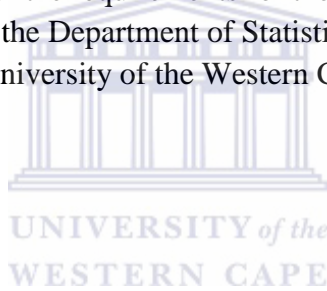# Utilization of health care services and maternal education in South Africa

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A thesis submitted in fulfilment of the requirements for the degree of Master of Philosophy in Population Studies, in the Department of Statistics & Population Studies
University of the Western Cape

UNIVERSITY *of the*
WESTERN CAPE

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November 2014

ABSTRACT

The importance of maternal health care services cannot be stressed enough. Maternal health services are important in reducing pregnancy-related complications as well as maternal and infant deaths. This study was concerned with investigating the relationship between maternal education and maternal health care utilization. Furthermore, the study aimed to investigate the rates of maternal health care use, the reasons for non-use of maternal health services, as well as the determinants of maternal health care use. Primary data was used from selected areas (Tsolo, Qumbu and Mqanduli), which fall within the O.R. Tambo district in the Eastern Cape Province. Simple random sampling was used (with a structured questionnaire) to study maternal health care use among the sampled women. To analyse this data, univariate, bivariate, and multivariate techniques were employed. The results indicated that maternal education was not statistically significant with antenatal and postnatal services, but the percentages were important in explaining the use of maternal health care services in relation to maternal education. Women with higher levels of education reported higher rates of antenatal and delivery care utilization, while those with lower levels of education reported higher rates of postnatal care use. Access factors, such as transport, payment and distance to health facilities, also played an important role in the use of maternal health care services. It was recommended that the Department of Health implement mobile clinics and centralise health care facilities as this will bring essential health services closer to the communities. Women in the study area also need to be educated about the importance of these services, more particularly pertaining to postnatal care.

Keywords: Maternal health care; Health facilities; Primary health care; Delivery care; Antenatal care; Postnatal care; Millennium development goals; O.R. Tambo district; Eastern Cape

DECLARATION

I hereby declare that *Utilization of health care services and maternal education in South Africa* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Mluleki Tsawe   **November 2014**

Signed: _____

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DEDICATION

I dedicate this work to my family: my mother (Veronica); my father (Malibongwe); my sister (Kelly); and my brothers (Thamsanqa and Vusumzi) – God bless you all. And to all my friends who encouraged me to study further – thank you.

ACKNOWLEDGEMENTS

ETHICAL CONSIDERATION

The information contained in this study was obtained from primary research participants from the O.R. Tambo district, Eastern Cape. A number of steps were taken to ensure that the study followed the proper procedures in the collection of the information. The researcher, together with the enumerators, verbally explained the focus of the study and its aims, and also explained the importance of the study. Ethical considerations (such as anonymity, confidentiality, as well as informed consent) were also explained. A consent form was read and explained to the participants, and was also given to them before they agreed to participate in the study. The participants were further informed that their details were not going to be made available to anyone else – their anonymity was thus protected. The ethical statement is that there is no way to link the responses to the participants, hence the study aimed for complete anonymity. The procedures and consent process were reviewed by the supervisor and the Senate Higher Degrees (SHD) via the Faculty's Post Graduate Committee, at the University of the Western Cape. In accordance with the protocol, a comprehensive informed consent process was followed and no names or identifying information were recorded. Eligible respondents who provided verbal consent to participate were interviewed. Further, verbal permission was also obtained from the ward councillors within the respective areas. The data sampling technique and data collection processes are explained in chapter three.

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ACRONYMS

AIDS   Acquired Immune Deficiency Syndrome

CARMMA   Accelerated Reduction of Maternal Mortality in Africa

HIV   Human Immunodeficiency Virus

MDG   Millennium Development Goal

MNCWH   Strategic Plan for Maternal, Newborn, Child and Women's Health

PHC   Primary Health Care

SHD   Senate Higher Degrees

SPSS   Statistical Package for the Social Sciences

TBA   Traditional Birth Attendants

UNESCO   United Nations Educational, Scientific and Cultural Organization

UNFPA   United Nations Population Fund

WHO   World Health Organization

Chapter I

Introduction

1.1. Introduction

The thesis looks at factors influencing maternal health care utilization in three selected areas (Tsolo, Qumbu and Mqanduli) of the O.R. Tambo district, Eastern Cape. The thesis particularly examines the influence of maternal education on the use of maternal health care services. Studies have found that maternal education positively influences the use of maternal health services (Babalola and Fatusi, 2009). The more educated a women is, the more likely she will use maternal health care services. More on this will be further discussed in Chapter 2. This chapter introduces the context of the health care system in South Africa, as well as the problem statement, aims, research questions, and the significance of the study.

1.2. Health Care: South African Context

In South Africa, the government implemented Primary Health Care (PHC) as an initiative aimed at providing basic health care within the public health sector. This health care system is aimed at providing health care services to many people who cannot afford the private health sector (Tanser *et al*, 2006; Nteta *et al*, 2010; Naledi *et al*, 2011). Within South Africa, primary health care faces many challenges – with regards to 'management', health 'coverage', 'access' to health care, and health care utilization (Tanser *et al*, 2006; Nteta *et al*, 2010; Naledi *et al*, 2011). Moreover, some health care facilities are not adequately equipped to handle the health care needs of the population (especially in rural areas) and some of these facilities do not provide the health services that are required of them (Beksinska *et al*, 2006; Myer and Harrison, 2003). Most of the challenges are attributed to the apartheid regime, which is argued to have laid the backdrop for the 'failing' and 'inadequate' primary health care system (Kautzky and Tollman, 2008).

The health care system in South Africa is made up of the public sector and the private sector. The public sector is the health care system that is financed mainly through government

initiatives and provided free of charge to citizens who cannot afford health services – this system is also known as the primary health care system. The private sector, on the other hand, is mostly utilized by those who are well-off and people have to have a medical aid (or related schemes) in order to pay for the health services they receive in such private institutions. These two health sectors show the inequalities that are apparent in this country's health system; whereby the private sector has most of its facilities running in order, and the public sector is struggling to make ends meet. This chapter introduces some of the factors that are linked to the usage (and lack thereof) of the maternal health services in South Africa.

The primary health care sector is often surrounded by much controversy when it comes to the availability of health resources, especially in rural areas. Peltzer *et al,* (2005) notes that in South Africa, health resources are unequally 'distributed among rural and urban areas' and this includes the unequal distribution of health facilities. This uneven distribution presents problems when it comes to health care use, in both urban and rural areas. Availability of health care facilities and accessibility of these facilities are some of the determinants of health care use in both rural and urban areas – this is even more so for most of the rural areas of South Africa (Ngwena, 2000; Munsur *et al*, 2010; Mattson, 2010).

There are still rural communities who are completely shut to the outside world. These societies have no access to the technological devices that make it necessary to have access to health care information. Even with information being available, many people do not use the health services, and this can be attributed to the illiteracy (as well as other factors) of the people in many societies throughout South Africa. Some would argue that the current health system is failing many people especially those living in rural areas. In most cases, the health services are inaccessible due to the fact that the health facilities are located far from the people who are meant to have access to such services. Access to maternal health services has always been a major problem for rural communities around South Africa; Moreover, people had to (and in some communities they still do) travel long distances in order to access health services, whereby barriers such as the costs of services, lack and cost of transportation and long waiting times at the health facilities play a role in whether people in rural areas make use of the maternal (and other) health services that are meant to benefit them (Tsoka *et al*, 2003).

Due to many factors such as lack to information and other factors that result in women not utilizing the available health services, many women die due to complications related to pregnancy, and other maternal health problems. In some rural areas, it is still practice for women give birth at home rather than going to the clinics or hospitals. This practice is driven by factors, such as cultural norms and beliefs. Apart from lack of knowledge and illiteracy, there are many other factors that cause Black African women to not seek maternal health services from the available health facilities, especially those from rural areas who still hold strong traditional beliefs and customs. In rural areas, such as those in the Limpopo province and the Eastern Cape province, women tend to delay the use of formal health services (such as hospitals and clinics) and thus prefer to make use of traditional birth attendants (TBAs) as substitutes for the type of care they receive in hospitals and clinics where they are usually met with unfriendliness by the staff (Ngomane *et al*, 2010; Peltzer and Henda, 2006). Traditional birth attendants (no matter how skilled they are) pose risks for both the mother and unborn child, thus increase the risk for maternal mortality (Ebuehi and Akintujoye, 2012).

Maternal mortality is one of the biggest challenges to many developing countries. South Africa as well as many other countries within sub-Saharan Africa battle with the fight against high maternal mortality ratios. It is estimated that over half-a-million women that around the world die due to childbirth and pregnancy-related causes every year, and two-hundred-and-fifty-thousands of these maternal deaths occur in sub-Saharan Africa (Nour, 2008; Alvarez *et al*, 2009; Silal *et al*, 2012). Improving maternal health is one of the Millennium Development Goals (MDG5), which is to be realised by 2015.

1.2.1. Maternal Health Care Policies

South Africa has implemented some policies to reduce maternal mortality. These policies are translated into programmes that the South African Department of Health has adopted in order to move closer to the 2015 MDG5 (of reducing maternal mortality by at least 75%). An example of such programme is the adoption of the UNFPA's Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA) by the department of health, as a strategy for reducing maternal mortality in South Africa. Another strategy adopted by the department of health as means of reducing the country's maternal mortality is the Strategic Plan for Maternal, Newborn, Child and Women's Health (MNCWH). The objective of the

MNCWH is to reduce the maternal mortality ratio by at least 10% by 2016, and to ensure that all women have access to reproductive health services (Cadegan *et al*, 2012).

1.3. Problem Statement

Utilization of maternal health care services reduces the risks of maternal deaths (Olayinka *et al*, 2014). It is important to study and understand factors that contribute to maternal deaths as means of reducing the maternal mortality ratio within developing countries, particularly in rural areas. Women's equality and empowerment (in relation to men) is central to many debates when it comes to general issues affecting women throughout the world today. Education is seen as one of the driving forces central to the empowerment of women, especially women living in rural areas. In many instances, it is argued that the illiteracy of women (both in rural and urban areas) has negative effects on their use of health care services. In South Africa, there is not much research done to study the relationship between maternal education and the use of health care services. Moreover, the available health care services and health care facilities are not easily accessible to many people, especially in rural areas. In rural areas, some hospitals and clinics are not easily accessible to most and getting to such institutions involves travelling (and paying taxi's which are usually unaffordable for most). Therefore, it is important to study factors associated with use and no-use of maternal healthcare services in rural areas to inform policy-makers about the current situations.

1.4. Aims

The specific aim of this study is to:

- Investigate whether there is a relationship between maternal education and utilization of maternal health care services in the study area.

The study also aims to:

- Investigate the rates of maternal health care utilization and the reasons for non-use of maternal health care services.

- Examine the factors (*predisposing* and *enabling*) that determine the utilization of maternal health care services.

1.5. Research Question

This study also aims to answer the following question:

- What are the socio-economic and demographic determinants of maternal health care use in the study areas?

1.6. Significance of the study

There is a growing need to evaluate maternal health care use by women of reproductive age in South Africa, particularly at district and municipal levels, in order to reduce the country's maternal mortality ratio. Looking only at the national level makes things seem '*glamorous*' whereas when looking deeper at district and municipal level, the results are quite different from the national ones. Therefore, the study is extremely significant for monitoring and evaluation purposes, as it is necessary to study the rates and determinants of health care use by women of reproductive age (15-49 years) in rural areas. There is also a need to understand why some of the women are not making use of the available maternal health services. This information is essential for policy implementation, programme evaluations, as well as evaluating the country's progress to achieving millennium development goal five (improving maternal health).

1.7. Conclusion

This chapter has brought into context the research topic through bringing into context the South African health care system, as well as some policies that have been implemented to deal with the country's maternal mortality ratio and improve maternal health. Moreover, the chapter has outlined the importance of studying maternal health care utilization in the rural context.

Chapter II

Literature review

2.1. Introduction

It is important to study the trends in maternal health care usage in order to determine where resources are lacking and where emphasis regarding needs to be made provision and accessibility of these services. Moreover, studying maternal health care utilization is necessary to promote and improve policies relating to maternal health care (as well as strategies that will ensure that South Africa reaches its Millennium Development Goal targets – even if this happens after the targeted year of 2015). The motive should not only be about reaching the millennium development goal targets but should be about ensuring equality across all population groups in terms of their socio-demographic standing – and thus the focus should also be on the provision of equitable health services across the nine provinces (in both urban and rural areas). This chapter outlines the background context of the South African health care system. It also highlights general factors which affect maternal health care services and in particular, those factors which influence the use of maternal health care services, looking at both the international and African contexts.

2.2. Determinants and Barriers of Maternal Health Care Utilization

There are certain determinants which influence the use (as well as non-use) of maternal health care use. Outlining these determinants of maternal health care utilization can help the government as well as policy-makers to find strategies that will eradicate these barriers. South Africa is a country where there are subtle (and most often blatant) hierarchies between the different population groups in terms of their socio-economic status and geographical location. For example, people living in rural areas have a different socio-economic status when compared to those living in urban areas. Health care provision is often unequally distributed between rural and urban areas, where the most up-to-date resources tend to favour the urban areas as compared to rural areas (Peltzer *et al*, 2005). This unequal distribution tends to bring

about certain challenges regarding access to maternal health services, especially for those in rural areas.
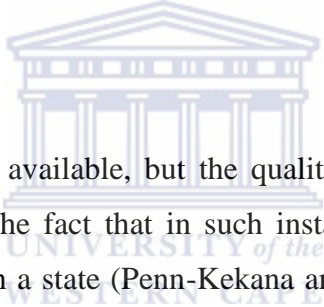
It is also noted that generally, women in rural areas are less likely to use maternal health services as compared to those living in urban areas (Dagne, 2010) – this is often due to accessibility and affordability constraints. In rural areas, women have to travel long distances, and they have to wait in long queues before being assisted by staff which is most often disrespectful towards the patients (Ensor and Cooper, 2004; Harris *et al*, 2011; Silal *et al*, 2012). In addition, these factors also contribute to other impediments such as maternal mortality – whereby pregnant women can face many complications after having to travel long distances to get to health facilities (Silal *et al*, 2012). A study which examined the barriers of maternal health service utilization in rural Mali found that transportation and distance barriers influenced the use of maternal health services by rural women (Gage, 2007).

Certain authors have pointed out various factors which inhibit full utilization of maternal (and general) health care; these factors include affordability, availability (particularly, accessibility) and acceptability barriers to maternal health care use (Myer and Harrison, 2003; Peltzer *et al*, 2005; Beksinska *et al*, 2006; Munsur *et al*, 2010; Mattson, 2010; Harris *et al*, 2011). Availability of health service facilities and accessibility of maternal health services are some of the determinants of health use in both rural and urban areas – this is even more so for most of the rural areas of South Africa (Ngwena, 2000; Munsur *et al*, 2010; Mattson, 2010). Furthermore, the poor and inadequate health system in South Africa presents many challenges when it comes to prospects of achieving the health-related (as well as other) millennium development goals (Naledi *et al*, 2011).

Even with many strategies being implemented by the South African government, it seems as if people still do not fully utilize the health services available to them – as in the case of rural areas. Most women, especially in rural areas cannot afford the transportation which takes them to health facilities; as such they tend to delay the use of health care services (Mattson, 2010; Harris *et al*, 2011). In such instances, women's socio-economic status can be seen as an influence in the frequency with which they use maternal health services. Even though the constitution recognises health care services accessibility as one of the most important socio-

economic rights, there are still some rural areas that still do not have access to these much-needed services (Ngwena, 2000).

Besides rural-urban inequalities in maternal health service provision and utilization, it is also worth noting that the quality of care also influences the use of such services. A study by Silal *et al*, (2012) found that the relationship between patients and health care providers is an important determinant of maternal health care usage. If women are treated badly when attending health institutions for maternal health care services, then they'll be less inclined to go back to such institutions. Quality of care also extends beyond the patient-provider relationships, and relates to the services being rendered. Penn-Kekana and Blaauw (2002), note that quality of care can be seen in terms of technical and human quality aspects that play a role in maternal health services. Both these aspects of quality of care have very serious consequences with regards to whether pregnant women make use of maternal health care services.

The facilities and staff are often available, but the quality of the services offered is often substandard, and this speaks to the fact that in such instances, people tend to not see the reason facilities which are in such a state (Penn-Kekana and Blaauw, 2002). For instance, if the health-care center and the staff at that health center are proven to show poor quality of care towards patients, then that will make such patients less inclined to use the services of such health-care center. A study by Silal *et al*, (2012) found that the attitudes of staff towards patients (for instance, shouting at patients) and just showing an uncaring attitude impeded access, use and quality of care. Even though the government is working hard and has made progress in ensuring that women make use of maternal health services, this progress might become immobile if things do not change with regards to the quality of care in most South African health care institutions.

The rural-urban factor is but one of the demographic determinants of maternal health services utilization. Various studies have noted that there are certain socio-demographic factors which have an influence on maternal health care utilization. Among the socio-demographic factors determining the use of maternal health services, studies have noted that distance barriers, socioeconomic status and access to services, birth order, parity, age of women, and ethnicity

are all demographic and socio-economic determinants of maternal health (Celik and Hotchkiss, 2000; Chakraborty *et al*, 2003; Gage, 2007; Babalola and Fatusi, 2009; Dagne, 2010; Chimankar and Sahoo, 2011; van der Hoeven *et al*, 2012). With regards to age and parity, a study conducted in Ethiopia found that women who are within the 35-49 year age group are less likely to use maternal health services than those women younger than 35 years – which is something that could be explained by the fact that older women who have given birth before tend to believe that they are more experienced to handle any pregnancy-related complications and thus they do not need to subject themselves to maternal health services (Birmeta *et al*, 2013).

As noted earlier, distance is one of the greatest barriers to maternal health services utilization, more especially in rural areas. Generally, in such areas, health care facilities tend to be far from the people (due to dispersed rural populations and villages, as in the case of South Africa), as such, people find it difficult to access health care facilities. In addition to the determinants stated above, several authors have pointed out that maternal education is one of the greatest determinants of maternal of maternal health care utilization (Tann *et al*, 2007; Ahmed *et al*, 2010; Regassa, 2011; Arthur, 2012; Ergano *et al*, 2012). The link between maternal education and maternal health care utilization will be explained in great detail in the section that follows.

At this point, it should be noted that the government has made some great strides in addressing these conditions, and there is still more that can be done. There are certain programmes that can be proposed to address the factors which inhibit full utilization of maternal health care. For the country to realise (or even move closer to) its millennium development goal of improving maternal health, there needs to be a holistic way of addressing these barriers, especially that of health services accessibility (Silal *et al*, 2012). In order to achieve this, more should be done in terms of universal health services delivery – whereby health services will become centralized for those communities (women) who have to travel long distances to get to much-needed maternal health services (Harris *et al*, 2011).

2.3. Linking Maternal Education and Maternal Health Care

There have not been many studies conducted in South Africa to explicitly research the role played by women's educational attainment on the use of maternal health care services. Although some researchers have paid more attention to other demographic and socio-demographic aspects of maternal health care use, there is little known with regard to the influence of maternal education on maternal health care use. However, a study by Phillips (2002) found a link between maternal education and the use of maternal health services in South Africa, though it was only limited to the black population rather than the whole population of women within the reproductive ages (15-49 years). Apart from that, education plays an important role in imparting knowledge onto many people. In some developing countries, many women are not educated and hence, they do not utilize the maternal health services available to them.

Education is a vital demographic factor and it has the potential to improve one's social status, as well as improve many other socio-demographic factors. Education is an important human right; it is links well with all other human rights and it is important when it comes to making good choices that affect one's life as it promotes individual autonomy (UNESCO, 2000; Babalola and Fatusi, 2009). Therefore, education provides women with the necessary knowledge as well as skills to claim and seek adequate health care (Celik and Hotchkiss, 2000; McAlister and Baskett, 2006; Babalola and Fatusi, 2009). Education has been found to be positively associated with the use of general health care services (Babalola and Fatusi, 2009). It is also argued that most educated women tend to seek modern medical health care (or treatment) whilst those with (little or) no education tend to stick to their traditional (belief) systems (Mugisha *et al*, 2004). Therefore, education plays an essential role in health, health use, and health-related outcomes (Bradshaw, 2008).

Furthermore, education is an important indicator of one's social position and is very essential when it comes to health care use. Maternal education is associated with care-seeking behaviours for maternal health services (Ahmed *et al*, 2010). Various studies have found that there is a positive association between maternal education the utilization of maternal health care services (Elo, 1992; Govindasamy and Ramesh, 1997; Celik and Hotchkiss, 2000; Phillips, 2002; Nisar and White, 2003; Babalola and Fatusi, 2009; Ahmed *et al*, 2010; Dagne,

2010; Karlsen *et al*, 2011; Ergano *et al*, 2012). The more educated the woman is, the more likely she will use the available maternal health services (Saxena *et al*, 2013). Education increases the chances of the mother being able to gain from the public health services than other women with no education (Babalola and Fatusi, 2009). Better basic education is linked with enhanced usage of much needed health services (Ensor and Cooper, 2004). Educated women are not often sceptical of the healthcare services provided through the various health institutions in their countries (Chimankar and Sahoo, 2011).

Studies show that a woman's educational attainment influences the use of maternal health services − such as professional delivery care (offered by skilled personnel), prenatal care, antenatal care, as well as the more modern methods of contraception (Govindasamy and Ramesh, 1997; Phillips, 2002; Munsur *et al*, 2010; Dagne, 2010; Chimankar and Sahoo, 2011; Ergano *et al*, 2012; Saxena *et al*, 2013). Maternal education is therefore, a catalyst that has a central role in the use of maternal health services. This suggests that educated women are more likely to use maternal health services (such as choosing professional delivery care rather than opt for home delivery) than their counterparts who have (little, or) no formal education (Celik and Hotchkiss, 2000; Babalola and Fatusi, 2009); this means that, women with no education tend to use maternal health care services the least (Elo, 1992).

Women with higher levels of education − especially those in urban areas − utilize maternal services more than those in rural areas, who often have lower levels of education; moreover, when maternal education increases, then the use of maternal care services (such as antenatal care, delivery care, and postnatal care) also increase (Chimankar and Sahoo, 2011). The better use of maternal health care services by women with higher levels of education could be explained by that educated women are better able to comprehend health-related messages that are presented to them via the mass media, thus they are better equipped with information about the available health services. A study on factors influencing the use of maternal health care services confirms that, "a higher proportion of women who were exposed to mass media used complete antenatal services compared to those who were not exposed" (Chimankar and Sahoo, 2011: 212).

Apart from positively influencing the use of maternal health services, maternal education also has an effect on maternal mortality; as a result, plays a role in the achievement of the fifth millennium development goal (Phillips, 2002; Hogan *et al*, 2010; Karlsen *et al*, 2011). The illiteracy levels among most women especially those in rural areas, is a factor in the lack of maternal health service utilization. This is due to the fact that most (rural) women who are uneducated and have low literacy levels tend to not use the maternal health services that are required of them (Koblinsky *et al*, 2008). Investing in maternal education will improve the quality of life and will have a big impact in the reduction of maternal mortality as well as in the achievement of the fifth millennium development goal– because education is a powerful tool that can enhance the knowledge of many women and thus aid in the use of maternal health care services (McAlister and Baskett, 2006; Dagne, 2010; Munsur *et al*, 2010). Therefore, focusing on maternal education, especially in developing countries can be a key strategy in reducing maternal mortality and in improving maternal health (MDG 5). In planning for the reduction of maternal mortality, attention should be given to socio-economic and socio-demographic determinants of health as this will have an effect in improving maternal health (Karlsen *et al*, 2011).
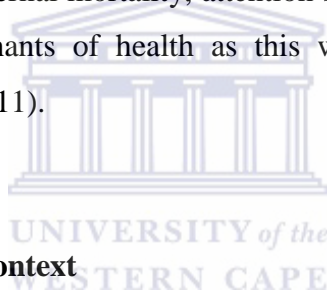
2.4. Maternal Health Care in Context

Maternal health is defined as the woman's health throughout her pregnancy up to child-birth and beyond (Moran and Moodley, 2012). Studying maternal health services in developing countries is essential as it informs policy-makers and the government about programs and interventions which can be used to reduce maternal and new-born mortality as well as generally improving maternal-related health outcomes (Graner *et al*, 2010; Wang *et al*, 2011; Sathiya Susuman, 2012). Women's health is a global priority and many countries have initiated strategies and programmes as means of producing the best indicators for maternal health and overall health care utilization. What follows is an overview of the three dimensions of maternal health care (antenatal care, delivery care, and postnatal care), as well as that of family planning and reproductive health

2.4.1. Antenatal Care Utilization

International perspectives

The utilization of maternal health services is generally regarded as a health priority. Antenatal care usage offers great benefits for many pregnant women. As such, the need to evaluate and monitor use of antenatal services cannot be stressed enough. It has been noted that undergoing complete antenatal check-ups promotes child survival and decreases the risk of maternal mortality among pregnant women (Regassa, 2011; Sathiya Susuman, 2012; Pell *et al*, 2013). This is because pregnant women, more especially those who have never given birth before, are given important skills or mechanisms that will enable them cope with challenges that arise during their pregnancy. But even though antenatal services might be made available, utilization of such services is not always guaranteed. A study in rural Vietnam, found that among the reasons given for non-use of antenatal services were economic constraints, lack of time, and also the fact that women often felt well during pregnancy (Graner *et al*, 2010). If women do not feel sick or have complications during pregnancy, then they tend to see no need in going to the health care facilities for check-ups.

Various factors that influence the use of antennal health services have been documented. The socio-demographic determinants of antenatal care utilization include: cultural beliefs and ideas about pregnancy, parity, age, maternal education, husband's education, marital status, availability of antenatal services, pregnant women's interactions with health care staff, poor quality of care, cost of services (as well as those incurred for transportation to health facilities), socio-economic status, and media exposure (Ibnouf *et al*, 2007; Simkhada *et al*, 2008; Tann *et al*, 2007; Halim *et al*, 2011; Regassa, 2011; Arthur, 2012; Gross, 2012). All these factors influence antenatal care use in different ways.

With regards to parity, it is noted that older women who have given birth before tend to see no need to go for antenatal check-ups because they believe that they have more experience of handling any complication that may arise during their pregnancy as such they tend to use antenatal care services less than those who have never given birth before (Simkhada *et al*, 2008; Regassa, 2011; Arthur, 2012). There is a general saying which goes like, '*been through one, been through all*'. Pregnant women's relations with healthcare personnel can result in a

lack or decreased use of antenatal services (Pell *et al*, 2013). For instance, those women who have had bad experiences with health care personnel will tend to decrease their visits to health care facilities in order to avoid those health care personnel. In addition, full utilization of antenatal services has a positive influence on the utilization of other maternal health care services, such as delivery care and postnatal care. A study among tribal women in India, found that those who went for full antenatal check-ups were about 3 times more likely to give birth in a medical institution and were more likely to go for postnatal care than those who did not go for any antennal check-up (Sathiya Susuman, 2012).

The World Health Organization (WHO) recommends that women have at least four antenatal visits during pregnancy (Garrido, 2009). There is evidence that developing countries have managed to increase their utilization of antenatal health services between 1990 and 2009 (see Appendix C). Appendix C shows that antenatal care visits have increased in developing regions, with the recommended four visits increasing by 45.7% between 1990 and 2009, from 35% to 51%. Although it is advised that pregnant women initiate antenatal care use early in their pregnancy, it has been noted that women in developing countries (particularly in African countries) tend to initiate the utilization of antenatal services late (Mrisho *et al*, 2009; Gross, 2012; Pell *et al*, 2013). A number of reasons are often given for late initiation of antenatal check-ups; among these reasons, women often state that they initiate antenatal care late as means of avoiding numerous visits to the health facility, lack of money which is needed to get to the health facility, poor quality of care, lack of awareness about the benefits of antenatal care, and being unaware that they are pregnant until later in pregnancy (Mrisho *et al*, 2009; Gross *et al*, 2012). A study in south-eastern Tanzania found that only a small percentage (29%) of women attended antenatal services within the first four months of pregnancy, while 71% initiated antenatal care attendance after four months of pregnancy (Gross *et al*, 2012). Late initiation of antenatal care can results in complications that could have been avoided if antenatal care utilization was initiated at earlier stages of pregnancy.

South African perspective

Antenatal care is an important aspect of a woman's pregnancy which all women should take seriously as it has many health benefits; for instance it is the period where health care

professionals can be able to notice and manage any problems that may arise during the course of the pregnancy (Blaauw and Penn-Kekana, 2010). Data from various sources shows that South Africa has managed to increase the use and provision of antenatal care services. This high rate of antenatal use has not managed to directly affect or minimize the maternal mortality ratio (Blaauw and Penn-Kekana, 2010). Ever since 1998, South Africa's antenatal care attendance has been reported to have maintained proportions of over 90% (Beksinska *et al*, 2006). Although antenatal services attendance is high, there are certain shortcomings which hinder the full use of such services.

One of these hindrances is the way in which pregnant women are often treated by health care personnel (particularly by nurses) within health care facilities – whereby they are shouted at or ridiculed for maybe not knowing certain aspects of the pregnancy. Beksinska *et al*, (2006) states that the attitudes of health care providers need to be addressed in order for the country to move in the direction of reaching the best possible quality of care. It is often the public health sector that presents with major problems of health care personnel with bad attitudes and poor staff-patient relations. Many within the South African population make use of the public health system due to not being able to afford private health facilities which often come with high prices. A study by Blaauw and Penn-Kekana (2010) found that there are certain differentials among the population groups in terms of the frequency with which maternal health care services are used – whereby utilization of antenatal care services is higher among Whites and Indians than among Africans. This could be explained by the fact that most of the White and Indian populations have higher socio-economic statuses than Black/Africans and Coloured populations (Statistics South Africa, 2012a).

In addition, there is evidence that even though there is high use of antenatal services, some women tend to initiate the use late. A study by Myer and Harrison (2003) found that the majority of women in rural areas of South Africa tend to initiate their first antenatal care visit late in pregnancy. Late initiation of antenatal services often leads to an occurrence of avoidable pregnancy complications (Myer and Harrison (2003). Various reasons have been suggested for the late attendance as well as non-attendance of antenatal services by some women. It has been found that financial problems as well as indigenous beliefs and practices have differing influences with regards to the utilization of antenatal services (Sibeko and

Moodley, 2006; Ngomane and Mulaudzi, 2010). With regards to indigenous beliefs and practices, fears of being bewitched (or the foetus being bewitched) have an influence on late initiation of antenatal visits (Ngomane and Mulaudzi, 2010). This could be explained by the fact that when it comes to pregnancy some traditional women in South Africa tend to be too careful and treat pregnancy as something very sacred – where the general belief is that there is no need to share the experience with other people, more particularly strangers (Ngomane and Mulaudzi, 2010). A study by Myer and Harrison (2003) found that women in rural South Africa tend to view antenatal care visits as unnecessary, as such the only reason most women go for antenatal care services is to get a card which permits them to deliver (give birth) at a health facility.

2.4.2. Delivery Care Utilization

Focusing on Africa

Unlike the developed world, Africa still faces many challenges in terms of maternal health services provision and utilization. It is normal for women in developing countries to deliver at home, (assisted by a non-professional or untrained as well as trained birth attendant and sometimes be on her own during the birth process) – and this often reflects negatively on the fight for the reduction of maternal mortality (Koblinsky *et al*, 1999). Traditional birth attendants are often used as substitutes for trained health care professionals who deliver births within the health facility environment – such as doctors, nurses or trained midwives (Hodnett, 2012). Unlike health care professionals who assist in delivery within the health facility setting, traditional birth attendants assist women with delivery at home or within other environments either than public health facilities.

Various studies within Africa have echoed the fact that a small proportion of women tend to deliver their babies at home rather than in health care facilities, particularly those in rural areas (Joseph *et al*, 2002; Peltzer, 2005; Tann *et al*, 2007). A study in Uganda found that even though most women deliver their babies in health facilities, there are still those that deliver at home without any trained birth assistants (Tann *et al*, 2007). Another study in the Eastern Cape province of South Africa found that 92% of women prefer to deliver in health facilities while 8% of the women prefer to deliver in their homes with the assistance of traditional birth

attendants (Peltzer *et al*, 2005). In addition, women have certain reasons which they have for not delivering at a health facility with the assistance of a trained health care professional (i.e. nurse, doctor or midwife). In developing countries women tend to choose to deliver at home for the following reasons: financial difficulties, transportation difficulties, and some prefer to give birth at home where they believe that their views regarding the birth process respected (Joseph *et al*, 2002; Tann *et al*, 2007; Ngomane and Mulaudzi, 2010).

2.4.3. Postnatal Care Utilization

Like the other aspects of maternal health care, the postnatal period – which begins immediately and is stretched for about three months after birth – is the most important time in the new-born's as well as the mother's life because it affords prospects of dealing with problems that may arise after a woman has given birth and also reduces maternal as well as neonatal deaths (Filippi *et al*, 2006; Sines *et al*, 2007; Chimankar and Sahoo, 2011; El-Sabaa *et al*, 2012). Studies show that there is generally a poor uptake and utilization of postnatal services as compared to other dimensions of maternal health care services (i.e. antenatal care and delivery care). Several studies have shown that postnatal care is ignored in developing countries, especially in Africa, with a very low prevalence of postnatal care utilization falling below 50% (Beksinska *et al*, 2006; Blaauw and Penn-Kekana, 2010; Mrisho *et al*, 2010; Warren *et al*, 2010; Chimankar and Sahoo, 2011; Regassa, 2011; Do and Hotchkiss, 2013). A study in southern Ethiopia and one in Uttarakhand found that postnatal care utilization amounted to only 37%, which is very low considering the importance of postnatal care services (Chimankar and Sahoo, 2011; Regassa, 2011).

Certain factors have been associated with the low use of postnatal care services in developing countries. The following factors have been found to influence the utilization of postnatal services across different regions of the world: staff shortages, unpredictability of birth – which makes it difficult for women to travel long distances (especially those living in rural areas), maternal education, socio-economic status, media exposure, rural-urban differentials, lack of awareness, and parity (Tann *et al*, 2007; Mrisho *et al*, 2009; Chimankar and Sahoo, 2011; Regassa, 2011; Sathiya Susuman, 2012). With regards to the urban-rural differentials, a study found that those who give birth in urban areas are twice as much to use postnatal care

than those who give birth within rural areas, at 60% and 30% respectively (Chimankar and Sahoo, 2011). Women in rural areas tend to be more traditional in the sense that they are non-conformists who hold onto their traditional beliefs and are often sceptical of *new-age* lifestyle. In addition, maternal education and literacy positively influence the use of postnatal care, with women who are literate using postnatal services more than those who are illiterate (Sathiya Susuman, 2012). Therefore, there is a need for developing countries to come up with ways of ensuring that women change their attitudes and beliefs about the utilization of postnatal services.

2.4.4. Overview of Family Planning and Reproductive Health

Family planning and reproductive health are important dimensions of maternal health care and both have the potential of contributing to the well-being of women as well as the development of populations (Moronkola *et al*, 2006; Doku *et al*, 2012). Family planning is particularly important in sub-Saharan Africa, especially in countries with high fertility rates as it can be utilized as a tool to reduce poverty, maternal mortality as well as infant mortality (Cleland *et al*, 2006). If poor countries manage to reduce the number of births then poverty will be reduced, as there would be no overpopulation and scarcity of resources to cater for large populations – and this could be achieved with good family planning policies. If the birth rate could be reduced through family planning in South Africa, then there might be no need for social grants. This could also have positive effects on the country's poverty rates.

Cleland *et al*, (2006) argues that many countries in sub-Saharan Africa still have high fertility rates and a high unmet need for family planning (i.e. the proportion of women, within the productive ages of (15-49 years), who wish to stop childbearing completely or postpone their next childbirth by at least two years, but are not using any contraceptive method). It is important that family planning and reproductive health is advocated throughout developing countries as means of empowering women and ensuring that most poor countries are developed through policies relating to family planning. Family planning is not only focused on women, but also extends to men – it safeguards women from unwanted pregnancies (Moronkola *et al*, 2006). Countries throughout Africa have some good ideas and policies with regards to family planning and reproductive health, but implementation of such policies still

lack and it seems that advocacy and international funding for programmes focused on family planning and reproductive health issues is lacking, and in some instances, minimal (Cleland *at al*, 2006).

2.5. The Burden of Maternal Mortality on Millennium Development Goal 5

Developing countries account for 99% of the total maternal deaths worldwide (WHO, 2014); and therefore, a number of strategies that could be utilized in order to try and reduce the high maternal mortality ratios of most of these nations. Maternal mortality is the death of women during pregnancy, childbirth, or within the 42 days after delivery (Hogan *et al*, 2010; WHO 2012). Several developing countries face a number of barriers when it comes to reducing their maternal mortality ratios (Hogan *et al*, 2010). Developing regions account for 286 000 maternal deaths, while the developed regions account for only 2300 maternal deaths – which shows the wide gap between developed and developing regions regarding maternal mortality (WHO, 2014). Within the sub-Saharan African countries the maternal maternity is estimated at 510 deaths per 100 000 live births, which is an increase from the 500 deaths per 100 000 live births estimated in previous years (WHO, 2010; WHO, 2012; WHO, 2014). Women's health is seen as a main concern for many countries globally, especially those with high maternal mortality ratios (Blaauw and Penn-Kekana, 2010). It is noted that maternal mortality tends to be higher for women living in rural areas and also higher for those living in poorer communities, as compared to those living in urban areas and those with a higher socio-economic status (Say and Raine, 2007).

South Africa's maternal mortality ratio in 2013 was estimated to be 140 deaths per 100 000 live births; this is a significant decrease (of 53.3%) when compared to the 2010 estimates which were at 300 deaths per 100 000 live births (WHO, 2012; WHO 2014). The maternal mortality ratio estimates provided by Statistics South Africa differ considerably from those provided by the World Health Organization. Statistics South Africa (2013) reported that the country's maternal mortality ratio was estimated to be 269 deaths per 100 000 live births in 2010, which shows a decrease of 10.0% compared to the 299 deaths per 100 000 live births estimated in 2007. The maternal mortality ratio estimates above differ due to the methods and data used when estimating them. Even though it is estimated that there has been a decrease in maternal mortality ratio over the years, these ratios are still quite high, and this presents major

challenges in terms of the country's prospects of achieving the millennium development goals (Penn-Kekana and Blaauw, 2002).

Africa is one of the continents with high maternal mortality ratios (i.e. the continent has a large number of women die during pregnancy and childbirth) – the continent also has many countries which are among the highest contributors to the global maternal mortality ratios – as such, sub-Saharan Africa produces most of the maternal deaths in the region estimated to be 98% of all the maternal deaths of the region (Aa *et al*, 2011; Babalola and Fatusi, 2009; WHO, 2012). In addition, many countries in Africa have no accurate vital registration systems, as a result maternal mortality is often estimated by making use of various small-scale studies – studies have shown that in South Africa, the maternal mortality ratio is measured by using large surveys (Aa *et al*, 2011; Department of Health, 2007; WHO, 2012).

The measurement of the maternal mortality ratio is an important indicator when it comes to understanding the performance of the health care sector, as well as the systems employed by this sector with regards to women's health. This indicator is very difficult to measure because it requires the use of data from very large surveys as means of obtaining information relating to health-related events within the population (Department of Health, 2007). Moreover, the maternal mortality ratio is vital when it comes to evaluating the country's progress towards the achievement of Millennium Development Goal 5. This goal is a major health-related goal which is aimed at reducing maternal mortality by at least 75% – and improving the maternal and reproductive health globally by 2015 (Hogan *et al*, 2010; Saxena *et al*, 2013; Munsur *et al*, 2010; Blaauw and Penn-Kekana, 2010).

Less than twelve months remain until 2015, a year set out as the target year for the realisation of MDG5, and it seems that South Africa is not even anywhere near to reaching the MDG targets set out by United Nations. Reducing the current maternal mortality ratio of 269 deaths per 100 000 live births by 75% would mean that South Africa's target for 2015 would be 202 deaths per 100 000 live births, which would still be high; whereas the current estimates provided by WHO would mean that South Africa must cut the 140 deaths per 100 000 live births to 105 deaths per 100 000 live births. Even if these ratios would be cut by 75%, they

would still be higher than the target of 38 deaths per 100 000 live births set for the year 2015 (Statistics South Africa, 2013). Given the current maternal mortality statistics, the prospects of South Africa achieving the millennium development goals relating to maternal mortality seem very unlikely (King *et al*, 2006; Naledi *et al*, 2011; Statistics South Africa, 2013). Moreover, South Africa's estimated average annual percentage change in the maternal mortality ratio between 1990 and 2010 was 0.9% which shows that the country is not making much progress towards improving maternal health by 2015 (WHO, 2012). Therefore, improving the current approaches to health and implementing new directions in maternal health care could improve the country's health and thus even ensure that, over time, the millennium development goals are met (Chopra *et al*, 2009).

2.6. Impact of HIV/AIDS on Maternal Mortality

HIV/AIDS is a prominent health concern in South Africa, since the country is among the countries with a large number of people who are HIV-positive, estimated to be around 5.6 million people as of 2012 (Statistics South Africa, 2013). HIV/AIDS has been documented as one of the leading contributors to maternal deaths worldwide (Onakewhor *et al*, 2011; Chweneyagae *et al*, 2012; Moran and Moodley, 2012; Burton, 2013). A study by Chweneyagae *et al*, (2012) found that 79.3% of women who died during pregnancy were tested for HIV, and 70.4% of those tested were found to be HIV positive. Another study in Nigeria found that one in four maternal deaths occur among those who are HIV positive (Onakewhor *et al*, 2011). These findings show that the HIV pandemic is one of the major health challenges worldwide.

There are certain underlying causes of maternal death which are not always directly associated with HIV, and some of these are not pregnancy-related, even among persons who are diagnosed HIV. Various studies argue that the most notable causes of maternal death among women who are HIV positive are infections which are not pregnancy-related, such as AIDS, pneumonia, tuberculosis, 'meningitis, obstetric haemorrhage, pregnancy-related sepsis, hypertension, and postpartum haemorrhage (Saving Mothers Report, 2005-2007; Moran and Moodley, 2012; Chweneyagae *et al*, 2012). In addition, a study in South Africa estimated that the institutional maternal mortality ratio for HIV positive women was 430

deaths per 100 000 live births, while for those women who are HIV negative the rate was estimated at 75 deaths per 100 000 live births (Chweneyagae *et al*, 2012). In order to reduce maternal mortality, HIV-related maternal deaths must become one of the health priorities worldwide (Moran and Moodley, 2012).

2.7. Conclusion

This chapter has outlined the influence of maternal education, as well as other socio-demographic factors, on the use of maternal health care services. With the discussion above, it can be concluded that education plays an important role in ensuring that people are knowledgeable about the type of services that are available and the value of making use of such services. In some developing countries, many women are not educated and hence, they do not make use of maternal health services. Therefore, it is necessary that countries with high maternal mortality ratios find strategies to ensure universal coverage and utilization of maternal health services. This will not only decrease the maternal mortality ratio, but will also ensure that there is equality in terms of maternal health care provision between rural and urban areas, particularly in Africa.
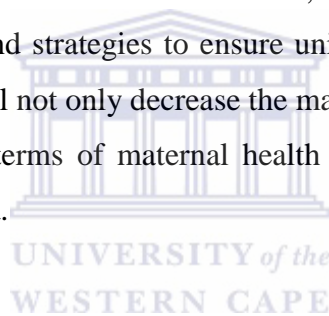
Chapter III

Data and methodology

3.1. Study design

A cross-sectional (household-based) study design, using quantitative data collection methods, was carried out to assess factors influencing utilization of maternal health care services in selected areas (Tsolo, Qumbu and Mqanduli) of the O.R. Tambo district, in the Eastern Cape Province.

3.2. Profile of the province and study areas

One of the reasons for selecting to study the Eastern Cape was due to that this province is among provinces with high fertility rates. The fertility rates in the province are estimated to be between 2.8 and 3.7 children per woman (Palamuleni, 2013; Udjo, 2014). The estimates differ depending on the method used to estimate fertility. According to the mid-year estimates, provided by Statistics South Africa (2014), the average life expectancy in the province is expected to lie between 53 among males and 59 among females from 2011 and 2016. The Eastern Cape is one of South Africa's largest provinces – it is the second in terms of land area at 168 966 square kilometres, just 203923 kilometres short of the Northern Cape province (Statistics South Africa, 2012a). This province includes the former homelands of Transkei and Ciskei with roughly 6 562 053 people, according to the 2011 Census results (Statistics South Africa, 2012a). The province is divided into six district municipalities (namely: Cacadu, Amatole, Chris Hani, Joe Gqabi, O.R. Tambo and Alfred Nzo) and two metropolitan municipalities – Nelson Mandela Bay and Buffalo City (Statistics South Africa, 2012b).

According to the 2011 Census results, the sex ratio in the province was 89 in 2011 (Statistics South Africa, 2012a; Statistics South Africa, 2012b). A sex ratio is a ratio of males to females in a given population. This sex ratio means that, in the Eastern Cape there are less males compared to females (89 males per 100 females). The Eastern Cape is a predominantly

'black' province, with the Black/African population having the highest proportions (86.5%) compared with other population groups – Coloured (8.3%), Indian/Asian (0.4%), and White (4.8%). About three-fifths of the population in the province falls within the functional or working age group (15-64 years), while less than 40% of the population falls within the dependent ages, of 0-14 years and 65 years and above (Statistics South Africa, 2012b). Regarding the dependency ratio, the 2011 Census results show that 66.0% of the population within the province is dependent on those within the working ages (15-64 years) (Statistics South Africa, 2012b).

Regarding educational attainment, 19.8% of the population aged 20 years and older reported having grade twelve as their highest level of education, while 8.7% reported having higher education, and 10.5% reported having no formal education (Statistics South Africa, 2012b). In 2011, the findings indicated that the majority (95.5%) of those aged 5-24 years attended public schools, while only 4.5% attended private schools (Statistics South Africa, 2012a). in 2011, the average household income was measured at R64 550, which could be attributed to the major cities such as Buffalo City and Nelson Mandela Bay, which offer employment to many people within the province – these two cities also had high average household incomes in the same year (Statistics South Africa, 2012b).

Tsolo, Qumbu and Mqanduli are rural areas (villages/towns) which fall within the O.R. Tambo district. Two of these villages (Tsolo and Qumbu) are located within the Mhlontlo municipality, while one (Mqanduli) is located within the King Sabata Dalindyebo municipality. According to Census 2011 results, 81.0% of the population aged 5-24 years reported that they were attending school (Statistics South Africa, 2012b). Over 6% of the population aged 20 years and older reported that they had higher education, while 17.3% reported having no formal education, and 15.3% reported that they had grade twelve (Statistics South Africa, 2012b). The dependency ratio for the district was measured at 80.5%, and the sex ratio was 86 males per 100 females (Statistics South Africa, 2012b).

3.2.1. Maps

3.2.1.1. South African Map

Below are maps which depict the location of the province and the selected study areas.

Figure 1: Map of South Africa

Source: http://home.global.co.za/~mercon/map.htm
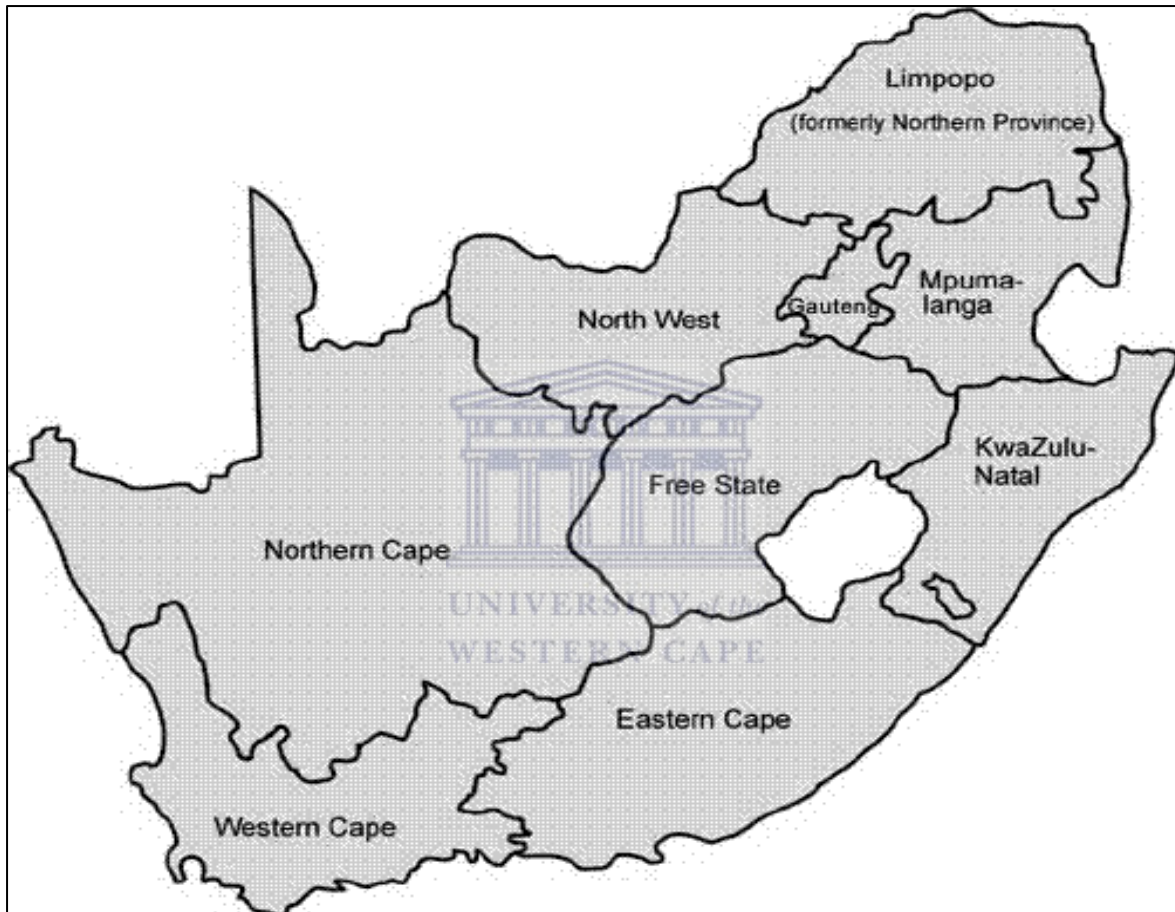
3.2.1.2. Map of health services facilities in the O.R. Tambo district

Figure 2: Map of the Eastern Cape – O.R. Tambo district's health service facilities
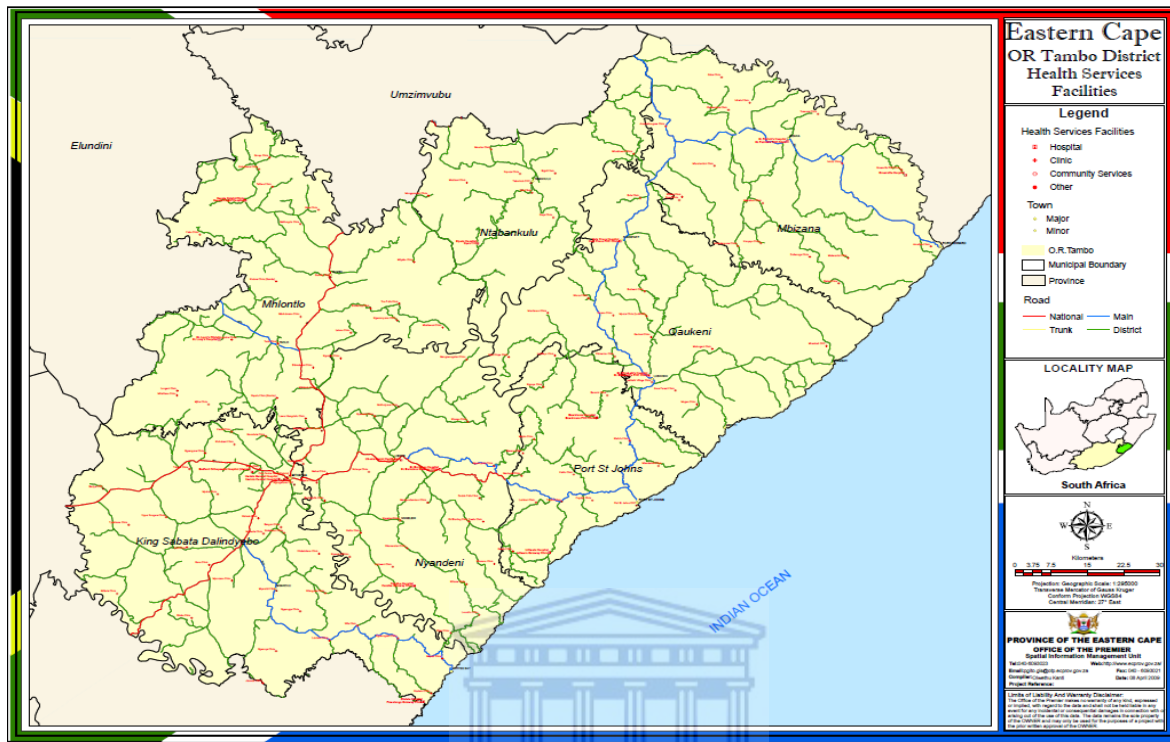
3.3. Study population

The study population consisted only of women aged 15 to 49 years, taken from three areas within the O.R. Tambo district of the Eastern Cape Province.

3.4. Inclusion and exclusion criteria for the study population

3.4.1. Inclusion criteria

i)   All women who have ever been pregnant and given birth (whether the baby survived or not)

3.4.2. Exclusion criteria

    i)   Women aged less than 15 years or more than 49 years

    ii)   Women who are not residents of Tsolo, Qumbu or Mqanduli.

3.5. Sample size determination

The sample size was determined using the formula for single population proportion based on the following assumptions. This formula is based on Yamane's work produced in the 1960s (Yamane, 1967: 258).

$$n = \frac{p\,(1-p)(z\alpha/2)^2}{e^2}$$

Where:

n = is the size of the sample

z = is the standard normal value corresponding to the desired level of confidence

e = error of precision

p = is the estimated proportion of an attribute that is present in the population.

3.5.1. Assumptions

1. To obtain the maximum sample size, p was assumed to be = 0.5
2. The margin of error e = 5% was accepted
3. A confidence interval of 95% was assumed ($z\alpha/2$ = 1.96).

$$n = \frac{0.5 \times (1-0.5) \times (1.96)^2}{(0.05)^2} = 384$$

For non-response errors, a 10% (384) contingency was added to the sample size = 38. Therefore, from this formula, a sample size of 422 women was determined. After determining the sample size, a simple random sampling technique was employed to study maternal health care use among women aged 15-49 years in the study areas.

3.6. Sampling procedure

The study used primary data – where a sample was obtained from three purposefully selected areas of the O.R. Tambo district. The main reason for selecting these areas was due to observation of the failing state of health care services in these rural areas. A pilot survey was conducted in Tsolo a week before the initial survey took place. The instrument was then adjusted based on the feedback from the pilot survey. To obtain 422 women, a house-to-house survey was conducted in each of the three study areas to obtain information on maternal health care utilization and associated factors. A structured questionnaire was administered to women who gave consent to participate in the study. The sample size of 422 women was allocated among the three selected areas as follows:

Table 1: Stratification of the sample across the selected areas

Place of residence	Total population[1]	Stratification (%)	Sample size
Tsolo	2427	46	194
Qumbu	1730	33	139
Mqanduli	1112	21	89
Total	**5269**	**100**	**422**

[1]*Census 2011 data, Statistics South Africa - the total population is taken from a population of women aged 15-49 within the selected areas*

In order to stratify the sample into the selected areas, data pertaining to women aged 15-49 was obtained from the 2011 Census. Thereafter, the numbers were added together to get 5269 women. From this number, percentages were calculated for each of the selected areas. The sample size for each area was calculated by multiplying the sample size (422) with the corresponding percentage. Based on this stratification process, the required sample in Tsolo was 194 women, 139 women in Qumbu, and 89 women in Mqanduli as shown in Table 1. Overall, 467 questionnaires were printed and sent to the respective areas. This was done to allow for 15 extra questionnaires to be allocated to each of the selected areas as to limit response errors and maximise the return rate. Out of the 422 participants sampled, 345 fully completed questionnaires were returned and included in the analysis.

3.7. The survey instruments

3.7.1. Survey

A face-to-face interview was conducted by using a structured questionnaire developed for purposes of obtaining information on socio-economic and demographic characteristics of women as well as maternal health care services utilization through a door-to-door process of interviewing.

3.7.2. Questionnaire development

The questionnaire was developed mainly based on the review of literature on factors which are known to affect the utilization of maternal health care services. The questions were developed to respond to the study's objectives. The survey was revised a number of times in order to obtain the best possible questions to yield good information regarding the use of maternal health care services in the study areas. A pilot study was carried to test the feasibility of the questions, and thereafter, the questionnaire was revised based on feedback from the pilot study. During the enumeration, questionnaires were verbally translated to the participants who did not understand English.

3.8. Data collection processes

3.8.1. Enumerators

Fourteen enumerators were employed and trained to carry the data collection. The enumerators were divided across the selected areas. The selection of the enumerators was based on the criteria that:

1. They were female
2. They had passed matric and knew how to read and write in the English language
3. They were from the area in which they were to do the enumeration.

All enumerators were trained by means of administering the questionnaire among each other to see their basic understanding of what it is that they must do. Clarity was given to those who

required it for certain sections of the questionnaire. All the enumerators were trained in Tsolo, in February 2014, and were then sent back to their respective areas to carry the survey data collection a month later.

3.8.2. Supervisors

Three supervisors (one physiotherapist working in a hospital in one of the areas, and two women from the other two areas) were employed to manage and oversee the data collection process and to ascertain the quality of the information obtained. The supervisors came from each of the selected areas and were responsible for the enumerators from those areas. The survey was undertaken for a period of one month, in March 2014.

3.9. Validity and reliability

To ensure the validity and reliability of the questionnaire, a pilot study was conducted in Tsolo a week before the initial survey took place. The instrument was then adjusted based on the feedback from the pilot survey. The pilot questionnaire was randomly distributed among women aged 15-49 to test the feasibility of the questions included in the questionnaire; the questionnaire was then revised based on feedback from the pilot study. During the enumeration process, questionnaires were verbally translated to the participants who did not understand English. Enumerators were trained and given time to go through the questionnaire to check their level of understanding and ask for clarity where they needed it. Only women (aged 21 years or older) whose highest educational attainment was grade twelve or higher, were hired for the enumeration process. The study was carried within a set time period, and questionnaires not returned within that period were not considered in order to minimise bias. The questionnaires were also numbered in order to avoid double-counting.

3.10. Conceptual framework

The conceptual framework used in this study is based on the health-seeking behaviour model developed by Anderson and Newman (in 1973). Several frameworks of maternal health care utilization were found in the literature, and out of those, the Andersen model was found to be

sufficient to meet the objectives of this study. Use of health care services is an individual experience; as such, it is at the individual level that the decision is made to make use of maternal and general health care services (Addai, 2000). This model suggested that the utilization of health care services is based on three sets of distinct factors; namely: predisposing factors, enabling factors, and need factors. It is therefore fitting to explain the determinants of maternal health care utilization using this model. Chakraborty *et al*, (2003) argue that predisposing and enabling factors may not be sufficient to adequate to promote health care use, which then makes the need factors central to health care use. According to this model, health care services are used because of a need (i.e. illness) which drives individuals to use these services (Chakraborty *et al*, 2003). Therefore, the need factors are the driving force behind the decision made by individuals to health care utilization. Because predisposing factors are demographic in nature, they cannot be changed by social circumstances (Young *et al*, 2005). Enabling factors promote healthcare use; unlike predisposing factors, the enabling factors have the potential to be changeable (Young *et al*, 2005). The health behaviour model is holistic in that it includes individual factors, community factors and the health system in trying to understand factors affecting health care use (Young *et al*, 2005). Predisposing, enabling factors, and need factors are further elaborated as follows (Chakraborty *et al*, 2003; Adamu, 2011):

❖ **Predisposing factors:** these are demographic factors such as age, education, parity, etc.

❖ **Enabling factors:** these are income, health care and facility accessibility, availability of health care services and facilities, etc.

❖ **Need factors:** these include the perceived morbidity, health status, etc.

Figure 3 shows the application of the Andersen Behavioural Model of Health Care Utilization to the study. Predisposing and need factors are individual characteristics which proximately influence the utilization of maternal health care services. As illustrated by the dotted line, there is a link between the predisposing and need factors. Enabling factors are community-based factors which have an influence on maternal health care utilization. All these factors (predisposing, enabling and need) have an influence on maternal health care utilization.

Figure 3: Andersen's Behavioural Model of Health Care Utilization applied to the study
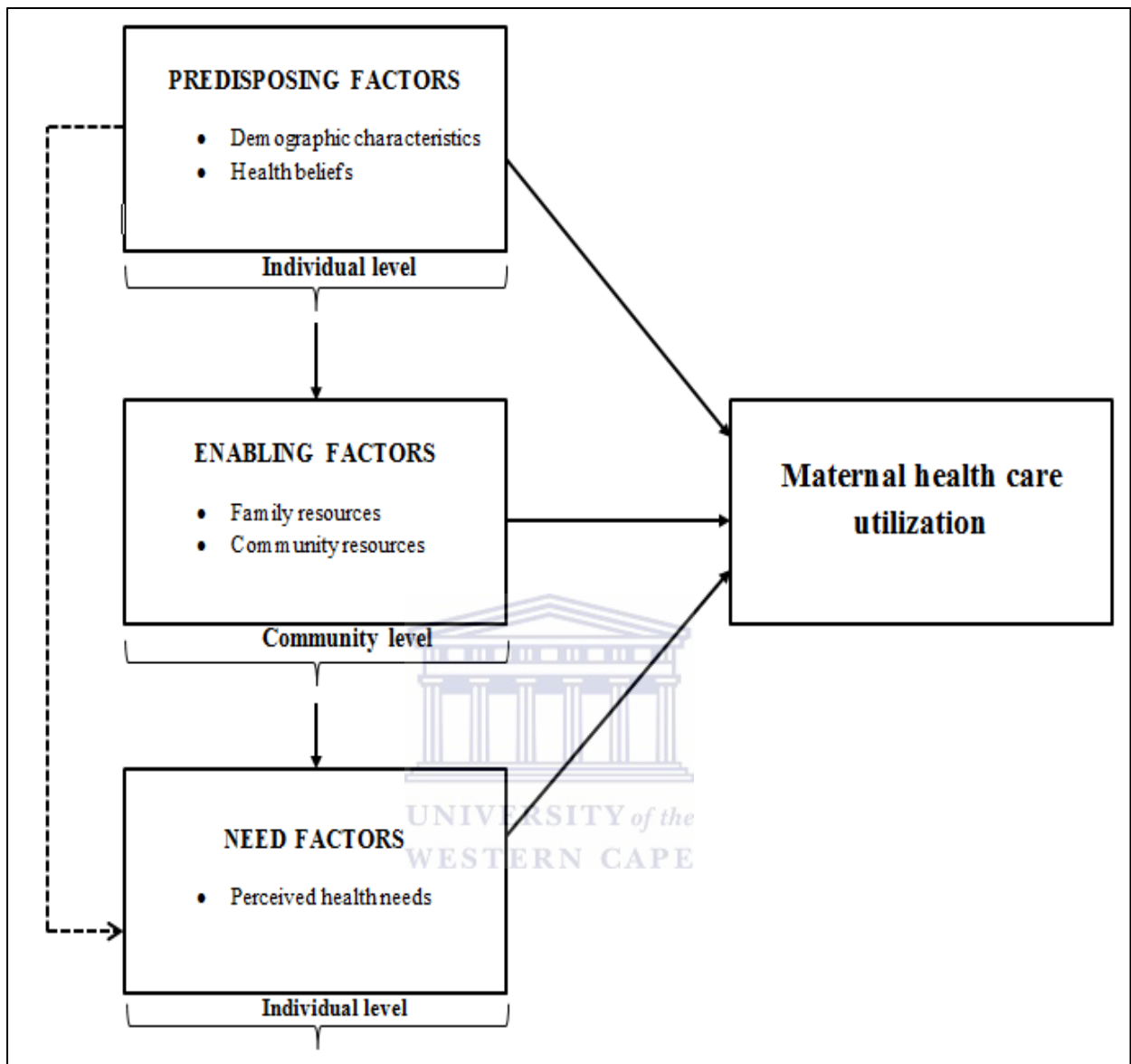
(Modified from Anderson and Newman (1973); Young *et al*, 2005; Adamu, 2011)

3.11. Data processing and analysis

3.11.1. Processing and cleaning

After the data collection process was completed the data was manually entered in to computer using the Statistical Package for the Social Sciences (SPSS) version 22 software. To limit outliers, the data was cleaned through checking the frequencies and then transformed into different variables (to group similar categories).

3.11.2. Operational definition

- Maternal health care utilization is defined as the utilization of antenatal care, delivery care and postnatal care.

3.11.3. Dependent variables

- Antenatal care is transformed from a question asking how many visits a woman has attended, and recoded as (0 = None; 1 = one or more visits)
- Delivery care is coded as (0 = Non-facility; 1 = Facility)
- Postnatal care is transformed from a question which asked the women whether they went for a postnatal check-up, and is recoded as (0 = None; 1 = Checked)

3.11.4. Independent variables

The independent variables selected for analysis include:

- Place of residence – (1 = Tsolo; 2 = Qumbu; 3 = Mqanduli)
- Maternal age – (1 = 15-24; 2 = 25-34; 3 = 35-49)
- Maternal education – (1 = Primary or less; 2 = Secondary or higher)
- Marital status – (1 = Not married; 2 = Married)
- Parity – (1 = 1 child; 2 = 2-3 children; 3 = 4 or more children)
- Employment status – (1 = Employed; 2 = Unemployed)
- Monthly income – (0 = No income; 1 = R1 - R800; 2 = R801 or more)
- Transport to health facility – (1 = Walking; 2 = Public transport; 3 = Private transport)
- Payment to health facility – (0 = None; 1 = R1 - R15; 2 = R16 or more)
- Distance to health facility – (1 = 0 - 5km; 2 = 6 - 8km; 3 = 9km or more)

Please note that those who are recoded as *not married* include women who are divorced or separated, never married, and widowed. Women who are recoded as *married* are those who are legally married as well as those who are cohabiting.

3.11.5. Analysis

Univariate, bivariate and multivariate analyses were employed to analyse the data using Statistical Package for the Social Sciences (SPSS) version 22. Univariate analysis was employed to describe the characteristics of the study. The bivariate analysis was employed to study the relationship between socio-economic or demographic factors and maternal health care utilization. In the bivariate analysis, a Chi-square (χ^2) test was performed to test the relationship between the dependent variable and the independent variables. For the multivariate analysis, a binary logistic regression was employed to examine the odds of using maternal health care services by selected socio-economic and demographic factors. The regression equation applied to this study is expressed as follows:

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots\dots + \beta_i x_i$$

This model is represented by more than one independent variable that is dichotomous, ordinal, nominal, continuous, and so forth. The dependent variable in this model is maternal health care utilization$\left(\frac{P}{1-P}\right)$. As defined above, maternal health care utilization is taken as the use of antenatal, delivery and postnatal services. The purpose of the regression coefficient ($\beta_i x_i$) is that it increases natural logarithm (log-odds) for a one unit increase in the predictor variable (x_i) when all other variables (x_i) are constant. It measures association between x_i and natural logarithm (log-odds) adjusted for all other (x_i) variables.

3.12. Limitations of the study

The limitation of the study is that the results (from 345 women) cannot be generalised to all women in the district or the province. However, this study is important in highlighting the extent as well as determinants of maternal health care use in the study area.

Chapter IV

Results

4.1. Descriptive results

4.1.1. Maternal health care services

Table 2 shows the distribution of maternal health care services utilization among women of child-bearing age (i.e. 15-49 years). The results indicate that there was a higher utilization of antenatal and delivery health care services as compared to postnatal services in the study area. About 96.8% and 94.2% of women reported that they were using antenatal and delivery health care services, respectively. However, 49.0% checked for postnatal services, which was lower than the 51.0% of those who reported that they did not use postnatal services.

Table 2: Analysis of study participants by maternal health services

Characteristics	Number	Percentage
Antenatal care		
None	11	3.2
1 or more visits	334	96.8
Overall	**345**	**100.0**
Delivery care		
Non-facility	20	5.8
Facility	325	94.2
Overall	**345**	**100.0**
Postnatal care		
None	176	51.0
Checked	169	49.0
Overall	**345**	**100.0**

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

4.1.2. Socio-economic and demographic characteristics

Table 3 shows descriptive results pertaining to socio-economic and demographic characteristics of women aged 15-49 years. Among the participants, over two-fifths of the women (42.3%) were from Tsolo village and about 29.0% were from Qumbu, while 28.7% were from Mqanduli. The results indicate that 42.0% of the women were aged between 25-34 years while 24.1% and 33.9% were aged 15-24 and 35-49 years respectively. More than three-quarters of women (76.8%) had secondary or higher levels of education, while 23.2% reported that they had primary education or less. Over two-thirds were not married compared to 31.1% of those who were married. Regarding parity, 46.9% of the women reported that they had given birth to two or three children; 35.9% and 17.2% reported that they had given birth to one and four or more children respectively. Furthermore, 88.7% of the women surveyed were unemployed as compared to 11.3% of those that were employed. The majority of women indicated that their monthly income was between R1 and R800. Finally, 19.8% had no source of income while 13.1% earned a monthly income of R801 or more.
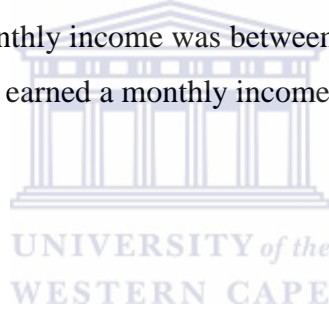
Table 3: Analysis of participants by selected socio-economic and demographic characteristics

Characteristics	Number	Percentage
Place of residence		
Tsolo	146	42.3
Qumbu	100	29.0
Mqanduli	99	28.7
Overall	**345**	**100.0**
Maternal age		
15-24	83	24.1
25-34	145	42.0
35-49	117	33.9
Overall	**345**	**100.0**
Maternal education		
Primary or less	80	23.2
Secondary or higher	265	76.8
Overall	**345**	**100.0**
Marital status		
Not married	237	68.9
Married	107	31.1
Overall	**344**	**100.0**
Parity		
1 child	123	35.9
2-3 children	161	46.9
4 or more children	59	17.2
Overall	**343***	**100.0**
Employment status		
Employed	39	11.3
Unemployed	306	88.7
Overall	**345**	**100.0**
Monthly income		
No income	68	19.8
R1 - R800	230	67.1
R801 or more	45	13.1
Overall	**343***	**100.0**

***Source:** Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*
*Note: * = Missing cases removed*

4.1.3. Health care access characteristics

Table 4 shows descriptive results regarding the payment, distance, and the mode of transport used by the women to access health care facilities. About 51.0% of women used public transport to access health facilities while 29.5% walked and 19.5% used private transport. The results further indicate that 46.7% paid R16 or more to get to health care facilities, followed by 30.5% of those who did not pay, while 22.8% paid between R1 and R15 to access health care facilities. Finally, the majority of women (48.1%) reported that they travel

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for nine kilometres or more to get to the health care facilities, followed by 36.5% of those who reported that they travel for five kilometres or less. Only 15.4% reported that they travel for six to eight kilometres to get to the health care facilities.

Table 4: Analysis of study participants by background access characteristics

Characteristics	Number	Percentage
Transport to health facility		
Walking	100	29.5
Public transport	173	51.0
Private transport	66	19.5
Overall	**339***	**100.0**
Payment to health facility		
None	102	30.5
R1 - R15	76	22.8
R16 or more	156	46.7
Overall	**334***	**100.0**
Distance to health facility		
0 - 5km	123	36.5
6 - 8km	52	15.4
9km or more	162	48.1
Overall	**337***	**100.0**

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014
*Note: * = Missing cases removed*

4.2. Bivariate analysis

4.2.1. Antenatal care utilization

Table 5 shows the percentage distribution of antenatal visits by background characteristics. Generally, the results indicated that at least nine in ten women used antenatal services (i.e. have went for one or more antenatal visits). Furthermore, the results also indicated that 99.0% of women who used antenatal services were from Qumbu. The use of antenatal services decreases with age – about 97.6% of women aged 15-24 years used antenatal services as compared to 95.7% of those aged 35-49 years. On the other hand, the use of antenatal services is prevalent among women with secondary or higher educational levels with the percentage of 97.2%, which is more than the 95.0% reported among those with primary education or less. Moreover, the majority of women who reported that they were married, had

one child, were unemployed, and had a monthly income of R801 or more, used more antenatal services, at over 97%. The access factors indicate that 98.0% of women were walking and made no payments to get to the health facilities, while 98.1% travelled for an average of six to eight kilometres to get to the facility to use antenatal services.

Table 5: Distribution of antenatal visits by background characteristics

Variables	Antenatal visits (N)			Antenatal visits (%)		
	None	1 or more visits	Total	None	1 or more visits	Total
Predisposing Factors						
Maternal age						
15-24	2	81	83	2.4	97.6	100.0
25-34	4	141	145	2.8	97.2	100.0
35-49	5	112	117	4.3	95.7	100.0
Total	11	334	345	3.2	96.8	100.0
Maternal education						
Primary or less	4	76	80	5.0	95.0	100.0
Secondary or higher	7	258	265	2.6	97.4	100.0
Total	11	334	345	3.2	96.8	100.0
Marital status						
Not married	8	229	237	3.4	96.6	100.0
Married	3	104	107	2.8	97.2	100.0
Total	11	333	344	3.2	96.8	100.0
Parity						
1 child	3	120	123	2.4	97.6	100.0
2 - 3 children	5	156	161	3.1	96.9	100.0
4 or more children	3	56	59	5.1	94.9	100.0
Total	11	332	343	3.2	96.8	100.0
Enabling Factors						
Place of residence						
Tsolo	6	140	146	4.1	95.9	100.0
Qumbu	1	99	100	1.0	99.0	100.0
Mqanduli	4	95	99	4.0	96.0	100.0
Total	11	334	345	3.2	96.8	100.0
Employment status						
Employed	2	37	39	5.1	94.9	100.0
Unemployed	9	297	306	2.9	97.1	100.0
Total	11	334	345	3.2	96.8	100.0
Monthly income						
No income	3	65	68	4.4	95.6	100.0
R1 - R800	7	223	230	3.0	97.0	100.0
R801 and more	1	44	45	2.2	97.8	100.0
Total	11	332	343	3.2	96.8	100.0
Transport to health facility						
Walking	2	98	100	2.0	98.0	100.0
Public transport	7	166	173	4.0	96.0	100.0
Private transport	2	64	66	3.0	97.0	100.0
Total	11	328	339	3.2	96.8	100.0
Payment to health facility						
Nothing	2	100	102	2.0	98.0	100.0
R1 - R15	2	74	76	2.6	97.4	100.0
R16 or more	7	149	156	4.5	95.5	100.0
Total	11	323	334	3.3	96.7	100.0

Distance to health facility						
0 - 5km	4	119	123	3.3	96.7	100.0
6 - 8km	1	51	52	1.9	98.1	100.0
9 or more	6	156	162	3.7	96.3	100.0
Total	11	326	337	3.3	96.7	100.0

Source: *Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*
Note: *Some of the variables do not equal to a total of 345 cases due to missing data*

4.2.1.1. Maternal education and antenatal care

Figure 4 shows the rate of utilizing antenatal services by maternal education and age. The majority (53.9%) of women with primary education or less who used antenatal services were aged 35-49 years. The use of antenatal services for women with primary education or less was lower among women aged 15-24 years. The use of antenatal services increased with age among women with primary education or less. However, for women with secondary or higher levels of education, the use of antenatal services was more prevalent among those aged 25-34 years as compared to the other age cohorts. Regardless of educational level, women aged 15-24 years had lower proportions of utilizing antenatal services as compared to those aged 25-34 and 35-49 years respectively.
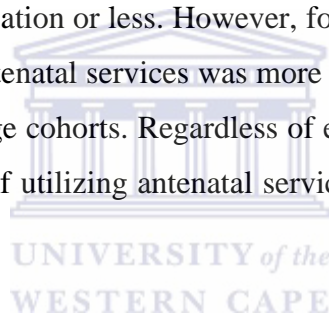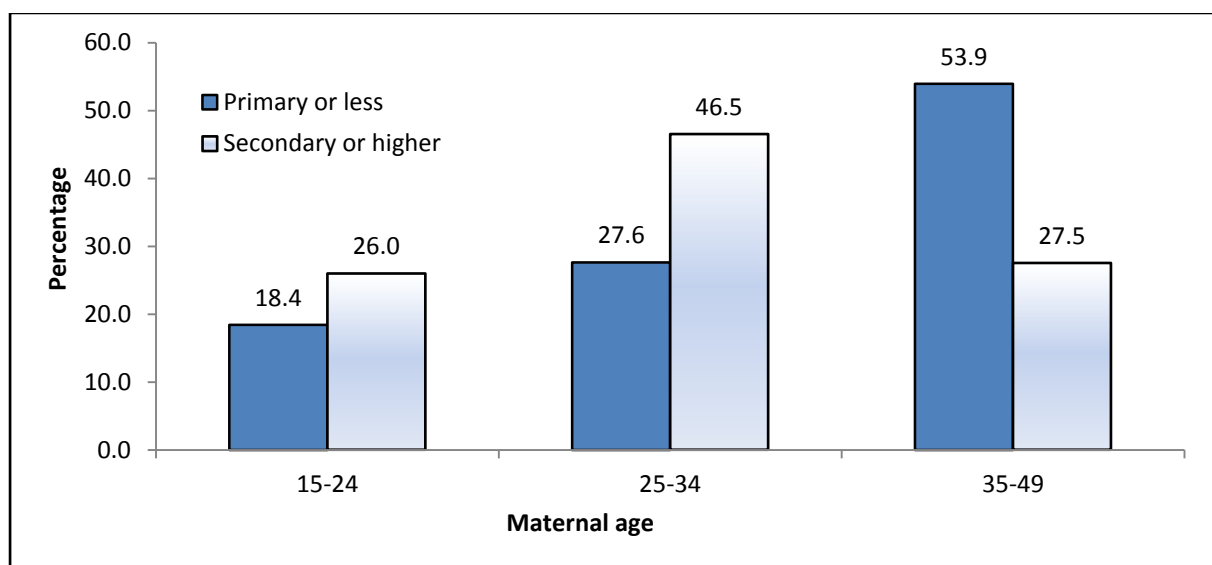
Figure 4: Antenatal care utilization by maternal education and age

Source: *Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*

Figure 5 shows the use of antenatal services by maternal education and parity. Utilization of antenatal services was high among women with two to three children, who had primary education or less. Among women with two to three children use of antenatal services was about 48.8% for those who had secondary or higher educational levels, which was more than 40.8% of those with primary education or less. Similar results are observed among women with one child, whereby use of antenatal services was high (39.8%) for those who had secondary or higher educational levels, compared to 23.7% of those with primary education or less. However, among women with four or more children, the use of antenatal services was higher for those with primary education or less compared to those who had secondary or higher educational levels.

Figure 5: Antenatal care utilization by maternal education and parity
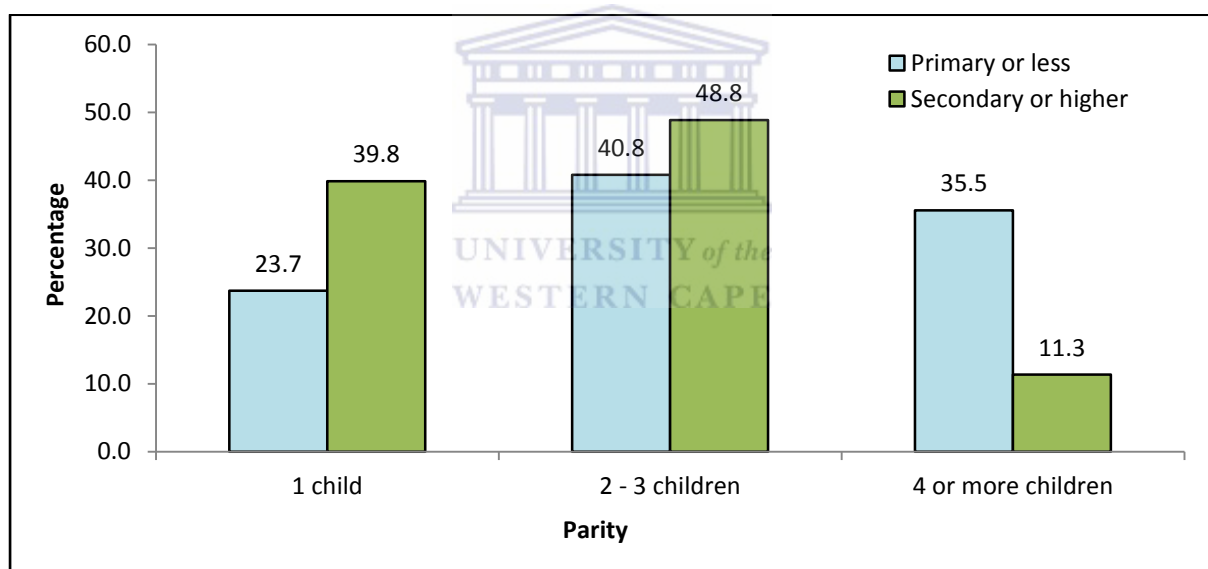
Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

4.2.1.2. Reasons for non-use of antenatal services

Figure 6 indicates the reasons women reported for not making use of antenatal services. The information contained in this figure is only for women who reported that they did not go for antenatal visits. The majority (60.0%) of the women said they did not make any antenatal visit because the facility was too far. About 20.0% (i.e. one-fifth) indicated that it was not

necessary for them to use antenatal services, while 10.0% reported that they did not know about the services, and another 10% reported that there were mental issues preventing them from using the services.

Figure 6: Reasons for non-use of antenatal services
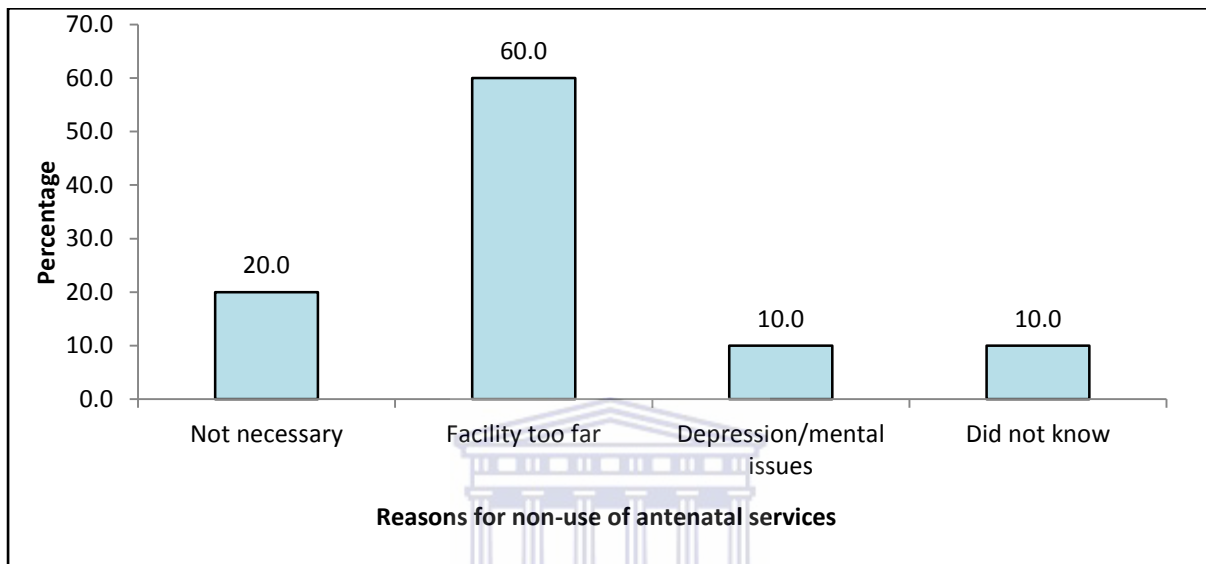
Figure 7 shows reasons for not utilising antenatal care services by maternal education. The results show that 66.7% of women with primary education or less reported that the facility was too far, compared to 57.1% of those with secondary or higher levels of education. More women (33.3%) with primary education or less indicated that it was not necessary to use antenatal services, compared to 14.3% of those with secondary or higher levels of education. Remarkably, about 14.3% of women with secondary or higher levels of education reported that they did not know about antenatal services. However, no cases of not knowing about antenatal services were reported among women with primary education or less.

Figure 7: Reasons for non-use of antenatal services by maternal education
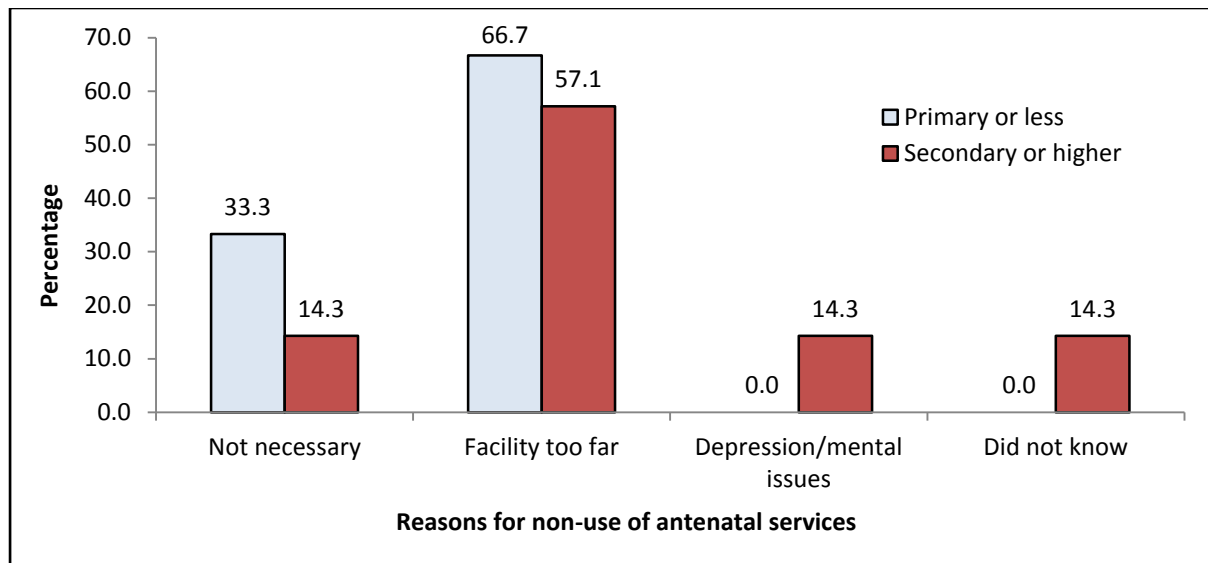
4.2.2. Delivery care

4.2.2.1. Utilization of delivery services

Table 6 shows a statistically significant association between delivery care and the following independent variables: maternal age ($P<0.01$), maternal education ($P<0.001$), parity ($P<0.05$) and place of residence ($P<0.01$). Non-facility deliveries were not reported among women aged 15-24 years. The results indicate that use of facility deliveries decreased with maternal age. Women aged 15-24 years used more health facility deliveries than those aged 35-49 years. Likewise, the use of facility deliveries increased with maternal education – where 97.4% of women with secondary or higher education reported that they used facility deliveries and 83.8% of those with primary education or less reported use of facility deliveries. Women who reported that they: were not married, had one child, were from Qumbu, were unemployed, had a monthly income of R801 or more, had higher rates of facility delivery utilization. Regarding access factors to delivery services, the majority of women reported that they walked and did not make any payment to get to the health care facilities. About 96.2% reported that they travelled distances between six to eight kilometres to reach the health facility. **Appendix D** shows that the majority (77.1%) of the women reported that they were assisted by a nurse when giving birth followed by (17.4%) of those

assisted by a doctor. Only 4.1% and 1.2% said they were assisted by a parent (or relative) and by a traditional midwife, respectively. Finally, a minority (0.3%) of women reported that they had no one to assist them when giving birth, which resulted in self-assisted birth.

Table 6: Distribution of delivery services by background characteristics

Variables	Delivery care (N)			Delivery care (%)		
	Non-facility	Facility	Total	Non-facility	Facility	Total
Predisposing Factors						
Maternal age					**	
15-24	0	83	83	0.0	100.0	100.0
25-34	8	137	145	5.5	94.5	100.0
35-49	12	105	117	10.3	89.7	100.0
Total	20	325	345	5.8	94.2	100.0
Maternal education					***	
Primary or less	13	67	80	16.3	83.8	100.0
Secondary or higher	7	258	265	2.6	97.4	100.0
Total	20	325	345	5.8	94.2	100.0
Marital status						
Not married	10	227	237	4.2	95.8	100.0
Married	10	97	107	9.3	90.7	100.0
Total	20	324	344	5.8	94.2	100.0
Parity					*	
1 child	5	118	123	4.1	95.9	100.0
2 - 3 children	7	154	161	4.3	95.7	100.0
4 or more children	8	51	59	13.6	86.4	100.0
Total	20	323	343	5.8	94.2	100.0
Enabling Factors						
Place of residence					**	
Tsolo	11	135	146	7.5	92.5	100.0
Qumbu	0	100	100	0.0	100.0	100.0
Mqanduli	9	90	99	9.1	90.9	100.0
Total	20	325	345	5.8	94.2	100.0
Employment status						
Employed	3	36	39	7.7	92.3	100.0
Unemployed	17	289	306	5.6	94.4	100.0
Total	20	325	345	5.8	94.2	100.0
Monthly income						
No income	4	64	68	5.9	94.1	100.0
R1 - R800	14	216	230	6.1	93.9	100.0
R801 and more	2	43	45	4.4	95.6	100.0
Total	20	323	343	5.8	94.2	100.0
Transport to health facility						
Walking	1	99	100	1.0	99.0	100.0
Public transport	11	162	173	6.4	93.6	100.0
Private transport	3	63	66	4.5	95.5	100.0
Total	15	324	339	4.4	95.6	100.0
Payment to health facility						
Nothing	2	100	102	2.0	98.0	100.0
R1 - R15	6	70	76	7.9	92.1	100.0

R16 or more	7	149	156	4.5	95.5	100.0
Total	15	319	334	4.5	95.5	100.0
Distance to health facility						
0 - 5km	5	118	123	4.1	95.9	100.0
6 - 8km	2	50	52	3.8	96.2	100.0
9 or more	8	154	162	4.9	95.1	100.0
Total	15	322	337	4.5	95.5	100.0

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014
*Significance level: * = P<0.05; ** = P<0.01; *** = P<0.001*
Note: *Some of the variables do not equal to a total of 345 cases due to missing data*

4.2.2.2. Maternal education and facility deliveries

Figure 8 shows type of birth assistant present during the woman's delivery as well as how maternal education was a factor. The results indicate that the majority of women with secondary or higher levels of education were assisted by a nurse and a doctor (i.e. 78.5% and 18.9% respectively), compared to those with primary education or less. The majority of women with primary education or less (72.5%), as well as those with secondary or higher education (78.5%) were assisted by a nurse at delivery. Among women who were assisted by a doctor, 18.9% reported that they had secondary or higher levels of education and 12.5% reported that they had primary education or less. About 11.3% of women with primary education or less were assisted by a parent (or relative), while 3.8% were assisted by a traditional midwife during delivery.

Figure 8: Utilization of facility deliveries by birth assistant and maternal education
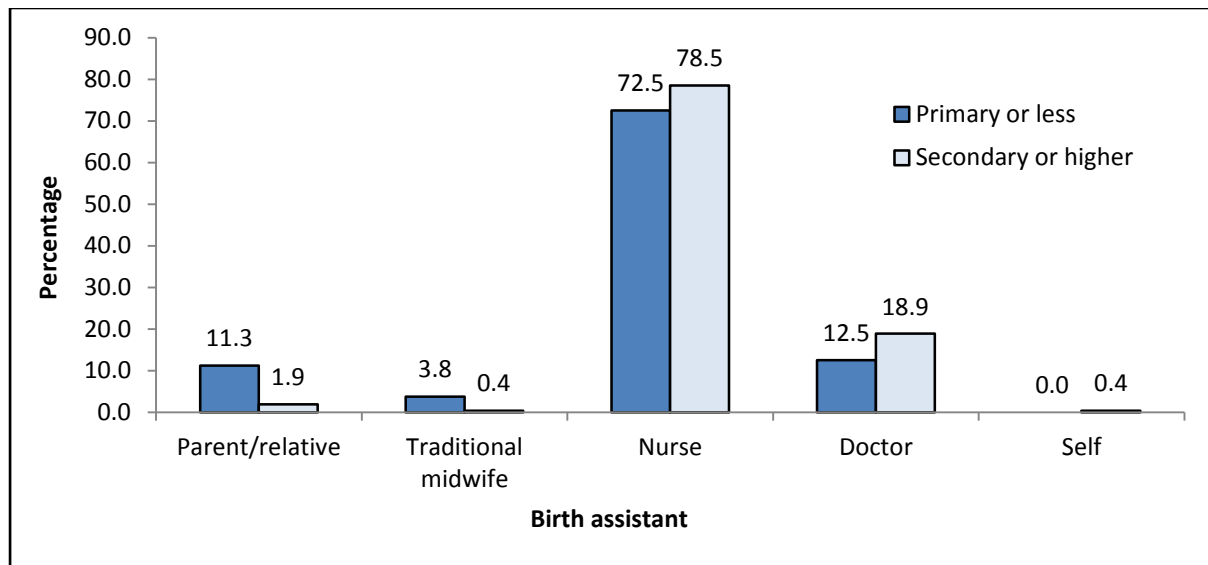
Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

Figure 9 shows the utilization of health facilities during birth by maternal education and maternal age. The results indicate that 52.2% of women aged 35-49 years with primary education or less, used facility deliveries higher than women in the other age cohorts. This was followed by 46.1% of women aged 25-34 years with secondary or higher educational levels. Comparing all age cohorts, the use of facility deliveries was lower among women aged 15-24 years with both primary education or less and secondary or higher education. Therefore, one can deduce that there is a positive relationship between age and use of facility deliveries, particularly among women with primary or lower levels of education.

Figure 9: Utilization of facility deliveries by maternal education and age
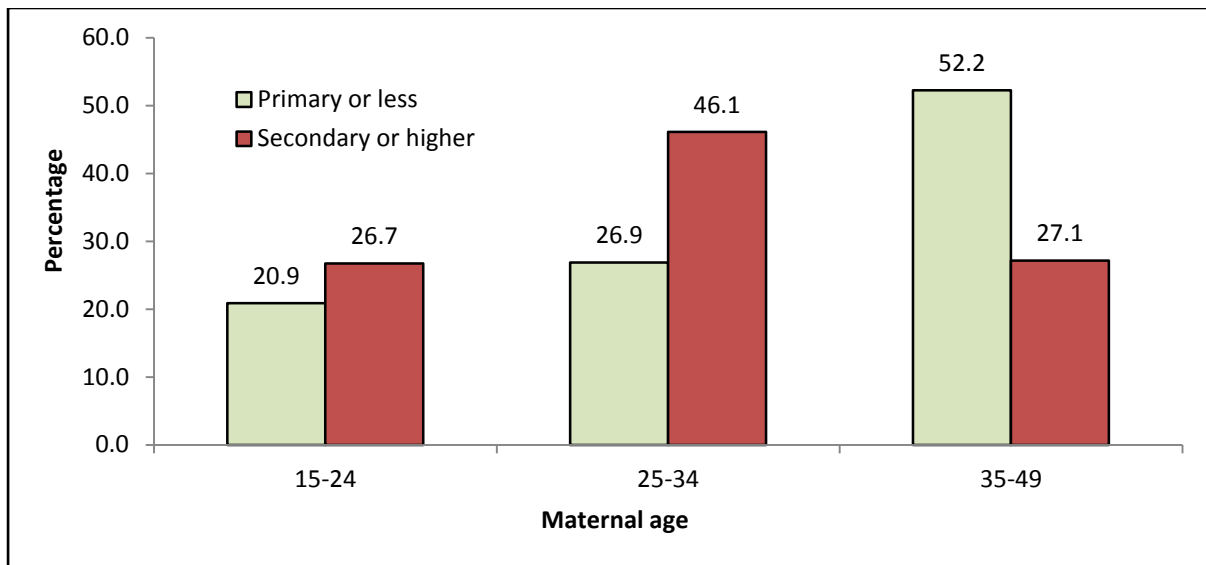
Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

4.2.2.3. Reasons for non-use of facility deliveries

Figure 10 shows the reasons for non-use of facility deliveries. The majority (50.0%) of the women reported that the reason they did not use facility deliveries was that the ambulance arrived late. More than one-third (35.0%) indicated that the reason they did not use facility deliveries was due to the facility being too far. However, about 10.0% of the women reported that cultural reasons hindered them from utilizing facility deliveries, while 5.0% felt it was not necessary for them to use facility deliveries.

Figure 10: Reasons for non-use of facility deliveries
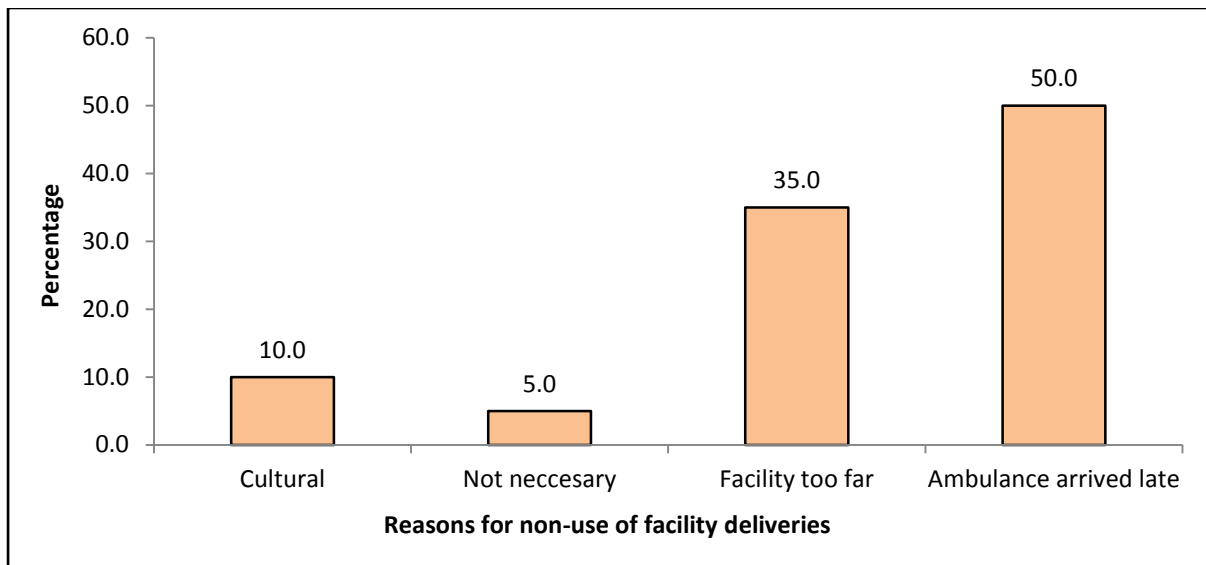
Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

Figure 11 shows that the majority (53.8%) of women with primary education or less reported that the reason they did not use facility deliveries was that the ambulance arrived late, and 15.4% of the women indicated that they did not use facility deliveries due to cultural reasons. Moreover, a considerable percentage (30.8%) of women with primary education or less reported that they did not use facility deliveries due to the facility being too far. For women with secondary or higher educational levels, the highest reason for non-use of facility deliveries was that the ambulance arrived late (42.9%) and that the facility was too far (42.9%); just 14.3% of women with secondary or higher educational levels reported that they felt it was not necessary for them to deliver their babies in health care facilities.

Figure 11: Reasons for non-use of facility deliveries by maternal education
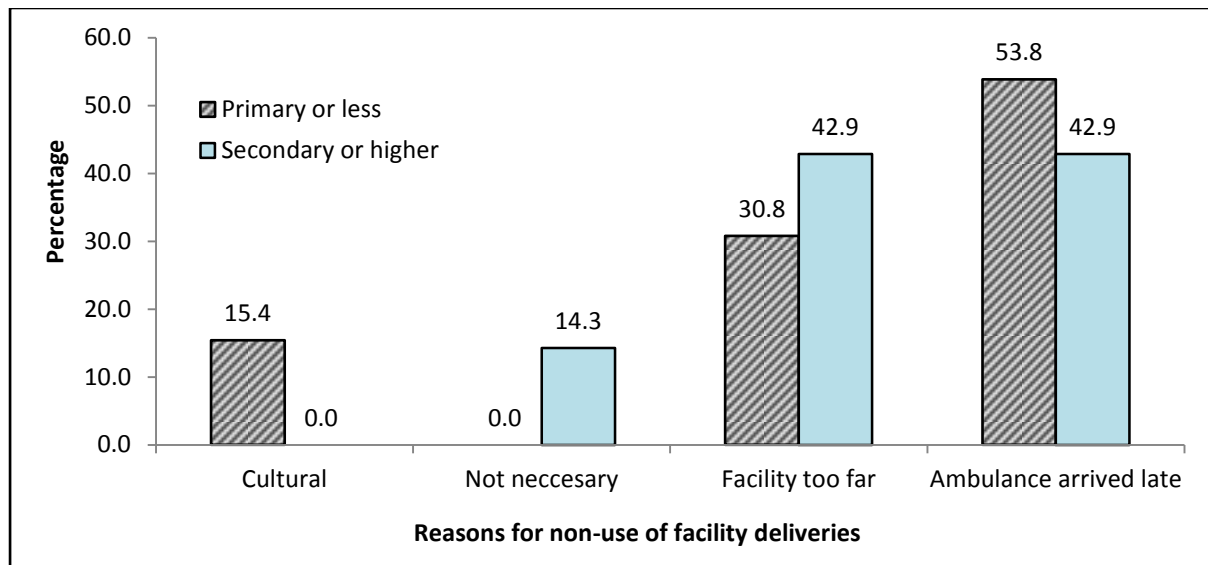
4.2.3. Postnatal care

4.2.3.1. Postnatal care utilization

Table 7 shows the results regarding postnatal services. The results show that marital status (*P<0.001*), place of residence (*P<0.001*), transport to health facility (*P<0.01*), payment to health facility (*P<0.05*), and distance to health facility (*P<0.05*), were factors that were significantly associated with postnatal services. The use of postnatal services was more prevalent among women aged 25-34 years (49.7%), followed by those aged 35-49 years (49.6%). This shows that the rate of postnatal services utilization was high among women aged 25-49 years compared to those aged less than 25 years. Regarding maternal education, women with primary education or less reported higher rates (51.3%) of postnatal care utilization compared to women with secondary or higher levels of education (48.3%). Married women reported higher rates of postnatal care utilization than those who were not married. The results further indicate that use of postnatal services increased with parity. This means that women with four or more children had higher rates of postnatal care utilization than women with less than four children. Women from Mqanduli had the highest rates of postnatal service utilization (66.7%), followed by women from Tsolo (58.9%) – the lowest was reported among women from Qumbu at only 17.0%. The results indicated that income

was an important factor in the utilization of postnatal services, where women who reported that their monthly income was from R801 or more had higher rates of postnatal service utilization. The analysis of access variables indicated that use of postnatal services was high among women who reported that they used private transport, paid from R1 to R15, and travelled for nine kilometres or more to get to the health facility.

Appendix E shows the percentage distribution of the number of postnatal check-ups. The majority (70.5%) of the women reported that they had one to two postnatal check-ups, followed by women who went for three to four postnatal check-ups (19.3%). However, only 10.2% reported that they went for five or more postnatal check-ups. Also noticeable from Appendix E is that the use of postnatal services decreased with number of postnatal check-ups – whereby the majority of women tended to go for at least two check-ups compared to four or more. **Appendix F** shows that the majority of women reported that they were assisted by a nurse when they attended postnatal services, and only 20.1% of women reported that they were assisted by a doctor.
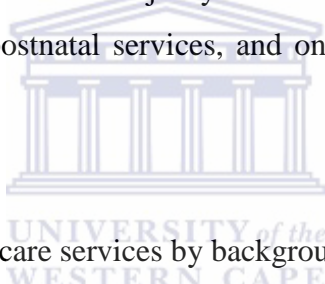
Table 7: Distribution of postnatal care services by background characteristics

Variables	Postnatal check-up (N)			Postnatal check-up (%)		
	None	Checked	Total	None	Checked	Total
Predisposing Factors						
Maternal age						
15-24	44	39	83	53.0	47.0	100.0
25-34	73	72	145	50.3	49.7	100.0
35-49	59	58	117	50.4	49.6	100.0
Total	176	169	345	51.0	49.0	100.0
Maternal education						
Primary or less	39	41	80	48.8	51.3	100.0
Secondary or higher	137	128	265	51.7	48.3	100.0
Total	176	169	345	51.0	49.0	100.0
Marital status					***	
Not married	133	104	237	56.1	43.9	100.0
Married	42	65	107	39.3	60.7	100.0
Total	175	169	344	50.9	49.1	100.0
Parity						
1 child	67	56	123	54.5	45.5	100.0
2 - 3 children	82	79	161	50.9	49.1	100.0
4 or more children	27	32	59	45.8	54.2	100.0
Total	176	167	343	51.3	48.7	100.0
Enabling Factors						
Place of residence					***	
Tsolo	60	86	146	41.1	58.9	100.0
Qumbu	83	17	100	83.0	17.0	100.0

Mqanduli	33	66	99	33.3	66.7	100.0
Total	176	169	345	51.0	49.0	100.0
Employment status						
Employed	18	21	39	46.2	53.8	100.0
Unemployed	158	148	306	51.6	48.4	100.0
Total	176	169	345	51.0	49.0	100.0
Monthly income						
No income	39	29	68	57.4	42.6	100.0
R1 - R800	115	115	230	50.0	50.0	100.0
R801 and more	21	24	45	46.7	53.3	100.0
Total	175	168	343	51.0	49.0	100.0
Transport to health facility					**	
Walking	63	37	100	63.0	37.0	100.0
Public transport	78	95	173	45.1	54.9	100.0
Private transport	29	37	66	43.9	56.1	100.0
Total	170	169	339	50.1	49.9	100.0
Payment to health facility					*	
Nothing	63	39	102	61.8	38.2	100.0
R1 - R15	33	43	76	43.4	56.6	100.0
R16 or more	72	84	156	46.2	53.8	100.0
Total	168	166	334	50.3	49.7	100.0
Distance to health facility					*	
0 - 5km	74	49	123	60.2	39.8	100.0
6 - 8km	23	29	52	44.2	55.8	100.0
9 or more	72	90	162	44.4	55.6	100.0
Total	169	168	337	50.1	49.9	100.0

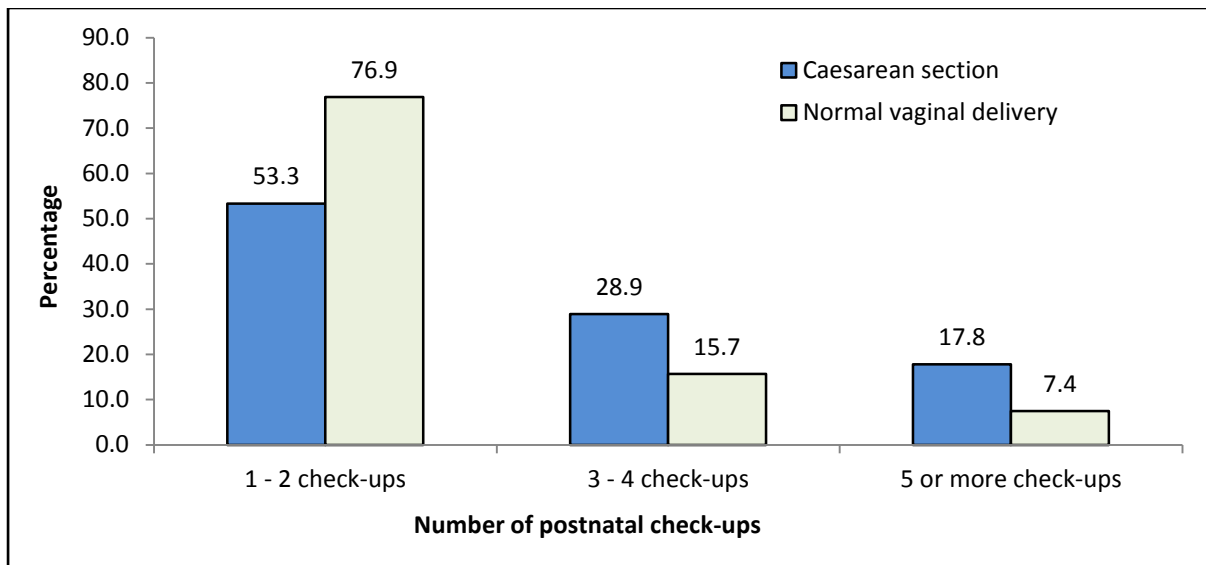*Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*
*Significance level: * = P<0.05; ** = P<0.01; *** = P<0.001*
Note: *Some of the variables do not equal to a total of 345 cases due to missing data*

The aim of **Figure 12** is to examine whether the birth method used had a relationship with the number of postnatal check-ups. Most women who went for at least two postnatal check-ups had delivered through normal vaginal delivery. The results indicated that the majority (53.3%) of women who delivered through a Caesarean section went for one to two postnatal check-ups. Likewise, the majority (76.9%) of women who delivered through normal vaginal delivery went for one to two check-ups. The majority of women who reported that they delivered through a Caesarean section went for three or more postnatal check-ups, while the use of three or more postnatal check-ups was low among women who had a normal vaginal delivery.

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Figure 12: Percentage distribution of postnatal check-ups by birth method

4.2.3.2. Maternal education and postnatal care

Figure 13 shows the utilization of postnatal care by maternal education and maternal age. The results indicate a higher use of postnatal services among women aged 35-49 years with primary education or less (56.1%). However, the proportions are lower among those aged 15-24 years, who reported having primary education or less, with the proportions of 12.2%. On the contrary, for women with secondary or higher educational levels, the use of postnatal services was high among those aged 25-34 years, and lower among those aged 15-24 years. The results indicated that use of postnatal services among women with primary education or less increased with age.

Figure 13: Utilization of postnatal services by maternal education and age
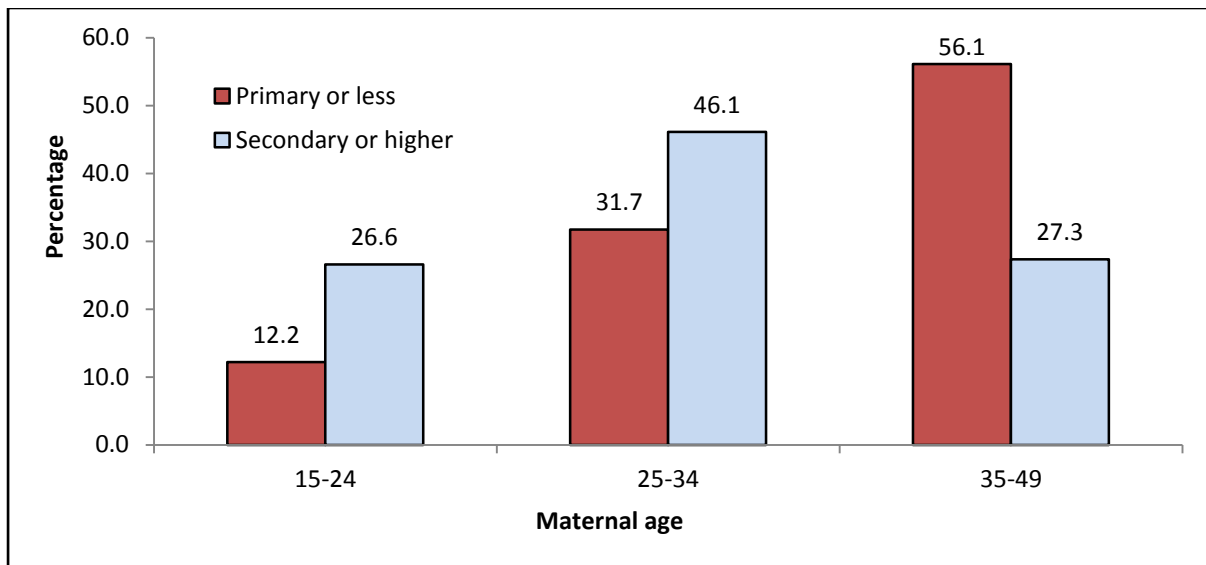
4.2.3.3. Reasons for non-use of postnatal services

Figure 14 shows the results pertaining to reasons for non-use of postnatal services by women of child-bearing age. About 71.0% of women reported that they did not use postnatal services because they felt it was not necessary. More than a quarter (28.4%) of the women reported that they did not use postnatal services due to the facility being too far.

Figure 14: Reasons for non-use of postnatal services
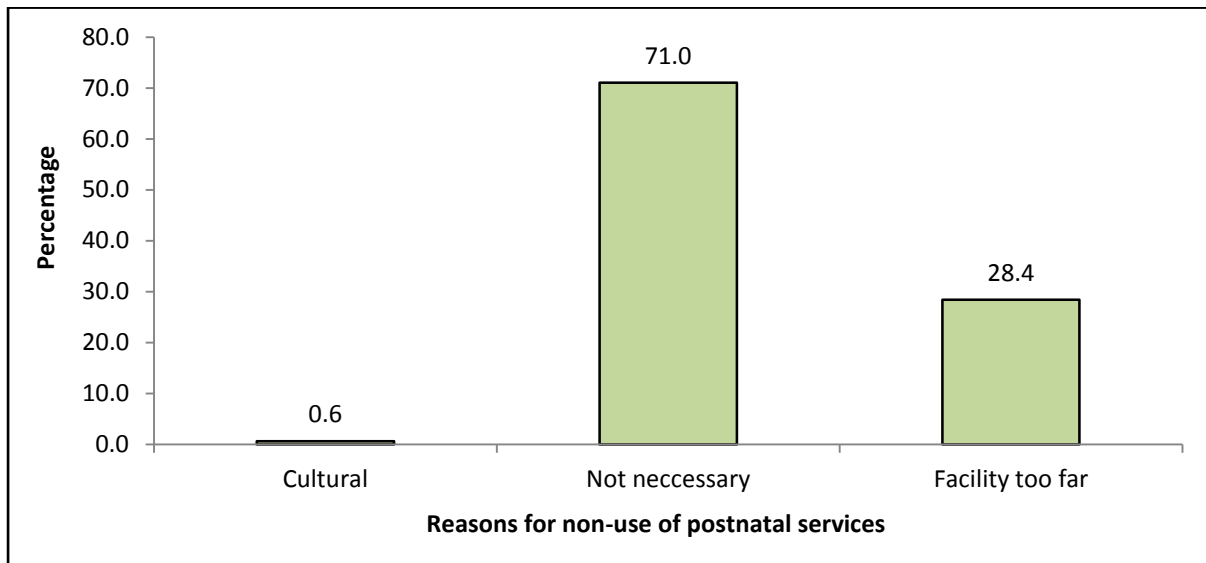
Source: *Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*

Figures 15 shows the results pertaining to reasons for not using postnatal services by maternal education. About 77.4% of women with secondary or higher educational levels reported that they did not use postnatal services because it was not necessary. Similar results are seen among women with primary education or less. About 48.7% said it was not necessary to use postnatal services and another 48.7% said the hospital was too far. Only 2.6% of women with primary education or less reported that cultural factors were the reason that they did not use postnatal services.

Figure 15: Reasons for non-use of postnatal services by maternal education
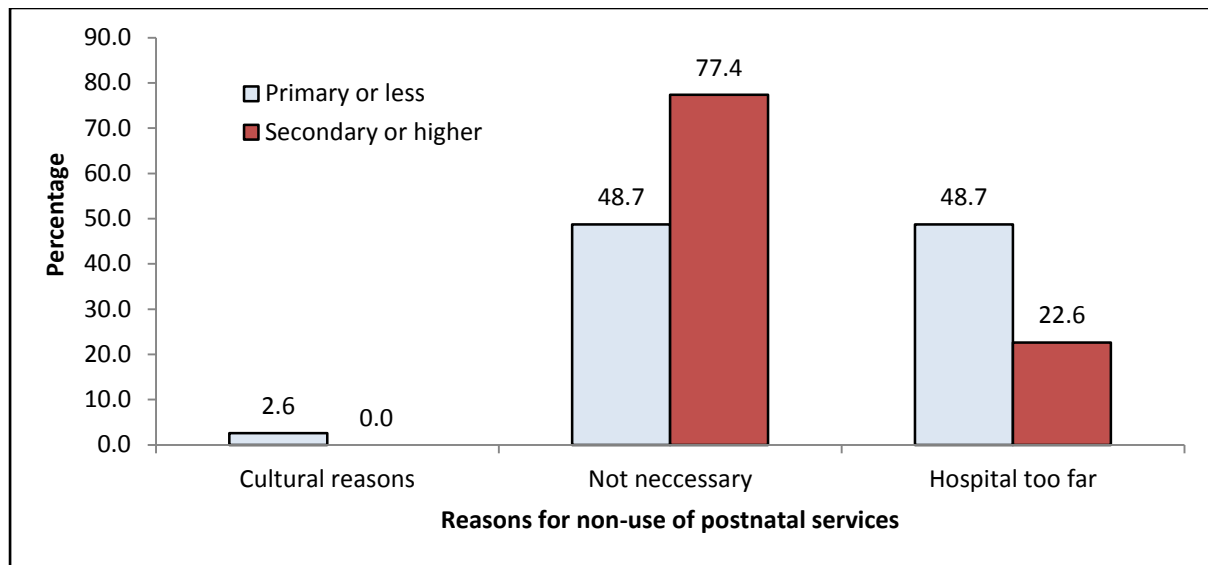
4.3. Multivariate analysis

4.3.1. Antenatal care

Table 8 shows the odds ratios of antenatal care utilization in the study area. The predictor variables are not statistically significant (as shown by their respective *p-values*) and this implies that they have no strong effect on the use of antenatal services in the study area. The results show that women who reported that they had secondary or higher educational levels were 1.85 times more likely to use antenatal services than women with primary education or less. Use of antenatal services decreased with maternal age, where women aged 35-49 years were 0.71 times less likely to use antenatal services than women aged 15-24 years. Similarly, use of antenatal services also decreased with parity, where women who reported that they had four or more children were 0.57 times less likely to use antenatal services than women who had one child. Married women were 1.93 times more likely to use antenatal services than women who were not married.

The enabling factors indicated that women from Qumbu were 3.15 times more likely to use antenatal service than women from Tsolo. Interestingly, women who were unemployed were 6.23 times more likely to use antenatal services than women who were employed. The access

characteristics indicated that women who reported that their monthly income was R801 or more were 13.12 times more likely to use antenatal services than those who reported that they had no income. Women who reported that they used private transport to access the health care facility, were 1.12 times more likely to use antenatal services than those who walked to the health care facility. Moreover, women who reported that they travelled distances of 6 - 8kilometres to access the health care facility were 3.84 times more likely to use antenatal services than women who travelled distances of up to five kilometres.

Table 8: Binary logistic regression model (odds ratios) for antenatal care utilization

Variables	β	P-value	Odds ratio	95% C.I.	
				Lower	Upper
Predisposing Factors					
Maternal education					
Primary or less[®]			1.00		
Secondary or higher	0.6	0.39	1.85	0.5	7.5
Maternal age		0.95			
15-24[®]			1.00		
25-34	-0.1	0.92	0.90	0.1	6.6
35-49	-0.3	0.78	0.71	0.1	7.6
Marital status					
Not married[®]			1.00		
Married	0.7	0.38	1.93	0.4	8.5
Parity		0.90			
1 child[®]			1.00		
2-3 children	-0.2	0.79	0.79	0.1	4.4
4 or more children	-0.6	0.65	0.57	0.1	6.3
Enabling Factors					
Place of residence		0.64			
Tsolo[®]			1.00		
Qumbu	1.1	0.38	3.15	0.2	40.1
Mqanduli	0.1	0.94	1.07	0.2	6.9
Employment status					
Employed[®]			1.00		
Unemployed	1.8	0.12	6.23	0.6	62.3
Monthly income		0.34			
No income[®]			1.00		
R1 - R800	0.7	0.43	2.02	0.4	11.6
R801 or more	2.6	0.14	13.12	0.4	409.5
Transport to health facility		0.46			
Walking[®]			1.00		
Public transport	-0.9	0.36	0.41	0.1	2.8
Private transport	0.1	0.92	1.12	0.1	11.8
Distance to facility		0.54			
0 - 5km[®]			1.00		
6 - 8km	1.3	0.28	3.84	0.3	42.9
9km or more	0.6	0.52	1.83	0.3	11.3
Constant	0.6	0.72	1.88		

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014
® = Reference category

4.3.2. Delivery care

Table 9 shows the binary logistic regression model (odds ratios) for utilization of facility deliveries by women in the study area. As with the antenatal care analysis, some of the predictor variables are not statistically significant which means that they have no strong effect on the use of deliveries in health care facilities. Regarding the predisposing factors, the results indicated that women with secondary or higher educational levels were 6.34 times more likely to deliver their babies in health care facilities than women with primary education or less. Moreover, secondary or higher educational levels were significantly associated with delivery care utilization. Married women were 0.43 times less likely to deliver their babies in health care facilities than women who were not married. Furthermore, women who had two to three children were 1.34 times more likely to deliver their babies in health care facilities than those who had only one child. Also, women who had four or more children were 0.47 times less likely to deliver their babies in health care facilities than women who had one child.

The enabling factors show that women who reported that they were unemployed were 7.20 times more likely to deliver their babies in health care facilities than those who were employed. The results show that for women in the study are, income was a factor in the use of facility deliveries, where women who reported that their monthly income was R801 or more were 1.13 times more likely to deliver their babies in health care facilities than those who had no income. The access characteristics indicated that women who reported that they used public transport to access the health care facility were more likely to deliver their babies in health care facilities than those who walked. Also, women who paid R16 or more to access the health facility were 7.99 times more likely to deliver their babies in health care facilities than those who did not pay. Moreover, women who travelled distances of six to eight kilometres were 3.01 times more likely to deliver their babies in health care facilities than those who travelled up to five kilometres.

Table 9: Binary logistic regression model (odds ratios) for delivery in health care facilities

Variables	β	P-value	Odds ratio	95% C.I.	
				Lower	Upper
Predisposing Factors					
Maternal education					
Primary or less[®]			1.00		
Secondary or higher	1.8	0.01**	6.34	1.7	24.2
Marital status					
Not married[®]			1.00		
Married	-0.8	0.19	0.43	0.1	1.5
Parity		0.41			
1 child[®]			1.00		
2-3 children	0.3	0.70	1.34	0.3	6.0
4 or more children	-0.8	0.38	0.47	0.1	2.5
Enabling Factors					
Employment status					
Employed[®]			1.00		
Unemployed	2.0	0.10	7.20	0.7	75.9
Monthly income		0.32			
No income[®]			1.00		
R1 - R800	-1.3	0.30	0.27	0.0	3.2
R801 or more	0.1	0.95	1.13	0.0	38.3
Transport to health facility		0.16			
Walking[®]			1.00		
Public transport	-3.7	0.06	0.03	0.0	1.1
Private transport	-3.3	0.08	0.04	0.0	1.5
Payment to health facility		0.24			
None[®]			1.00		
R1 - R15	1.3	0.42	3.62	0.2	82.1
R16 or more	2.1	0.14	7.99	0.5	122.3
Distance to health facility		0.53			
0 - 5km[®]			1.00		
6 - 8km	1.1	0.27	3.01	0.4	21.7
9km or more	0.7	0.44	2.06	0.3	12.9
Constant	2.8	0.20	16.20		

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014
® = Reference category
*Significance level: ** = P<0.01*

4.3.3. Postnatal care

The binary logistic regression model for postnatal care utilization (**Table 10**) indicated that place of residence (*P<0.001*) and monthly income (*P<0.05*) were factors that were significantly associated with utilization of postnatal services. Use of postnatal services decreased with maternal age, where women aged 35-49 years were 0.53 times less likely to use postnatal services than women aged 15-24 years. Women with secondary or higher levels of education were 1.44 times more likely to use postnatal services that women with primary education or less. Married women were 1.31 times more likely to use postnatal services than

those who were not married. The results show that use of postnatal services increased with parity, where women who reported that they had four or more children reported were 1.35 times more likely to use postnatal services than women with one child.

The enabling factors indicated that women from Qumbu (odds ratio = 0.07) were significantly (*P<0.001*) less likely to use postnatal services than women from Tsolo (odds ratio = 1.00). Women from Mqanduli were 1.07 times more likely to use postnatal services than women from Tsolo. Also, women who reported that their monthly income was from R1 to R800 (odds ratio = 2.74 and *P<0.01*) and those who had a monthly income of R801 or more (odds ratio = 4.73 and *P<0.05*) were significantly more likely to use postnatal services than women who had no income. Furthermore, women who reported that they were unemployed were 2.10 times more likely to use postnatal services than those who were employed. The access characteristics indicated that women who reported that they travel six to eight kilometres to access their health care facility were significantly more likely (odds ratio = 2.50 and *P<0.05*) to use postnatal services than those who travelled up to five kilometres. Women who used public transport to access the health facility were 2.93 times more likely to use postnatal services than those who walked to hospital. The results also revealed that use of postnatal services decreased with the amount of money women had to pay in order to access the health facility. Women who reported that they paid R16 or more to access the health facility were less likely to use postnatal services than women who did not make any payment.

Table 10: Binary logistic regression model (odds ratios) for postnatal care utilization

Variables	β	P-value	Odds ratio	95% C.I. Lower	95% C.I. Upper
Predisposing Factors					
Maternal age		0.32			
15-24[®]			1.00		
25-34	-0.2	0.65	0.85	0.4	1.8
35-49	-0.6	0.17	0.53	0.2	1.3
Maternal education					
Primary or less[®]			1.00		
Secondary or higher	0.4	0.26	1.44	0.8	2.7
Marital status					
Not married[®]			1.00		
Married	0.3	0.35	1.31	0.7	2.3
Parity		0.80			
1 child[®]			1.00		
2-3 children	0.2	0.57	1.21	0.6	2.3
4 or more children	0.3	0.55	1.35	0.5	3.6
Enabling Factors					
Place of residence		0.00***			
Tsolo[®]			1.00		
Qumbu	-2.7	0.00***	0.07	0.0	0.2
Mqanduli	0.1	0.86	1.07	0.5	2.4
Employment status					
Employed[®]			1.00		
Unemployed	0.7	0.21	2.10	0.7	6.6
Monthly income		0.02*			
No income[®]			1.00		
R1 - R800	1.0	0.01**	2.74	1.3	5.8
R801 or more	1.6	0.02*	4.73	1.3	17.3
Transport to health facility		0.73			
Walking[®]			1.00		
Public transport	1.1	0.44	2.93	0.2	43.5
Private transport	1.0	0.44	2.81	0.2	38.3
Payment to health facility		0.29			
None[®]			1.00		
R1 - R15	-1.6	0.23	0.20	0.0	2.8
R16 or more	-1.9	0.15	0.15	0.0	1.9
Distance to health facility		0.13			
0 - 5km[®]			1.00		
6 - 8km	0.9	0.05*	2.50	1.0	6.3
9km or more	0.7	0.12	2.06	0.8	5.0
Constant	-1.0	0.21	0.35		

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014
® = Reference category
*Significance level: * = P<0.05; ** = P<0.01; *** = P<0.001*

Chapter V

Discussion

5.1 Introduction

The main aim of the study was to investigate whether a relationship exists between maternal education and utilization of maternal health care services in the study area. Another aim was to investigate the rates of maternal health care utilization and the reasons for non-use of these services. It is important to understand the rates of maternal health care use among women in rural areas. As noted in chapter one, when health care provision and utilization is investigated at national (and provincial) level, things tend to seem okay, but if one goes deeper and looks at it from the district or municipal level, one will notice a lot of shortcomings. The following is a discussion of the findings from this study, as well as possible explanations of factors associated with the current state of maternal health care services in the study area.

5.2. Maternal health care services and access

One of the principal findings from the descriptive analysis is that the utilization of antenatal and delivery services was high, but use of postnatal services was low. Higher rates of antenatal and delivery services have been found by several researchers studying maternal health care use among women from rural areas in developing countries (Beksinska *et al*, 2006). Even though postnatal services are as important as the other dimensions of maternal health care services, there is generally not much focus on the postnatal phase (Beksinska *et al*, 2006). Several studies have found that the utilization rates of postnatal services fall below 50%, which is unacceptable, more so in countries with high maternal mortality ratios (Dhaka *et al*, 2007; Chimankar and Sahoo, 2011; Regassa, 2011; Do & Hotchkiss, 2013).

The descriptive analysis of the access factors highlighted that the majority of women surveyed did not live in close proximity to health care facilities. The situation in rural areas is quite different from that of urban settings. Rural areas are spread-out and health care facilities are generally located far away from the people they are meant to serve. In turn, this makes it

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difficult for women to access essential health care services due to financial problems. The study found that women have to travel nine kilometres or more in order to access maternal health care services. This is a double-burden for these women, who already do not have much financial means to access these facilities. Women who are located very far from health facilities have to pay large amounts of money to get to those facilities. This is due to that these women have to take several taxi's to get to the health facility. For instance, women from the rural areas of Tsolo have to take a taxi to town, and then another taxi which will drop them at Dr Malizo Mpehle Memorial Hospital. Therefore, distance has serious implications on the use of maternal health services, where women who travel long distances tend to find it difficult to use the available maternal health care services. Studies have found that distance is a barrier to utilization of maternal health care services (Tsoka *et al*, 2003; Ensor and Cooper, 2004, Gage, 2007; Harris *et al*, 2011; Silal *et al*, 2012).

## 5.3. Explanations for non-use of maternal health services

The highest rate of non-use of maternal health care services was recorded among women who reported that they were not using postnatal services. Among the reasons given for non-use of maternal health care services, the majority of women reported that: (a) it was not necessary to use maternal health services; (b) the facilities were too far; and (c) the ambulance arrived late. These findings point to the fact that distance is a barrier to maternal health care utilization by pregnant women in the study area. These results are echoed by the literature. A study in Malawi by Kambala *et al* (2011) found that women did not make full use of maternal health care services because of problems experienced, such as: walking long distances to get to health facility, having to deal with rude health personnel, as well as other barriers.

Moreover, it should be noted that distance is not the only reason women do not utilize maternal health care services. The attitudes women have towards the health care system and the services offered within this system can also be a factor in the low use of maternal health services. For instance, one might find that even if women are not located far away from the health care facility, they might not see the need to use the services offered. Over seven in ten women felt that it was not necessary to use postnatal services. As noted above, the current state with regard to postnatal care may be attributed to that health care institutions as well as

women themselves do not give much attention to the postnatal period. The only time women go for postnatal check-ups is when complications arise, either with the baby or the mother. A study by Tsawe and Sathiya Susuman (2014) found that women are often not referred for [or told about] postnatal services by health care professionals, and this leads to lowered use rates of postnatal services.

5.4. Determinants of maternal health care utilization

As noted in chapter three, the predisposing factors are demographic factors which drive the use of maternal health care services (Young *et al*, 2005). Among the demographic factors, maternal age and maternal education are among the essential factors that are often linked to maternal health care utilization (Ibnouf et al, 2007; Simkhada et al, 2008; Regassa, 2011). One of the aims of the study was to examine the factors (*predisposing* and *enabling*) that determine the utilization of maternal health care services. What follows is a discussion of each of these factors and the role they play in the utilization of maternal health care services within the study area.
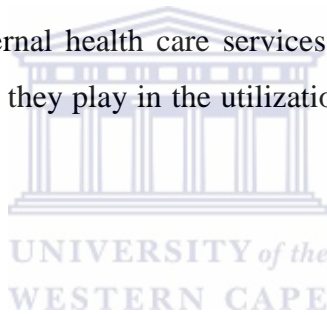
5.4.1. Predisposing factors

5.4.1.1. Maternal education

The multivariate analysis showed that even though maternal education is not statistically significant with antenatal care, the results indicated that use of antenatal services increase with maternal education. Women with secondary or higher levels of education were more likely to use antenatal services compared to those with primary education or less. Regarding delivery care, women with secondary or higher levels of education were significantly more likely to use facility deliveries compared to women with primary education or less. The use of delivery care increased with maternal education, where women with secondary or higher levels of education had higher percentages of maternal health care use. This is an important finding which supports the literature in that higher levels of maternal education are directly linked to use of maternal health care services (Babalola and Fatusi, 2009; Saxena *et al*, 2013). Moreover, these results are further supported by the descriptive analysis where it was found that a higher percentage of women in the study area had secondary or higher levels of

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education. Women with higher levels of education are often more willing to adopt modern health care services and are more likely to be concerned about their health compared with women who have lower levels of education who often tend to stick to traditional methods of health (Chimankar and Sahoo, 2011).

The low utilization of postnatal services in the study area is a concern, because postnatal services are an important phase in maternal health care and should be taken seriously. Unlike the other dimensions of maternal health care services (i.e. *antenatal care* and *delivery care*) the use of postnatal services was higher among women with primary education or less. This low rate of postnatal services use could be explained by the attitudes women have towards postnatal care. As noted above, women often don't feel the need to use postnatal services unless complications arise after childbirth. Interestingly, women who gave birth through a Caesarean section had higher percentages of postnatal check-ups compared to those who gave birth through vaginal delivery. These findings suggest that women who have given birth through a Caesarean section are expected to have more postnatal complications than women who have given birth through vaginal delivery. On the contrary, the multivariate analysis indicated that women with secondary or higher levels were more likely to use postnatal services than those with primary education or less – which confirms what has been noted in the literature (Chimankar and Sahoo, 2011; Regassa, 2011).

5.4.1.2. Maternal age

Age is an important demographic factor which has an influence on many social aspects of individuals. The multivariate analysis results indicated that the use of antenatal services and postnatal decreases with maternal age – meaning that as women age, they tend to use antenatal services less. Similarly, the bivariate results indicated that the use of delivery care decreased with maternal age. Studies have suggested that women at older ages (i.e. those aged 35-49 years) tend to think that they are better equipped, through experience, to deal with pregnancy-related complications (Birmeta *et al*, 2013). As noted above, the low use of maternal health care services at older ages could be explained by that older women tend to believe that they have the necessary skills to handle any complications that may arise during the period around pregnancy and childbirth.

5.4.1.3. Marital status

Research has shown that marital status influences the use of maternal health care services (Mekonnen and Mekonnen, 2002). Women who indicated that they were married were more likely to use antenatal care and postnatal care, while women who reported that they were not married were more likely to use facility deliveries. The results regarding marital status and use of facility deliveries confirm results found from the analysis of the Ethiopian Demographic and Health Surveys of 2000 and 2005, which also showed that women who were not married were more likely to use facility deliveries than those who were married (Mehari, 2013). Marital status is an important predisposing factor to maternal health care – and the premise is that married people have the power to influence each other in terms of health care use than people who are not married. Another study which focused on the Nigeria Demographic and Health Survey found that women who indicated that they were married were less likely to use antenatal care services than those who were never married (Babalola, 2014). The descriptive analysis indicated that the majority of women were not married. Since maternal health care services are offered for free, and delivery services are essential to reducing maternal and infant mortality – women will tend to opt for facility deliveries more compared to non-facility deliveries. This suggests that marital status might not always be a factor in maternal health care use.

5.4.1.4. Parity

Childbirth is central to maternal health care. Studies have found that parity influences the use of maternal health care services (Simkhada *et al*, 2008; Regassa, 2011). The multivariate results indicated that use of antenatal and delivery services decrease with parity. This meant that women who have given birth to four or more children were less likely to use antenatal and delivery services than women who gave birth to only one child. Literature shows that women who have given birth before tend to think that they are better equipped to handle pregnancy complications and see no need for the utilization of maternal health care services (Simkhada *et al*, 2008; Regassa, 2011; Arthur, 2012). Conversely, women who reported that they had given birth to four or more children were more likely to use postnatal services. In fact, the use of postnatal services increased with parity. An explanation for this trend is that

older women who have given birth before will tend to experience more pregnancy-related complications at older ages compared to younger women.

5.4.2. Enabling factors

5.4.2.1. Place of residence

Place of residence is an important factor in explaining use of maternal health care services (Dagne, 2010; Chimankar and Sahoo, 2011). The results indicated that nine in ten women in all the three selected areas reported that they used antenatal and delivery services. The multivariate analysis showed variations in maternal health care use among the different areas. For example, the multivariate analysis suggests that there is a high uptake of antenatal services (compared to delivery and postnatal care) in Qumbu, whereas there is a high uptake of postnatal services (compared to antenatal and delivery care) in Mqanduli. Studies have found that women in urban areas tend to use maternal health services more than women in rural areas (Munsur *et al*, 2010; Mattson, 2010). However, even though this study only considered rural areas, the results show variation in the use of maternal health services within the selected areas, particularly concerning use of postnatal services. Location is important with regard to access and use of maternal health care services. If women reside far from the health care facility, they will not be able to fully use the services due to distance barriers.

5.4.2.2. Employment status and monthly income

Having a source of income enables women to have better access and use of maternal health services. Being employed is also an important factor in maternal health care utilization. It is argued that women with a higher socio-economic status (*i.e. those who are employed and have a good source of income*), tend to use maternal health care services at a higher rate than women who have a lower socio-economic status (Chimankar and Sahoo, 2011). However, the multivariate analysis results indicated that women who reported that they were unemployed were more likely to use maternal health care services that those who reported that they were employed. This shows that in the context of the study area, being employed is not a factor which relates to maternal health care use. The descriptive analysis indicated that the majority of women in the study area reported that they were unemployed. One would expect that

women who are unemployed would use maternal health services at a rate far less than women who are employed. Therefore, it is worth noting that even though unemployment is high in the Eastern Cape Province – it does not affect the use of maternal health care services among women within the study area.

5.4.2.3. Transport, payment and distance to health facilities

The results revealed some variations with regard to use of the different dimensions of maternal health care. The mode of transport that women were more likely to use to access antenatal and postnatal services was private transport, while other women were more likely to walk in order to access delivery services. Oftentimes women in the study are have to rely on private transport to take them to health care facilities as there is not enough ambulances to serve the entire province. Moreover, the results indicated that the majority of women who reported using maternal health care services were traveling distances of six kilometres or more in order to access health care facilities. This shows that health care facilities are not located in close proximity to the women, hence they have to travel these distances to access maternal health services. Transportation, payment and distance to health care are important enabling factors for maternal health care utilization, particularly in rural contexts. If women are located far away from health facilities, they will have to pay for transport to take them to those facilities. This is often difficult for women from lower socio-economic backgrounds, more particularly in rural areas. Studies have found that transportation costs and distance to health facilities have an influence on the use of maternal health care, more so in rural areas (Tsoka *et al*, 2003; Gage, 2007; Mattson, 2010; Harris *et al*, 2011).

5.5. Conclusion

The aim of this chapter was to discuss some key findings from the analysis. Predisposing and enabling factors, as outlined above, have an effect on the use of maternal health care services, though this effect varies according to each of the three dimensions of maternal health care. The chapter which follows will elaborate more on this and add some conclusions which speak to the objectives of this study.

Chapter VI

Conclusions and Recommendations

6.1. Conclusions

The importance of maternal health care services cannot be stressed enough. These services are essential in minimising pregnancy-related complications as well as maternal and infant deaths. Findings from this study have pointed to variations in maternal health care use. These variations are better explained by socio-economic and demographic factors which affect the use of maternal health care services. Therefore, it is important to study and understand factors that contribute to maternal deaths as means of reducing the maternal mortality ratio of developing countries, particularly in rural areas. The findings from the study confirm what is known in the literature, in that rates of antenatal and delivery services were high, whereas use of postnatal services was very low. The postnatal phase is completely neglected by women in the study area where the majority of those who did not use these services felt that it was unnecessary for them to use postnatal services. This is a concern because postnatal services are an important phase in maternal health care which is meant to monitor and check for post-delivery complications. Women often don't feel the need to use postnatal services unless complications arise after childbirth. The findings indicated that the attitude women have towards maternal health services determines the frequency with which they use these services. The majority of women who did not use postnatal services indicated that it was not necessary to use these services. Moreover, other factors that played a role in non-use of maternal health care services were that the facility was located too far and ambulances did not arrive on time to assist pregnant women. The study has highlighted various predisposing and enabling factors in order to meet the research objectives and research question outlined in chapter one. These factors have differing effects on the use of maternal health care services. What follows are some concluding remarks which highlight the study objectives.

6.1.2. What determines maternal health care utilization in the study area?

6.1.2.1. Maternal education

Even though maternal education was not statistically significant with some of the dimensions of maternal health care, it did indicate the importance of having higher levels of education with regard to maternal health care use. The findings have indicated that maternal education is an important factor to maternal health care utilization. It was found that women with higher levels of education have a higher rate of antenatal and delivery care use compared to those with lower educational levels. This is an important finding which is supported by the literature. Education has the potential to empower women and give them essential tools to help them understand the need to use maternal health care services. This makes maternal education an essential predisposing factor governing the utilization of maternal health care services. The bivariate analysis of postnatal services indicated that women with lower levels of education had higher utilization proportions for postnatal care. This finding relates to the attitudes women have towards postnatal services – where the majority indicated that it is not necessary for them to use postnatal services.
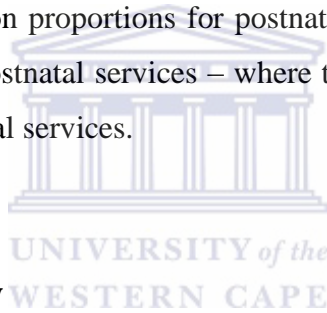
6.1.2.2. Maternal age and parity

Age is an important determinant of health care utilization. In terms of general health, people at older ages tend to experience more health-related complications. Findings from the study indicated that use of antenatal and delivery services was high among younger women (i.e. those aged 15-24 years). This is the age cohort where women would not be experienced with pregnancy or childbirth; as such, it is expected for these women to take as much precaution as possible during this phase. Conversely, use of postnatal services was higher among women at older ages (i.e. 35-49 years) who had given birth to four or more children. This finding could be explained by that women at older ages might experience more pregnancy-related complications than women at younger ages. As with age, use of antenatal and delivery services decrease with parity. Therefore, these findings suggests that as women grow older and experience more childbirths they tend to use maternal health care services less frequently as they did during their younger years. What is interesting from these findings is the suggestion of a direct link between maternal age and parity with regard to maternal health care utilization.

6.1.2.3. Marital status

The findings indicated variations in the use of maternal health care services explained by marital status. Use of antenatal services was higher among married women, whereas use of delivery and postnatal services was higher among women who were not married. Therefore, being in union had no effect on the use of maternal health care services. Generally, marital status has the power to influence health care utilization in that married people tend to make decisions together. For instance, if one is not feeling well their partner will encourage that person to seek medical care. But this depends on context due to that in some instances, men are absent to matters relating to pregnancy and childbirth, more particularly African men.

6.1.2.4. Place of residence

Even though this study did not consider urban areas, the findings show distinct variations between the areas where it is evident that some areas have better access to health care facilitates than others. Location is an important predictor of maternal health care use. Women whose place of residence is located far away from the health facility will tend to use facilities less often than those whose place of residence is located closer to the facility. Variations were found with regard to maternal health care use in the selected areas (Tsolo, Qumbu, and Mqanduli). The findings indicated that women in Qumbu had high rates of antenatal and delivery services utilization, whereas use of postnatal services was high among women from Mqanduli.

6.1.2.5. Employment status and monthly income

Being employed and having a source of income relates to affordability and use of health care services. Having higher monthly income levels was shown to increase the odds of using maternal health care services. However, an interesting finding was that use of antenatal and delivery services was higher among women who reported that they were unemployed. An explanation for this is that, this could be due to the fact that these services are offered free-of-charge. Hence, even women who are unemployed are able to access and use maternal health care services, provided that these services are accessible (i.e. close to them). Nonetheless, it is important to note that women in rural areas have fewer sources of employment and this often

hampers their use of health care services because health care facilities are often located far from them.

6.1.2.6. Transport, payment and distance to health facilities

What is evident from the findings is that transport, payment and distance to health facilities are important factors which enable women to use maternal health care services. In rural areas, health care facilities are often located far from the people they are meant to serve. This poses a serious challenge when it comes to use of these facilities. If women are located far away from health facilities, they will have to pay for transport to take them to those facilities. This is often difficult for women from lower socio-economic backgrounds, more particularly in rural areas.

6.2. Recommendations

The findings have highlighted some of the factors that determine the use of maternal health care services. Even though some of these determinants were not statistically significant with maternal health care use, the rates of maternal health care use indicated important findings. From the findings, distance was seen to be among the greatest determinant of maternal health care use. The majority of women who did not use these services reported that distance was the reason they did not use maternal health services. Due to the fact that most health care facilities are often located far away from people, it is recommended that the Department of Health implement mobile clinics and centralise health care facilities as this will bring essential health services closer to the communities. As things stand, women struggle to use these services due to the costs involved in terms of traveling to health care facilities. Centralising health care facilities would mean that instead of having one hospital that serves several local municipalities or areas, central points which women would have access to health facilities. Moreover, women in the areas need to be educated about the importance of these services, more particularly pertaining to postnatal care. Educating women about the importance of maternal health care use is essential, more so among women who reported that they did not use these services. The attitudes women have towards use of maternal health

services, particular postnatal services is a concern which could be addressed through educating them.

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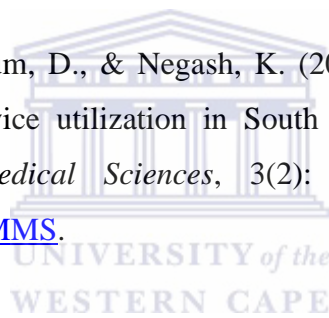
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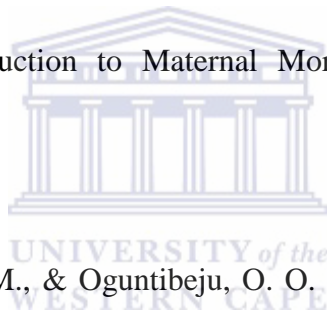
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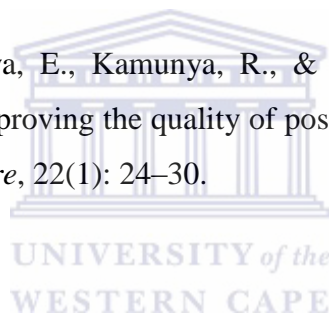
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Appendices

Appendix A: Questionnaire

ASK WOMEN ONLY: AGES FROM 15 TO 49

Please read carefully and follow the instructions

Questionnaire number:	Place of issue:_____
Date of issue of questionnaire (*e.g. 02/Jan/2014*) _____/_____/_____	e.g. *Tsolo*

A: GEOGRAPHIC LOCATION

1. Province	2. Town/Location	3. Type of residence
1. Eastern Cape ☐	1. Tsolo ☐ 2. Qumbu ☐ 3. Mqanduli ☐	1. Urban ☐ 2. Rural ☐

B. BACKGROUND CHARACTERISTICS (*please tick appropriate box. Only one box*)

4. What is your Date of Birth? *Please write on spaces provided* 1. Date _____ 2. Month _____ 3. Year _____ *Example: 05, January, 1992*	5. What is your <u>current</u> marital status? 1. Married ☐ 2. Living together *like married people* ☐ 3. Never married/single ☐ 4. Divorced/Separated ☐ 5. Widowed ☐

EDUCATION

6(a). Are you <u>currently</u> studying? 1. Yes ☐go to 6(b) 2. No ☐ *If yes, please answer 6(b)* *If no, skip to 7*	6(b). If you are currently studying. At which level are you currently in? 1. High school ☐ 2. Tertiary ☐ a) *High school is grade 8 to 12* b) *Tertiary is university or college*	7. What is your highest (*completed*) level of education? 1. No education ☐ 2. Primary (grade R to grade 7) ☐ 3. Secondary (grade 8-12) ☐ 4. University/College ☐

EMPLOYMENT

8. Are you currently working? 1. Yes (*including self-employed*) ☐go to 9 2. No ☐skip to 10	9. If working, which sector are you currently employed in? (*skip this question if you are not employed*) 1. Government ☐ 2. Private sector ☐

10. What is your individual (*own*) income per month (*including any monies you receive per month, whether from parents or from social grants*)?

1. No income ☐
2. R1 to R800 ☐
3. R801 to R3200 ☐
4. R3201 to R6400 ☐
5. R6401 to R12800 ☐
6. R12801 or more ☐

MEDIA EXPOSURE (*please select one box*)

11. How often do you listen to the radio?	12. How often do you read newspapers/magazines?	13. How often do you watch TV?
1. Never listen ☐ 2. At least once a week ☐ 3. Almost every-day ☐	1. Never read ☐ 2. At least once a week ☐ 3. Almost every-day ☐	1. Never watch ☐ 2. At least once a week ☐ 3. Almost every-day ☐

1

C. PREGNANCY AND HEALTHCARE RELATED QUESTIONS

Please answer the following questions related to the time of your pregnancy

14. When you were pregnant, did you have medical aid? 1. Yes ☐ 2. No ☐	15. What means of transport did you mostly use to get to hospital/clinic/health center? 1. Walk ☐ 2. Taxi ☐ 3. Private (*own*) transport ☐	16. How much did mostly you pay to get to hospital/clinic/health center and back home? 1. Nothing ☐ 2. R1 to R15 ☐ 3. R16 or more ☐

17. How far are you from your hospital/clinic/health center? 1. 0-5km ☐ 2. 6-8km ☐ 3. 9km or more ☐	18. At what age did you give birth to your **FIRST** child? Write that age here: _____ *Example: 17 years*	19. Have you given birth in the **LAST TWELVE MONTHS**? 1. Yes ☐ 2. No ☐

20. How many children have you **EVER** given birth to (*all your children, including those who died AFTER birth*)? 1. One ☐ 2. Two ☐ 3. Three ☐ 4. Four ☐ 5. Five or more ☐	21. Are you currently pregnant? 1. Yes ☐ 2. No ☐ 3. Don't know ☐

D. ANTENATAL, DELIVERY, AND POSTNATAL SERVICES (*please refer to your last/latest pregnancy and birth*)

ANTENATAL (*please tick the most appropriate box, only one box*)		
22(a). How many check-ups did you go to (*at hospital/clinic/health center*) for your pregnancy? 1. None ☐ *go to 22(b)* 2. 1 to 3 ☐ 3. 4 or more ☐ *If you selected "1 to 5 or more", please skip to 23*	22(b). If **none**, what was your main reason for not going for check-ups? (*do not answer if you did go to one or more check-ups*) 1. Cultural ☐ 2. Not necessary ☐ 3. Hospital/clinic too far ☐ 4. Depression/mental stress ☐ 5. Not in good mood (*mentally*) ☐ 6. Did not know about check-ups ☐	23. Did you (at any point) regret being pregnant? 1. Yes ☐ 2. No ☐
24. Did you communicate with your husband/partner about going for check-ups during pregnancy? 1. Yes ☐ 2. No ☐	25(a). Did you need permission to go for check-ups? 1. Yes ☐ *go to 25(b)* 2. No ☐ *skip to 26*	25(b). If **YES**, from whom did you need to get permission? (*do not answer if you DIDN'T NEED PERMISSION to go for check-ups*) 1. Parents ☐ 2. Partner/husband ☐

DELIVERY (*please tick the most appropriate box, only one box*)	
26. By which method did you give birth to your last child? 1. Normal vaginal delivery ☐ 2. Caesarean section/operation ☐	27(a). At which place did you deliver (*or give birth to*) your child/children? 1. Hospital/clinic/health center ☐ *skip to 28* 2. Home ☐ *go to 27(b)* 3. Other ☐ *go to 27(b)*
27(b). If **not** hospital/clinic/health center, why not? 1. Cultural reasons ☐ 2. Not necessary ☐ 3. Hospital too far ☐ 4. Ambulance arrived late ☐	28. Who assisted you when you were giving birth? 1. Parent/relative ☐ 2. Traditional midwife ☐ 3. Nurse ☐ 4. Doctor ☐ 5. Self ☐
29(a). Did you make the final decision about where to give birth? 1. Yes ☐ *skip to 30 (a)* 2. No ☐ *go to 29(b)*	29(b). If **no**, who decided where you should give birth? 1. Parents ☐ 2. Partner/husband ☐

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POSTNATAL *(please tick the most appropriate box, only one box)*		
30(a). Did you go for check-ups after giving birth? 1. Yes ☐ *skip to 31* 2. No ☐ *go to 30(b)*	**30(b). If No, please give reasons why not?** *(answer only if you did NOT go for check-ups)* 1. Cultural reasons ☐ 2. Not necessary ☐ 3. Hospital too far ☐	**31(a). If you went for check-ups after giving birth, how many did you go to?** *(don't answer if you DID NOT go for check-ups)* 1. 1 to 2 ☐ 2. 3 to 4 ☐ 3. 5 or more ☐

31(b). If you went for check-ups after giving birth, who assisted you with the check-up? *(don't answer if you DID NOT go for check-ups)* 1. Nurse ☐ 2. Doctor ☐ 3. Other ☐	**32(a). After giving birth to your last child, did you regret having the baby?** 1. Yes ☐ *go to 32(b)* 2. No ☐ *skip to 33* *If your answer is Yes, go to 32(b).* *If No, skip to question 33.*
32(b). If Yes, what do you think was the reason for you regretting having the baby? *(answer only if you answered YES to 32a)* 1. Had no support from partner/husband ☐ 2. Did not have money to raise the baby ☐ 3. Had not planned to be pregnant ☐ 4. Other ☐	**33(a). After giving birth to your LAST CHILD, were you able to bond with the child/baby?** 1. Yes ☐ *skip to 34* 2. No ☐ *go to 33(b); 33(c) and 33(d)* *If YES, please skip to 34* *If NO, please answer 33(b); 33(c) and 33(d)*
33(b). If NO, for how long did you feel this way? *(answer this question only if you responded with No to the previous question)* 1. Up to 6 days ☐ 2. 7 days to 13 days ☐ 3. 14 days or more ☐	**33(c). If NO, what do you think was the reason for you NOT being able to have a bond having the baby?** *(answer only if you answered NO to 33a)* 1. Had no support from partner/husband ☐ 2. Had not planned to be pregnant ☐ 3. Other ☐
33(d). If you were NOT able to bond with your child, did you receive counselling *(psychologist/social worker)*? 1. Yes ☐ 2. No ☐	**34. Did you communicate with your husband/partner about going for check-ups after giving birth?** 1. Yes ☐ 2. No ☐

E. PSYCHOLOGICAL ISSUES *(please refer to your last/latest pregnancy and birth)*
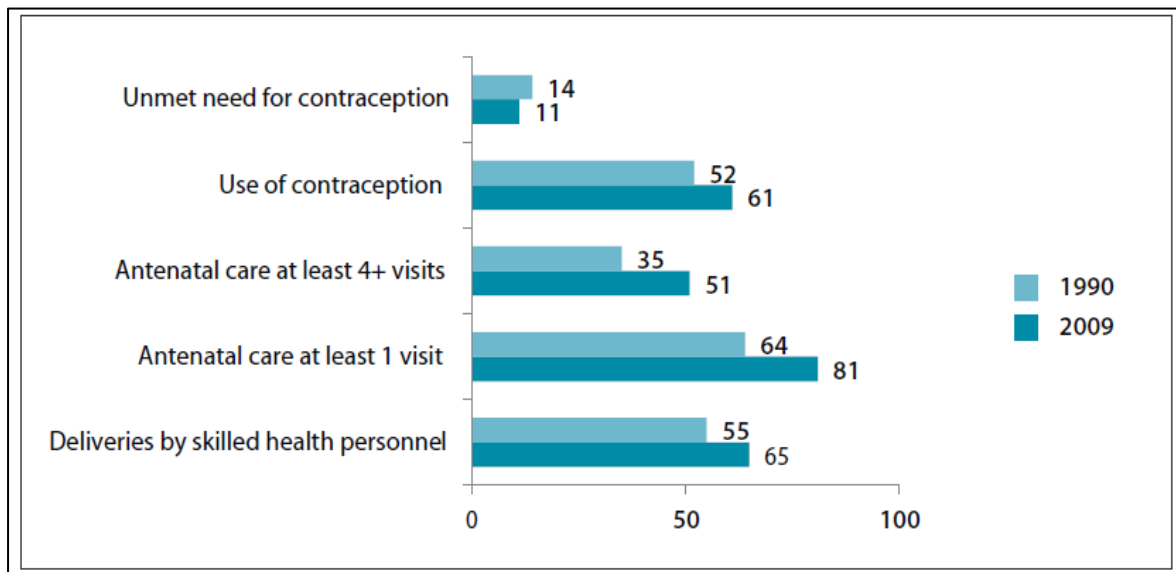
35. During pregnancy, was it difficult for you to get along with others? 1. Yes ☐ 2. No ☐	**36(a). During pregnancy did you experience any psychological / mental problems?** 1. Yes ☐ *go to 36(b)* 2. No ☐

36(b). During pregnancy did you experience any of these psychological / mental problems? *(tick all those you experienced)* – Do not answer this question if you answered NO, to 35(a) 1. Eating disorders   ☐ 2. Mood disorders   ☐ 3. Personality disorders   ☐ 4. Disorders of behaviour   ☐ 5. Sleep disorders   ☐ 6. Stress   ☐ 7. Other   ☐

*Thank you*

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Appendix B: Consent form

DEPARTMENT OF STATISTICS AND POPULATION STUDIES

03 March 2014

TO WHOM SO EVER IT MAY CONCERN

This is to inform you that Mr. **Mluleki Tsawe** is a Post Graduate student at the University of the Western Cape, in the Department of Statistics and Population Studies, under my supervision. You are kindly invited to participate in a study titled: *Utilization of health care services and maternal education in South Africa*. This work will be used for Mr Tsawe's postgraduate work and for academic purposes only. The purpose of this research is to find out the factors that affect the use of maternal health services. 'Maternal health services means, health services related to pregnant women and those who have just given birth (i.e. whether women went for check-ups, and what are the reasons for not going among women who did not go for check-ups).

In order for you to participate in this study, you must have had given birth to one or more children in your lifetime. Also, only women between the ages of 15 to 49 years can participate in this study. It would be appreciated if you could please assist in completing the questionnaire attached. Please note that: (a) your personal information will not be shared with anyone; (b) your identity will not be revealed to anyone (*please do not write your name or full address*); and, (c) you are not forced to participate in this study (if you do not want to participate in the study then you are free to do so).

It is hoped that the results of this study will helpful to the government and policy-makers in promoting women's health and ensuring that women receive adequate health care during their pregnancy, birth, and after they have given birth.

For more information about the study, please contact:

1. Mr Mluleki Tsawe Cell: 071 424 2271	2. Prof A Sathiya Susuman Tel: 021 959 3898	3. Department of Statistics & **Population Studies** (Contact person: Mr Leslie Selbourne) Tel: 021 959 3039
Email: 2861022@myuwc.ac.za	Email: sappunni@uwc.ac.za	Email: lselbourne@uwc.ac.za

Thanking you

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WESTERN CAPE

A place of quality, a place to grow, from hope to action through knowledge

Appendix C: Reproductive health indicators in developing regions, 1990 and 2009 (%)

Source: WHO, UNICEF, UNFPA and The World Bank estimates – (**Trends in Maternal Mortality, 2010**)

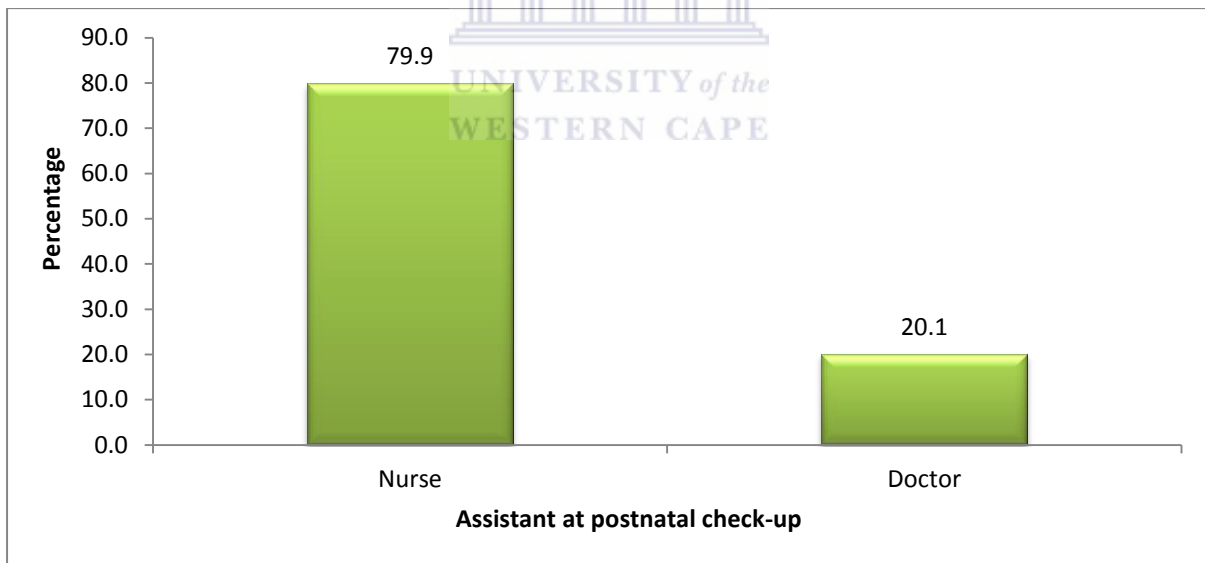Appendix D: Type of birth assistant present at birth
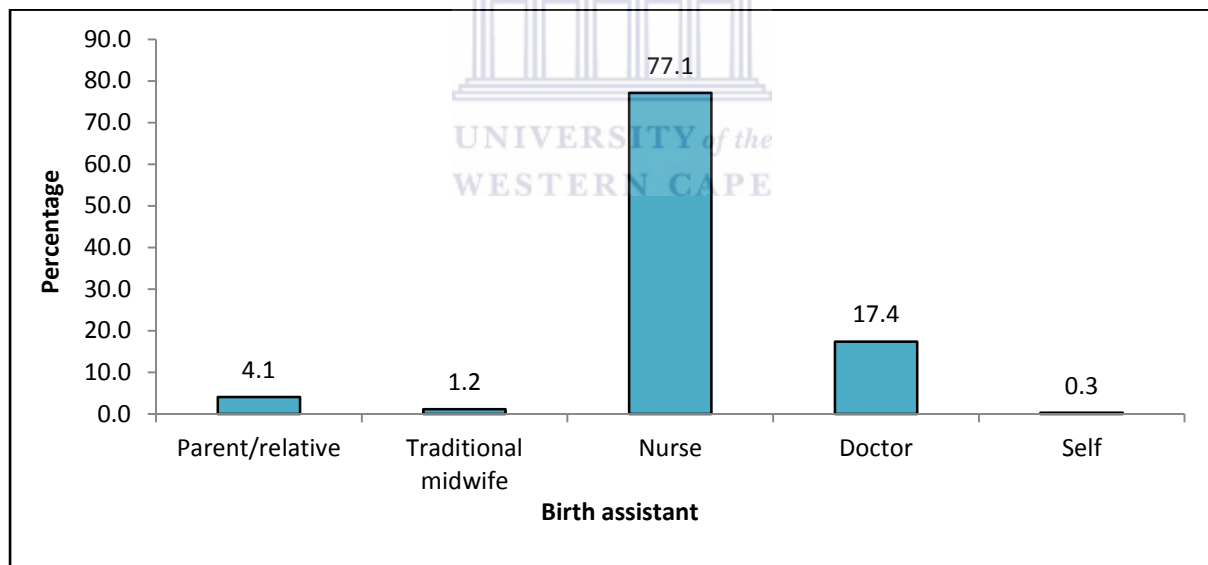
Source: *Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014*

Appendix E: Percentage distribution of the number of postnatal check-ups
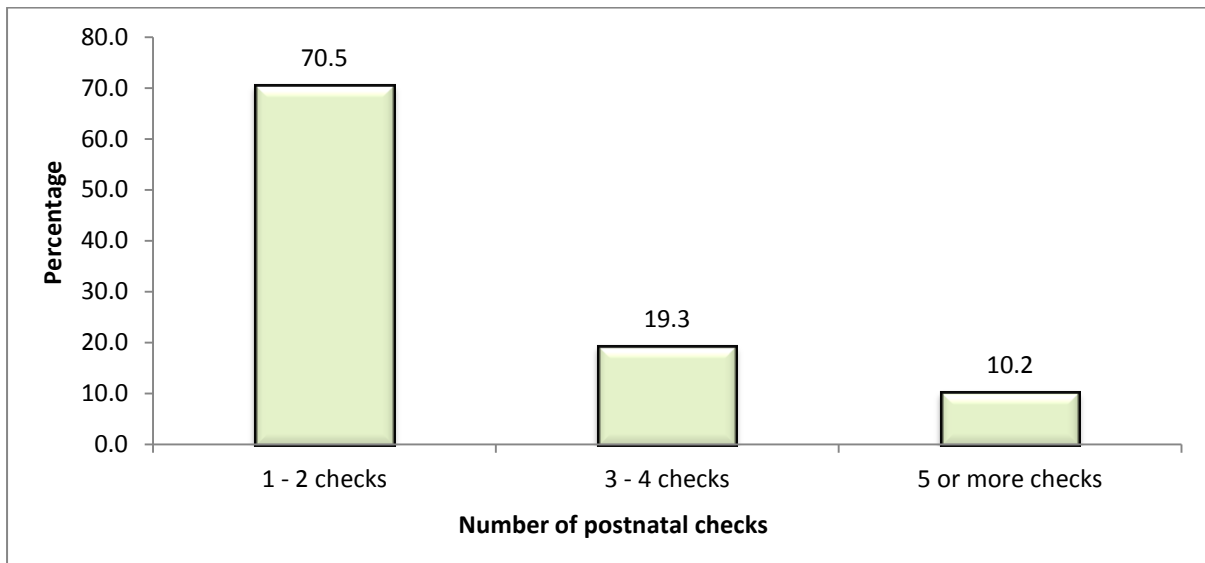
Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

Appendix F: Type of assistant at postnatal check-up

Source: Primary data, O.R. Tambo district, Eastern Cape, South Africa, 2014

Appendix G: Published article - Abstract

Determinants of access to and use of maternal health care services in the Eastern Cape, South Africa: a quantitative and qualitative investigation

Abstract

Background

The main aim of the study is to examine whether women in Mdantsane are accessing and using maternal health care services. Accessibility of maternal health care facilities is important in ensuring that lives are saved through the provision and use of essential maternal services. Therefore, access to these health care services directly translates to use – that is, if women cannot access life-saving maternal health care services, then use of such services will be limited.

Methods

The study makes use of mixed methods to explore the main factors associated with access to and use of maternal health care services in Mdantsane. For the quantitative approach, we collected data using a structured questionnaire. A sample of 267 participants was selected from health facilities within the Mdantsane area. We analysed this data using bivariate and multivariate models. For the qualitative approach, we collected data from health care professionals (including nurses, doctors, and maternal health specialists) using one-on-one interviews.

Findings

The study found that women who were aged 35–39, were not married, had secondary education, were government employees, and who had to travel less than 20 km to get to hospital were more likely to access maternal health services. The qualitative analysis provided the insights of health care professionals regarding the determinants of maternal health care use. Staff shortages, financial problems, and lack of knowledge about maternal health care services as well as about the importance of these services were among the major themes of the qualitative analysis.

Conclusion

A number of strategies could play a big role in campaigning for better access to and use of maternal health services, especially in rural areas. These strategies could include (a) the inclusion of the media in terms of broadcasting information relating to maternal health services and the importance of such services, (b) educational programs aimed at enhancing the literacy skills of women (especially in rural areas), (c) implementing better policies that are aimed at shaping the livelihoods of women, and (d) implementing better delivery of maternal health care services in rural settings.

Source: http://www.biomedcentral.com/content/pdf/1756-0500-7-723.pdf