnancy?	Yes..............................1 No................................0
28.	Antenatal care helps to reduce maternal and neonatal morbidity and mortality?	Yes..............................1 No................................0
29.	Do you attend antenatal care regularly?	Never attended..................1 Sometimes.......................2 Yes..............................3
30.	When did you book antenatal care?	1-12 weeks (first trimester) ...1 13-24 weeks (second trimester) ....2 25-40 weeks (third trimester) 3

31.	Pattern of attendance of antenatal care after bookings.	Appointment days……...…1 When I have complaints…….2 Not sure………..…………..3
32.	Attitude of the health care providers.	Positive………..……………1 Negative…………..…………0
33.	Lack of knowledge about the existing services in antenatal care.	Yes…………….……………1 No…………………………..0
34.	Barrier about accessing the services.	Illiterate…………..…………1 Culture…………..…………..2 Language……………..……3 Religious………..………….4
35.	Women's decision-making power.	Yes…………….……………1 No………….……………...0

SECTION B: ANTENATAL INFORMATION

36.	Where do you attend antenatal care clinics? Why?	Public hospital………...……1 Public clinic……………..…..2 Private hospital/clinic………..3 Both private & public sector..4 Both public hos/clinic………..5
37.	How many times did you receive antenatal care during this pregnancy?	……………………………
38.	Do you understand the importance of antenatal care for pregnant women?	Less important………………1 Medium important…………...2 Highly important……………..3
39.	Do you know the importance of antenatal care of the fetus?	Less important………………1 Medium important…………...2 Highly important……………..3
40.	Number of antenatal care visits of previous pregnancy only if is not the first-time of pregnancy. Why?	Only 1 visit attended….........1 2-3 visits attended…………...2 4-6 visits attended…………...3 >6 visits attended…………...4
41.	Antenatal care follow up is good to monitor mother's and fetus' health?	I agree………………………1 I disagree……………………0

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42.	Who examined you during your antenatal care check-ups?	Nurse…………………………..1 Doctor..……………………....2 Specialist (gynaecologist)… .3
43.	Did you access antenatal care services during all your pregnancies including the current one?	Yes……………………………1 No……………………………..0
44.	Are you always referred to the next level of care in case abnormalities are detected during your visits?	Yes…………………………...1 No……………………….…....0
45.	In your view when should pregnant woman access antenatal care services?	1st Trimester (1-12) weeks.....1 2ndTrimester (13-24) weeks.. 2 3rdTrimester (25-40) weeks…3 Anytime………………………4 Never……………………....…5
46.	How is your attitude towards the antenatal care services?	Positive…………..…………..1 Negative………………….…..0
47.	Where are you planning to deliver your baby?	Home…………………………...1 Clinic..……………………….2 Hospital……..………………3
48.	How many children do you have alive (parity)?	………………………………….
49.	How many pregnancies you had including the current one (gravity)?	………………………………….
50.	Have you ever had abortion/ miscarriages? Why?	Yes……………………………1 No…………………………..2
51.	Any suggestions to improve maternal health service provision to pregnant women.	Answer

THANK YOU FOR YOUR PARTICIPATION

Annexure 6: Questionnaire in Sepedi

MABAKA AO A HLOHLELETSAGO TSHUMIŠO EA DI TIRELO TŠA MAPHELO A BOMME SELETENG SA SEKHUKHUNE PROROFENSENG EA LIMPOPO, AFRICA BORWA.

KAROLO EA MATHOMO: PHAPANTSHO EA BOKAMORAGO BJA NNETE EA TSHUMISO EA TIRELO TSA MAPHELO A BOMMA

Nomoro	Dipotšišo le Mohlotlo	Legoro Molao
1.	O na le mengwaga e me kae?	18-20………………………1 21-25………………………2 26-30………………………3 31-35………………………4 36-40…………………….....5
2.	Bodumedi.	Mokriste……………..………1 Tše dingwe (Tše di itšego)….2
3.	Ke maemo a feng a godimo a sekolong a we o fihlileng ka ona?	Go se tsebe gobala…………1 Praemari…………………...2 Sekontari…………………3 Sekolo sa godimo…………..4
4.	Seemo sa gago sa lenyalo se eme bjang?	Noši…………………………1 Nyetšwe…………………....2 Hladile……………………3 Mohlologadi…………………4
5.	O be ona le mengwaga e mekae ge o nyalwa?	Mengwaga…………………...
6.	O na le bana ba bakae?	Bana………………………….
7.	Seemo sa gago sa mošomo?	Šoma………………………1 Mošomo wa lebakana...........2 Boipereki…………………3 Go se šome………………….4
8.	Thuto ya monna wa gago.	Go se tsebe gobala…………1 Praemari…………………...2 Sekontari…………………3 Sekolo sa godimo…………..4
9.	Mošomo wa monna wa gago.	Šoma………………………1 Go se šome………………....2 Boipereki…………………3 Tše dingwe (Tše di itšego)…4

10.	Šupetša tekanyo ea ditseno tša lapa.	R 1000-00- 2000-00…………1 R 3000-00- 4000-00…………2 R 5000-00- 9000-00…………3 R 10 000-00- 19000-00……..4 R 20 000-00 & Goya godimo..5
11.	Boemo bja lehumo la lapa.	Go tlhaka kudu R 1000-00- 2000-00…………………1 Botlhaki R3000-00- 4000-00..2 Seemo sa magareng R 5000-00- 9000-00……......3 Humile R10 000-00- R 19000-00…………………..4 Humile kudu R 20 000-00- Goya godimo…………………5
12.	O amogela mphiwafela naa?	Ee………………………1 Aowa……………………….2
13.	Seemo sa leago le boiphedišo.	Fase…………………………1 Magareng……………………2 Godimo………………………3
14.	E kaba bokgole bjo bo kakang go tloga mo o dulago go fihla lefelong la maphelo?	Ka tlase ga 1 kilometara……1 1-5 kilometara………………2 6-10 kilometara………………3 Godimo ga 10 kilometara…..4
15.	O sepela bjang goya lefelong le?	Go sepela……………………1 Pese…………………………2 Thekisi………………………3 Sefatanaga sa gago…………4
16.	Khwalithi ea hlokomelo mo lefelong le.	Go se lekane…………………1 Lekanetšego………………...2 Lekanego……………………3
17.	Gobagona ga ba šomi ba tša maphelo.	Ee………………………1 Aowa……………………….2
18.	Golemogega ga tshedimošo ea tša maphelo ka setšhaba.	Go se lekane…………………1 Lekanetšego…………………2 Lekanego……………………3
19.	Theko ea tokelo ea tirelo.	Kgona go lefa………………1 Gose kgone go lefa…………0

20.	Lefelo leo o dulago go lona.	Setoropo…………………….1
		Magaeng……………………2
		Lekeišene……………………3
21.	Mothopo wa go phatlalatša tshedimošo mabapi le sekala sa boimana.	Thelebišene…………………1
		Seyalemoya…………………2
		Letlakala la tshedimošo…….3
		Ga gona le e tee……………4
22.	Peakanyo ea nako ea go thoma sekala sa mathomo?	Pele ga beke tše 12…………1
		Ka morago ga beke tše 12….2
23.	E kaba boimana bjo bo polanetšwe naa?	Ee……………………………1
		Aowa…………………………0
24.	E kaba boimana bjo bo boledišane magareng ga molekane wa gago naa?	Ee……………………………1
		Aowa…………………………0
25.	O thomile gokwa ka tša sekala ka……	Bagwera……………………...1
		Sekolo………………………..2
		Sepetlele/ kliniki………………3
		Tše dingwe (Tše di itšego)….4
26.	E kaba o wa tseba ka tirelo tšeo diabiwago ka kliniki ea sekala sa boimana?	Ee……………………………1
		Aowa…………………………0
27.	Sekala sa boimana se thuša go tšweletša dilo tšeo diraraganego ka nako ea boimana?	Ee……………………………1
		Aowa…………………………0
28.	Sekala sa boimana se thuša go fokotša malwetše le mahu awe a amanago le bomma le bana naa?	Ee……………………………1
		Aowa…………………………0
29.	E kaba o etela sekala sa boimana ka mehla naa?	Ga se ke ka…………………..1
		Ka nako e nngwe……………2
		Ee……………………………3
30.	O thomile neng sekala sa boimana?	Go tloga go beke e 1 go fihla go tše 12…………………………1
		Beke tše 13-24………………2
		Beke tše 25-40………………3
31.	E kaba o etela bjang sekaleng sa boimana ka morago ga ge o thomile?	Ka matšatši awe a beakantšwego………………..1
		Ge kena le dingongorego…..2
		A ke na bonnete…………….3
32.	Maitshwaro a ba šomi ba maphelo.	Maleba………………………1
		Kganetšo……………………0
33.	Go hloka tsebo ka ditirelo tšeo dilego gona tša sekala sa boimana.	Ee……………………………1
		Aowa…………………………0

34.	Dilo tšeo di thibelago hwetšagalo ea di tirelo.	Go se tsebe gobala………….1 Setšo…………………………2 Leleme………………………3 Sedumedi……………………4
35.	Maatla a basadi a go tšea sephetho.	Ee………………………………1 Aowa…………………………2

KAROLO EA BOBEDI: TSHEDIMOSO EA SEKALA SA BOIMANA

36.	O etela kae sekala sa gago sa boimana? Go baneng?	Sepetlele sa mmušo…………1 Kliniki ea mmušo…………….2 Sepetlele goba kliniki ea poraebete……………..……3 Lekala la poraebete goba mmušo…………………..……4 Sepetlele goba kliniki ea mmušo ka bobedi…..………..5
37.	E kaba o humane ditirelo tša sekala sa boimana ga kae mompeng e?	………………………………….
38.	E kaba o a kwišiša bohlokwa bja sekala sa boimana mo baimaneng?	Bohlokwa bjo bonnyane……..1 Bohlokwa bja magareng……..2 Bohlokwa bjo bo golo……….3
39.	E kaba o tseba bohlokwa bja sekala sa boimana mo ngwaneng?	Bohlokwa bjo bonnyane……..1 Bohlokwa bja magareng……..2 Bohlokwa bjo bo golo……….3
40.	Nomoro ea diketelo tšeo difetilego tša sekala sa boimana, ge fela e se mpa ea mathomo.	Ke etetše ga tee (1) fela……...1 Ke etetše ga bedi (2)- go ya ga raro (3)…………………………2 Ke etetše ga nne (4)- go ya ga tshelela (6)……………………3 Ke etetše go fitiša ga tshelela (6)………………………………4
41.	Sekala sa boimana se bohlokwa go lekola maemo a maphelo a mma le ngwana?	Kea dumela………………..…1 Kea gana………………………0
42.	E kaba o hlahlobile ke mang ka nako ea gago ea sekala sa boimana?	Mooki………………………...1 Ngaka……….....…………....2 Ngaka ea golebana le baimana fela……………………………3

43.	O kile wa kgona go fihlelela ditirelo tša sekala sa boimana go boimaneng bja gago ka moka go fihlela le bjo?	Ee……………………………1 Aowa…………………………0
44.	E kaba o phela o romelwa go lefapha le lengwe la maphelo ge go hwetšagetšwe tšeo e sego tša maleba ka nako ea gago ea ketelo?	Ee……………………………..1 Aowa…………………………0
45.	Go ea ka kgopolo ea gago, o nagana gore mosadi wa moimana a ka hwetša ditirelo tša sekala sa boimana neng?	Go tloga go beke e 1 go fihla go tše 12…………………………1 Beke tše 13-24………………2 Beke tše 25-40………………3 Neng kapa neng……………..4 Ga a swanela…………………5
46.	Maitshwaro a gago a bjang mabapi le ditirelo tša sekala sa boimana?	Maleba…………………………1 Kganetšo………………………0
47.	E kaba o e kemešeditše go ea go belega ngwana wa gago kae?	Gae……………………………1 Kliniki…………………………2 Sepetlele………………………3
48.	O na le bana ba bakae bao ba phelago?	……………………………….
49.	O emile ga kae go akaretša le mpa e?	……………………………….
50.	O kile wa thuba mpa goba wa fetela ke ngwana? Go baneng?	Ee……………………………1 Aowa…………………………0
51.	Tšhišinyo efe kapa efe ea go kaonafatša di tirelo tša maphelo a bomma le ditokišetše go basadi ba baimana.	Karabo

KELEBOGA KAROLO EA GAGO

Annexure 7: Information leaflet in English

I am a Master of Public Health Student from the University of Limpopo, Baloyi Mkateko Happiness and I am busy conducting a research study to find out the determinants of maternal health services utilization in Hlogotlou area at Sekhukhune district of Limpopo Province, South Africa.

The researcher wishes to find the underlying factors behind low utilization of maternal health care services in Hlogotlou area, Limpopo Province.

The researcher requests your participation in this research. Information will be collected using questionnaire. There will be no direct harm and rewards to you and you can withdraw from the study at any time.

Thank you for considering this request. Please find the consent form attached for you to complete. Ethical approval has been obtained from the Turfloop Research and Ethic Committee of the University of Limpopo.

Please forward any question or concern you may have regarding this research to the contact details provided below.

Student researcher: Baloyi M.H   **Contact details:** 081 4861 292

Email address: mkateko.mhbaloyi.happiness2@gmail.com

Supervisor: Maimela E   **Contact details:** 084 686 5686

Annexure 8: Information leaflet in Sepedi

Kena moithuti ea Yunibesithi ea Limpopo, ea ithutela tša mastara ea tša maphelo a pubiliki, kelego Baloyi Mkateko Happiness. Ke šomana lego hlahla thuto ea go nyakišiša go nyakolla mabaka ao a hlohleletšago tshumišo ea di tirelo tša maphelo a bomme seleteng sa Sekhukhune Profenseng ea Limpopo, Africa Borwa.

Monyakišiši o duma go humana mabaka awe arilego mabapi le tšomišo ea gase ea tirelo tša maphelo ea bomme, lefelong la Hlogotlou, Profenseng ea Limpopo.

Monyakišiši o kgopela go tšea karolo ea lena go nyakišišo e. Tshedimošo ethlo kgoboketšwa ka go šomisa lenaneopotšišo. Goka sebe le gobalo e lebantšhitšego le moputso go wena, le gona o ka e kgogela morago gotšwa go thutong e kanako engwe le engwe.

Ke leboga go amogelwa kgopelo e. Ka kgopelo humana foromo ea tumello ewe e kgomagantšwego gore o kgone go etlatša. Tumello ea go tšwela pele ka nyakišišo e hwetšagetšwe go Turfloop Research and Ethic Committee (TREC) Yunibesithi ea Limpopo.

Rumela dipotšišo tšeo lenago le tšeo mabapi le nyakišišo e, go bathu ba latelago:

Moithuti monyakišiši: Baloyi M.H   **Nomboro ea mogala**: 081 4861 292

Aterese ea email: mkateko.mhbaloyi.happiness2@gmail.com

Molaodi: Maimela E   **Nomboro ea mogala**: 084 686 5686

Annexure 9: Approval from Turfloop Research Ethics Committee (TREC)

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE
ETHICS CLEARANCE CERTIFICATE

MEETING: 24 April 2020

PROJECT NUMBER: TREC/100/2020: PG

PROJECT:

Title:	Determinants of Maternal Health Services Utilization in Hlogotlou Areas at Sekhukhune District of Limpopo Province, South Africa
Researcher:	MH Baloyi
Supervisor:	Dr E Maimela
Co-Supervisor/s:	Dr TS Ntuli
School:	Health Care Sciences
Degree:	Master of Public Health

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

Note:

i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.

ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.

iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

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Annexure 10: Approval from Limpopo Department of Health

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Ref	:	LP-2020-06-011
Enquires	:	K. Letseparela
Tel	:	015-293 6028
Email	:	Kurhula.Hlomane@dhsd.limpopo.gov.za

Baloyi Mkateko Happiness

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Determinants of material health services utilization in Hlogotlou areas at Sekhukhune District of Limpopo Province, South Africa

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
   a. Present this letter of permission to the institution supervisor's a week before the study is conducted.
   b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
   c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   e. The approval is only valid for a 1-year period.
   f. If the proposal has been amended, a new approval should be sought from the Department of Health
   g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated

Head of Department   24/07/2090
                                                        Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: http/www.limpopo.gov.za

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Annexure 11: Evidence of language editing

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Date: 05 February 2021

To Whom it May Concern

I hereby confirm that I have proof-read the document entitled: "Determinants of maternal health services utilization in Hlogotlou area at Sekhukhune district of Limpopo Province, South Africa" authored by Baloyi Mkateko Happines, and have suggested a number of changes which the student may, or may not, accept, at her discretion and the supervisor.

Each of us has our own unique voice as far as both spoken and written language is concerned. In my role as proof-reader I try not to let my own "written voice" overshadow the voice of the author, while at the same time attempting to ensure a readable document.

Please refer any queries to me.

Andrew Scholtz