KNOWLEDGE AND UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI

by

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submitted in accordance with the requirements for
the degree of

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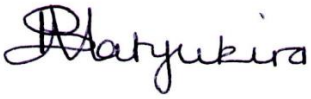
DECLARATION

I declare that **KNOWLEDGE AND UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI** is my own work and that all sources I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



09 January 2014

SIGNATURE **DATE**

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ABSTRACT

The aim of the study was to investigate the knowledge and utilisation of antenatal care (ANC) services by pregnant women at a clinic in Ekurhuleni. A quantitative, descriptive correlational study was carried out on 90 eligible pregnant women. Data were collected with a self-administered questionnaire and analysed with the help of a statistician using the Epi Info version 7 computer program.

The results of the study indicate that most women initiated ANC later than the recommendations by the World Health Organization (WHO). Over half of the respondents had overall good knowledge of ANC, but lacked knowledge of medication and screening tests done during pregnancy, some danger signs during pregnancy and of exclusive breastfeeding. Factors that were identified as associated with late initiation of ANC were current employment status, number of children, transport costs to clinic and number of antenatal visits.

Keywords

Antenatal care; antenatal care utilisation; initiation of ANC; knowledge about ANC; pregnant woman; timing of ANC.

DEDICATION

This study is dedicated to those we never got a chance to share a life with and to the ones yet to be born

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ACRONYMS

ANC	Antenatal care
DoH	Department of Health
ECDC	European Centre for Disease Prevention and Control
GDHSD	Gauteng Department of Health and Social Development
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The experience of pregnancy and childbirth has proved to be a major risk for women, a risk that is filled with suffering and even resulting in death for thousands of women worldwide (South Africa 2010:66). The United Nations Children's Fund (UNICEF) estimated that every year more than 500 000 women die of problems that are related to pregnancy and childbirth (UNICEF 2010:4). Most of these deaths, about 99%, were concentrated in developing countries, mostly sub-Saharan Africa and Asia, with sub-Saharan Africa contributing to 87% of such deaths globally, as reported by the United Nations (UN) (2011:28). The major causes of maternal mortality in the developing regions are haemorrhage and hypertension, which contribute to half of all deaths in expectant and new mothers (UN 2010a:31).

Most of the deaths can be prevented or managed through the correct interventions by skilled healthcare providers and by using the correct equipment (UN 2010a:31). This is the reason that pregnant women are encouraged to attend antenatal care (ANC). Antenatal care during pregnancy enables the detection and management of the risky conditions associated with pregnancy and childbirth (UN 2011:29). Antenatal care, according to the World Health Organization's (WHO) ANC model, should be initiated in the first trimester, most preferably before or around week 12 of pregnancy (WHO 2002:12).

The South African Department of Health has issued guidelines for maternal care in South Africa (DoH 2007). This manual recommends that a woman who suspects that she is pregnant should visit an antenatal clinic to confirm her pregnancy and receive ANC. Early booking is recommended, so that the health staff can identify the risk factors in pregnancy and deal with them in

time (DoH 2007:20). Early booking can be as soon as the first menstrual period is missed up to week 12 of pregnancy (DoH 2007:20; 28). This study therefore investigates the utilisation of ANC services by pregnant women at a clinic in Ekurhuleni. The focus of the study is the timing of the first visit, women's knowledge about ANC and ANC services, and factors associated with early and late initiation of ANC visits.

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

Maternal mortality is one of the major concerns of the United Nations (UN) as indicated by the adoption of the United Nations Millennium Declaration in 2000, when member states agreed to assist one another in helping citizens of poor countries to have a better life (UN 2010b). The declaration contained eight goals, which are known as the Millennium Development Goals (MDGs). Goal 5 focuses on improving maternal mortality. The cornerstone of maternal and perinatal healthcare has been identified as ANC and it will facilitate the achievement of MDG 5 (Hoque, Hoque & Kader 2008:66a).

South Africa has adopted most of the international treaties, initiatives and programmes related to maternal and child health (King, Mhlanga & Pinho 2006:108). In addition, South Africa's laws and policies on reproductive health have been commented on as being progressive and comprehensive worldwide, owing to their recognition of human rights, including sexual and reproductive health. In its commitment to ensuring that all pregnant women had access to care, especially poor women, South Africa introduced free for all health services in public health facilities for pregnant women in 1994 (Harrison 2009:14). Since 1998 the ANC attendance has remained high, with a percentage of over 90% and the same percentage has been maintained according to the MDG report for 2010 (Beksinska, Kunene & Mullick 2006:1; SA 2010:71).

However, although ANC services are free and the majority of the women have access to them, most women initiate ANC late. According to national statistics, the proportion of women who initiate ANC during the recommended guidelines (within the first 12 weeks of pregnancy) is very low. The National Department of Health (NDoH) Annual Report (2011/2012) stated that only 40.2% pregnant women in South Africa initiated ANC before 20 weeks of pregnancy (DoH 2012:54). Gauteng Department of Health and Social Development (GDHSD), which comprises six local government authorities (Ekurhuleni included), confirmed that pregnant women continue to initiate ANC late in pregnancy (GDHSD 2011a:107). In 2009/2010, only 25.3% initiated ANC before 20 weeks of pregnancy, and in 2010/2011, only 30.7% of pregnant women initiated their ANC before 20 weeks' gestation (GDHSD 2011b:65; GDHSD 2011a:107). Ekurhuleni district itself recorded the lowest rate of 20.5% among all the districts in Gauteng of pregnant women who sought ANC before 20 weeks of gestation in 2011/2012 (GDHSD 2011b:65).

Information gathered from the clinic records indicates that pregnant women are initiating ANC late in their pregnancy, as shown in Table 1.1 From January to June 2012, the proportions of pregnant women who initiated ANC late ranged from 54.8% to 94.4%, respectively.

Table 1.1: Antenatal care first visits from January to June 2012

Month	ANC first visits before 20 weeks	ANC first visits after 20 weeks	Total	% of women initiating ANC late
January	1	15	16	93.8
February	2	34	36	94.4
March	11	47	58	81.0
April	16	41	57	71.9
May	8	17	26	65.4
June	14	17	31	54.8

Source: Elsburg ANC clinic attendance register

1.3 STATEMENT OF THE RESEARCH PROBLEM

Antenatal care is one of the means to reduce maternal mortality and morbidity with interventions and information that promote the health, wellbeing and survival of mothers and their babies (UN 2012:32). Although ANC services are free and highly accessible in South Africa, most women initiate ANC late in pregnancy. Ekurhuleni recorded the lowest proportion (20.5%) of pregnant women who initiated ANC before 20 weeks. Statistics from the study site underline the tendency to late ANC initiation. It is against this background that the researcher decided to investigate the utilisation of the ANC services at a clinic in Ekurhuleni.

1.4 AIM OF THE STUDY

The aim of the study is to investigate knowledge of and utilisation of ANC services by pregnant women at a clinic in Ekurhuleni.

1.4.1 Research objectives

The objectives of this study are:

- To establish the timing of the first ANC visit by pregnant women
- To assess pregnant women's level of knowledge about ANC
- To determine the factors associated with early and late initiation of the first ANC visit

1.4.2 Research questions

The study is guided by the following research questions:

- Are pregnant women attending the first ANC visit according to the WHO's antenatal care model of the first trimester?
- What is the knowledge level of pregnant women about ANC?
- What are the factors associated with early and late initiation of antenatal care?

1.5 RESEARCH DESIGN AND METHOD

In trying to understand the utilisation of ANC services by pregnant women at a clinic in Ekurhuleni, the researcher used a descriptive correlational research design. The researcher described the utilisation of ANC services by pregnant women, and assessed whether there are associations between pregnant women's timing of initiation of ANC (measured according to gestational age at time of first ANC visit) and other factors such as socio-demographic characteristics, economic factors, obstetric history and attitude to current pregnancy, and women's knowledge of ANC. A quantitative approach was used for data collection and analysis. Data collection was done with a self-designed structured questionnaire through a self-reporting method. The respondents for the study were selected by systematic sampling and a targeted sample size of 30% of the monthly prevalence was used, giving a total of 90 respondents. Steps were taken to ensure validity and reliability of the data collection instrument and the research design.

Details of the research design and method are provided in chapter 3.

1.6 SCOPE OF THE STUDY

The study focused on the timing of the first ANC visit and factors associated with the timing of the first visit. It was conducted at the ANC section of a clinic in Ekurhuleni and assessed women's knowledge of these services. Prospective respondents for the study were pregnant women who are using ANC services at the clinic. The researcher limited this research to women who consented to participate, who could communicate in English, and who had come to the clinic to initiate ANC or for follow-up visits. Women who were too sick to participate or who refused to participate were not included in the study.

1.7 SIGNIFICANCE OF THE STUDY

This research will provide better understanding of what determines the pregnant woman's decision to initiate ANC early or late. The key factors associated with early and late booking are important in assisting planners of health education to develop effective health interventions for pregnant women and eventually improve the health status of women. Also in line with planning effective health interventions, assessment of pregnant women's knowledge about ANC will reveal their knowledge gaps so that the design of intervention programmes will be well informed.

1.8 DEFINITIONS OF KEY CONCEPTS

Antenatal care: Kindersley (2007) defines ANC as the care that is given to a pregnant woman and her unborn baby throughout the pregnancy. This care involves regular visits to the doctor or midwife, who performs abdominal examination, blood and urine tests, and monitors blood pressure and foetal growth to detect disease or potential problems. In this study, ANC is provided by midwives to pregnant women with low or intermediate risks. Care starts from the confirmation of pregnancy, continues throughout the pregnancy, but does not include delivery.

Antenatal care services: These services are offered to pregnant women for the best pregnancy outcomes for them and their babies, and include screening for pregnancy problems, assessment of pregnancy risks, treatment of problems during pregnancy, medication to improve pregnancy outcomes, health education, and physical and psychological preparation for birth and parenthood (DoH 2007:19). In this study ANC services are offered free of charge to pregnant women (as listed above) in public health facilities by the provincial government.

Antenatal care utilisation: Utilisation refers to the act of using (The Free Dictionary 2012). Antenatal care utilisation therefore means using the services provided to pregnant women at healthcare centres. In this study ANC, utilisation means using the services provided at a primary healthcare

clinic for pregnant women from the time of confirmation of pregnancy until just before giving birth.

Knowledge: Knowledge is defined by Oxford Dictionaries (2013) as the facts, information and skills acquired through experience or education. In this study, the term 'knowledge' means facts and information about ANC that are acquired by women though the experience of being pregnant, and the education they receive by attending ANC.

Maternal mortality: WHO defines maternal mortality as 'the death of a pregnant woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes' (WHO 2009:4). In this study, the term is used to highlight the importance of ANC, because lack of it has resulted in complications during pregnancy not being detected or being detected late, leading to the death of some women.

Pregnant woman: This is when a woman carries a developing foetus in her uterus (The Free Dictionary 2012). In this study, a pregnant woman refers to one of the pregnant women who are visiting a clinic in the Ekurhuleni Municipality area.

Timing: Timing refers to the selection of the best time or speed for doing something in order to achieve the desired or maximum results (Dictionary.Com 2012). In this study, timing therefore refers to the selection of the best time (within the first 12 weeks of pregnancy) to initiate ANC by pregnant women.

1.9 STRUCTURE OF THE DISSERTATION

The study is organised in five chapters, as described below:

Chapter 1: Orientation to the study. This chapter introduces and discusses the background of the research problem and gives a statement of the research problem, the aim of the study and objectives, and the definitions of key concepts.

Chapter 2: Literature review. This chapter gives an in-depth review of the literature related to the topic under study.

Chapter 3: Research design and methodology. This chapter outlines the research methodology focusing on the research design, population, sampling, data collection methods and reliability and validity of the research design and instrument of data collection. Data analysis procedures and ethical considerations for this research are explained.

Chapter 4: Data presentation, analysis and interpretation. This chapter presents the results of the study, interprets them according to the set objectives of the study, and discusses them in relation to findings from other researches.

Chapter 5: Conclusions and recommendations. This chapter reports the conclusions of the study in relation to the set objectives, outlines the limitations encountered in carrying out the research, and makes recommendations based on the findings of the research.

1.10 CONCLUSION

Chapter 1 gave a brief introduction of the background to the study in relation to the importance of ANC to pregnant women, the recommended time to start ANC and how women initiate ANC in South Africa. The aim and objectives of the study were outlined and the significance of the study was discussed. Key concepts that were used in the study were defined.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review, according to Parahoo (2006:127), involves critical reading of selected up-to-date and relevant material to find out how it can be useful to the current research. A literature review gives an understanding of what is known about a particular situation or phenomenon and enables the researcher to identify the knowledge gaps (Burns & Grove 2009:38). Through carrying out a literature review, the researcher is able to:

- Identify, refine and formulate questions
- Provide justification of current study
- Place the current study into the context of what is known about the topic
- Discuss the theoretical basis for the current study (Parahoo 2006:127).

By doing a literature review the researcher knows which problems have been investigated, those that require further investigation and those that have not yet been investigated (Burns & Grove 2009:38). The following literature review discusses ANC in South Africa, initiation of the first ANC visit, reasons given by women for late initiation of ANC, factors associated with timing of ANC, and women's knowledge about ANC.

2.2 ANTENATAL CARE IN SOUTH AFRICA

In 2007 South Africa developed guidelines for maternal care with the objective of guiding doctors and midwives who provide obstetric, surgical and anaesthetic services for pregnant women who are attended to at district clinics, health centres and hospitals where access to specialist services is

limited (DoH 2007:10). In the DoH guidelines, ANC was identified as one of the ‘pillars’ of safe motherhood together with choice of contraception, clean and safe delivery, essential obstetric care and choice of termination of pregnancy. These pillars were based on the WHO’s Safe Motherhood Initiative (DoH 2007:8).

The provision of ANC services brings with it a positive impact on pregnancy as it enables the identification of risk factors and early diagnosis of pregnancy complications and appropriate management, and healthcare management (DoH 2007:8). The positive impact can be achieved through:

- Screening for pregnancy problems
- Assessing pregnancy risk
- Treating problems that may arise during the antenatal period
- Giving medication that may improve pregnancy outcome
- Providing information to the pregnant woman
- Preparing physically and psychologically for childbirth and parenthood (DoH 2007:20)

At the first antenatal visit to a healthcare facility, a pregnant woman is issued with an antenatal care card (DoH 2007:19). This card is the principal record of the pregnancy and is filled in whenever the woman goes for an ANC visit. After the first visit, the woman is considered to be booked for ANC. The first visit is important because that is when a woman receives a complete assessment of gestational age and the risk factors. A full and relevant medical history is taken from the pregnant woman and includes:

- Current pregnancy
- Previous pregnancies, complications and outcomes
- Medical problems, including psychiatric problems and previous operations
- Familial and genetic disorders
- Allergies
- Use of medications

- Use of alcohol, tobacco and other substances
- Family and social circumstances (DoH 2007:20)

A physical examination is done and is divided into three categories:

- A general examination, which includes weight, height, heart rate, colour of mucus membranes, blood pressure, check for oedema, and palpitations for lymph nodes
- A systematic examination, which includes teeth, gums, breasts, thyroid, and heart and lung functions
- Examination of the pregnancy, including inspection and palpitation of the pregnant uterus, with measurement of the symphysis-fundal height in centimetres

Pregnant women undergo essential screening investigations, which include syphilis serology, rhesus (D) blood group, haemoglobin (Hb) level, human immunodeficiency virus and protein and glucose level in urine (DoH 2007:20). All pregnant women are given supplements of ferrous sulphate tablets to prevent anaemia, calcium tablets to prevent complications from pre-eclampsia, folic acid, and tetanus toxoid to prevent neonatal tetanus (DoH 2007:26).

After an assessment on the first visit (which should be before week 12 of pregnancy) and the woman has no risk factors, she has to go for four follow-up ANC visits in her 20th, 26th, 32nd and 38th week. If she is still pregnant, she can go for the fifth visit on week 41. Return visits of women with risk factors are scheduled according to their specific problems.

2.3 INITIATION OF THE FIRST ANTENATAL CARE VISIT

The WHO recommends that pregnant women should go for their first ANC visit in the first trimester (WHO 2002:12). This section discusses findings from previous researches on how pregnant women initiate ANC in South Africa, sub-Saharan Africa, and globally.

2.3.1 Initiation of the first antenatal care visit in South Africa

Antenatal care services for pregnant women are free in South Africa at public health facilities. However, research indicates that most women from rural areas tend to attend ANC late in pregnancy and at times they fail to go for return visits (Myer & Harrison 2003:268). Results of a descriptive study carried out in Durban showed that 47.9% of the women in the study initiated ANC late (after 20 weeks of pregnancy) and only 23.4% initiated ANC early (before 20 weeks of pregnancy). The remaining 27.8% had not initiated ANC (Sibeko & Moodley 2006:17b). An audit of ANC in rural South Africa confirms that women initiate ANC late. The audit results showed that only 9% of the participants of the study booked for ANC in their first trimester, and two thirds (67%) in their second trimester (Hoque et al. 2008:66). According to the researchers, late initiation of ANC could be explained by poor understanding of the importance of ANC, cultural practices, and socio–economic factors such as transport costs (Hoque et al. 2008:66c).

A recent comparative study of utilisation of ANC services between the developed world and the developing world indicated that South African women in an urban setting tend to attend ANC late in pregnancy compared with their counterparts in the developed world. Pregnant women in Pretoria attended antenatal clinics late in their pregnancy ($P<0.0001$), with a median of 16 weeks from conception (range 4−27 weeks), unlike Birmingham women, with a median of 6 weeks from conception (range 0−17 weeks) (Openshaw, Hlwelekazi & Pretlove 2011: 2).

Sibeko and Moodley (2006:17c) discovered that confirmation of pregnancy does not necessarily lead to initiation of ANC as pregnant women tended to delay beginning ANC, though they were aware that they were pregnant. For early bookers the average delay between confirming pregnancy and commencing ANC was two months, while for the late bookers the average delay was three months (Sibeko & Moodley 2006:17c).

2.3.2 Initiation of the first antenatal care visit in sub–Saharan Africa

Despite the recommendations by the WHO, many pregnant women in sub-Saharan Africa tend to start ANC late, especially adolescent women, resulting in them not benefiting from preventative and curative measures (Gross, Alba, Glass, Schellenberg & Obrist 2012:2). Findings from a cross-sectional study in 2008 that was carried out government health institutions in Addis Ababa, Ethiopia, where the services for ANC are free and physically accessible, support the finding that women initiate ANC late. Only 40.2% of the respondents began ANC within the recommended time (in the first trimester) and the majority (59.8%) booked late. The range of initiation of ANC was from 1–9 months gestation with a mean timing of 4 months (SD = 1.8) (Tariku, Melkamu & Kebede 2010:228). These results are in line with a community-based cross-sectional study, which was carried out in Southern Ethiopia. Only 8.9% of the respondents initiated ANC in their first trimester of pregnancy, the majority (68.2%) started ANC in the second trimester, and some (22.9%) even in the third trimester (Zeine, Woldie & Ololo 2010:78).

A cross-sectional descriptive study carried out in Kassala, Eastern Sudan, identified that of the 90% of the women who participated in the study and had at least one visit to the ANC, 40.5% initiated ANC late (with 37.4% in the second trimester and 3.1% in the third trimester). The percentage of women who were able to initiate ANC in the first trimester was 59.6% (Ali, Osman Abbaker & Adam 2010: 2).

Another cross-sectional study in south-eastern Tanzania found similar results. Of the pregnant women, 71% began ANC late with an average gestational age at initiation of ANC being 5.1 months (SD = 1.2, range 2-9) (Gross et al. 2012:4, 6).

2.3.3 Initiation of the first antenatal care visit globally

Studies in Asia indicate that most women do not initiate ANC in the first trimester as recommended by the WHO. A descriptive study in Bangladesh, which was based on national surveys, showed that the median gestation time of the first visit in 2007 was 5.0 months (Hossain 2010:402). The

majority of Nepali women do not attend ANC early, according to the results of the National Demographic Health Survey of women aged 15–49 years (Neupane & Doku 2012:867). Of these women, 45% had their first ANC visit after three months into their pregnancy, and 28% did not receive any ANC at all.

In a cross-sectional study by Ye, Yoshida, Harun-Or-Rashid and Sakamoto (2010) in Kham District, Japan, the same trend of receiving ANC late was discovered. The majority (58.7%) of the respondents in the study initiated ANC in the second trimester. Those who initiated ANC in the first trimester were only 39.9% and 1.4% even initiated ANC in the last trimester (Ye et al. 2010:26). In another study on the utilisation of ANC in the four counties in Ningxia in China, Ren (2011:e265) revealed that the majority of the women in the study started ANC in the second and third trimester of their pregnancy. According to the findings, 35.2% began ANC in the first trimester, 44.2% in the second trimester, and 20.6% in the last trimester (Ren 2011:e263).

Comparative studies between rural and urban women on the utilisation of ANC services have revealed that rural women initiate ANC late. Tran, Nguyen, Nguyen, Eriksson, Bondjers, Gottvall, Ascher and Petzold (2011) compared the pattern and adequacy of ANC in rural and urban Vietnam and discovered a wide disparity between urban and rural women in terms of initiation of ANC. Pregnant rural women tended to attend ANC later than their urban counterparts, with an urban/rural ratio of 1: 4 ($p<0.05$) in the first trimester (Tran et al. 2011:4). The late initiation of ANC by rural women could be from lack of awareness of the importance of attending ANC early or, since the proportion of women with two and more children was high in rural areas, perhaps they were trying to conceal the pregnancy to avoid penalties of contravening the limit set by the 'two-child policy' of the Vietnamese government (Tran et al. 2011:6).

Contrary to these results, studies in Texas indicated that more than half of the women initiated ANC early. Sunil, Spears, Hook, Castillo and Torres (2010:134) in their study in San Antonio, Texas, found that 60% of the

pregnant women initiated ANC in the first trimester of their pregnancy. These were women who were married, had higher income (than the women of the low-income group) and a higher level of education, and had planned their pregnancies.

2.4 REASONS GIVEN BY WOMEN FOR LATE INITIATION OF ANTENATAL CARE

In a preliminary study carried out in the rural health district of Hlabisa, KwaZulu−Natal, South Africa, women identified several reasons that prevented them from seeking ANC in time. These included accessibility (those who stayed far from the health facility could not afford the transport costs), being unsure that one is pregnant, waiting for the foetus to move, and not seeing any benefit of attending ANC. Thus they would rather go late in pregnancy and reduce the number of visits to the health facility (Myer & Harrison 2003:270).

In a study by Sunil et al. (2010:138), service-related barriers were identified as the most significant factors that influenced pregnant women's decisions on when to initiate ANC. The odds of starting ANC late were 1.7 times more on women who reported service-related concerns as problematic. The factors that were of most concern to the women included 'not having child care', 'not having transportation', 'having to wait too long to get an appointment' and 'having to wait too long in the waiting room to see a doctor or a nurse'.

Ndidi and Oseremen (2010:49, 50) in their study discovered that the reasons given by pregnant women were rooted mainly in misconceptions and ignorance of the importance of ANC. This accounted for 65.61% of the women. The reasons ranged from 'did not have serious problems or expected to have any in the first three months'; 'women do not have serious problems in early pregnancy that need a doctor's intervention'; 'don't think there is any benefit in booking in the first three months'; 'felt weak and sick most of the time and wanted to feel stronger before registering for ANC'; 'no

reason, felt it was the right time to book'; to 'was seeing a nurse at home'. This, according to Ndidi and Oseremen (2010:47), may be because women believe that it is not beneficial to start ANC in the first trimester as ANC is regarded as curative, rather than preventative. Pregnant women therefore view whatever symptoms they face in early pregnancy as normal, mild, and not serious enough to need a doctor's attention. Financial constraints and fear of the consequences of making the pregnancy public were mentioned by a few of the women with percentages of 10.1 and 9.1, respectively.

In another study, Gross et al. (2012:4) found that women attended ANC late because of inability to recognise pregnancy early (29%), poor accessibility to health facility owing to distance, difficulties in crossing rivers or poor road conditions (17%), illness or other obligations (14%), and negligence and apathy (13%).

2.5 FACTORS ASSOCIATED WITH TIMING OF ANTENATAL CARE

Simkhada, van Teijlingen, Porter and Simkhada (2008:244) carried out a systematic review of twenty-eight papers to identify and analyse the main factors that affected the utilisation of ANC services in developing countries. Maternal education, husband's education, marital status, availability, costs, household income, women's employment, media exposure, a history of obstetric complications, cultural beliefs and ideas about pregnancy and parity were identified. These findings are discussed below, indicating how some of these factors are associated with timing of the first ANC visit.

2.5.1 Age

Results from an analysis of demographic health surveys of 21 countries in sub-Saharan Africa (Magadi, Agwanda & Obare 2006:1315, 1317) found little or no variation between timing of ANC and age of the pregnant mother. A few countries with significant variations were Senegal, Côte d'Ivoire, Cameroon, Mali, Nigeria and Togo. However, after controlling for background characteristics, the authors discovered that teenagers in sub-Saharan Africa generally tend to experience poorer maternal healthcare than older women.

The teenagers were more likely to initiate ANC late, had inadequate ANC visits, delivered outside health facilities, and had unskilled birth attendants, compared with older women (Magadi et al. 2006:1322).

Some later studies found no evidence of an association between age and initiation of ANC. For example, in their study in Uganda, Atuyambe, Mirembe, Tumwesigye, Annika, Kirumira and Faxelid (2008:4) found no significant differences between adolescents and adults in terms of how early they attended ANC (OR = 0.82; 95% CI: 0, 54−1.25). Gross et al. (2012:4, 6) found no evidence of delayed initiation of ANC by adolescents in south-eastern Tanzania when comparisons were made between adolescents and adults, although adolescent women initiated ANC slightly earlier than older women, with a mean of 5.0 months (SD = 1.2, range 2−8). However, multiparous adolescents started ANC considerably later than their counterparts, with a mean of 5.5 months (SD 1.20, t = 1.43, p = 0.157).

A study carried out later in south-western Nigeria (Adekanle & Isawumi 2008:4) revealed that younger women initiated ANC later than older women. In this study, women who were younger than 25 were more likely to book in late than older women (OR = 8.3, 95% CI: 1.10−62.65). According to these authors (Adekanle & Isawumi 2008:5), this can be attributed to traditional beliefs in the area. The younger women believe that since pregnancy is not a diseased condition, they need not start ANC early, thus being indifferent to early initiation of ANC.

Contrary to these results, a study in Damascus (Bashour, Abdulsalam, Faislal & Cheikha 2008:599) found that being young (less than 20) was significantly associated with initiating the first ANC visit early (OR = 2.9; 95% CI: 1.1-7.7). Age at first pregnancy was proved to be associated with the utilisation of ANC services (Bahilu, Abebe & Yohannes 2009:47). The researchers discovered that women who were 20 years or below with their first pregnancy were three times more likely to utilise ANC services than women whose age at first pregnancy was more than 20 (AOR = 2.94 95%

CI: 1.66-5.20). This according to Bahilu et al (2009:50) can be attributed to the premise that younger women are more careful with their first pregnancy and childbirth, and therefore seek institutional care.

2.5.2 Socio-economic factors

Sunil et al. (2010:134) identified that when women have higher incomes, they tend to start ANC early. Other studies have reported that income earned by women is associated with booking for ANC. Adekanle and Isawumi (2008:3) discovered that women who had lower income booked late for ANC compared with women who had higher income ($p<0.01$).

A study in Japan provides evidence that family income is one of the most significant predictors of utilisation of ANC services. Women with high income were 2.6 times (95% CI: 1.2–5.7)] more likely to have received ANC than women with low income (Ye et al. 2010:30).

2.5.3 Education

Educated women tend to have greater awareness of the existence of ANC services and the advantages of using such services. Educated women are therefore according to Bashour et al. (2008:601) in a position to use the skills they acquired through schooling to communicate with health professionals and be more demanding about healthcare services. Ren (2011:e262) adds that younger mothers have more education and knowledge, and are more likely to accept modern healthcare, while older mothers depend more on experience of pregnancy and childbirth, and are less willing to attend formal ANC services.

Studies have documented the association of education and initiation of ANC. Adekanle and Isawumi above (2008:3) found that women with primary education or none tended to register later than those who had secondary education and above (OR = 2.6, 95% CI, 1.28–5.38). The results of Sunil et al.'s (2010:138) study (above) support the findings by Adekanle and Isawumi, as they determined that lower levels of education were associated

with late initiation of ANC. The odds of starting ANC late were 3.1 times higher for women with middle school or less.

In a comparative study of women in the developing and the developed world, Openshaw et al. (2011:3) ascertained that women in Pretoria tended to have lower educational status than their Birmingham counterparts, and therefore tended to attend ANC late. Poor education, according to Openshaw et al. (2011:3), tended to lead to decreased knowledge of problems affecting pregnancy among women in Pretoria, resulting in poorer use of healthcare services during pregnancy. A recent study of Nepalese women found that pregnant women who were not educated had higher probability of attending ANC late and a seven times greater risk of not attending ANC at all than women with at least some education (Neupane & Doku 2012:867).

Contrary to all these findings (above) about education and first ANC visit, a study by Gross et al. (2012:4) found no evidence of an association between education and early or late timing of ANC ($p = 0.987$). These results, according to the researchers, can be explained by the overall low education level in the area of their research, as most of these women have not attended secondary school (Gross et al. 2012:8).

2.5.4 Planning of pregnancy

Tariku et al. (2010:231) argue that a planned pregnancy means a wanted pregnancy, thus it is better cared for by the woman and other significant individuals. This enables the woman to initiate ANC early. In a study they carried out in Addis Ababa, Ethiopia, the researchers discovered that women with planned pregnancies tended to book early (adjusted OR = 1.87, 95% CI: 1.11-3.23) (Tariku et al. 2010:231). In line with these findings, Sunil et al. (2010:138) stated that women who had wanted pregnancies had a 50 per cent or lower risk of staring ANC late in their pregnancies.

Planned pregnancy was found to be a predictor of utilisation of ANC services (Bahilu et al. 2009:51). In their study, the researchers found that women whose current pregnancies were planned were more likely to use ANC

services than women who had unplanned pregnancies (AOR = 4.14, 95% CI; 2.18, 7.85).

2.5.5 Distance and transport costs to healthcare facility

Costs and distance to travel to the antenatal clinic have proved to be a problem that tends to limit access to the antenatal service for both urban (Openshaw et al. 2011:4) and rural pregnant women (Myer & Harrison 2003:270). Ye et al. (2010:30) found that distance to ANC services, availability of transport, and cost of transportation were significant predictors of ANC service utilisation ($p<0.05$). In their study, women who lived far from ANC services had the lowest rate of visits (OR = 2.9, 95% CI = 1.1−7.6). Women who had daily access to public transport to the nearest ANC service were 4.5 times (95% CI = 2.0-10.4) more likely to visit ANC services than those women who did not have such access. In addition, women who had high transport costs to the nearest ANC service had the lowest utilisation of ANC (OR = 2.5, 95% CI = 1.1−5.7). A strong association between distance to the health facility and utilisation of ANC services (with $p<0.05$) was reported by Onasoga, Afolayan and Oladimeij (2012:1313). In trying to explain the association, the researchers argue that many pregnant women find it distressing to walk long distances or take two or more taxis to a health facility, therefore they tend to utilise ANC services less regularly than those who live close by.

2.5.6 Parity

Studies have suggested that parity influences initiation of ANC. In research by Bashour et al. (2008:599), an association was observed between being pregnant with the first baby and early initiation of the first ANC visit (OR = 6.3; 95% CI: 1.4−28.8). According to Tariku et al. (2010:231), as parity increases, the experience of timely initiation of ANC decreases. This is evidenced by findings in their study in which respondents with first pregnancy were about two times more likely to book early than those with one parity and more. Gross et al. (2012:4) found similar results in which women with a first

pregnancy were 0.87 times more likely or three weeks earlier to initiate ANC than those who had had more than one pregnancy ($p<0.001$).

According to Ali et al. (2010:67), low utilisation of ANC services among women with high parity could be attributed to time management, limited resources in the family, and negative perceptions resulting from previous pregnancies. The researchers argue that there is a possibility that high parity women have greater experience, which make them feel more confident during pregnancy and they thus view ANC as less important.

Adekanle and Isawumi (2008:3, 5) established that 82.7% of multiparous women were likely to book late than primiparous women (78.7%; $p>0.05$). However, no significant association was found between early initiation of ANC and nulliparity. This, according to the researchers, can be explained because traditionally in south-western Nigeria, nulliparous women seek advice from multiparous women, who are regarded as more experienced and they tend to discourage them from initiating ANC early.

2.5.7 History of reproductive loss and previous pregnancy complications

A history of reproductive loss has proved a strong predictor of early ANC initiation (Gross et al. 2012:10). The researchers determined that women who had previously experienced miscarriages or stillbirths attended ANC two weeks earlier that those who did not ($p = 0.007$). Bahilu et al. (2009:50) found that previous pregnancy illness and perceived susceptibility to illness in future pregnancy were associated with utilisation of ANC services (AOR = 2.10 95% CI; 1.18, 3.71).

In a separate study, Adenkale and Isawumi (2008:5) discovered that a history of previous obstetric complications (stillbirth, caesarean section, eclampsia, and intrauterine death) had no significant association with gestational age at the start of ANC. However, women with no previous history of caesarean section (81.9%) tended to book later than those who had this history (75%), ($p>0.05$). In addition, women who had no problems in

their previous pregnancies (81.7%) were more likely to book ANC late than those who had had problems (75.8%), p> 0.05.

2.5.8 Marital status

A study by Sunil et al. (2010:138) confirmed that marital status was a predictor of initiation of ANC. They discovered that women who were living alone were 2.4 times more likely to initiate ANC late than those who were married. Women in polygamous unions (78.7%) were more likely to initiate ANC late than those in monogamous relationships (80.8%; p<0.05) (Adekanle & Isawumi 2008:3). However, Gross et al. (2012:4) found no significant association between marital status and early or late timing of ANC (p = 0.532).

2.5.9 Ethnicity

Studies have indicated that timing of ANC differs across ethnic groups. Alderliesten, Vrijkotte, van der Wal and Bonsel (2007:1232, 1235) in their prospective cohort study in the Netherlands observed delays in the timing of first ANC by non-Dutch groups compared with ethnic Dutch groups of women although that the service was universally accessible. The risk factors associated with delay were age below 20, poor language proficiency in Dutch, maternal education less than five years, multiparity, unplanned pregnancy, and unhappiness with pregnancy. Women from other Western European countries that closely resembled the Dutch ethnic group had no significant difference with the Dutch ethnic group. For the non-Dutch speaking and non-Western group of women, the high prevalence of the risk factors explained all (for Turkish women) or the greater part of the delay (on Moroccans, Ghanaian and other non-Westerners) in initiating of first visit. The delay in initiation of ANC by Dutch-speaking women who were not ethnic Dutch (Surinamese and Antillean) was not explained by the listed risk factors.

Ren's findings (2011:e263) are consistent with those of Alderliesten et al. (2007) that ethnicity had a significant effect on utilisation of adequate ANC. In her study in Ningxia, China, Hui mothers were less likely to start ANC

services in the first trimester (adjusted OR = 0.32, 95% CI 0.18−0.54) and less likely to receive five ANC (adjusted OR = 0.31, 95% CI 0.14−0.70) visits than Han mothers.

2.5.10 Late perception of pregnancy

A study by Gross et al. (2012:6) found that late perception of being pregnant was a factor that was independently associated with initiating ANC late by two weeks (p = 0.002). About 30% of the women in their study confessed to late recognition of their pregnancies, citing reasons such as continued bleeding during pregnancy and previous use of contraception.

2.5.11 Supportive spouse or partner

Having a spouse or partner who is not supportive was reported to be associated with initiating ANC late for both adolescents and adult women (p = 0.035) (Gross et al. 2012:6). In their study, the researchers concluded that women who had no support from their spouses or partners initiated ANC almost three weeks later than those who were given support.

2.5.12 Quality of care

Women were reported to initiate ANC late owing to perceived bad quality of service at the healthcare facility (Gross et al. 2012:10). The women's criticisms were related mainly to lack of service, citing reasons such as being sent home without receiving services owing to insufficient staff, and having to purchase drugs, cards or diagnostic tests, although the service was supposed to be free. Although the women who criticised ANC were few (9%), they tended to initiate ANC three weeks later than the women who were satisfied with the services offered at the health facility (p = 0.009) (Gross et al. 2012:4).

2.6 WOMEN'S KNOWLEDGE ABOUT ANTENATAL CARE

Health knowledge is an important factor. It enables women to be aware of their rights and health status in order to seek appropriate health services (Zhao, Kulane, Gao & Xu 2009, 9:5). In investigating women's knowledge of

ANC, Ye et al. (2010:27) questioned women on complications that may occur during pregnancy and the benefits of ANC. A score of above 80% on women's responses indicated that they were knowledgeable, while those who scored 80% and less were not knowledgeable. Results of their study showed that of the women who had received ANC, 54.5% did not have sufficient knowledge of the service, and only 45.5% had good knowledge.

Ye et al. (2010:31) compared women with good knowledge and those with poor knowledge of ANC. The results revealed that sufficient knowledge of the benefits of ANC and of the complications associated with pregnancy plays an important role in the utilisation of ANC services. Being knowledgeable about ANC was associated with higher utilisation of ANC services, as more knowledgeable women were 6.5 times (95% CI = 2.4–17.6) more likely to utilise ANC services than those who had poor knowledge (Ye et al. 2010:30).

Knowledge of the importance of ANC, however, does not seem to be directly related to initiation of ANC early. Sunil et al. (2010:134), in their study in Texas, found that although women in their research reported that they were aware of the importance of ANC and had the money to pay for the service, some of them did not initiate ANC early. Rosliza and Muhamad (2011:19) found no significant relationship ($p = 0.279$) between knowledge of ANC and early antenatal booking. In their cross-sectional survey in Malaysia they discovered that pregnant women's level of knowledge of the importance of ANC, screening tests, and complications of diabetes and hypertension during pregnancy was poor (Rosliza & Muhamad 2011:17).

Gross et al. (2012:4) ascertained that of the women who perceived that ANC should start in the first trimester (67%) and women who had good knowledge of ANC (22%), neither group started ANC earlier than others. This, according to Sunil et al. (2010:133), is a clear indication of how complex it is to make a decision to start ANC.

Utilisation of ANC services, however, was associated with awareness of danger signs in pregnancy because significant differences were noted in

Islamabad when comparisons were made of knowledge of the danger signs of pregnancy between women who utilised ANC services and those who did not on their last pregnancy. Women who utilised ANC services were able to recognise fever (OR = 2.8, 95% CI 1.4−5.5), persistent vomiting (OR = 2.35, 95% CI 1.19−4.64) and dizziness and fainting (OR = 1.18, 95% CI 0.57−2.42 as danger signs during pregnancy (Alam, Qureshi, Adil & Ali 2005:55).

In Bangladesh, a descriptive study by Hossain (2010:402) revealed that the proportion of women who were informed about pregnancy-related complications was very low (38%). Such poor knowledge of the complications of pregnancy was reported among rural women of Sreepur Upazila (a sub-district of Gazipur in the same country), in which only 42.3% of the women in the study knew about swelling of the feet, 36.3% were aware of fits, 25.7% knew about severe headaches, and 24.7% knew about unusual bleeding as danger signs in pregnancy (Shirin 2011:15). Knowledge about the complications of pregnancy tended to be less common among women from rural areas, women of higher birth order, the uneducated, and those with a lower general level of education (Hossain 2010:402; Openshaw et al. 2011:3).

Hossain (2010:402) speculated that the low proportion of women with knowledge of complications of pregnancy in their study in Bangladesh was because healthcare workers were not instructed to impart such knowledge to pregnant women or there was not enough time during ANC visits to discuss such complications. On the other hand, Openshaw et al. (2011:4) argued that poor education leads to decreased knowledge of medical problems during pregnancy, resulting in women from Pretoria (who were less educated than their Birmingham counterparts) being able to mention only a few medical problems that affect women in pregnancy.

A study on rural-urban migrant women in China identified education, husband's residence and annual family income, number of ANC visits and delivery experiences as the main factors affecting women's knowledge of maternal health (Zhao et al. 2009:1). Women who had a husband with

Shanghai residence (urban residence) and junior education level or above were associated with better knowledge level (OR = 4.0, 95% CI: 1.3−12.0, and OR = 3.3, 95% CI: 1.8−5.8 respectively). Women from the highest family income homes were more likely to have better level of knowledge (OR = 3.3, 95% CI: 1.4−8.2). Zhao et al. (2009:8), however, argue that being poor results in poor access to education owing to lack of financial resources, early marriage and pregnancy, household responsibilities, and lack of will to invest in hidden costs of education such as transport and fees. This then explains why women with the least knowledge of maternal health had the least access to maternal healthcare services. This is evidenced by the results of their study in which women who had attended five or more ANC visits had a statistically significant higher knowledge score than women who had fewer visits (9.45 +/- 2.17 vs. 7.60 +/- 2.53, t = 8.070, p<0.001) (Zhao et al. 2009:4). Lastly, multipara women had poorer knowledge of maternal health than primipara women. The difference, however, was not statistically significant after adjustments were made for demographic and socio-economic factors (p = 0.059).

2.7 CONCLUSION

This chapter discussed the literature that is relevant to the study. It indicates that South Africa has guidelines on ANC, which direct the country on when ANC must start, and the procedures to be followed when offering the service. Previous studies revealed that pregnant women initiate ANC later than the prescribed guidelines of the WHO in South Africa, sub-Saharan Africa, and globally. Several factors were identified, which affect initiation of ANC positively or negatively. These include age, socio-economic status, education, planning of pregnancy, marital status, distance and transport to healthcare and quality of care. A discussion was presented on whether knowledge about ANC was associated with initiating ANC, as well as the factors associated with having knowledge of ANC.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

This chapter describes how, when and where data were collected and analysed (Parahoo 2006:183). The research design is an overall plan used by the researcher to obtain answers to the questions under study (Polit & Beck 2008:765). This plan addresses the approach (quantitative, qualitative or both, with or without a conceptual framework); methods of data collection and ethical considerations; time, source and place of data collection; and method of data analysis (Parahoo 2006:183).

3.2 THE RESEARCH APPROACH

A quantitative research approach was used. Quantitative research focuses on investigation of phenomena using precise measurement and quantification, and the research design is often controlled and rigorous (Polit & Beck 2008:763). The characteristics of quantitative research are:

- The studies have a highly structured nature.
- They have a set of predetermined stages.
- Data collection is achieved through the use of predetermined procedures and pre-tested instruments.
- The aim of the researcher is to maximise control over data collection and to achieve uniformity in the application of the techniques.
- Statistical analysis of the data is usually done after data collection (Blaikie 2009:214).

Quantitative research was regarded as the best research paradigm for this research because the researcher tried to achieve objectivity by using a pre-designed structured questionnaire to collect information from the respondents. Contact between the researcher and the respondents was

formal and of limited duration. This enabled the researcher to maintain distance from the respondents and avoid any form of personal disclosure or emotional involvement, thus achieving objectivity (Blaikie 2009:214). The closest the researcher was to the participant was when responses were sought through the self-report method when respondents were asked to fill in the questionnaire. Data obtained during data collection were rooted in objective reality, meaning that the data were grounded in reality rather than the researcher's personal beliefs (Polit & Beck 2008:16). Data obtained resulted in quantitative information, which was analysed using statistical methods, such as descriptive statistics, parametric statistical tests (t-test; ANOVA; Kruskal-Wallis test) and non-parametric procedures (Mann-Witney U-test).

3.3 THE RESEARCH DESIGN

The research design adopted for this study was descriptive correlation. This enables the identification of many interrelationships in a situation over a short period. The situation under investigation may already have occurred or is currently occurring and there is no manipulation or control of the situation (Burns & Grove 2009:246).

3.3.1 Correlational research

Correlational research is used when the researcher is studying the effect of a potential cause that cannot be manipulated. It allows researchers to study the relationship between two or more variables, enabling them to make predictions about a variable using another variable (Weathington, Cunningham & Pittenger 2010:229). In correlational research, the researcher does not control the independent variable (Polit & Beck 2008:272). In this study the researcher therefore assessed whether there was any association between pregnant women's timing of initiation of ANC (measured by gestational age at time of first ANC visit) and socio-demographic characteristics, economic factors, obstetric history, current pregnancy and attitude to current pregnancy and women's knowledge of ANC.

The index that summarises the degree of relationship between two variables is known as the correlation coefficient (Polit & Beck 2008:751). Positive correlation (r>0) occurs when an increase in one variable is matched with an increase in another variable or a decrease in one variable results in a decrease in the other. Negative correlation occurs when an increase in one variable is matched by a decrease in the other variable or when the two variables move in opposite directions (Weathington et al. 2010:301).

Correlational research was best suited for the study because it is strong in realism, allowing the researcher to solve practical problems. It enabled the researcher to collect large amounts of data about a problem, which in turn makes it possible to discover a large number of interrelationships in a relatively short time (Polit & Beck 2008:277).

3.3.2 Descriptive research

Descriptions are the simplest way to put survey data to use. Monette, Sullivan and De Jong (2011:4) define descriptive research as research that focuses on description, or an attempt to discover facts or describing reality. This can be done through:

- Correlational studies, which give a description of how phenomena are interrelated
- Univariate studies, which examine the occurrence, frequency, or average value of variable. (Polit & Beck 2008:283)

Descriptive designs may contain two variables or multiple variables, and the relationship between variables gives an overall picture of the phenomena under investigation (Burns & Grove 2009:237). This study gives a descriptive summary of the responses of all the relevant items for the sample of the pregnant women who took part in the study.

3.3.3 Survey research

A cross-sectional survey using a questionnaire was used to collect data for the research. Survey research uses questionnaires, and personal and telephonic interviews as data collection methods (Polit & Beck 2008:324). Survey research is defined by Cottrell and McKenzie (2011:195) as involving the administration of a questionnaire to a sample or an entire population to determine the attitudes, values, behaviours and characteristics of the group being studied. Survey research is known as descriptive research because the results depict the way things are. Comparison of sub-groups is a common feature of survey research. Survey research is classified into two designs, namely cross-sectional and longitudinal. This research used a cross-sectional design. Cross-sectional studies involve the collection of data at a specific time and are used by researchers to learn about a particular group of people, evaluate a programme or conduct a community needs assessment (Cottrell & McKenzie 2011:197).

3.3.4 Research setting

Research can be conducted in three settings, namely natural, partially controlled, and highly controlled (Burns & Grove 2009:35). Descriptive and correlational studies are often carried out in natural settings. That is, the setting for data collection is natural to the respondents involved in the study (Polit & Beck 2008:758). This means that the researcher does not control or manipulate the situation under investigation (Burns & Gove 2009:246). This study took place at a natural setting of a clinic in Ekurhuleni district and involved sourcing information from pregnant women who came to the clinic for ANC.

3.4 RESEARCH METHOD

A ‘method’ is defined by Krishnaswami and Ranganatham (2010:167) as the way or mode of gathering data. Various methods can be used to collect data. These range from observation, interview, mail survey, experimentation, simulation to projective techniques (Krishnaswami & Ranganatham 2010:167). Research methods are the techniques that the researcher uses to

structure the study and to collect and analyse information that is relevant to answering the research questions (Polit & Beck 2008:15). This section describes the population of the study, the selection of the sample, selection of the site, data collection method, data collection instrument, validity and reliability of the instrument, ethical considerations and data analysis.

3.4.1 Population

A population is a collection of cases in which the individual cases are similar and are found in a defined place and at a given time, for example the population served by a health clinic (Griffiths 2009:196). The population for this study was pregnant women in the Ekurhuleni District.

3.4.2 Target population

The study population, known as the target population, is a collection of all cases about which the researcher would like to make generalisations (Polit & Beck 2008:338). The study population for this research was all pregnant women who attended ANC at the clinic under study in Ekurhuleni.

3.4.3 Sample selection

The process of selecting a portion of the population to represent the entire population is called sampling (Polit and Beck 2008:765). A sample is a subset of a population of interest to the researcher. The results obtained by the researcher from the sample can then be used to make generalisations about the entire population, if the sample is a true representation of the whole population (Leedy & Ormrod 2005:198). Sampling allows the researcher to minimise costs (financial and time) of collecting information, processing it and reporting on the results (WHO 2001:71). However, there is a risk if the sample is not a true representation of the population's traits (Polit & Beck 2008:67).

The sample for this study was selected from the women who came to the clinic for ANC during the data collection period. Probability sampling was used, which ensures some degree of precision in estimating some population parameters. Every member of the population had a chance that is greater

than zero of being included in the sample, thus reducing sampling error (Burns & Grove 2005:346).

3.4.3.1 Sampling technique

The estimated number of women pregnant who attended the ANC clinic per month is 300 (15 women x 5 days in a week). Systematic sampling, which is a probability sampling method, was used to select women to participate in the study. This is whereby every *kth* woman entering the clinic for ANC was selected for the study (Polit & Beck 2008:347). The proposed sample for the study was 90 women, so the sampling interval was 3. The sampling interval was established by dividing the estimated population of pregnant women per month by the proposed study sample as follows:

Sampling interval = 300 (population /month) ÷ 90 (sample) = 3

The first woman to arrive for ANC at the clinic's waiting area and met the eligibility criteria was taken as the first candidate for the research. Thereafter, every third woman who visited the clinic for ANC was approached to participate in the study until the sample number of 90 was achieved. Since systematic sampling was used to select the sample, if the next third person did not meet the eligibility criteria, the next person in the queue was approached until a participant who met the criteria was identified.

3.4.3.2 Sample size

According to data gathered at the clinic the maximum average daily attendance of ANC by pregnant women is 15. It is therefore estimated that 300 women are attended to monthly. The planned sample for the study was 30% of the monthly attendance. Therefore the sample size was 90 women.

3.4.3.3 Sampling criteria

Population characteristics are specified using criteria. These criteria are the defining factors that determine whether an individual will be a member of the population or not and are known as eligibility criteria or inclusion criteria. Sometimes exclusion criteria define a population. Exclusion criteria are

characteristics that an individual must not have in order to be a member of the population (Polit & Beck 2008:338). For this study, the inclusion and exclusion criteria were as follows:

Inclusion criteria:

- Pregnant women who had come to the clinic to initiate ANC or for follow-up visits
- Pregnant women between the ages of 18 and 49
- Pregnant women attending follow-up visits who had initiated their first visit at the clinic
- Pregnant women who have given consent to participate
- Pregnant women who are able to communicate in English

Exclusion criteria:

- Pregnant women who were too sick to participate in the study
- Pregnant women attending the clinic for services other than ANC

3.4.4 Site sampling

The site population for this study was all the clinics of Ekurhuleni Municipality, from which one accessible clinic was selected. Convenience sampling was used to select the clinic from the sampling frame of all the clinics in Ekurhuleni. This facility was convenient for these reasons:

- Proximity to the researcher, who had limited financial resources for the research
- Time constraints, since the research was supposed to be carried out over a specified period
- The health facility caters for a wide variety of services, including ANC
- Preliminary statistics indicated that some women are attending ANC late

3.5 DATA COLLECTION

Data collection, according to Krishnaswami and Ranganatham (2010:163), is a process in which the researcher searches for answers to research questions and data collected are the facts and other relevant material, in the past or in the present that serve as a basis for the study and analysis.

3.5.1 Data collection approach

The research used quantitative data collection methods. These methods often use measuring instruments that range from questionnaires, checklists, indexes to scales (Delport 2002:171). A structured questionnaire was used to collect data from the pregnant women after obtaining permission from the authorities (Annexures B & C). Data collection for quantitative studies is done according to a structured plan that indicates the type of information to be collected and how the information will be collected (Polit & Beck 2008:371). Structured methods tend to limit the respondents to a fixed set of questions answered using predetermined responses. This means respondents have limited opportunity to explain their responses. However, the data are relatively easy to analyse (Polit & Beck 2008:371). Since the phenomenon under study in the proposed research does not need in-depth investigation, the structured method was most suitable.

3.5.2 Data collection method

The self-report method was used in the collection of data for the research. Respondents were given a questionnaire, in which they filled their responses. Polit and Beck (2008:766) define self-report as a method that involves direct reporting of information by the participant being studied. The self-report method was chosen because

- It gives the researcher information about what respondents think, feel and believe.

- It is strong in directness and versatility as it captures psychological characteristics of respondents through direct communication with them.
- It enables the researcher to collect information from respondents that would be difficult, if not impossible to collect by any other means (Polit & Beck 2008:369).

Self-reports, however, have a major weakness in terms of validity and accuracy as respondents may deliberately or unconsciously misrepresent what they think, feel and believe (Polit & Beck 2008:390).

3.5.3 Data collection instrument

The data collection instrument used for this study was a self-designed structured questionnaire. A questionnaire is a document that is used in survey research to gather data by self-administration of the questions (Cottrell & McKenzie 2011:195; Polit & Beck 2008:763). The advantages of questionnaires are:

- They allow the collection of data at a lower cost than other methods of data collection.
- They tend to have a fair degree of reliability because they are structured and predetermined, and cannot be varied in wording and the order in which they are answered.
- They use the same form to collect data from all the respondents, thus facilitating comparison between respondents (Parahoo 2006:298).
- They offer the possibility of anonymity, which is crucial in obtaining candid responses (Polit & Beck 2008:424).

Despite all the advantages of questionnaires, they tend to exclude certain groups of people, especially those who have difficulty with reading and comprehension and in articulating written responses, for example the illiterate, elderly, blind and children (Parahoo 2006:299; Polit & Beck 2008:424). The use of the questionnaire is affected by missing information,

either in the form of ‘don’t know’ or by leaving questions unanswered (Polit & Beck 2008:424).

Data were collected from the pregnant women while they waited to be attended by the midwife. The questions on the questionnaire consisted of both closed and open-ended questions. Self-reporting or self-administration of the questionnaire was used to collect the data. When using self-reported or self-administered questionnaires, respondents write their responses on the questionnaire with no help from the researcher (Parahoo 2006:298). Self-administration of the questionnaires was chosen because it eliminates the interviewer, thus ensuring absence of interviewer bias (Polit & Beck 2008:424). Self-administered questionnaires, however, have the main disadvantage of not providing an opportunity for the researcher to ask respondents to elaborate, expand, clarify or illustrate their answers. Although respondents can seek clarification, they may understand the questions differently from the researcher, thereby reducing the validity of the questionnaire (Parahoo 2006:299).

Closed- and open-ended questions have advantages and disadvantages. Closed-ended questions give the respondent a chance to select one or more response choices from those provided (Delport 2002:179). They provide greater uniformity of responses and are easy to analyse (Babbie 2010:256). However, the omission of possible responses by the researcher can lead to inadequate understanding of the issue or the introduction of bias if respondents choose a response that does not represent their position (Polit & Beck 2008:415). Open-ended questions are used when the researcher does not have all the answers or wants to obtain respondents’ views. Such questions provide respondents with an opportunity to frame their answers in their own words, but too many open-ended questions demand more time from respondents, who may decide to skip them or give superficial answers (Parahoo 2006:289; 290).

The questionnaire focused on these areas: a) socio-demographic characteristics; b) economic factors; c) obstetric history; d) current pregnancy

and attitude to current pregnancy; e) timing of ANC; f) women's knowledge about ANC; g) factors associated with late initiation of ANC; and h) challenges in utilising ANC services.

3.5.4 Data collection plan

Women who come to the clinic for ANC wait to be attended in the waiting area, where they queue according to the order in which they arrive at the clinic. The researcher sampled respondents for the study from this queue using systematic sampling as explained in section 3.4.3.1. For every woman selected, the researcher described the study fully (aims, benefits, costs and risks of the study) and answered their questions about the research. Written consent was sought from the respondents and they were assured of confidentiality, anonymity and non-victimisation if they did not want to participate or decided not to continue with the study.

To ensure that the selected respondents were the ones who filled in the questionnaire and that only their individual views were reflected in them, all the questionnaires were completed at the clinic. This allowed the researcher to respond to questions raised by respondents during data collection.

3.6 DATA ANALYSIS

The analysis of the data was done with the assistance of a statistician (Annexure F) and began with the description of the sample. Means, medians, modes, standard deviations and percentages were used for descriptions. Variables that resulted in variation in level of knowledge of ANC were identified using the t-test (for two categories) and analysis of variance (ANOVA) (for more than two categories). A t-test is a parametric statistical test that is used to analyse the difference between two means (Polit & Beck 2008:768). An ANOVA was used where the groups were more than two. ANOVA is a statistical procedure that is used to test mean differences for three or more groups (Polit & Beck 2008:747). Tukey post-hoc analysis was used to identify groups that were different where the null hypothesis of equal means was rejected.

Factors associated with initiation of ANC were identified using the chi-square test (for two categorical variables), Mann-Whitney U-test (for two non-categorical variables) and Kruskal-Wallis test (for more than two non-categorical variables). The Mann-Whitney U-test and Kruskal-Wallis test were used to identify challenges faced by women in utilising ANC. Chi-square is a statistical test that is used when assessing differences in proportions. The Mann-Witney U test is a non-parametric procedure that is used to test the difference between two independent groups based on ranked scores, while the Kruskal-Wallis test is a parametric test that is used to test differences among three or more independent groups with ranked scores (Polit & Beck 2008:749; 596;757)

3.7 RELIABILITY AND VALIDITY

Reliability and validity are the two primary criteria for assessing a quantitative instrument (Polit & Beck 2008:471). The two measures are not independent qualities of an instrument. An instrument with high reliability provides no evidence of validity, but if an instrument has low reliability, this is evidence of low validity (Polit & Beck 2008:458).

3.7.1 Reliability of the research instrument

The reliability of an instrument is the consistency with which it measures what it is suppose to measure. Reliability is concerned with accuracy, that is, maximising the true score component and minimising the error component (Polit & Beck 2008:452). Independent administration of the same instrument should produce similar results under comparable conditions if the test is reliable. Reliability therefore is more concerned with maximising true scores and minimising the error component. In this research one aspect of reliability, that is, internal consistency, was measured using Cronbach's alpha method.

3.7.1.1 Internal consistency

Internal consistency establishes whether the items in the questionnaire measure the same trait. Cronbach's alpha method estimates the extent to

which the sub-parts of the questionnaire are reliably measuring the trait under investigation (Polit & Beck 2008:455). Since this questionnaire is newly developed, a reliability coefficient of 0.70 is considered acceptable, according to Burns and Grove (2009:377).

The reliability of the data collection instrument was measured over three sections, namely knowledge about ANC (section F), factors associated with late initiation of ANC (section G) and challenges in utilising ANC (section H). The Cronbach alpha of this questionnaire showed that it was a reliable questionnaire. The results are shown in Table 3.1. All the sections had reliability over 70%, making the measuring instrument reliable. Section H depicted 0.830 reliability, signifying that reliability was good. Thus, the Cronbach alpha for this questionnaire indicated that it was a reliable instrument.

Table 3.1: Reliability tests results for the questionnaire

Aspect	Cronbach's alpha reliability coefficient
Section F: Knowledge about ANC (15 items)	0.704
Section G: Factors associated with late initiation of ANC (10 items)	0.753
Section H: Challenges in utilising ANC (8 items)	0.830

3.7.1.2 Pre-test of data collection instrument

Polit and Beck (2008:762) define a pre-test as a trial administration of a newly developed instrument to find out whether the instrument has flaws and to estimate the time required to fill the questionnaire. A pre-test was carried out with 10 respondents with the same characteristics as the study sample at a different site. The pre-test informed the researcher whether the questions were understood in the same way by the respondents and if they were answerable and appropriate. The pre-test gave the researcher an idea of the time respondents took to answer the questionnaire and how it affected their

responses, whether they understand the instructions, and if its format was suitable for the population (Parahoo 2006: 305;309).

3.7.1.3 Consistent administration of the questionnaire

In addition, to improve validity, the researcher was consistent in the way the questionnaire was administered. According to Burns and Grove (2009:409), consistency in the way the questionnaire is administered is important to validity as it maintains a true measure of the variable. The researcher administered the questionnaire at the clinic and the respondents filled it in. After completing the questionnaires, they deposited them in a closed box to maintain anonymity. This way the researcher ensured that only the targeted respondents filled in the questionnaires, and views portrayed in the responses were solely from the respondents.

3.7.2 Validity of the research instrument

Validity is the degree to which an instrument is measuring what it is supposed to measure (Polit & Beck 2008:457). The definition of validity can thus be divided into two parts: whether the instrument measures the attribute in question; and whether the attribute is measured accurately. The various validities include content, face, criteria and construct validity (Delport 2002:166). For this research, the measures of validity that are tested are content validity and face validity.

3.7.2.1 Content validity

Content validity is defined by Parahoo (2006:305) as the extent to which a data collection instrument contains a representative sample of the content of the construct under investigation. Content validity was achieved through a comprehensive literature review and a critical analysis of the structured questionnaire by the supervisor of the research, the statistician and the nurses who offer ANC services at the clinic. They were asked to comment on the adequacy and relevance of the items on the questionnaire to the subject matter under investigation and their feedback was used to improve the questionnaire.

Consistency checks were carried out to validate some items on the questionnaire, for example, 'When did you start ANC?', 'How far pregnant are you?' using the respondent's antenatal card. The researcher's aim was to reconfirm whether participant responses were correct.

3.7.2.2 Face validity

Face validity is the extent to which the data collection instrument looks as though it is measuring what it is supposed to measure (Polit & Beck 2008:458). To enhance face validity, the researcher ensured that the items developed for the questionnaire were relevant through extensive consultation of pertinent literature, as well as consultation with the midwives offering ANC services at the clinic where the research was carried out.

3.7.3 Validity of the research design

This section outlines the measures that were taken to improve the internal and external validity of the research.

3.7.3.1 Internal validity

Internal validity is defined by Burns and Grove (2009:222) as the 'extent to which the effects detected in the study are a true reflection of reality rather than the result of extraneous variables'. Internal validity of the study was enhanced by the use of probability sampling, which eliminated selection bias, thus creating a representative sample of the population under investigation. Probability sampling in the study produced random samples, which were more likely to be representative than non-random samples (Burns & Grove 2005:346). The random sampling in this study was used to control the effect of extraneous variables, since all the sub-sets of the population have a chance of being represented in the sample (Burns & Grove 2005:221, 346).

3.7.3.2 External validity

External validity is the extent to which the conclusions drawn from the study can be generalised to the population under consideration (Polit & Beck 2008:287). The use of probability sampling to select respondents for this study allows the results to be generalised on a small scale to the target

population of women utilising ANC services at the clinic. The study results, however, cannot be generalised to the total population of women in Ekurhuleni health district because the study site was chosen through convenience sampling, which is a non-probability method, and this tends to limit generalisation of findings to the total population.

3.8 ETHICAL CONSIDERATIONS

This section explains the procedures that the researcher took to protect the study respondents, to obtain approval to carry out research, and to maintain the scientific integrity of the research.

3.8.1 Research ethics

Polit and Beck (2008:752) define ethics as 'a system of moral values' that ensure that research procedures fulfil the professional, legal and social obligations to the study respondents. Researchers and reviewers of research have an obligation to recognise and protect the rights of human research subjects (Burns & Grove 2009:189). The human rights that need protection when carrying out research are right to self-determination, right to privacy, right to anonymity and confidentiality, right to fair treatment, and right to protection from discomfort and harm (Burns & Grove 2009:189).

3.8.1.1 Right to self-determination

The right to self-determination is based on the principle of respect for human dignity. Human beings are viewed as autonomous agents who are able to make their own decisions about whether to participate in research (Burns & Grove 2009:189). Their decisions should be respected. They should therefore participate voluntarily in research, thus exercising their right to self-determination. To ensure voluntary participation, informed consent was used to recruit respondents for the study (see Annexure D)**.** According to Polit and Beck (2008:176), informed consent means respondents 'have adequate information regarding the research, are capable of comprehending the information and have the power of free choice, enabling them to consent to or decline participation voluntarily'. The elements of informed consent are full

disclosure, understanding, voluntary participation and capacity (Singh 2007:35).

Full disclosure takes place when the researcher gives a full description of his/her responsibility, the nature of the study, the benefits and risks of the study and the right to refuse to participate by prospective participants (Polit & Beck 2008:172). Such information enables potential respondents to take a decision on whether to participate in the study. The researcher described the study fully to the respondents (aims, benefits, costs and risks) and answered all their questions about the research.

Understanding: Singh (2007:35) explains that the researcher should make sure that the information provided to potential participants has been clearly understood. Simple terms were used during the explanation, and all questions were clarified by the researcher. Understanding assisted the potential participants in their process of making a decision to participate or not.

Voluntary participation: Singh (2007:35) comments that participation in research should be voluntary, without being forced to do so. Polit and Beck (2008:172) give two examples of how one can be pressured to participate. This can be through implicit or explicit threats of penalty or through excessive rewards. So that the researcher did not pressurise the potential respondents, rewards were not given to those who agreed to participate. This was done so that the potential respondents did not feel obliged to take part in the study. The researcher, however, thanked all those who participated after completion of the questionnaire.

Capacity: According to Singh (2007:35), laws have been set on who should and should not participate in research. Prospective participants should be legally and mentally competent for them to be able to participate. Such laws protect those with diminished autonomy. Human beings who lack autonomy need protection since they cannot make sound decisions on whether to participate in the research (Polit & Beck 2008:171). The inclusion and

exclusion criteria determined the respondents who are eligible for the study. Minors below the age of 18 and those who were seriously ill were not included in the study to protect them since they have diminished capacity to make a decision to participate.

3.8.1.2 Right to privacy

Individuals have the right to determine the time, extent, and circumstances under which their personal information will be shared with or withheld from others. This information includes their beliefs, opinions, attitudes, behaviours and records (Burns & Grove 2009:194–195). The right to privacy obligates the researcher to keep the data obtained from the respondents in the strictest confidence. The researcher did not share the data collected from respondents, and the data were used for this research only.

3.8.1.3 Right to anonymity and confidentiality

Linked to the right to privacy, the respondents in a study have a right to anonymity, in which the identity of the respondent cannot be associated with his or her responses, even by the researcher him- or herself (Burns & Grove 2009:196). Patient names or numbers did not appear on the questionnaire; therefore anonymity was assured to the respondents. Confidentiality is a pledge that is made by the researchers, assuring the research respondents that the information collected for the research will not be made public in such a way that it will expose the respondents' identities (Polit & Beck 2008:180). In addition, the researcher is not allowed to provide the information collected during the research to others (for example other researchers, family members, or other physicians) without the consent of the participant involved (Singh 2007:33). The respondents were assured of the confidentiality of the data, which were for the use of the researcher only.

3.8.1.4 Right to fair treatment

Right to fair treatment is based on the principle of justice (Burns & Grove 2009:198). This principle involves the right to fair treatment, in which the selection of research respondents will be based on research requirements, and not on vulnerability or compromised positions of some people (Polit &

Beck 2008:180). All the respondents were given an equal chance to participate in the study by allowing all eligible women to fill in the questionnaire.

3.8.1.5 Right to protection from harm

The right to protection from harm is based on the ethical principle of beneficence, which states that 'one should do good and, above all, do no harm' (Burns & Grove 2009:198). The obstetric history section of the questionnaire contains questions about previous miscarriages, stillbirths and caesarean sections, which bring back memories that may be sad and traumatic for some patients. To minimise intrusion into respondents' personal lives and to diminish distress, only the frequency of occurrence of such events was requested and no further details. The researcher held a debriefing session after the data collection to allow respondents to air complaints and ask questions (Polit & Beck 2008:182). With the help of the midwives responsible for ANC, women who needed emotional support were referred to the clinic psychologist.

3.8.2 Protecting the rights of institutions

To prevent biased evaluation from the researcher and maintain objectivity a research proposal has to undergo external evaluation (Polit & Beck 2008:184). The research proposal was submitted to the Higher Degrees Committee of the University of South Africa in the Department of Health Studies for review (see Annexure A). The review considered some of the following concerns:

- Minimising risk to participants
- Ensuring that the benefits of research outweigh the risks.
- Making sure that the selection of participants is equitable
- Seeking informed consent
- Making adequate provisions to ensure the safety of participants (Polit & Beck 2008:184)

Approval to carry out a study at the clinic was sought and obtained from the Department of Health Ekurhuleni South District (see Annexures B and C). The researcher described the study fully to the department official and manager at the clinic (aims, benefits, costs and risks) and answered all questions that arose about the research.

3.8.3 Scientific integrity of the researcher

In addition to protecting human and animal participants, researchers should make an effort to maintain high standards of integrity and avoid research misconduct. Misconduct can take three forms, namely fabrication of results, plagiarism and falsification of data (Polit & Beck 2008:191).

Fabrication means making up data or study results and reporting them (Polit & Beck 2008:188). According to Babbie (2001) as quoted by Strydom and Venter (2002:69), it is the obligation of the researcher towards all colleagues in the scientific community to report correctly on data analysis and the results of the data. Falsification involves manipulation of research materials, equipment, or processes. It includes changing or omitting data or distorting results.

To prevent fabrication and falsification, the researcher made sure that all collected data were analysed and interpreted correctly, irrespective of whether the produced outcome was desirable or not. The services of a statistician were therefore sought to assist in the data analysis and interpretation.

Plagiarism occurs when a researcher uses someone else's ideas, results or words, without giving due credit (Polit & Beck 2008:188). Plagiarism was avoided through acknowledging all the sources that were used in the research, as well as providing a list of references, which indicates all these sources.

3.9 CONCLUSION

This section of the study provided a description of the research design, that is, correlational research design. The focus was on sampling the respondents and site, method of data collection and data collection instrument, data analysis, issues of reliability and validity of the instrument and research design and ethical issues considered in this research.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The aim of the study was to investigate the knowledge level and utilisation of ANC services by pregnant women at a clinic in Ekurhuleni. This chapter presents the research results and the findings of the study. The purpose of this study was threefold: first, to establish the timing of the first ANC visit by pregnant women; second, to assess the pregnant women's knowledge level about ANC; and lastly to determine the factors associated with early and late initiation of the first ANC visit. The possible answers to the research objectives are based on the results of the empirical survey of the selected pregnant women at the clinic. Section 4.2 presents the data management and analysis. The research results are discussed in section 4.3 to determine the level of knowledge of pregnant women about ANC and utilisation of ANC. Section 4.4 onwards presents an overview of the research findings in which the research objectives are discussed and answered. Lastly, section 4.7 gives the conclusion of the chapter.

4.2 DATA MANAGEMENT AND ANALYSIS

The planned sample for the research was 90 pregnant women. All the selected respondents who fitted the eligibility criteria agreed to participate in the study, giving a 100% response rate. This was achieved because the researcher was always on site collecting data from the pregnant women while they waited to be attended by the midwife. The data were collected using a questionnaire, which was self-administered by the respondents. After data collection was completed, each questionnaire was assigned a number so that the questionnaire could be re-checked if the need arose. The data collected from the 90 respondents were processed and analysed with the assistance of a statistician.

Open-ended questions were coded and data cleaned, especially on the filter questions. The filter questions were those respondents were asked to comment on after they had given a certain response to the previous question. The data were entered in Epi Info version 7. Each questionnaire was entered twice and the information validated to ensure that data entry was done accurately. The data were exported to SPSS, where they were analysed using descriptive statistics, knowledge scores, and chi-square test of association to determine independence. Mann-Whitney U-test and Kruskal-Wallis test were used to determine whether there were differences in locations among demographic data. The results are presented in the next section.

4.3 SAMPLE CHARACTERISTICS

This section describes the respondents' age, marital status, educational level, living arrangement, number of children, age of last child, language spoken and nationality.

4.3.1 Age distribution

All 90 respondents indicated their age as shown in Table 4.1. Almost half of the respondents (46.7%; n = 42) were between 25 and 29 years. This may be because this is the age at which most women are married and start to give birth.

Table 4.1: Age distribution of respondents (n = 90)

Age	Frequency	%	Rank
Below 20 years	7	7.8%	4
20–24 years	20	22.2%	2
25–29 years	42	46.7%	1
30–34 years	15	16.7%	3
35–39 years	6	6.6%	5
	90	**100.0%**	

The distribution of respondents across age groups seems to be symmetrical, as depicted by the bar chart in Figure 4.1.

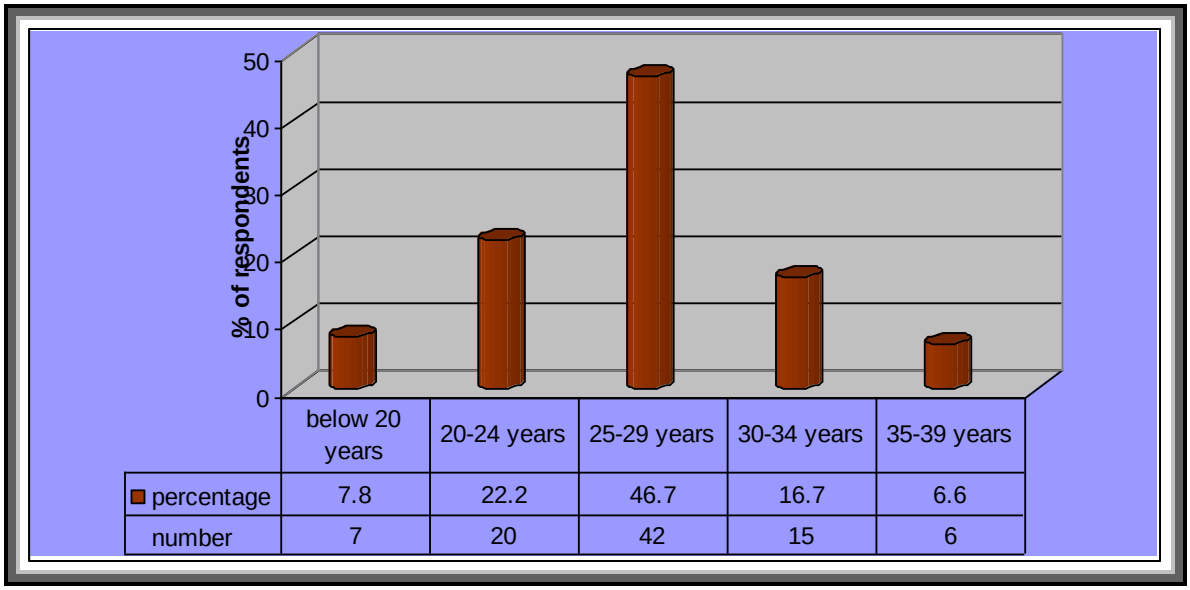


Figure 4.1: Percentage distribution of respondents by age (n = 90)

The diagrammatic presentation tallies with national patterns of the ages of child-bearing women. The majority of women tend to give birth between the ages of 20 and 34. The age range was of significance in this study to try to find if it had an effect on the timing of the initiation of ANC, as revealed by some studies (Adekanle & Isawumi 2008:4). Since the study included only pregnant women who were 18 years and above, the age category for below 20 years ranged from 18 to 19.

4.3.2 Marital status

In terms of marital status, slightly more of the respondents were married and living with their partners (40%; n = 36), while 38.9% (n = 35) were single. Twenty per cent (n = 18) of the respondents were living with a man in union as shown in Table 4.2.

Table 4.2: Marital status (n = 90)

Marital Status	Frequency	%	Rank
Married and living together	36	40.0%	1
Single	35	38.9%	2
Living with a man in union	18	20.0%	3
Married but separated	1	1.1%	4
	90	**100.0%**	

The numbers of women who are married and those who are single seem almost equal. These figures indicate that the majority of the women who are pregnant are not married to their partners. Information on marital status was collected to find out whether it was associated with initiation of ANC.

4.3.3 Level of education

All the women had attained some level of education with most respondents (35.6%; n = 32) having completed Standard 10 / Grade 12 followed by Standard 9 / Grade 11, with 24.4% (n = 22), as depicted in Figure 4.2.

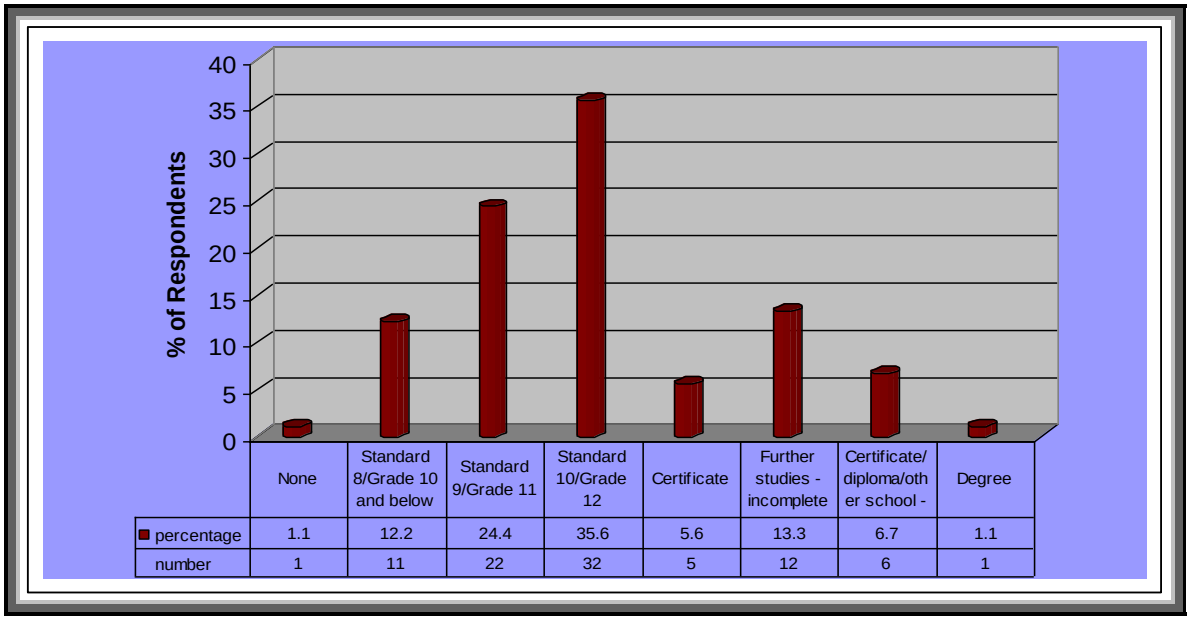


Figure 4.2: Percentage distribution of respondents by level of education (n = 90)

Data on education were collected to find out if there is an association between being educated and initiating ANC early, as well as the knowledge level of women on ANC. From the information gathered from the respondents, one may conclude that the majority of the women attained Grade 11 or Grade 12.

4.3.4 Living arrangements

The majority of the women, that is, 62.2% (n = 56) were living with their spouse or partner and only a minority were living alone (7.8%; n = 7), with friends (2.2%; n = 2) or with relatives (6.7%; n = 6). Just more than a fifth (21.1%; n = 19) of the respondents still lived with their parents, as displayed in Table 4.3.

Table 4.3: Living arrangements of respondents (n = 90)

Member	Frequency	%	Rank
Spouse/Partner	56	62.2%	1
Parents	19	21.1%	2
Friends	2	2.2%	5
Relative	6	6.7%	4
Alone	7	7.8%	3
	90	**100.0%**	

4.3.5 Religion

In terms of religion, there were 88 valid responses. The majority of the women (87.5%; n = 77) were Christians, while 10.2% (n = 9) indicated that their religion is African traditional belief, and 2.3% (n = 2) were Islamic. Religion was important in trying to understand whether cultural beliefs play a role in the start of ANC.

4.3.6 Number of children and age of last child

The highest percentage of respondents (44.4%; n = 40) had one child, while 35.6% (n = 32) had none as shown in Figure 4.3.

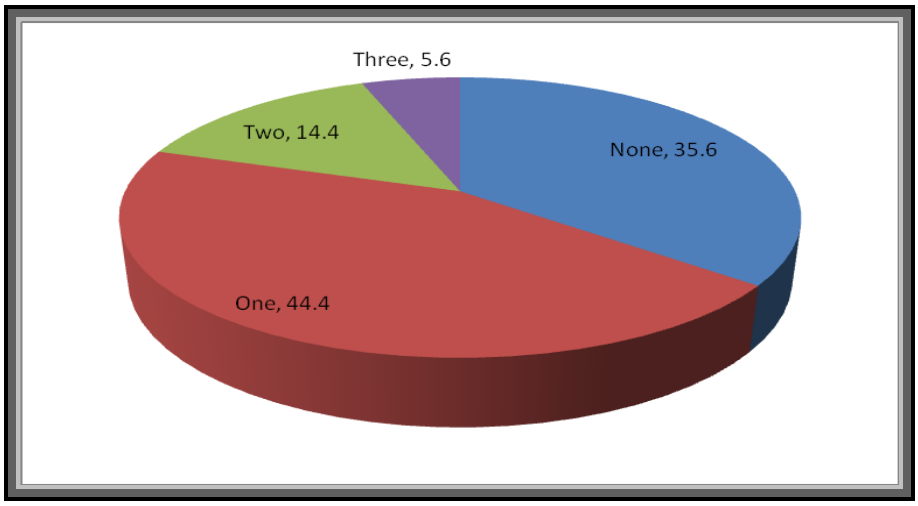


Figure 4.3: Percentage distribution of respondents by number of children (n = 90)

Few women who were visiting ANC had two or more children. In terms of age of last child, 36.7% (n = 33) women indicated not applicable. These women were pregnant for the first time or did not have a living child after a series of miscarriages, stillbirths or child had passed away. The information is shown in Table 4.4.

Table 4.4: Age of last child (n = 90)

Number	Frequency	%	Rank
Less than 1 year	2	2.2%	6
1–2 years	10	11.1%	5
3–4 years	18	20.0%	2
5–6 years	13	14.4%	4
Seven years and above	14	15.6%	3
Not applicable	33	36.7%	1
	90	**100.0%**	

Only 13.3% (n = 11) had children who are at most two years old. Information on the number of children was important in establishing whether knowledge of ANC is affected by the experience a woman had in giving birth to children, as well as when the woman initiated ANC.

4.3.7 Home language

The main languages from the survey participants were SePedi, IsiXhosa, IsiZulu, English and Afrikaans. The information is shown in Table 4.5.

Table 4.5: Home language (n = 90)

Language	Frequency	%	Rank
SePedi	17	18.9%	1
IsiXhosa	15	16.7%	2
IsiZulu	13	14.5%	3
English	10	11.1%	4
Afrikaans	10	11.1%	4
Sesotho	8	8.9%	6
Shona	6	6.7%	7
TshiVenda	4	4.4%	8
XhiTonga	3	3.3%	9
IsiNdebele	2	2.2%	10
SeTswana	1	1.1%	11
IsiSwati	1	1.1%	11
	90	**100.0%**	

The largest proportion of respondents (34.4%; n = 31) are Nguni speakers (IsiXhosa, IsiZulu, IsiNdebele and IsiSwati) followed by Sotho speakers (SePedi, SeSotho and SeTswana) with a proportion of 28.9% (n = 26). Good communication is important in ANC clinics as it enables pregnant women to understand information well and facilitates interaction with the staff. Boerleider, Wiegers, Mannien, Francke and Deville (2013:8), in their review of sixteen studies, found that the woman's native language was an important communication factor. Pregnant women were more comfortable if information was imparted in their native language, antenatal classes were conducted in their native language and healthcare workers spoke their native language. In this

study, investigation of home language was important in order to find out whether language acted as a communication barrier to utilisation of ANC services.

4.3.8 Nationality

From 90 responses on nationality, the majority of the respondents, that is, 80% (n = 72) indicated that they were South African; 17.8% (n = 16) were Zimbabwean and 2.2% (n = 2) were Mosotho, as shown in Figure 4.4.

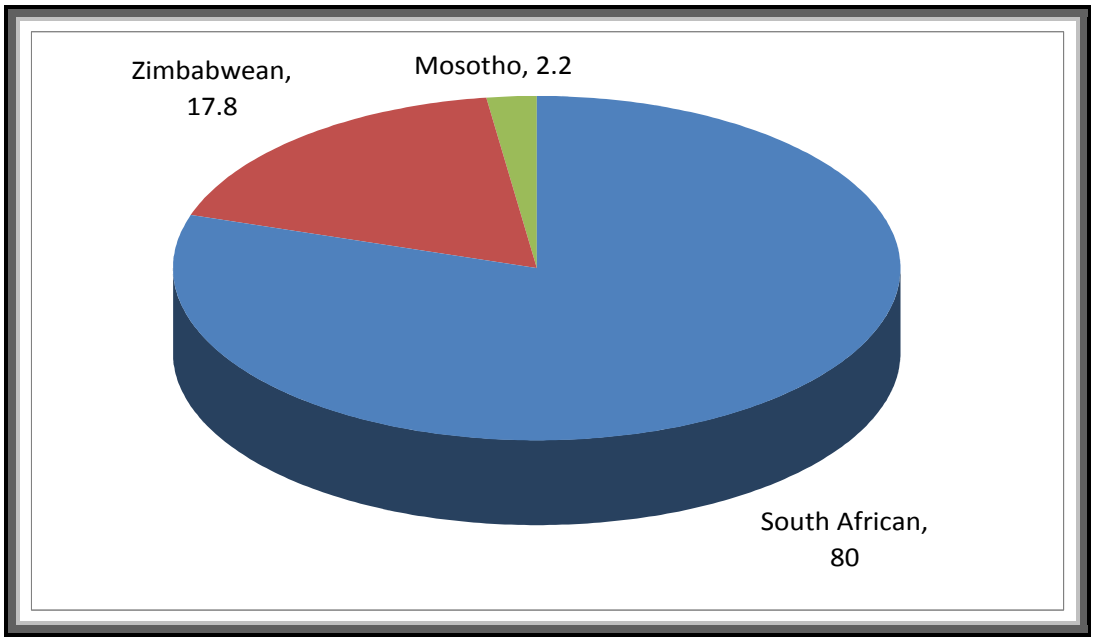


Figure 4.4: Percentage distribution of respondents by nationality (n = 90)

4.3.9 Economic factors

The respondents were asked about their employment status, their spouse or partner's employment status and the costs of travelling to the ANC clinic. The results of their responses are described in this section.

4.3.9.1 Respondents' employment status

Eighty-nine out of 90 respondents gave answers to the question on their employment status. Most of the respondents, that is, 74.2% (n = 66) were unemployed as indicated in Table 4.6.

Table 4.6: Respondent employment status (n = 89)

Employment status	Frequency	%	Rank
Unemployed	66	74.2%	1
Employed full time	14	15.7%	2
Employed part time	5	5.6%	3
Self-employed	4	4.5%	4
	89	**100.0%**	

Only 15.7% (14) were employed full time. It may be concluded that most of the women are financially dependent on someone.

4.3.9.2 Husband or partner's employment status

In terms of husband or partner's employment status, there were 89 valid responses. As indicated in Table 4.7, 66.3% (n = 59) respondents had husbands or partners who worked full time.

Table 4.7: Husband or partner's employment status (n = 89)

Employment status	Frequency	%	Rank
Unemployed	8	9.0%	3
Employed full time	59	66.3%	1
Employed part time	9	10.1%	2
Self-employed	5	5.6%	5
Not applicable	8	9.0%	4
	89	**100.0%**	

The information gathered from the respondents clearly indicated that most of the respondents seem to depend on their husband or partner for financial support. A diagrammatic comparative analysis of the employment status is shown in Figure 4.5.

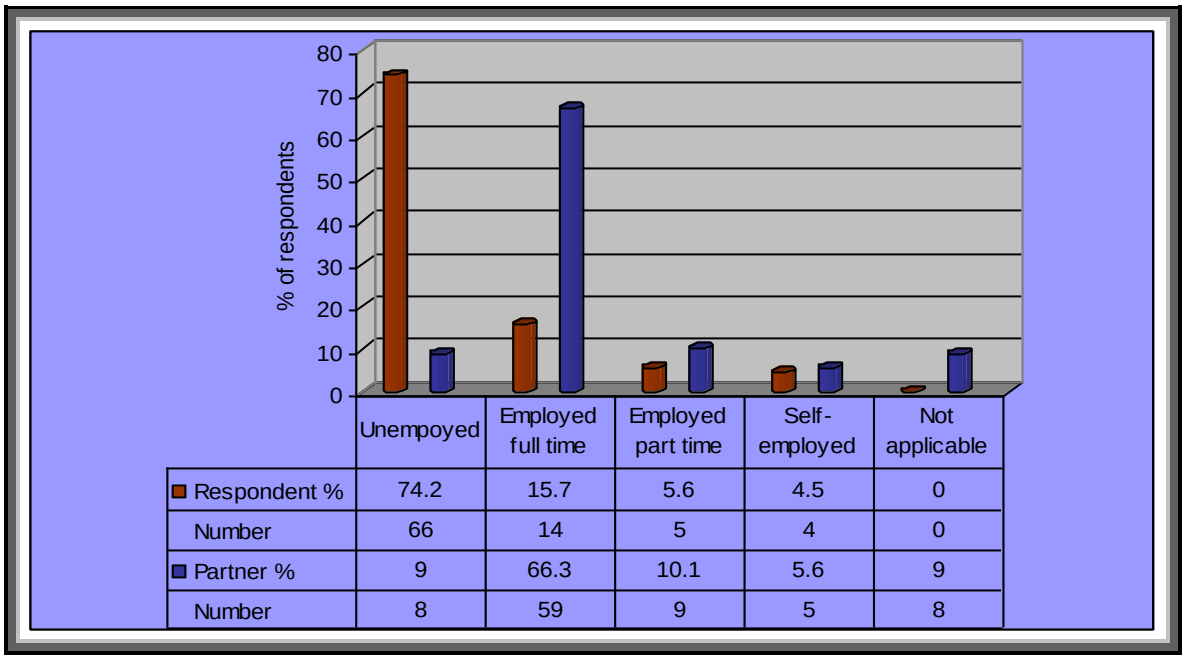


Figure 4.5: Percentage distribution of respondents by employment status (n = 89)

4.3.9.3 Cost of transport to antenatal care clinic

In terms of transport costs to the antenatal clinic, all women responded to the question as indicated in the Table 4.8. Close to half of the respondents (48.9%; n = 44) spend less than R20 on transport to travel to and from the clinic, while 35.6% (n = 32) walk to the clinic. One may conclude that the majority of the respondents do not have high transport costs, which could be a barrier to visiting the ANC clinic.

Table 4.8: Transport costs to antenatal clinic (n = 90)

Cost	Frequency	%	Rank
Nothing, I walk to the clinic	32	35.6%	2
Less than R20	44	48.9%	1
R21–R25	8	8.9%	3
R26–R30	3	3.3%	4
R31 and more	3	3.3%	4
	90	**100.0%**	

4.3.10 Obstetric history

This section describes the number of pregnancies, the outcomes of previous pregnancies, and medical complications of previous pregnancies. This information was important for this study because a history of reproductive loss has been documented as a strong predictor of early ANC initiation (Gross et al. 2012:10).

4.3.10.1 Number of pregnancies for each respondent

The largest proportion of respondents, 42.2% (n = 38), indicated that the current pregnancy was their second pregnancy, while 27.8% (n = 25) specified that it was their first. The information is shown in Table 4.9.

Table 4.9: Number of pregnancies (n = 90)

Number	Frequency	%	Rank
This is my first pregnancy	25	27.8%	2
Two	38	42.2%	1
Three	17	18.9%	3
Four	6	6.7%	4
Five and more	4	4.4%	5
	90	**100.0%**	

The majority, that is, 70% (n = 63), had either one or two pregnancies. This tallies with the respondents' ages as most of them are between 25 and 34. Few of the respondents in this study had five or more pregnancies. The information is shown in Figure 4.6.

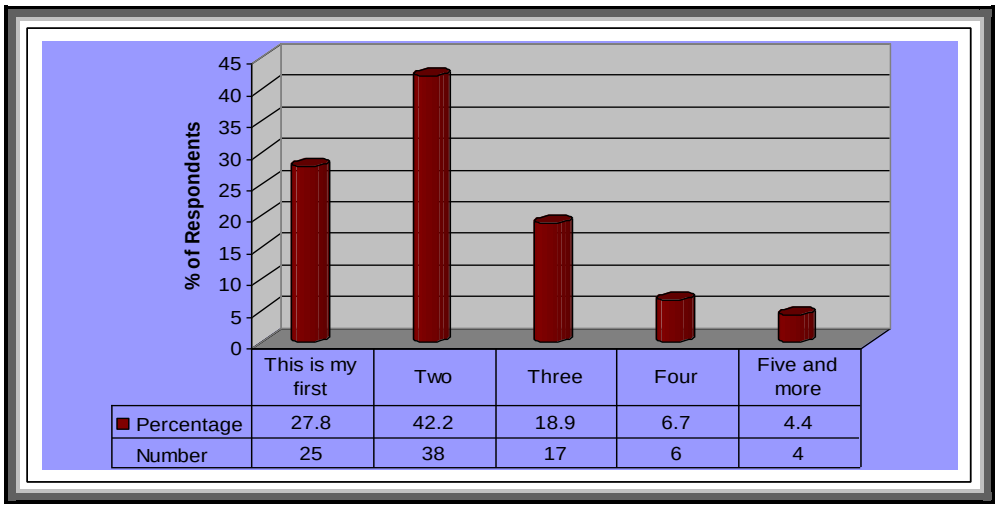


Figure 4.6: Percentage distribution of number of pregnancies (n = 90)

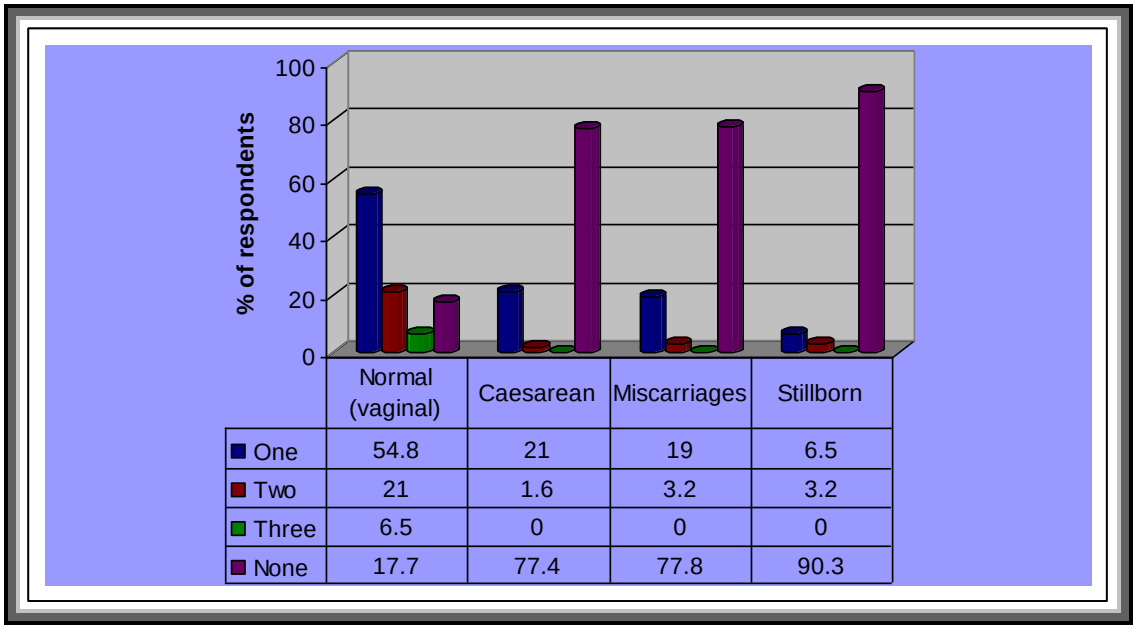
4.3.10.2 Outcome of respondents' previous pregnancies

The respondents who had indicated that their current pregnancy was the second or more (72.2%; n = 65) were asked to specify the outcomes of their other pregnancy/pregnancies. These outcomes were normal birth, caesarean birth, miscarriage and stillbirth. The information is shown in Table 4.10.

Table 4.10: Type of pregnancy outcome (n = 65)

Type of pregnancy outcome	Occurrence				Sample size
	One	Two	Three	None	
Normal (vaginal)	54.8% (34)	21.0% (13)	6.5% (4)	17.7% (11)	62
Caesarean	21.0% (13)	1.6% (1)	-	77.4% (48)	62
Miscarriage	19.0% (12)	3.2% (2)	-	77.8% (49)	63
Stillborn	6.5% (4)	3.2% (2)	-	90.3% (56)	62

About 82.3% (n = 51) had one normal (vaginal) delivery; 22.6% (n = 14) had at least one live Caesarean delivery; 22.2% (n = 14) had at least one miscarriage; and 9.7% (n = 6) had a stillbirth. The information is shown in Figure 4.7.



	Normal (vaginal)	Caesarean	Miscarriages	Stillborn
One	54.8	21	19	6.5
Two	21	1.6	3.2	3.2
Three	6.5	0	0	0
None	17.7	77.4	77.8	90.3

Figure 4.7: Types of pregnancy outcomes (n = 65)

Few women had stillbirths from their previous pregnancies as displayed in Figure 4.7.

4.3.10.3 Medical complications during previous pregnancies

In terms of medical problems or complications during pregnancy, 61 participants responded to the question. A large proportion, that is, 90.2% (n = 55), indicated that they did not have complications, while 9.8% (n = 6) said that they had problems. Of those who pointed out that they had medical problems and complications, they said that they had experienced high blood pressure and vaginal bleeding.

4.3.11 Current pregnancy and attitude to current pregnancy

This section describes the information gathered from the respondents in terms of family planning (awareness, use and effectiveness), planning of the

pregnancy, and whether the pregnancy was accepted by the woman and her partner.

4.3.11.1 Family planning, awareness, use and effectiveness

In terms of awareness of family planning methods, 89 out of 90 women responded to the question. Of these 89 respondents, 89.9% (n = 80) showed that they were aware of family planning methods, while 10.1% (n = 9) said that they were unaware. The level of usage of family planning methods was 74.4% (n = 67), while 25.6% (n = 23) had not used a family planning method prior to falling pregnant with the current pregnancy. Those who were using family planning methods indicated the following methods as shown in Table 4.11.

Table 4.11: Types of family planning method (n = 67)

Method	Frequency	%	Rank
Pills	20	29.9%	2
Injections	35	52.2%	1
Condoms	9	13.4%	3
Breast-feeding	2	3.0%	4
Natural methods	1	1.5%	5
	67	**100.0%**	

The majority of the women (52.2%; n = 35) were using injectable methods of family planning, while 29.9% (n = 20) were using pills. The information is shown in Figure 4.8.

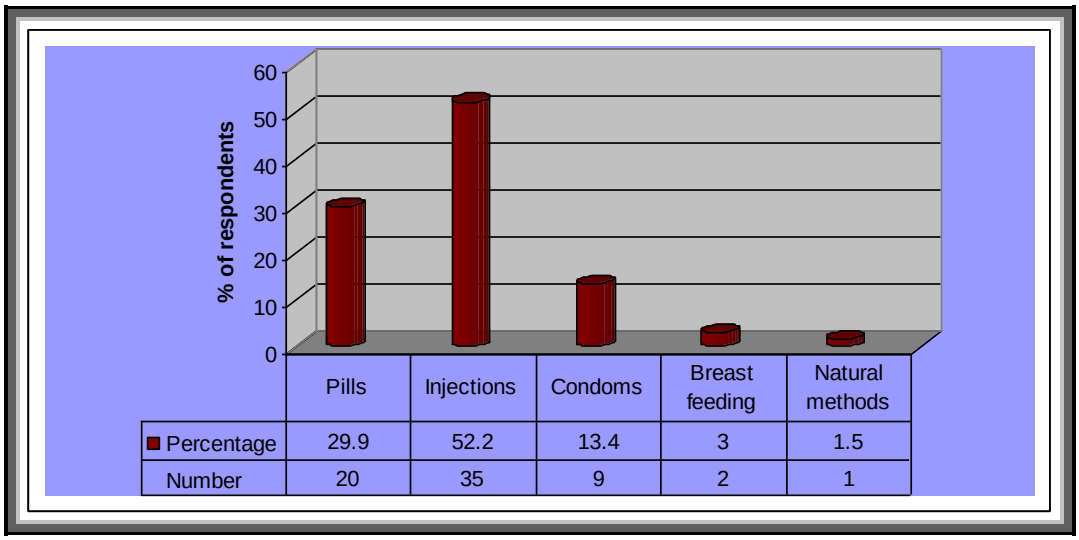


Figure 4.8: Family planning method used (n = 67)

One can conclude that the common methods of family planning are injectable contraceptives, pills and condoms.

When the women who used family planning (n = 67) were asked to indicate whether the method they used was effective, about 76.1% (n = 51) said that the family planning method worked for them, while 23.9% (n = 16) revealed that it did not.

4.3.11.2 Planning of pregnancy and attitude to it

In terms of planning the pregnancy, there were 90 valid responses. A large proportion, that is, 71.1% (n = 64) indicated that the pregnancy was planned, while 28.9% (n = 26) revealed that it was not planned. More than three quarters (84.4%; n = 76) said that they were happy with the pregnancy, while 15.6% (n = 14) stated that they were not happy. The information is shown in Figure 4.9.

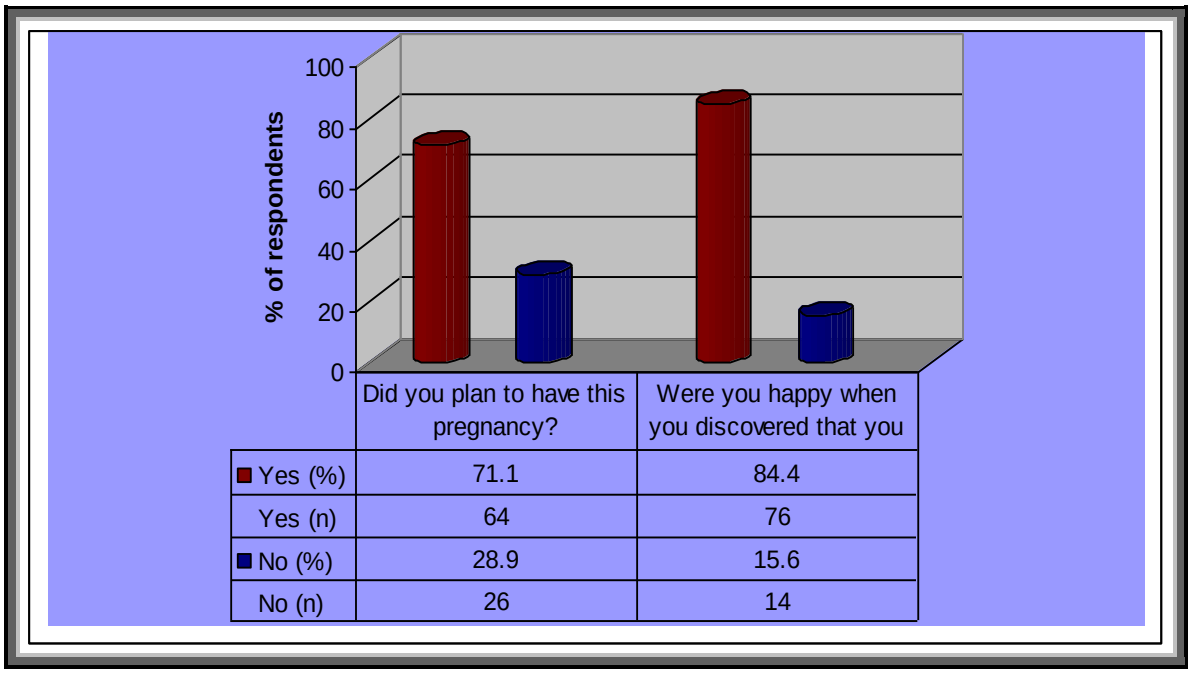


Figure 4.9: Percentage distribution of planning pregnancy and attitude to pregnancy (n = 90)

Some people had not planned the pregnancy, but were happy to be pregnant. Of the 14 respondents who were not happy that they were pregnant, 11 gave these reasons, as shown in Table 4.12.

Table 4.12: Reasons for not being happy to be pregnant (n = 11)

Reason	Frequency	%	Rank
Was not prepared	3	27.3%	1
The last baby is still young	3	27.3%	1
Not employed	2	18.1%	3
My partner is refusing responsibility	1	9.1%	4
Was not aware	1	9.1%	4
Wanted to finish my course first	1	9.1%	4
	11	**100.0%**	

Close to half of those women who did not plan the pregnancy indicated that they were not prepared or their last baby was still young. A clear majority, 97.8% (n = 88), indicated that their pregnancy was accepted by their husband or

partner, only 1 (1.1%) did not tell him, and only 1 (1.1%) indicated that her partner had refused responsibility of the pregnancy. The respondent who did not tell her partner said he was out of town and she wanted to surprise him.

4.3.12 General comments

The respondents were asked to give any other comments about ANC at the end of the questionnaire. This was an open-ended question. Only six respondents added comments. The comments in order of frequency are as follows:

- Two respondents commented that some of the healthcare workers were rude
- One respondent remarked that the quality of service was poor
- One respondent said that the staff members were not experienced
- One respondent reported a lack of privacy as they undress in front of other pregnant women during consultations
- One respondent commented that they (referring to the nursing staff) were doing their best and were very helpful

4.4 TIMING OF THE FIRST ANTENATAL CARE VISIT

All the women indicated the time that they discovered that they were pregnant. The information is shown in Table 4.13. Most of the respondents stated that they had discovered their pregnancy in the first or second month.

Table 4.13: Time that respondent discovered she was pregnant (n = 90)

Period	Frequency	%	Rank
During the 1st month of pregnancy (4 weeks & below)	39	43.3%	1
During the 2nd month of pregnancy (5–8 weeks)	31	34.5%	2
During the 3rd month of pregnancy (9–12 weeks)	12	13.3%	3
During the 4th month of pregnancy (13–16 weeks)	6	6.7%	4
During the 5th month of pregnancy (17–20 weeks)	2	2.2%	5
	90	**100.0%**	

The WHO recommends that pregnant women should go for their first ANC visit in the first trimester (WHO 2002:12). Also according to the South African guidelines, pregnant women are encouraged to book for ANC as early as the first missed menstrual period up until week 12 of pregnancy (DoH 2007:20;28).

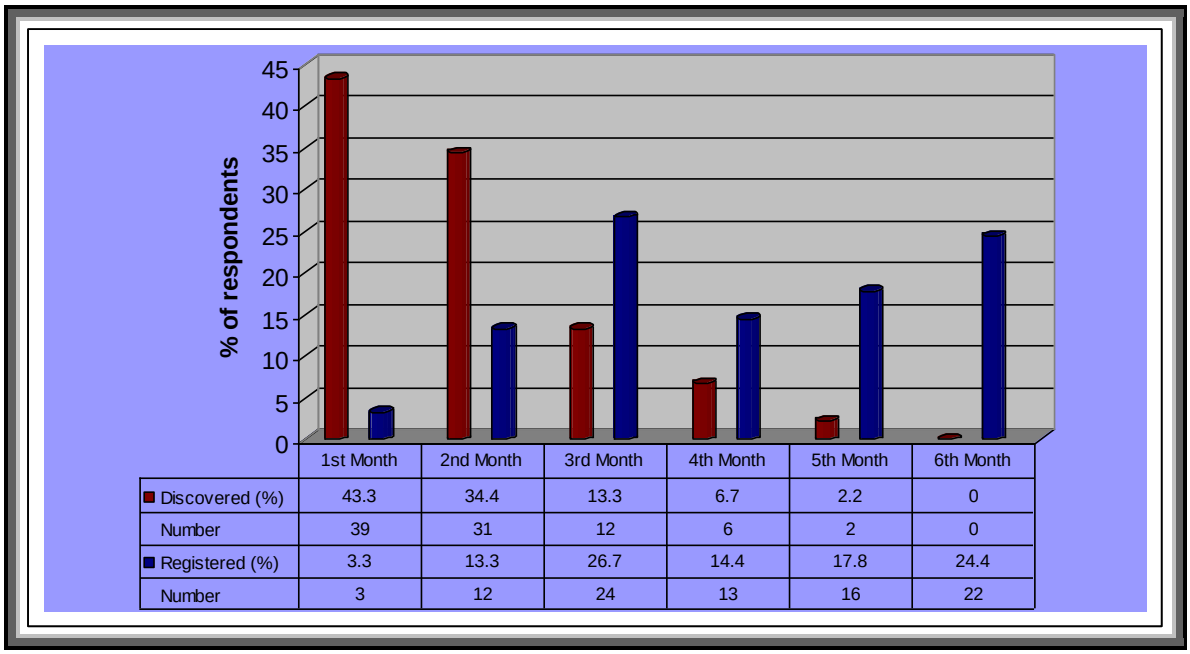
In this study respondents were divided into two groups: early initiators of ANC (those who started ANC from month 1 to month 3, that is, week 1 to week 12 of pregnancy); and late initiators of ANC (those who started ANC from month 4 onwards (week 13 and above). The results of the study show that 56.7% (n = 51) of the pregnant women started ANC after the first three months and only 43.3% (n = 39) initiated ANC in the first trimester as shown in Table 4.14.

Table 4.14: Time that respondent started antenatal care (n = 90)

Period	Frequency	%	Rank
During the 1st month of pregnancy (4 weeks & below)	3	3.3%	6
During the 2nd month of pregnancy (5–8 weeks)	12	13.3%	5
During the 3rd month of pregnancy (9–12 weeks)	24	26.7%	1
During the 4th month of pregnancy (13–16 weeks)	13	14.4%	4
During the 5th month of pregnancy (17–20 weeks)	16	17.8%	3
During the 6th month of pregnancy (week 21 & above)	22	24.5%	2
	90	**100.0%**	

These results are in line with the documented evidence of women initiating ANC late in South Africa at national level, provincial level and district level of Ekurhuleni (DoH 2012:54; GDHSD 2011a:107 & GDHSD 2011b:65). Also in support of these results are the results of a recent comparative study in an urban setting where pregnant women in Pretoria started to attend ANC late, with a median of 16 weeks from conception (range 4−27 weeks), unlike Birmingham women, with a median of 6 weeks from conception (range 0−17 weeks) (Openshaw et al. 2011: 2).

Although the results of the study indicated that most women start ANC late, they discovered that they were pregnant at an early stage. This is indicated in Figure 4.10. Most women found out that they were pregnant in the first trimester, but most initiated ANC in the second trimester. Sibeko and Moodley (2006:17c) discovered a similar pattern of behaviour in which confirmation of pregnancy did not necessarily lead to initiation of ANC. Pregnant women tended to delay initiating ANC, even though they were aware that they were pregnant.



	1st Month	2nd Month	3rd Month	4th Month	5th Month	6th Month
Discovered (%)	43.3	34.4	13.3	6.7	2.2	0
Number	39	31	12	6	2	0
Registered (%)	3.3	13.3	26.7	14.4	17.8	24.4
Number	3	12	24	13	16	22

Figure 4.10: Percentage distribution of discovering pregnancy and registering for antenatal care (n = 90)

For early bookers the average delay between confirming pregnancy and initiating ANC was two months, while for the late bookers the average delay was three months (Sibeko & Moodley 2006:17c).

4.4.1 Reasons for initiating ANC late

The respondents who did not seek antenatal in the first three months were asked the reasons for this. This question allowed the respondents to give multiple responses. See Table 4.15.

Table 4.15: Reasons for not seeking antenatal care in time (n = 51)

Reasons	Frequency	%	Rank
Was not aware that I was pregnant	21	41.2%	1
Was not aware of when I should start	16	31.4%	2
Could not get time off work	6	11.8%	3
No time to go to the clinic	6	11.8%	3
It's not customary to make pregnancy public too early	5	9.8%	5
Not necessary	3	5.9%	6
Lazy to attend	3	5.9%	6
The date which I was given was after 3 months	3	5.9%	6
Was looking for a job	1	2.0%	9
Poor quality of service	1	2.0%	9

Close to 40% (41.2%; n = 21) were not aware that they were pregnant; and about 30% (31.4%; n = 16) did not know when they should start ANC. This indicates the need to educate women on ANC. Myer and Harrison (2003:270), in their study of pregnant women in Hlabisa, KwaZulu-Natal, highlighted being unsure that one is pregnant as one of the reasons women started ANC late. Similar results were discovered by Gross et al. (2012:4). In their study in Tanzania, they discovered that women attended ANC late, citing inability to recognise pregnancy early. Kisuule, Kayez, Najjuka, Ssematimba, Arinda, Naketende and Otim (2013:5) found that 72.7% of women in their study who started ANC after 20 weeks of pregnancy did not know when they should start ANC.

Five respondents (9.8%) said that they were late in starting ANC because 'it's not customary to make pregnancy public too early'. Similar results were ascertained by Ndidi and Oseremen (2010:49) in their study in Nigeria. Owing to

fear of perceived enemies who may harm the baby, the women decided to delay the start of ANC. This shows how cultural beliefs and ideas about pregnancy can influence women to make a decision about when to start ANC or not to attend at all (Kisuule et al. 2013:2).

According to Ndidi and Oseremen (2010:49, 50) some of the reasons given by pregnant women in their study were rooted in misconceptions and ignorance of the importance of ANC. Similar reasons were given by a few respondents in this study. These included 'no time to go to the clinic' (11.8%; n = 6); 'not necessary' (5.9%; n = 3); and 'lazy to attend' (5.9%; n = 3). Raising awareness on the importance of ANC is therefore important, so that all the misconceptions can be dispelled for the maximum benefits of ANC to be achieved.

4.4.2 Frequency in utilisation of antenatal clinic and other ANC facilities

When the women were asked about the number of times they had visited the ANC clinic, 88 women responded. Half of the women (50%; n = 44) indicated that they had attended the antenatal clinic only once, while 30% (n = 28) had visited at least three times. The information is shown in Figure 4.11.

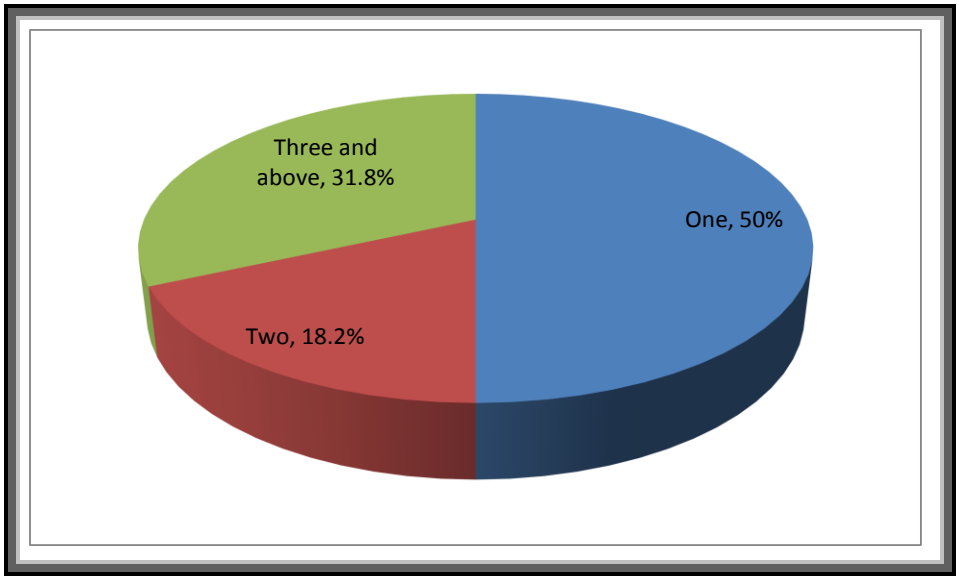


Figure 4.11: Percentage distribution of antenatal visits (n = 90)

The women were asked if they had visited another ANC facility before coming to the clinic where the study was being conducted. Only 24.4% (n = 22) indicated that they had attended another clinic before coming to the clinic, while 75.6% (n = 68) had not. Of the 22 who sought ANC elsewhere, 72.7% (n = 16) had visited a private doctor; 22.7% (n = 5) had visited a public clinic; and 4.5% (n = 1) had visited a public hospital.

The reasons for visits to other health facilities were not part of this study. However, they may have gone to other facilities to confirm their pregnancy, for consultation on ill-health or for continuation of ANC (Sibeko & Moodley 2006:17c). The number of visits to ANC service providers is given in Table 4.16. Visiting other facilities by respondents in this study is consistent with findings in Uganda in which 30% of the participants in a study at Mulago Hospital had sought ANC elsewhere before coming to the hospital under study (Kisuule et al. 2013:6).

Table 4.16: Number of antenatal visits made elsewhere (n = 22)

Number	Frequency	%	Rank
One	2	9.0%	4
Two	6	27.3%	2
Three	8	36.4%	1
Four and more	6	27.3%	2
	22	**100.0%**	

The majority (63.7%; n = 14) of those who visited other ANC facilities had made at least three visits. This information was important to establish, as some women are regarded as starting ANC late or not at all, because they had gone to the private sector instead of the public sector, and evidence to that effect is not available (Sibeko & Moodley 2006:17a).

Cross-tabulations were done to determine the behaviour of those who were late in initiating ANC with certain variables. Of the 51 respondents who were late initiators, 23.5% (n = 12) went for ANC elsewhere before visiting the clinic, while 76.5% (n = 39) did not. Of those who utilised other facilities, 58.3% (n = 7) visited a private doctor, 33.3% (n = 4) a public clinic and 8.3% (n = 1) a public hospital.

4.5 KNOWLEDGE ABOUT ANTENATAL CARE

The respondents were asked questions to determine their level of knowledge of ANC. Health knowledge is important as it enables women to be aware of their health status and the value of appropriate ANC (Rosliza & Muhamad 2011:14). The questions on knowledge were grouped into four sections: services offered; medication and screening tests during pregnancy; danger warning signs during pregnancy; and HIV, pregnancy and the baby. A score of one (1) was given for each correct designation of a knowledge statement as true or false and zero (0) was given to those respondents who gave an incorrect response or did not respond. In the sections on services offered, danger warning signs during pregnancy and HIV, and pregnancy and the baby, the highest possible score was 4. For the section on medication and screening tests during pregnancy, the highest possible score was 3. The overall highest possible score was 15 points.

Further analysis of the results revealed the knowledge score of the respondents on these four sections of knowledge. Table 4.17 gives the knowledge proportions.

Table 4.17: Knowledge about antenatal care (n = 90)

STATEMENT	% CORRECTLY JUDGED AS TRUE OR FALSE
(A) Services offered	
Antenatal care is very important to the pregnant woman as it ensures the wellbeing of the mother and the child **(t)**	94.4%
Antenatal care informs the mother on how to identify danger signs of pregnancy **(t)**	88.9%
The best time for a pregnant woman to start antenatal care is before three months of pregnancy **(t)**	77.8%
It is not necessary to go for all follow-up visits as advised by the healthcare staff **(f)**	71.1%
(B) Medication and screening tests done during pregnancy	
HIV screening is one of the services provided to pregnant women **(t)**	81.1%
Taking iron tablets during pregnancy prevent anaemia **(t)**	55.6%
Women with first pregnancy receive tetanus toxoid injections on their first visit, 4 weeks later, and 6 weeks after delivery against tetanus **(t)**	48.9%
(C) Danger warning signs during pregnancy	
Vaginal bleeding is a danger sign in pregnancy **(t**)	93.3%
Diabetes and high blood pressure are conditions that may result in complications during pregnancy **(t)**	82.2%
Drainage of liquid (water) from the vagina is normal during pregnancy **(f)**	40.0%
Severe abdominal pain is normal during pregnancy **(f)**	34.4%
(D) HIV, pregnancy and the baby	
HIV testing is important for the health of the mother and the unborn baby **(t)**	96.7%
An unborn baby can be prevented from getting HIV from its mother if the mother is HIV positive **(t)**	86.7%
Breast milk provides the newborn with adequate nutrition to protect against infections **(t)**	81.1%
Giving the baby breast milk only for six months reduces the risks of transmitting HIV to the baby **(t)**	58.9%

(t), statement is true; (f), statement is false

On the section of services offered, the minimum value of the knowledge score was 1 and the maximum value was 4. The distribution of scores is shown in Figure 4.12.

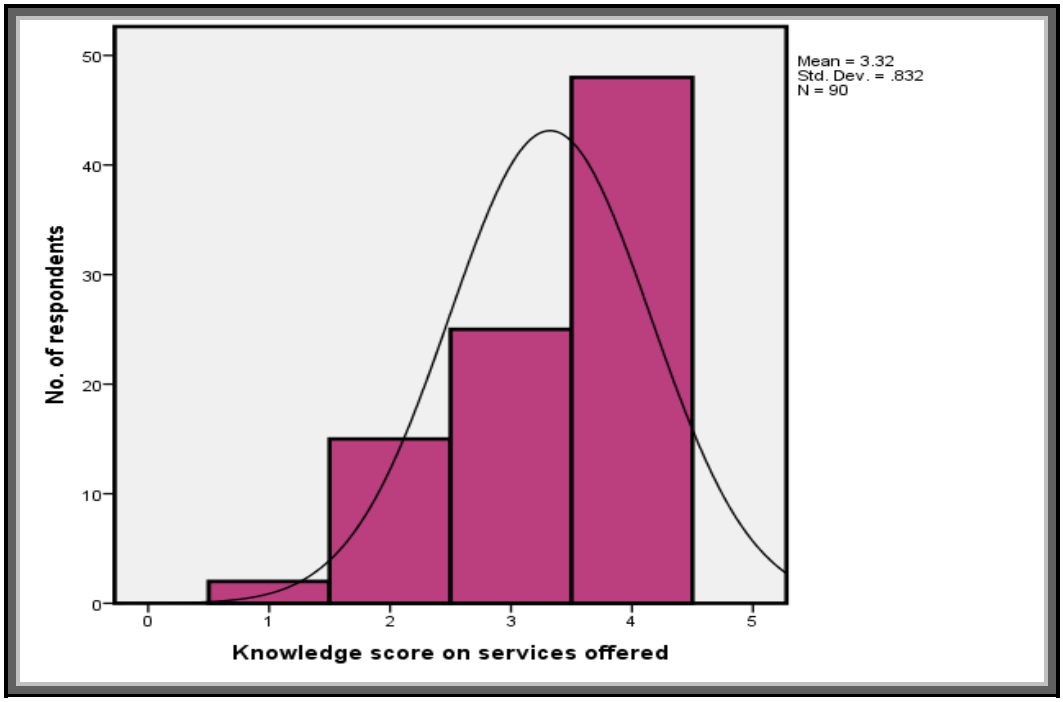


Figure 4.12: Percentage distribution of knowledge score on services offered (n = 90)

The distribution of scores was negatively skewed. The median and mode were both 4. Thus the majority of the respondents had knowledge of services offered by the clinic. This is evidenced by a mean value of 3.32 out of 4 statements. About 46.7% (n = 42) respondents had a knowledge score that was below the mean, while 53.3% (n = 48) were above the mean. The standard deviation was 0.832, giving a coefficient of variation of 25.06%. One can conclude that in terms of services offered, the respondents judged the statements correctly as true or false. This can be observed from the proportions of the aspects, which are all high, that is, above 70%. Almost similar results were reported by Rosliza and Muhamad (2011:16) among the Orang Asli women in Malaysia. The majority (94.2%) knew that a pregnant woman should go for ANC check-ups, and 73.1% knew that the first check-up should be done in the first three months.

In terms of medication and screening tests during pregnancy, the minimum value was 0 and the maximum value was 3. The distribution of scores is shown in Figure 4.13.

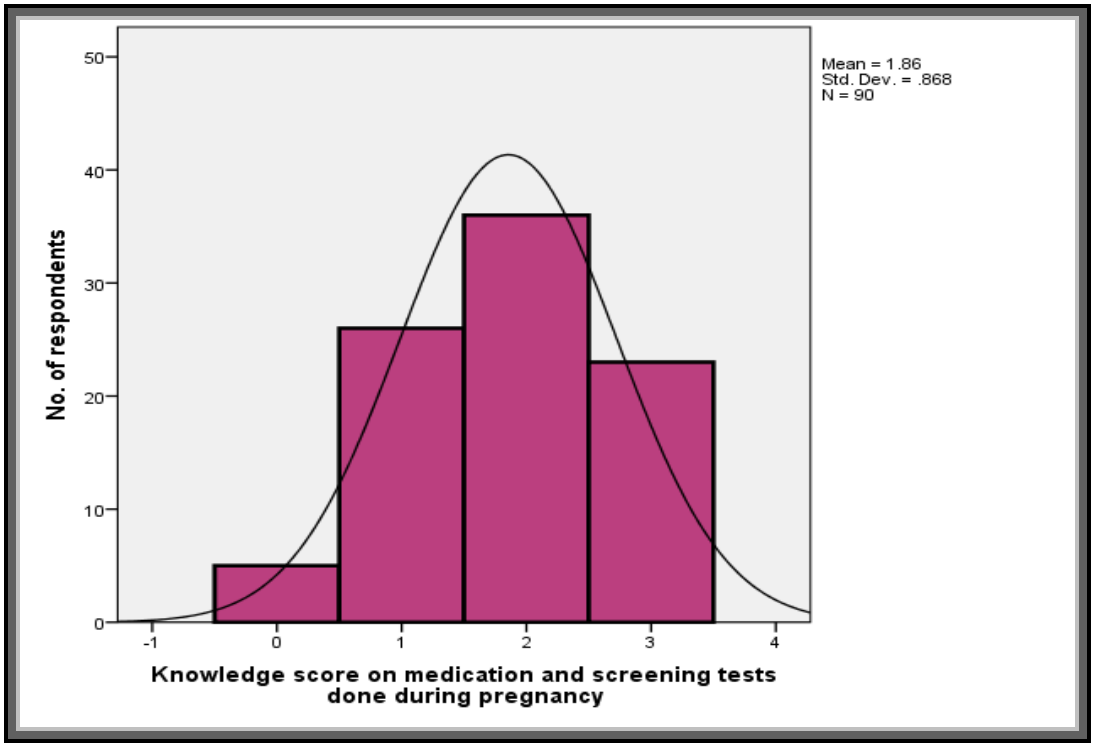


Figure 4.13: Percentage distribution of knowledge score on medication and screening tests during pregnancy (n = 90)

The distribution of scores was slightly negatively skewed. The median and mode were both 2. The respondents gave the right answer to an average mean of 1.86 out of 3 statements. About 34.4% (n = 31) had scores below the mean, while 65.6% (n = 59) had scores above the mean. The standard deviation was 0.868, giving a coefficient of variation of 46.67%. Only 48.9% (n = 44) judged this statement correctly: 'Women with first pregnancy receive tetanus toxoid injections on their first visit, 4 weeks later, and 6 weeks after delivery against tetanus' Some 55.6% (n = 50) judged the aspect correctly that 'Taking iron tablets during pregnancy prevent anaemia'. There is a need to educate pregnant women on medication and screening tests during pregnancy

The minimum score value for danger warning signs during pregnancy was 0 and the maximum was 4. The distribution pattern of scores is shown in Figure 4.14

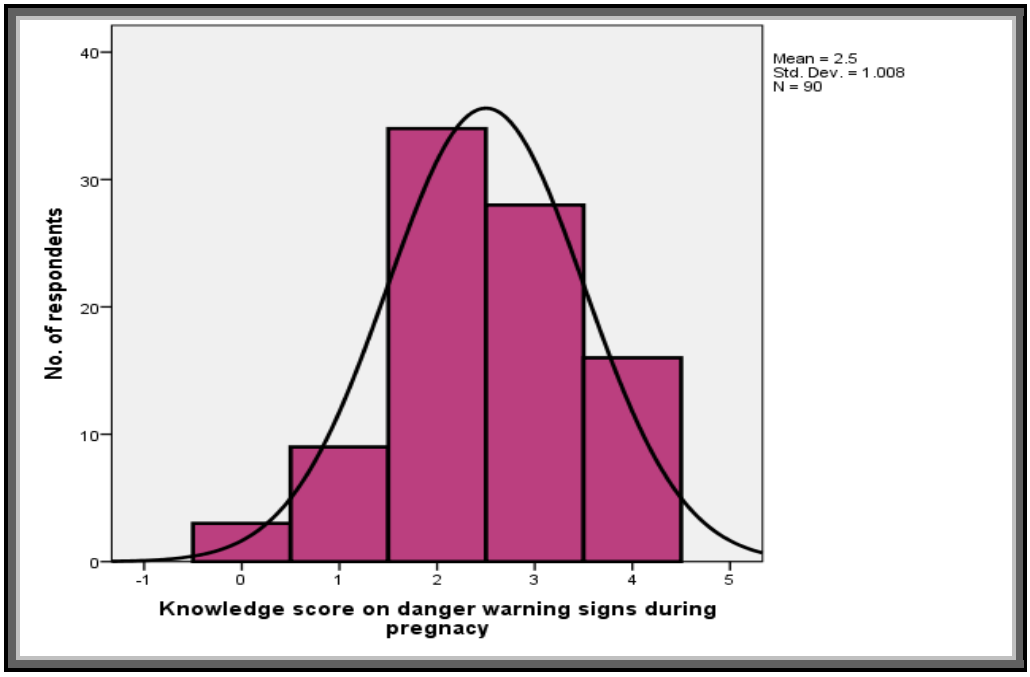


Figure 4.14: Percentage distribution of knowledge score on danger warning signs during pregnancy (n = 90)

The median and mode were both 2. The average mean was 2.5 out of 4 statements. About 51.1% (n = 46) were below the average mean score and 48.9% (n = 44) were above the average mean. The standard deviation was 1.008, giving a coefficient of variation of 40.32%.

The aspects that 'Drainage of liquid (water) from the vagina is normal during pregnancy' and 'Severe abdominal pain is normal during pregnancy' were judged correctly by 40% (n = 36 and 34.4% (n = 31), respectively. Thus, most respondents thought that drainage of liquid from the vagina and severe abdominal pain are normal during pregnancy, which is incorrect. When Ye et al. (2010:27) investigated women's knowledge of complications that may occur during pregnancy and the benefits of ANC, they discovered that of the women who had received ANC, 54.5% did not have sufficient knowledge of ANC and

only 45.5% had good knowledge. This lack of knowledge of the benefits of ANC and the complications that might occur during pregnancy affected negatively the utilisation of ANC services by pregnant women (Ye et al. 2010:31).

A study by Shirin (2011:15) supports the results of this study. Although some of the danger signs they investigated in women were different, the outcome was that pregnant women's knowledge of the danger signs was poor, as only 42.3% knew about swelling of the feet, 36.3% were aware of fits, 25.7% knew about severe headaches and 24.7% knew about unusual bleeding. However, unlike the results in Shirin's study, in which women did not know much about vaginal bleeding, women in this study had good knowledge that vaginal bleeding is a danger sign during pregnancy, because 93.3% (n = 84) of the women answered it correctly. Although most women in this study (82.2%; n = 74) could identify diabetes and high blood pressure as conditions that may result in complications during pregnancy, results of other studies indicate that it is not easy for women to identify the complications which may arise with such conditions during pregnancy (Rosliza & Muhamad 2011:16). In the study by Rosliza and Muhamad, only about half of these women were not aware of the complications of diabetes and high blood pressure.

In terms of HIV, pregnancy and the baby, the distribution of knowledge score is shown in Figure 4.15.

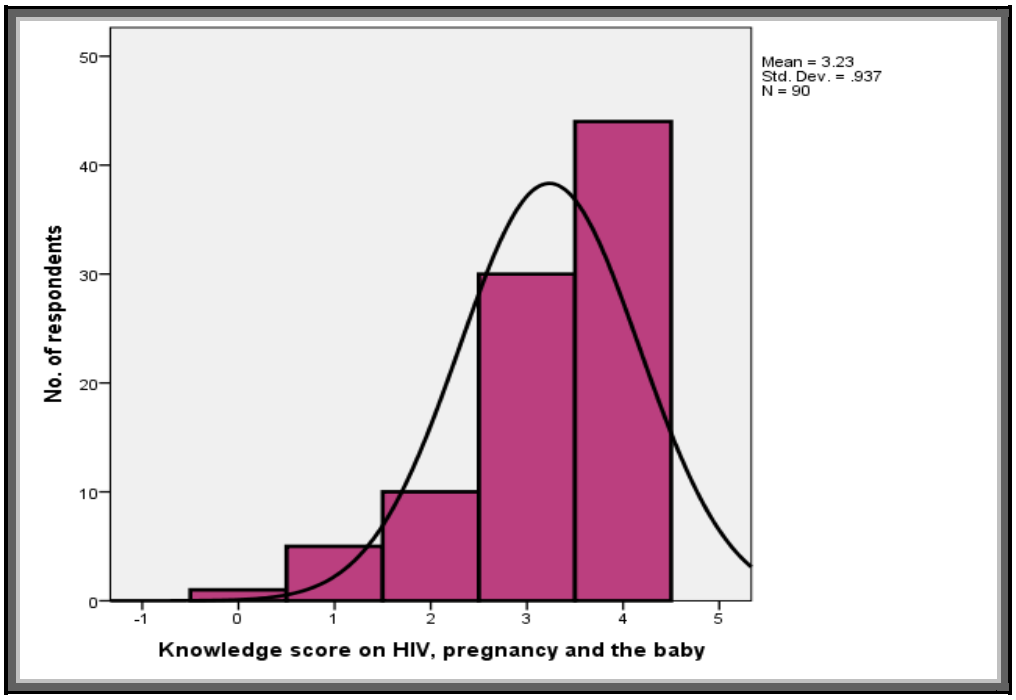


Figure 4.15: Percentage distribution of knowledge score on HIV, pregnancy and the baby (n = 90)

The distribution is negatively skewed. Few respondents got scores 0 to 2. The minimum value was 0, maximum value 4, mode 4 and median 3. The respondents gave the right answer to an average score of 3.23 out of 4 statements. About 51.1% (n = 46) were below the mean, while 48.9% (n = 44) were above the mean. The majority of the respondents obtained scores of 3 or 4. Thus they had knowledge of HIV, pregnancy and the baby. The standard deviation was 0.937, with a coefficient of variation of 29.01%. All aspects except 'Giving the baby breast milk only for six months reduces the risks of transmitting the infection to the baby' were judged correctly by at least 80% of the respondents. The exceptional aspect was judged correctly by 58.9% (n = 53) of the respondents.

This agrees with the findings that South Africa has the lowest rates in the whole world of exclusive breastfeeding practices and its promotion remains a major challenge (Doherty, Sanders, Goga & Jackson 2011:66). This has resulted in South Africa no longer distributing free infant milk in public hospitals and clinics in an effort to promote exclusive breastfeeding to mothers, including HIV-

positive mothers, as well as to reduce mortality (AFP 2011). In conclusion, Ye et al. (2010:31) argue that it is therefore important to improve women's knowledge about the benefits of ANC, as this will enrich their experiences, as well as support their efforts to appreciate ways to protect their health and that of their children. In addition, if the women become knowledgeable, they will be able to take better care of their health.

The overall total knowledge score of the respondents in this study ranged from 2 to 15, with a mean of 10.91 (SD = 2.4). The median and the mode were both 11. The distribution is shown in Figure 4.16.

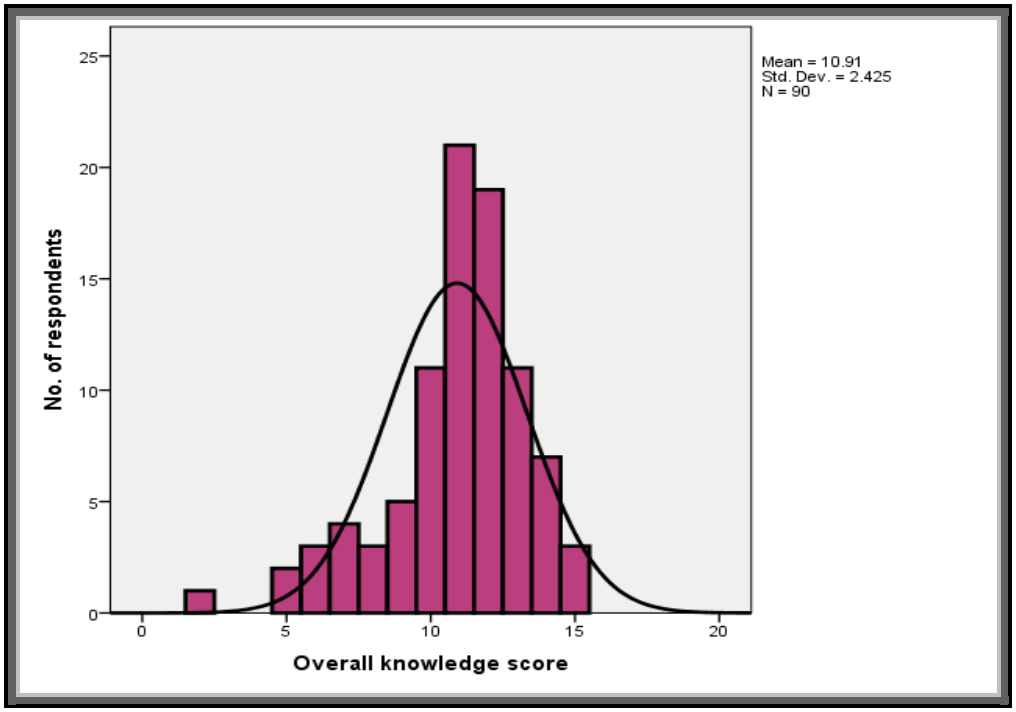


Figure 4.16: Percentage distribution of overall knowledge score (n = 90)

The graph shows that the data were slightly negatively skewed. The overall total knowledge score of all respondents was further divided into two groups, using the mean total score as the cut-off point. Women with good scores were those women with scores above the mean, and women with poor knowledge were those with knowledge scores below the mean. The results indicate that

respondents with good knowledge were 67.8% (n = 61), while those with poor knowledge were (32.2%; n = 29).

4.5.1 Variation in knowledge level about antenatal care in pregnant women

Tests were done to determine whether the level of knowledge differed by age, marital status, highest level of education, number of children, number of pregnancies, initiation of ANC and number of antenatal visits. All other variables were grouped, except number of ANC visits. The variables were grouped as follows:

- **Age** was regrouped in three categories: 24 years and below: 25–29 years; and 30 years and above.
- **Marital status** was organised in three categories: married; single; and living with partner in union.
- **Highest level of education** was put into four groups: Standard 8 / Grade 10 and below; Standard 9 / Grade 11; Standard 10 / Grade 12; and post matric.
- **Number of children one has** was divided into three groups: none; one; and two or three.
- **Number of pregnancies one has** was organised into three groups: this is my first pregnancy; two; and at least three.
- **Initiation of ANC** was divided into two groups: late; and early initiation

Independent t-tests were used when there were two categorical groups to determine whether there was a difference in knowledge score and the analysis of variance was used where groups were more than two. Tukey post-hoc analysis was used to identify the groups that were different in which the null hypothesis of equal means was rejected. The 5% level of significance was used, and the null hypothesis of equal means was rejected if the *p-value* was less than á (alpha)

Only significant tests will be presented.

4.5.1.1 Age

A test was done to determine whether the knowledge scores on 'services offered', 'medication and screening tests during pregnancy', 'danger warning signs during pregnancy', 'HIV, pregnancy and the baby and overall knowledge' differed by age. Since age had more than two groups, an analysis of variance (ANOVA) was used to determine whether the mean score on knowledge about ANC was the same for the age groups. The hypothesis to be tested was:

H_0: The mean scores are the same across the different age groups

H_1: At least one of the mean scores is different from the other means

All aspects showed that there was no difference in knowledge score, except for 'HIV, pregnancy and the baby'.

HIV, pregnancy and the baby

The ANOVA gave an ***F-value = 3.069*** and ***p-value < 0.05,*** leading to the rejection of the null hypothesis of equal means. There was no difference in means by age on the aspect on "HIV pregnancy and the baby". Table 4.18 shows the post-hoc analysis of homogeneous groups.

Table 4.18: Post-hoc analysis of knowledge score about HIV, pregnancy and the baby by age (n = 90)

Tukey B[a,b]

Q1. What is your age?	N	Subset for alpha = 0.05	
		1	2
30 years and above	21	2.90	
25–29 years	42	3.19	3.19
24 years and below	27		3.56

The tests resulted in two homogeneous groups. The lowest mean of 2.90 out of 4 was recorded from those who are 30 years and above, and the highest mean of 3.56 was recorded for those who are 24 years and below. Those who are

young tend to be more knowledgeable about HIV, pregnancy and the baby than the older women. The reason could be that younger women are fresh from school having completed / not completed school, and some might still be in school. Information about HIV is taught at school as part of the curriculum. This gives younger women an advantage over older women.

Supporting results of a significant relationship between age and knowledge about ANC were reported by Shirin (2011:15). Younger women (below 31 years) were more knowledgeable than older women ($p<0.001$, $p<0.05$). In trying to explain the difference in knowledge between younger and older mothers, Ren (2011:e262) argues that younger mothers have education and knowledge and are more likely to accept modern healthcare, while older mothers depend more on experience of pregnancy and childbirth, and are less willing to attend formal ANC services.

4.5.1.2 Marital status

A test was done to determine whether the knowledge scores on 'services offered', 'medication and screening tests during pregnancy', 'danger warning signs during pregnancy', 'HIV, pregnancy and the baby and overall knowledge' differed by marital status. The hypothesis to be tested was:

H_0: The mean scores are the same across marital statuses

H_1: At least one of the mean scores is different from the other means

In terms of marital status, the null hypothesis was not rejected on the aspects on 'services offered' 'HIV, pregnancy and the baby' and 'overall knowledge score'. The null hypothesis of equal means was not rejected at the 5% level of significance. However, the null hypothesis of equal means was rejected on the aspects 'medication and screening tests during pregnancy' and 'danger warning signs during pregnancy'.

Medication and screening tests during pregnancy

This resulted in an ***F-value = 4.211*** and ***p-value < 0.05***. Thus, the null hypothesis of equal means was rejected. The results of the post-hoc analysis are shown in Table 4.19.

Table 4.19: Post-hoc analysis of knowledge score about medication and screening tests during pregnancy by marital status (n = 90)

Tukey B[a,b]

Q2. Marital status:	N	Subset for alpha = 0.05	
		1	2
Single	35	1.54	
Living with a man in union	18	1.94	1.94
Married	37		2.11

Two homogeneous groups were generated. Those who were single and those living with a man in union belonged to one group, while those who were married belonged to the other group. This implies that the major difference was between those who were single and those who were married. The mean for single was 1.54 out of 3, while for those married it was 2.11. Thus married women were more knowledgeable on medication and screening tests during pregnancy than single pregnant women.

Danger warning signs during pregnancy

The ANOVA resulted in an ***F-value = 5.093*** and ***p-value < 0.05***. The test was highly significant since *p-value* ***< 0.05*** and the null hypothesis of equal means was rejected. Thus there was a difference in means by marital status on the aspects on 'danger warning signs during pregnancy'. Table 4.20 shows the results of the post-hoc analysis. Two homogeneous groups were constructed. The lowest mean knowledge score was 2.11 for those who were single, while the highest mean knowledge score was 2.84 from those who were married. The pattern that had been observed earlier on knowledge of medication and screening tests during pregnancy was also depicted in which married women were more knowledgeable than single pregnant women.

Table 4.20: Post-hoc analysis of knowledge score about danger warning signs during pregnancy by marital status (n = 90)

Tukey B[a,b]

Q2. Marital status:	N	Subset for alpha = 0.05	
		1	2
Single	35	2.11	
Living with a man in union	18	2.56	2.56
Married	37		2.84

4.5.1.3 Highest level of education

A test was also done to determine whether the knowledge scores on 'services offered', 'medication and screening tests during pregnancy', 'danger warning signs during pregnancy', 'HIV, pregnancy and the baby and overall knowledge' differed by highest level of education. The hypothesis to be tested was:

H_0: The mean scores are the same across highest levels of education

H_1: At least one of the mean scores is different from the other means

The aspects on 'services offered' 'HIV, pregnancy and the baby' and 'overall knowledge score' had p-values less than 0.05, thus the null hypothesis of equal means among categories of highest level of education was rejected at the 5% level of significance.

Services offered

The null hypothesis of equal mean knowledge score among the categories was rejected. The ***F-value = 2.851*** and ***p-value < 0.05.*** The post-hoc analysis homogeneous groups are shown in Table 4.21. The lowest mean knowledge score was 2.92 out of 4 from those who have Standard 8/Grade 10 and below, while the highest mean of 3.63 was for those who have post-matriculation. Two homogeneous groups were obtained. Table 4.21 shows that those with post-matriculation are more knowledgeable than those with standard 8/Grade 10 and

below. One can conclude that those who are more educated are more knowledgeable about the services offered for ANC.

Table 4.21: Post-hoc analysis of knowledge score about services offered by highest level of education (n = 90)

Tukey B[a,b]

Q3. The highest level of education you have attained is:	N	Subset for alpha = 0.05	
		1	2
Standard 8 / Grade10 and below	12	2.92	
Standard 9 / Grade11	22	3.09	3.09
Standard 10 / Grade12	32	3.41	3.41
Post-matric	24		3.63

HIV, pregnancy and the baby

A test was done to determine whether the knowledge scores on HIV, pregnancy and the baby differed by highest level of education. The ANOVA resulted in an ***F-value = 6.5648*** and ***p-value < 0.05***. Thus, the null hypothesis of equal means was rejected. The results are shown in Table 4.22.

Table 4.22 Post-hoc analysis of knowledge score about HIV, pregnancy and the baby by highest level of education (n = 90)

Tukey B[a,b]

Q3. The highest level of education you have attained is:	N	Subset for alpha = 0.05	
		1	2
Standard 8 / Grade10 and below	12	2.33	
Standard 9 / Grade11	22		3.05
Post-matric	24		3.46
Standard 10 / Grade12	32		3.53

The knowledge of HIV, pregnancy and the baby differed by highest level of education. There were two homogeneous groups. Those with Standard 8 / Grade 10 and below had the lowest mean knowledge score of 2.33, and were significantly different from the other educational categories. The Standard 10 / Grade 12 had the highest mean knowledge score of 3.53, and were not

significantly different from the post-matric and Standard 9 / Grade 11 educational categories.

Overall knowledge score on antenatal care

The overall knowledge score had 15 items, thus the total score was 15. The null hypothesis of equal mean knowledge score among the categories was rejected. The ***F-value = 4.662*** and ***p-value < 0.05.*** The post-hoc analysis homogeneous groups are shown in Table 4.23. The lowest mean knowledge score was 9.33 from those with Standard 8 / Grade 10 and below, while the highest mean of 11.75 was for those with post-matric. Two homogeneous groups were obtained. Those with Standard 9 / Grade 11 and below were in one group, and those with at least Standard 10 / Grade 12.

Table 4.23: Post-hoc analysis of overall knowledge score on antenatal care by highest level of education (n = 90)

Tukey B[a,b]

Q3. The highest level of education you have attained is:	N	Subset for alpha = 0.05	
		1	2
Standard 8 / Grade10 and below	12	9.33	
Standard 9 / Grade11	22	10.05	10.05
Standard 10 / Grade12	32		11.47
Post-matric	24		11.75

Looking at Table 4.23, one can conclude that those who are more educated are more knowledgeable about ANC.

Education, according to Zhao, Kulane, Gao and Xu (2009:7), is the most powerful influence on the knowledge score of maternal health. The results of their study in China revealed that women who had education of junior high school or higher had a better knowledge level (OR = 3.3, 95% CI: 1.8–5.8) than those who were less educated (Zhao et al. 2009:7). According to Onasoga, Afolayan and Oladimeij (2012:1314), an educated woman is more aware of

health problems; she knows more about the availability of health services; and she uses this information more effectively than someone who is not educated.

4.5.1.4 Number of children

Number of children was not a factor in determining knowledge about ANC. All aspects showed that the null hypothesis of equal means was not rejected. All p-values were greater than 0.05, thus the number of children a person had did not influence the level of knowledge about ANC.

4.5.1.5 Number of pregnancies

The same pattern observed with number of children was observed with the number of pregnancies. All p-values were greater than 0.05. The level of knowledge about ANC did not differ by the number of pregnancies a person had. Zhao et al. (2009:7) did not find any statistically significant association between number of pregnancies and knowledge of maternal health, although the study results indicated that women with more than one pregnancy (multiparae) had less knowledge about maternal health than women with their first pregnancy (primiparae).

4.5.1.6 Initiation of antenatal care

An independent t-test was done to determine whether knowledge differed between early initiators and late initiators of ANC. All p-values were greater than 0.05. Thus the null hypothesis of equal means was not rejected. This might be because not much education about ANC is being offered during ANC visits or perhaps most of the women are registering late, so that those few who registered early did not make an impact. Rosliza and Muhamad (2011:19) found no significant relationship ($p = 0.279$) between knowledge of ANC and early antenatal booking. A study in Texas by Sunil et al. (2010:134) found that although women were aware of the importance of ANC, some still did not initiate ANC early.

4.5.1.7 Number of antenatal care visits

In terms of number of ANC visits, the assumption was that as the women attended more ANC visits, more knowledge would be imparted to them about ANC and it would increase their knowledge level of the subject. The same pattern observed with initiation of ANC was observed with the number of ANC visits. All p-values were greater than 0.05. The level of knowledge about ANC did not differ by the number of ANC visits. The reason for this could be that not many respondents (20%; n = 18) had paid three visits and more, thus the few who had done so did not have much influence on the results. Contrasting results, however, were reported by Zhao et al. (2009:3), in which women who attended ANC five times or more had statistically significant higher knowledge scores than those with fewer visits (9.45 ± 2.17 vs. 7.60 ± 2.53, t = 8.070, P<0.001).

4.6 FACTORS ASSOCIATED WITH EARLY AND LATE INITIATION OF ANTENATAL CARE

This section focuses on the results of the analysis to identify factors associated with early and late initiation of ANC. The analysis involved three statistical tests. Chi-square tests were used when both variables were categorical. In the case of the Likert scales that were scored, Mann-Whitney U-test was used when ranking in level of agreements were used to determine difference between two groups and the Kruskal-Wallis test was used when the groups were more than two.

4.6.1 Tests of association between variables and initiation of antenatal care

Chi-square tests were carried out to determine whether there was difference in association between variables, and whether one had early or late initiation of ANC. The hypothesis to be tested was:

H_0: There was no association between the two variables, that is, the variables are independent

H_1: There was an association between the two variables, that is, the variables are not independent

The tests were done at the 5% level of significance, and when the p-value was less than 0.05, the null hypothesis of no association was rejected.

A chi-square test is valid if not more than 20% of the cells have expected value less than 5 and no cells have expected value less than 1. If this condition is not satisfied, then the chi-square test is invalid. In this case, only valid and significant chi-squares are presented.

The variables age, marital status, highest level of education, number of children, and number of pregnancies and initiation of ANC were grouped as before. The other variables were grouped as follows:

- **Living arrangement** was regrouped into two categories: spouse/partner; others.
- **Religion** was divided into two categories: Christians; non-Christians.
- **Age of last child** was organised into three groups: less than 5 years; 5 years and above; and not applicable.
- **Home language** was divided into four groups: English/Afrikaans; Nguni group (IsiZulu, IsiNdebele, IsiSwati and IsiXhosa); Sotho group (SeSotho, SePedi and SeTswana); and others (XhiTonga, TshiVenda and Shona).
- **Nationality** was divided into two groups: South Africans; non-South Africans.
- **Current employment status** was subdivided into two groups: unemployed; employed/self-employed.
- **Employment status of husband/ partner** was grouped into three groups: unemployed; employed/self-employed; not applicable.

- **Transport costs to clinic** was classified in three groups: nothing I walk to clinic; less than R20; R20 and more.
- **Number of normal pregnancies** was arranged in three groups: one; two/three; none.
- **Number of Caesarean deliveries** was categorised into two groups: one/two; none
- **Number of miscarriages** was sorted into two groups: one/two; none
- **Number of stillbirths** were set into two groups: one/two; none
- **Medical problems in current pregnancy** were arranged into two groups: yes; no
- **Planned pregnancy** was classified into two groups: yes; no
- **Happy with pregnancy** was divided into two groups: yes; no
- **Husband/partner accepting pregnancy** was arranged in two groups: yes; no

For the chi-square test that was valid, the null hypothesis of no association was not rejected for the following variables; age, marital status, highest level of education, number of children, and number of pregnancies, initiation of ANC, living arrangement, religion, age of last child, nationality, current employment status, employment status of husband/ partner, transport costs to clinic, number of normal pregnancies, number of caesarean deliveries, number of miscarriages, number of stillbirths, medical problems in current pregnancy, planned pregnancy, happy with pregnancy, husband/partner accepting pregnancy, except home language, as indicated in Table 4.24. The chi-square value for 'Home language' was **10.006** with a p-value < **0.05**. Thus early and late initiation of ANC was related to home language. The percentage distributions are shown in Figure 4.17.

As indicated in Figure 4.17, the majority of the Nguni group and Sotho group tended to register late for ANC. When the respondents were questioned on factors that may result in a woman initiating ANC late, more women from the

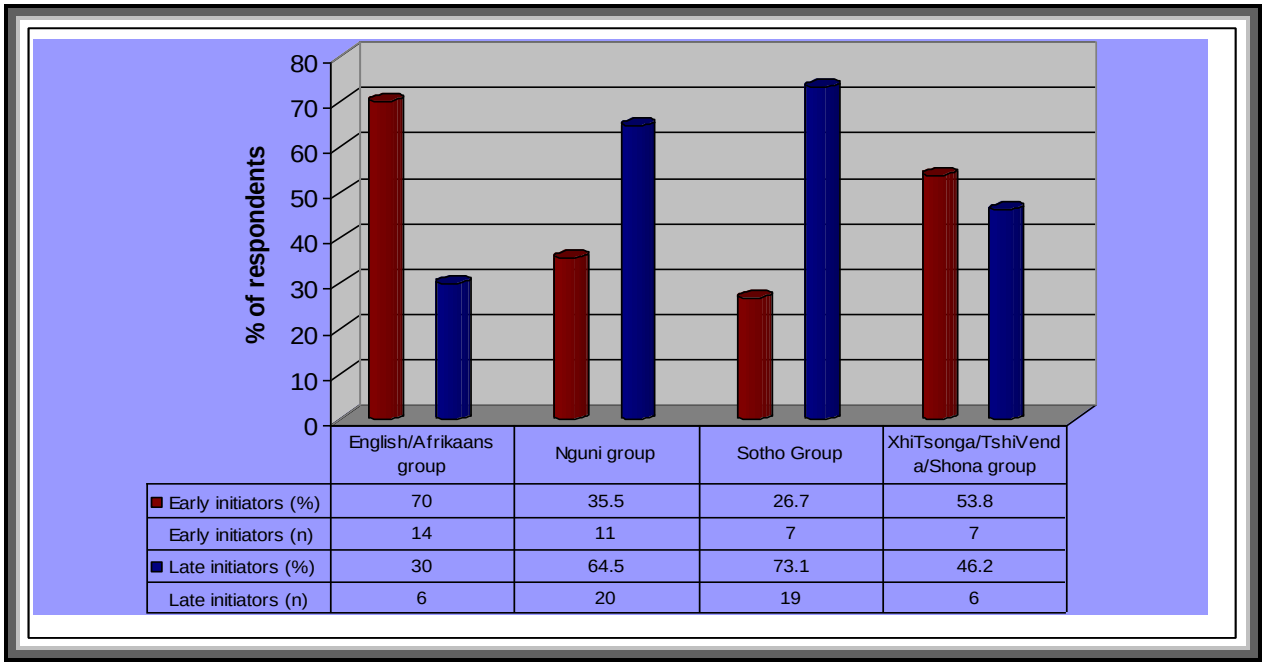
Table 4.24: Association between initiation of antenatal care and other variables

Variable	Chi-square value	p-value	Decision
Age	3.208	0.201	There is no association
Marital status	4.440	0.109	There is no association
Highest level of education	**6.315****	**0.097**	**There is no association at 5% but at 10%**
Living arrangement	0.578	0.447	There is no association
Number of children	2.220	0.330	There is no association
Age of last child	0.858	0.651	There is no association
Home language	**10.006***	**0.019**	**There is an association**
Nationality	0.011	0.915	There is no association
Current employment status	0.202	0.653	There is no association
Cost of travelling to clinic	**5.466****	**0.065**	**There is no association at 5% but at 10%**
Number of pregnancies	1.573	0.455	There is no association
Number of normal delivery	1.880	0.391	There is no association
Number of Caesareans	0.006	0.937	There is no association
Number of miscarriages	0.375	0.540	There is no association
Planned pregnancy	0.353	0.552	There is no association
Happy with pregnancy	0.392	0.531	There is no association

Note: The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05

Nguni and Sotho groups agreed that 'fear of disclosing pregnancy due to cultural reasons' might have this effect. In total, 42% (n = 37 out of 88 women) indicated that they agreed that 'fear of disclosing pregnancy due to cultural reasons' is a factor that may result in a woman initiating ANC late. Of the 37 women who agreed, 78.4% (n = 29) had initiated ANC late, of whom 68.9% were from the Nguni (37.9%; n = 11) and Sotho (31.0%; n = 9) groups. These results indicate that the reason that these two groups (Sotho and Nguni) started

ANC later than others may be cultural. Findings were consistent with those of previous studies in which cultural beliefs were reported to create barriers to decision making on when to start ANC (Ndidi & Oseremen 2010:49; Kisuule et al. 2013:2).



	English/Afrikaans group	Nguni group	Sotho Group	XhiTsonga/TshiVenda/Shona group
Early initiators (%)	70	35.5	26.7	53.8
Early initiators (n)	14	11	7	7
Late initiators (%)	30	64.5	73.1	46.2
Late initiators (n)	6	20	19	6

Figure 4.17: Percentage distribution of home language by initiation of antenatal care (n = 90)

The variables 'highest level of education' and' transport costs to clinic' showed no association at 5% level of significance, but an association at the 10% level of significance. The initiation of ANC according to the highest level of education they attained is shown on Table 4.25. According to the results, women with a higher level of education tended to initiate ANC later. More women who have attained Grade 11 up to post-matric had initiated ANC late, with percentages of 63.6%, 56.3% and 66.7%. The information is shown in Figure 4.18.

Table 4.25: Association of initiation of antenatal care and highest level of education (n = 90)

Highest level of education attained	Early initiators	Late initiators	Total
Standard 8 / Grade 10 & below	75.0% (9)	25.0% (3)	100% (12)
Standard 9 / Grade 11	36.4% (8)	63.6% (14)	100% (22)
Standard 10 / Grade 12	43.7% (14)	56.3% (18)	100% (32)
Post-matric	33.3% (8)	66.7% (16)	100% (24)
TOTAL	**39 43.3%**	**51 (56.7)**	**100% (90)**

From Figure 4.18, one can conclude that those who are more educated tend to attend the ANC clinic late. Educated women are likely to be working, therefore they may not be able to go for ANC as the clinic does not open at weekends, or

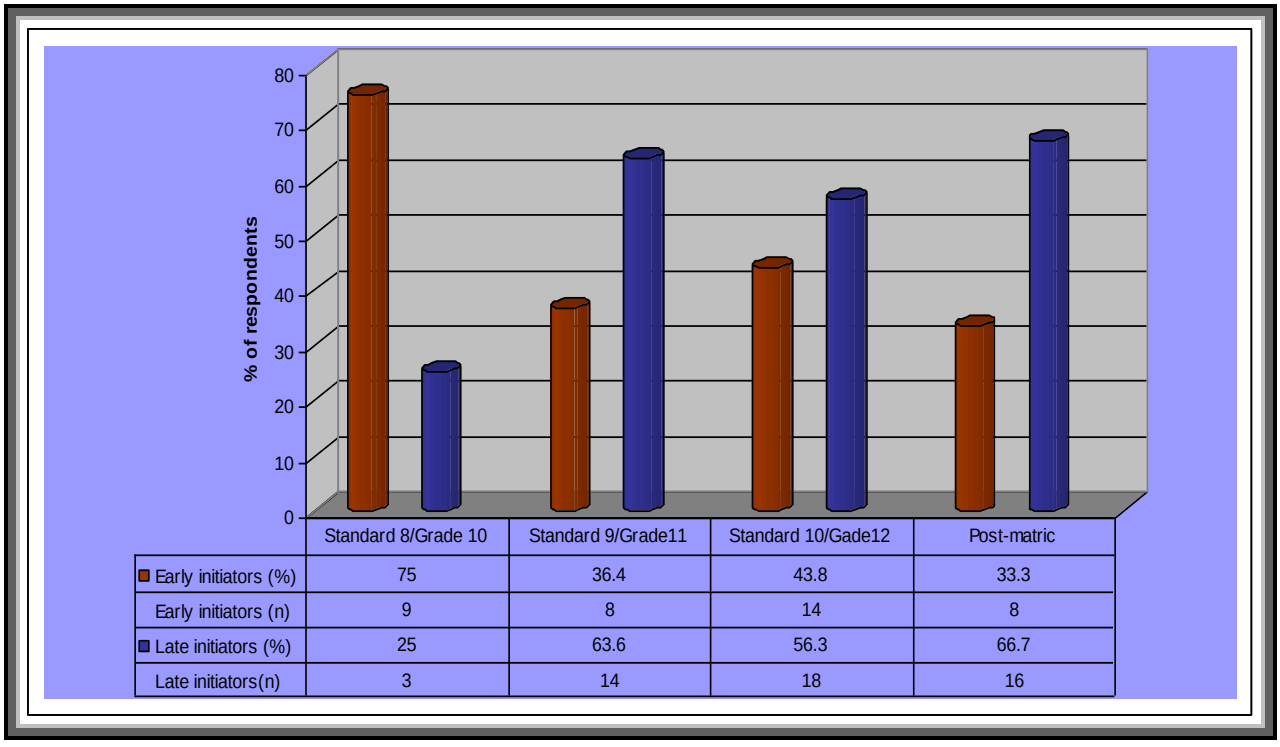


Figure 4.18 Percentage distribution of highest educational level by initiation of antenatal care (n = 90)

they may visit private doctors, private clinics and hospitals. Further investigation was done to reveal the main reason that educated women attended ANC late using cross-tabulation. Cross-tabulations were carried out to determine whether they were employed or had gone for ANC elsewhere before coming to the clinic. The results showed that half of the women who are more educated had attended ANC elsewhere, as shown in Figure 4.19.

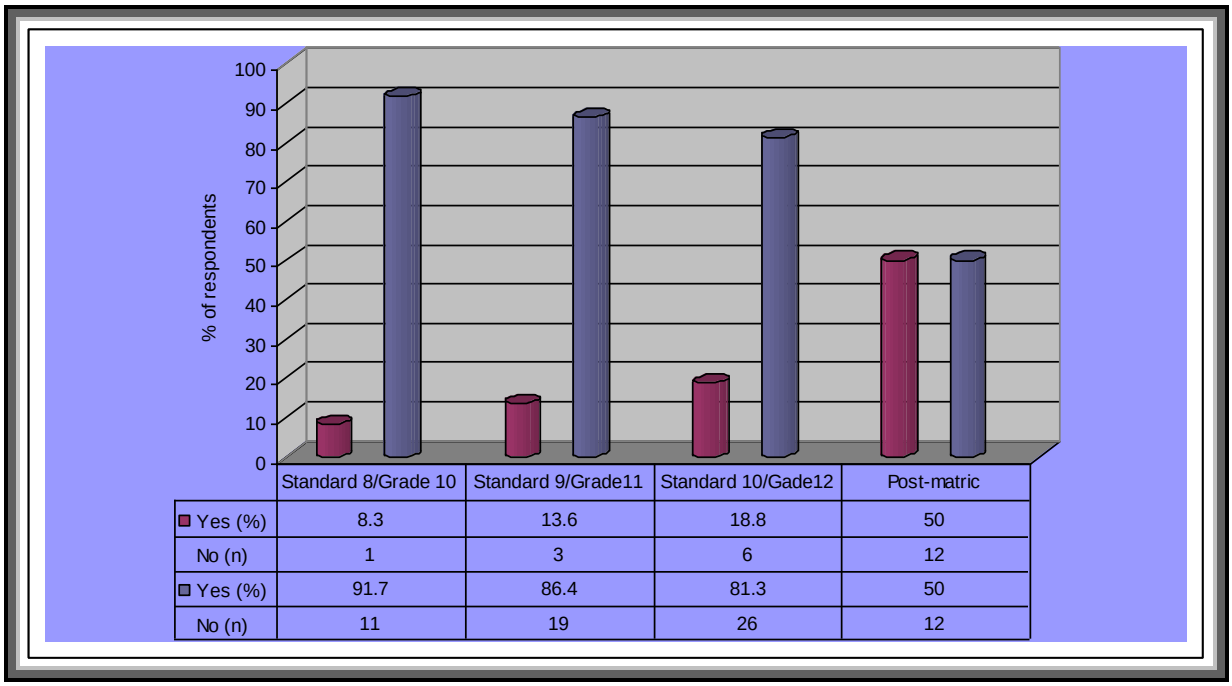


Figure 4.19: Percentage distribution of highest educational level by attendance of antenatal care elsewhere before visiting the clinic (n = 90)

A further investigation was carried out to find out whether there was an association between highest educational level and attendance of ANC elsewhere. This resulted in a chi-square value of **12.126** with a **p-value < 0.05** which is highly significant. The null hypothesis of no association was rejected. Thus there was an association between highest level of education and having attended ANC elsewhere. Cramer's V = 0.367 shows that there was a strong relationship between attending ANC elsewhere before coming to the clinic and highest educational level.

Some researchers have documented results that are contrary to those of this study. They found that a positive association between education and initiation of ANC. For example, Adekanle and Isawumi (2008:3), in a study in south-western Nigeria, found that women with primary education or none tended to register later than those who had secondary education and above (OR = 2.6, 95% CI, 1.28–5.38). Sunil et al. (2010:138), in their study in San Antonio, Texas, found that less education was associated with late initiation of ANC. The odds of starting ANC late were 3.1 times higher for women with middle school or less. A recent study on Nepalese women found that pregnant women who were not educated had higher probability of attending ANC late, and had a seven times greater risk of not attending ANC at all, compared with women with at least some education (Neupane & Doku 2012:867). Being educated therefore has a positive impact on utilisation of ANC as it enables pregnant women to become more aware of health problems, be well informed on availability of healthcare services, and utilise the information more effectively (Onasoga et al. 2012:1314).

Table 4.26: Association of initiation of antenatal care and cost of travel to the clinic (n = 90)

COST OF TRAVEL TO THE CLINIC	EARLY INITIATORS	LATE INITIATORS	TOTAL
Nothing, I walk to the clinic	40.6% (13)	59.4% (19)	100% (32)
Less than R20	36.4% (16)	63.6% (28)	100% (44)
More than R20	71.4% (10)	28.6% (4)	100% (14)
TOTAL	43.3% (39)	56.7% (51)	100% (90)

In terms of cost of travel to the clinic, women (63.6%; n = 28) who paid R20 and less to go to the clinic for ANC initiated ANC late as shown in Table 4.26. The information is shown in Figure 4.20.

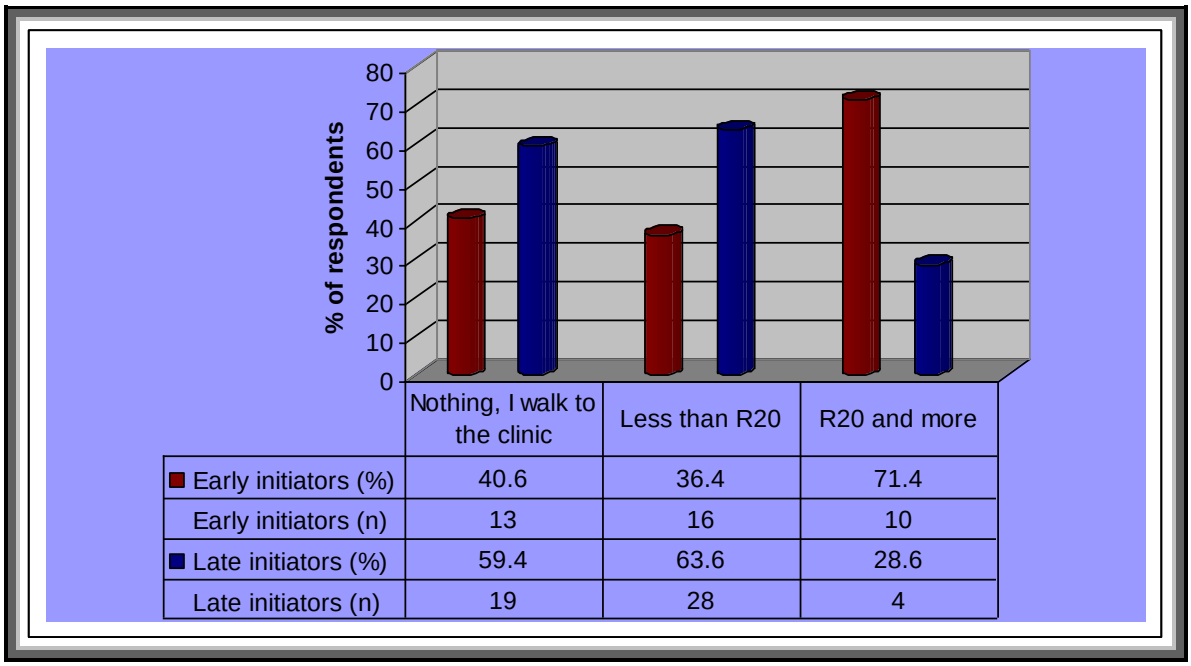


Figure 4.20: Percentage distribution of transport costs by initiation of antenatal care **(n = 90)**

One can conclude that those who paid more in terms of transport costs tended to register earlier. In terms of costs to the ANC facility, many studies have identified costs as a barrier to seeking ANC for the poor, especially in developing countries, and distance from health facilities (Simkhada et al. 2008:257). Such costs include travel, equipment and service fees. In this study higher transport costs to the clinic were not a barrier to initiating ANC early. This could be because the transport costs were low and did not make much difference between those who paid for transport to the clinic and those who did not.

Travelling a long distance to a healthcare facility may discourage women because it tends to be costly in terms of money and time. However, this is inconsistent with the results of this study, in which those who paid more to come to the clinic tended to start ANC early. According to Zeine et al. (2010:80) pregnant women who live within walking distance (less than an hour) of the ANC facility utilised ANC facilities about four times more than those who stayed further away (more than two hours' walking distance) (OR = 3.86; 95% CI 2.08,

7.16). Utilisation of ANC services was affected by distance to facility and income of respondents. As distance increased, the number of visits to ANC facilities decreased. Use of ANC facilities tended to be high among women with high income as transport costs were not considered a great expense by them (Ye et al. 2010:31).

The results of this study show no significant relationship between age, marital status, number of children, number of pregnancies, living arrangement, religion, age of last child, nationality, employment status, employment status of husband or partner, obstetric history (number of normal pregnancies, number of Caesarean delivery, number of miscarriages, stillbirths and medical problems during last pregnancy), planning of pregnancy, attitude to pregnancy and husband or partner accepting pregnancy. Other studies also investigated the relationship between some of these factors and initiation of first ANC visit. Some of the findings in these studies are discussed below.

Results by Gross et al. (2012:1) support those of this study, as they found no relationship between age and initiation of the first ANC visit, but Adekanle and Isawumi (2008:4) revealed that younger women (less than 25 years) initiated ANC later than older women (OR = 8.3, 95% CI: 1.10−62.65). Similarly, Boerleider et al. (2013:5) in their systematic review of 16 studies determined that pregnant women less than 20 years started ANC late. Contrary to these results, a study in Damascus by Bashour et al. (2008:599) found that being young (less than 20 years) was significantly associated with initiating the first ANC visit early (OR = 2.9; 95% CI: 1.1−7.7).

In terms of marital status, Gross et al. (2012:4) found no significant association between marital status and early or late timing of ANC. Sunil et al. (2010:138), however, discovered that women who were living alone were 2.4 times more likely to initiate ANC late than those who were married (p = 0.532). For parity, the findings of Onasoga et al. (2012:1314) and Adekanle and Isawumi (2008:5)

were consistent with those of this study. They found no relationship between parity and attendance or utilisation with $p>0.05$. On the other hand, Boerleider et al. (2013:6) found that multiparity was associated with late initiation of ANC. However, other researchers established a relationship between first pregnancy and attending first ANC early (Bashour et al. 2008:599; Gross et al. 2012:1). According to Adekanle and Isawumi (2008:5), the reason might be that women with first pregnancy usually seek advice from multiparous women who are considered more experienced and they usually discourage nulliparous women from going for ANC early.

No association was found in this study between previous obstetric history and initiation of ANC. This may be because the women who had experienced complications were ignorant of the danger these complications might cause to their health and that of the unborn baby. Second, few women in this study had experienced such complications (medical problems such as diabetes and high blood pressure 9.9%; n = 6 out of 61, stillbirths 9.7%; n = 6 out of 62, miscarriages 22.2%; n = 14 out of 63 and Caesarean section 22.6%; n = 14 out of 62) resulting in them having no effect on the results. Similarly, no association was found by Adekanle and Isawumi (2008:5) on previous obstetric complications (stillbirth, eclampsia, intrauterine foetal death, Caesarean section) and initiation of ANC. In contrast, a study by Gross et al. (2012:1) found that previous experience of miscarriage and stillbirths was associated with early initiation of ANC.

In terms of planning pregnancy, studies by Zeine et al. (2010:80) and Tariku et al. (2010:226) found an association between planned and wanted pregnancy with utilisation and early utilisation of ANC facilities, while unplanned pregnancy was associated with late initiation. However, this study found no significant association between the two factors. Also, no relationship was found between religion and initiation of ANC, but Onasoga et al. (2012:1309) found a significant association between religion and utilisation of ANC services with $p<0.05$.

4.6.2 Factors associated with late initiation of antenatal care

The respondents were asked to give their agreement level on factors that they thought might result in late start of ANC by pregnant women. The five agreement levels were then organised in three main groups: 'Agree' (which included 'Strongly agree' and 'Agree' levels); 'Neutral'; and 'Disagree' (which included 'Disagree' and 'Strongly disagree' levels). There were 10 items and the information is shown in Table 4.27.

The factors that were indicated by the majority of the respondents that had level of agreement of more than 50% are:

- Delay in recognising that one is pregnant (71.3%; n = 72)
- Inadequate knowledge of the benefits of ANC (63.8%; n = 51)
- Incorrect advice from friends, relative or partner on the best time to start ANC (56.7%; n = 51)
- Partner not accepting the pregnancy (51.1%; n = 45)

All other aspects had agreement levels below 50%. The factor 'Unplanned pregnancy' was close to 50% with an agreement level of 47.8% (n = 43). The factor that had the highest percentage of agreement (71.3%; n = 72), namely 'Delay in recognising that one is pregnant', was the same reason that was given by respondents in this study who initiated ANC late. Also 41.2% (n = 21) of the respondents who initiated ANC late gave the reason of not being aware of pregnancy as the cause for late initiation. The same reason was highlighted in a study by Myer and Harrison (2003:270), Tariku et al. (2010:230) and Gross et al. (2012:4) as a cause of attending ANC late.

Table 4.27: Factors that may result in late start of antenatal care by pregnant women

Statement	Level of Agreement			N – Value	Rank
	Agree	Neutral	Disagree		
Delay in recognising that one is pregnant	71.3% (62)	6.9% (6)	21.8% (19)	87	1
Inadequate knowledge of the benefits of antenatal care	63.8% (51)	20.0% (16)	16.2% (13)	80	2
Incorrect advice from friends, relative or partner on the best time to start antenatal care	56.7% (51)	8.9% (8)	34.4% (31)	90	3
Partner not accepting the pregnancy	51.1% (45)	13.7% (12)	35.2% (31)	88	4
Unplanned pregnancy	47.8% (43)	12.2% (11)	40.0% (36)	90	5
Fear of disclosing pregnancy early owing to cultural or religious factors	52.0% (37)	15.9% (14)	42.1% (37)	88	6
Feeling well and not having any serious problems that need the nurse or doctor's attention	41.2% (37)	4.4% (4)	54.4% (49)	90	7
Poor service offered at the clinic (long waiting time, overcrowding)	40.5% (36)	13.5% (12)	46.0% (41)	89	8
Unable to meet the transport costs to the healthcare facility	38.2% (34)	7.8% (7)	54.0% (48)	89	9
Waiting for the foetus (baby) to move before going for antenatal care	32.2% (29)	7.8% (7)	60.0% (54)	90	10

Incorrect advice from friends, relatives or partners who have fallen pregnant before on the best time to start ANC was highlighted by Adekanle and Isawumi (2008:5) in trying to explain the reason that women in their first pregnancies were starting ANC late. Tariku et al. (2010:230) found that women mentioned

'Incorrect advice from service providers' (18%; n = 65) as one of the reasons for late start of ANC. When a woman takes up advice from friends, relatives or partners that is not correct, it means that they are not well informed on the best time to start ANC. Such ignorance in women is supported by a study by Kisuule et al. (2013:5), who found that 72.7% of women in their study who started ANC after 20 weeks of pregnancy confessed to not knowing when they should start ANC.

4.6.2.1 *Factors associated with late initiation of ANC using Mann-Whitney U-test*

An independent t-test is carried out when one wants to find the difference in means between two groups in which data are normally distributed and are measured on an interval or ratio scale. Thus the Mann-Whitney U-test is the non-parametric equivalent to parametric independent t-tests and is used when assumptions of the t-tests are not met. The Mann-Whitney U-test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. It determines whether the groups come from identical distributions with the same medians.

The assumptions are:

Assumption 1: The continuous distributions for the test variable are exactly the same (except their medians) for the two populations.

Assumption 2: The cases represent random samples from the two populations, and the scores on the test variable are independent of each.

Assumption 3: The data measurement scale is of ordinal or continuous type.

The null hypothesis to be tested is:

H_0: The two populations have identical probability distributions

H_1: The two populations differ in location

In this case the Mann-Whitney U-test was used to determine whether the level of agreements on factors associated with late initiation differed by religion, nationality, current employment status and initiation of ANC. Levels of agreement to determine which factors contribute to late registration of ANC had identical probability distribution by religion, nationality and initiation of ANC.

Current employment status

There was a difference by current employment status of the women in two aspects as shown in Table 4.28.

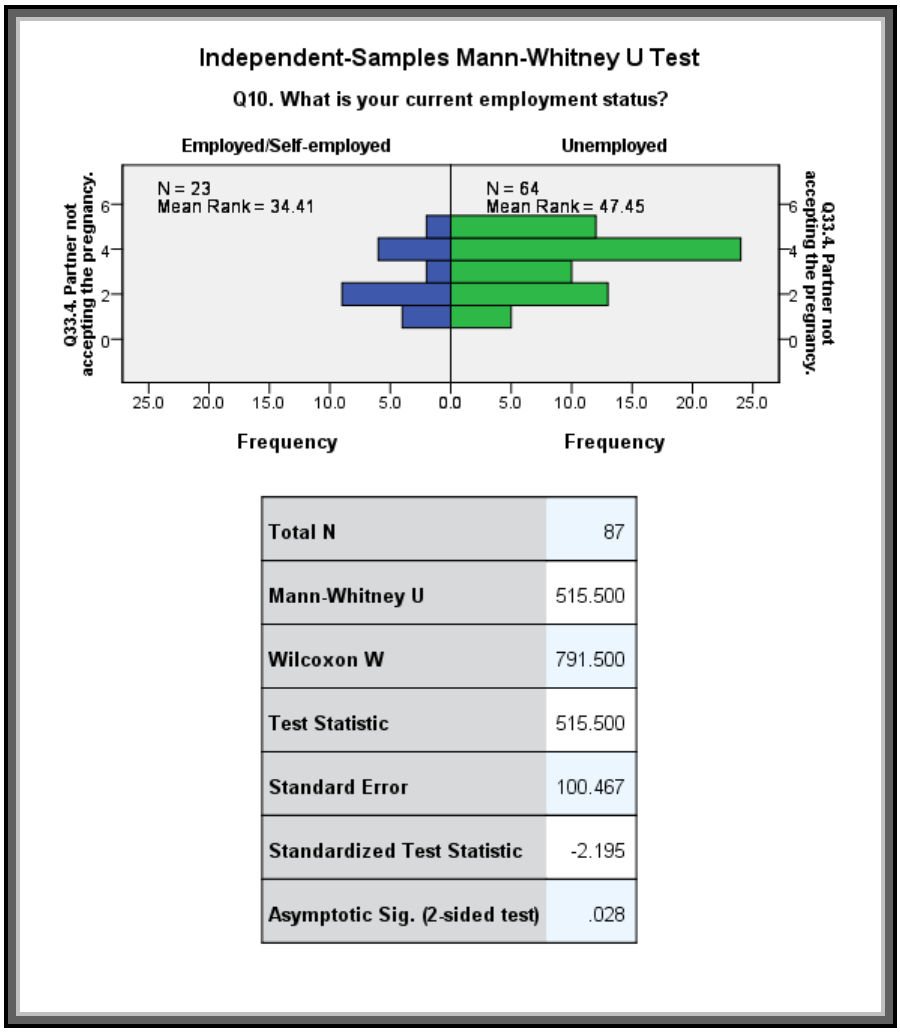
Table 4.28: Mann-Whitney U-test for difference in location in levels of agreement of factors associated with late initiation by current employment status (n = 87)

Factor	Group	Mean Rank	Mann-Whitney U-Test value	p-value	Decision
Partner not accepting the pregnancy	Unemployed	47.45	515*	0.028	Reject the null hypothesis
	Employed/self-employed	34.41			
Unable to meet the transport costs to the healthcare facility	Unemployed	47.54	550*	0.049	Reject the null hypothesis
	Employed/self-employed	35.91			

The factor 'Partner not accepting the pregnancy' was ranked high by those who were unemployed. The information is shown in Figure 4.21. The Mann-Whitney U-test ***value = -2.195*** with a ***p-value < 0.05*** Thus, the null hypothesis of identical probability distribution was rejected. Figure 4.21 showed that for those unemployed, the distributions was negatively skewed, with the majority agreeing or strongly agreeing that 'Partner not accepting pregnancy' was a factor in registering late for ANC. For those employed or self-employed, the majority

were in disagreement or strongly disagreeing. The histogram was positively skewed.

Similarly, the same trend was observed in the factor ‘Unable to meet the transport costs to the healthcare facility’ as shown in Figure 4.22.

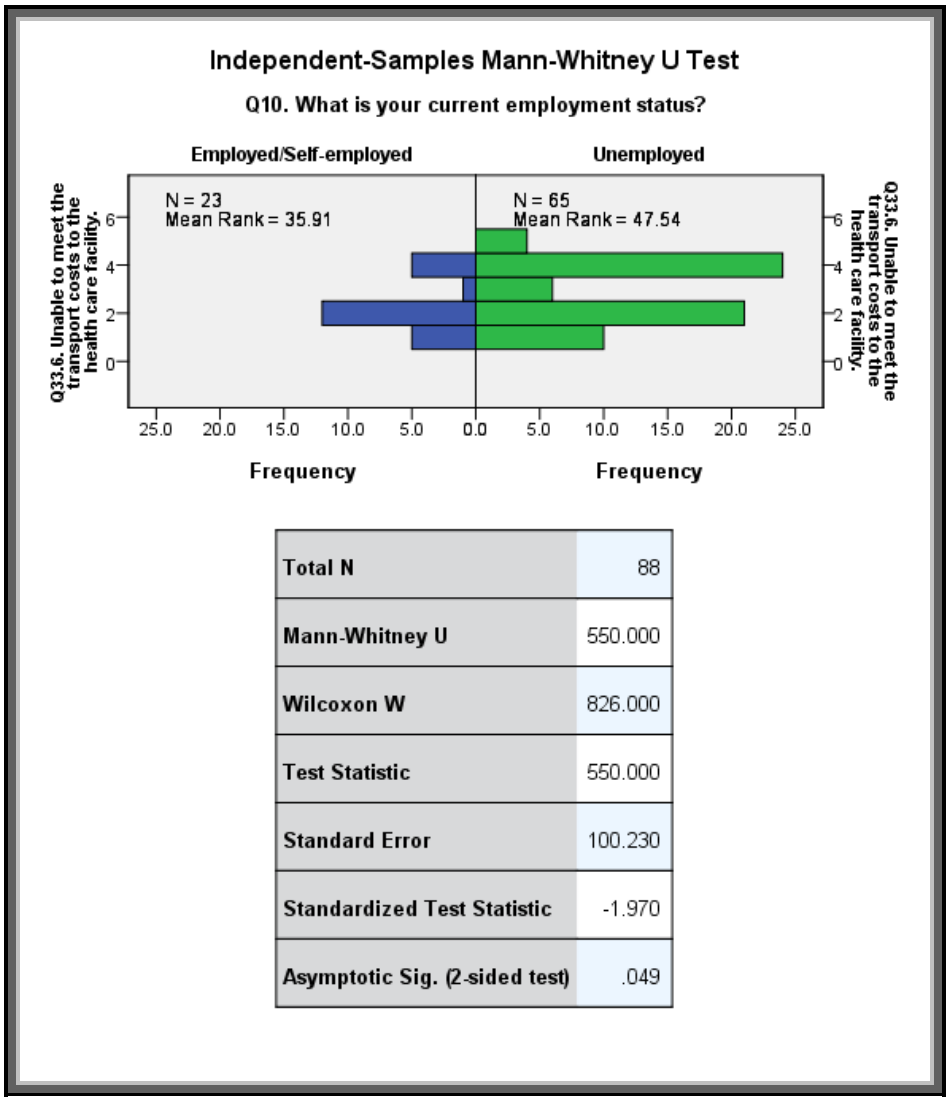


Total N	87
Mann-Whitney U	515.500
Wilcoxon W	791.500
Test Statistic	515.500
Standard Error	100.467
Standardized Test Statistic	-2.195
Asymptotic Sig. (2-sided test)	.028

Figure 4.21: Mann-Whitney U-test for the factor partner not accepting the pregnancy by current employment status (n = 87)

The Mann-Whitney U-test ***value = -1.970*** with a ***p-value < 0.05***. Thus, the null hypothesis of identical probability distribution was rejected. Women who were not employed agreed that ‘Partner not accepting pregnancy’ and ‘Unable to meet transport costs to the health facility’ are factors that can result in a woman initiating ANC late. Cash may be controlled by the man, making it difficult for the

woman to pay for healthcare and transport to the clinic (Simkhada et al. 2008:258).



Total N	88
Mann-Whitney U	550.000
Wilcoxon W	826.000
Test Statistic	550.000
Standard Error	100.230
Standardized Test Statistic	-1.970
Asymptotic Sig. (2-sided test)	.049

Figure 4.22 Mann-Whitney U-test for the factor unable to meet the transport costs to the health facility by current employment status (n = 88)

Having a spouse or partner who is not supportive was highlighted as being associated with initiating ANC late for both adolescent and adult pregnant women (p = 0.035) (Gross et al. 2012:6).

4.6.2.2 *Factors associated with late initiation of ANC using Kruskal-Wallis test*

A Kruskal-Wallis test was done where there were more than two groups to compare whether the groups came from identical populations. This test is the non-parametric equivalent of the ANOVA. It is used when assumptions of ANOVA are not met. When the Kruskal-Wallis test leads to significant results, then at least one of the groups is different from the other groups. The test does not identify where the differences occur or how many.

A Kruskal-Wallis test is appropriate only when these two assumptions are met:

Assumption 1: The dependent variable should be measured on an ordinal (such as Likert scales) or interval/ratio level. In this case, all the dependent variables (the factors) were measured on the ordinal scale.

Assumption 2: The independent variable should consist of two or more categorical, independent groups. In this case the variables that were used to determine whether their categories existed were:

- Age of respondent
- Marital status
- Highest educational level
- Number of children
- Age of last child
- Home language
- Employment status of husband or partner
- Transport costs to clinic
- Number of pregnancies
- Number of ANC visits

If a significant difference is found, then there is a difference between the highest and lowest median. If there is no significant difference in the data, one cannot

conclude that the samples are the same, but rather they come from identical populations.

The null hypothesis in this or any comparable situation involving several independent samples of ranked data is that the

H_o: The samples come from identical populations

H_1: The samples come from different populations

The test was done at 5% level of significance. In all the variables, the null hypothesis that the samples come from identical populations was not rejected in all aspects except for number of children; transport costs to clinic; and number of ANC visits.

Number of children

There was a difference by number of children in one aspect shown in Table 4.29. Those with none or one child ranked higher than those with two/three children. The information is shown in Figure 4.23.

Table 4.29: Kruskal-Wallis test for difference in location in levels of agreement for the factors associated with late initiation by number of children (n = 88)

Factor	Group	Mean Rank	Kruskal-Wallis Test value	p-value	Decision
Fear of disclosing pregnancy early due to cultural/religious factor	None	44.40	7.269*	0.026	Reject the null hypothesis
	One	50.47			
	Two/three	31.72			

The Kruskal-Wallis test ***value = 7.269*** with a ***p-value < 0.05***. Thus, the null hypothesis of coming from identical populations was rejected. From the box plot in Figure 4.23, it can be observed that a majority of those with two or three children disagreed that 'Fear of disclosing pregnancy early due to cultural/religious factor' was associated with late registration of ANC. These

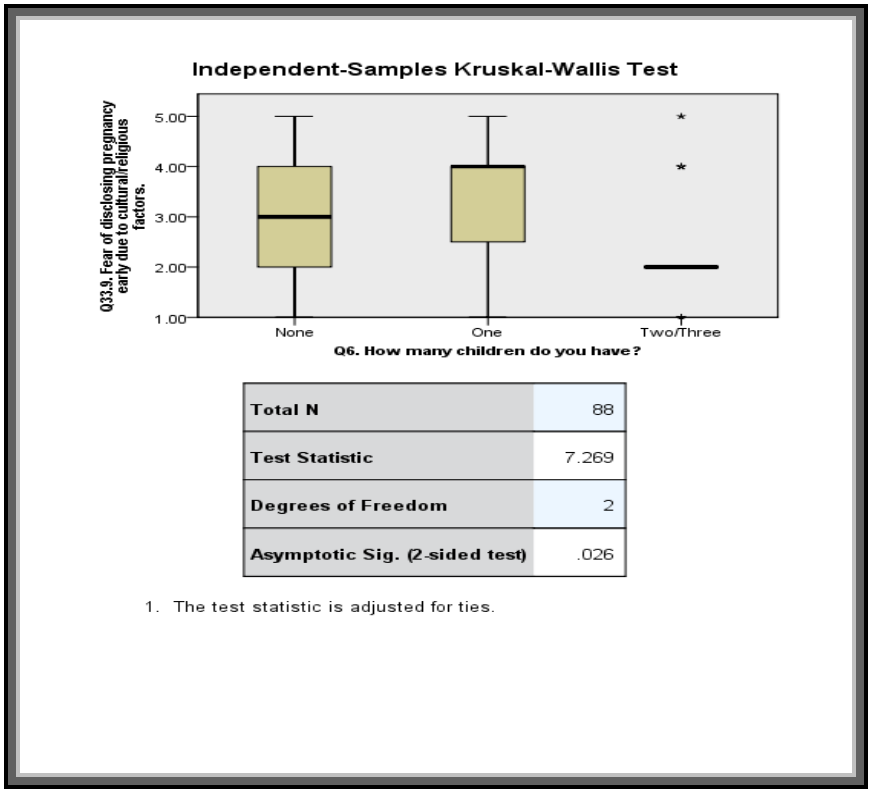


Figure 4.23: **Kruskal-Wallis test for the factor fear of disclosing pregnancy early due to cultural or religious factors by number of children (n = 88)**

results indicate that after having carried two and more pregnancies, the antenatal health education received during these pregnancies was effective in dispelling such fears, resulting in positive behaviour change. Hence, the women disagreed with the statement. However, in contrast to these results, fear of bewitchment was raised as a reason for attending ANC late by respondents in a study carried out in Bohlabelo, Limpopo, South Africa (Ngomane & Mulaudzi 2010:8). This fear makes women keep their pregnancy a secret until it becomes

obvious, because the women are afraid of evil spirits that may be inflicted on them when they are pregnant, which may cause malformation of the foetus.

Transport costs to clinic

There was difference by transport costs to the clinic in one aspect shown in Table 4.30.

Table 4.30: Kruskal-Wallis test for difference in location in levels of agreement for the factors associated with late initiation by transport costs to clinic (n = 89)

Factor	Group	Mean Rank	Kruskal-Wallis Test value	p-value	Decision
Poor service offered at the clinic (long waiting time, overcrowding)	Nothing, I walk to the clinic	35.76	7.573*	0.023	Reject the null hypothesis
	Less than R20	48.22			
	R20 and more	55.36			

Those who walk were ranking lower than those who used paid transport. The information is shown in Figure 4.24. The ***Kruskal-Wallis*** test ***value = 7.573*** with a ***p-value < 0.05*** therefore, the null hypothesis of coming from identical populations was rejected. From the box plots in Figure 4.24 it can be observed that those who pay at least R20 agreed that the factor 'Poor service offered at the clinic (long waiting time, overcrowding)' was associated with late registration of ANC.

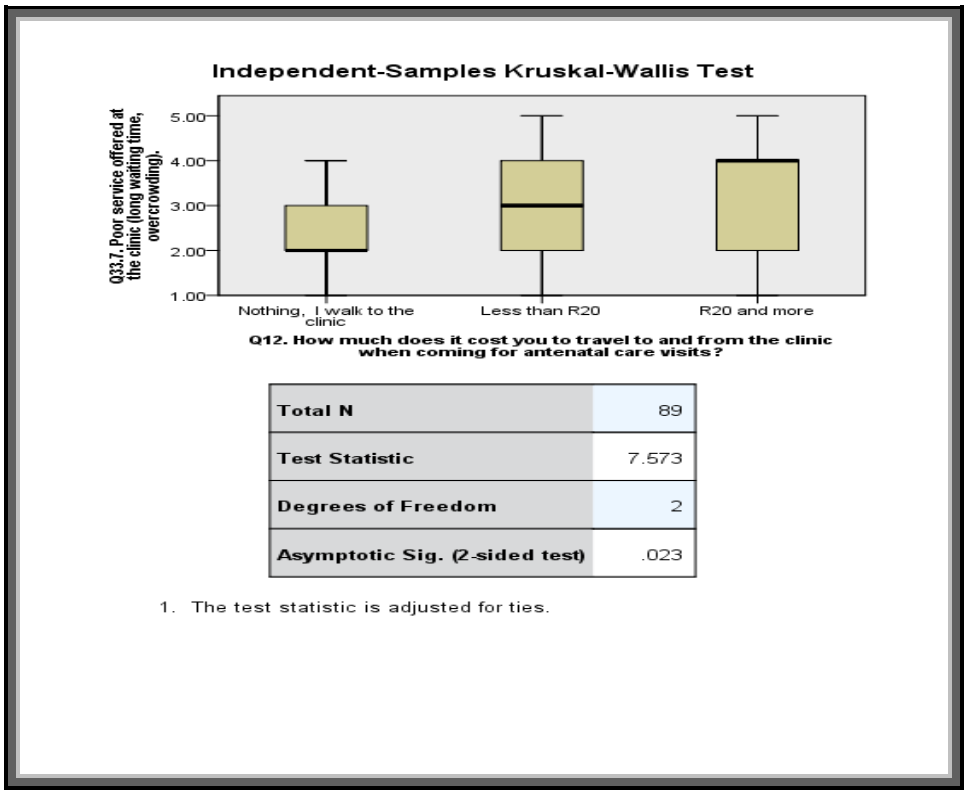


Figure 4.24 Kruskal-Wallis test for the factor poor service offered at the clinic by transport costs to clinic (n = 89)

Number of antenatal visits

There was difference by number of ANC visits on two aspects as shown in Table 4.31. In terms of 'Partner not accepting pregnancy', the **Kruskal-Wallis** test ***value = 8.472*** with a ***p-value < 0.05*** as shown in Figure 4.25. Thus, the null hypothesis of coming from identical populations was rejected.

Table 4.31: Kruskal-Wallis test for difference in location in levels of agreement for the factors associated with late initiation by number of antenatal visits (n = 86)

Factor	Group	Mean Rank	Kruskal - Wallis Test value	p-value	Decision
Partner not accepting the pregnancy	One	46.49	8.472*	0.014	Reject the null hypothesis
	Two	27.10			
	Three and above	47.70			
Incorrect advice from friends, relatives or partners on the best time to start antenatal care	One	48.44	12.487*	0.002	Reject the null hypothesis
	Two	25.72			
	Three and above	49.04			

From the box plots in Figure 4.25, those who went for two visits were more in disagreement, while the others were more in agreement, since more than 50% of the respondents gave a ranking of at least 4 (agreeing).

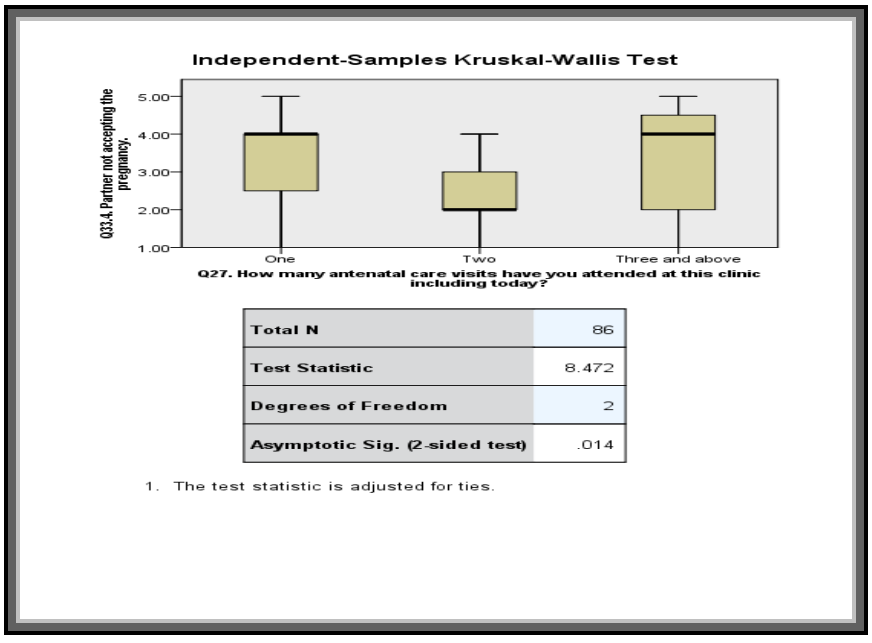


Figure 4.25 Kruskal-Wallis test for the factor partner not accepting the pregnancy by number of antenatal visits (n = 86)

For the factor ‘Incorrect advice from friends, relative or partner on the best time to start ANC’ the same pattern as above was observed, as shown in Figure 4.26.

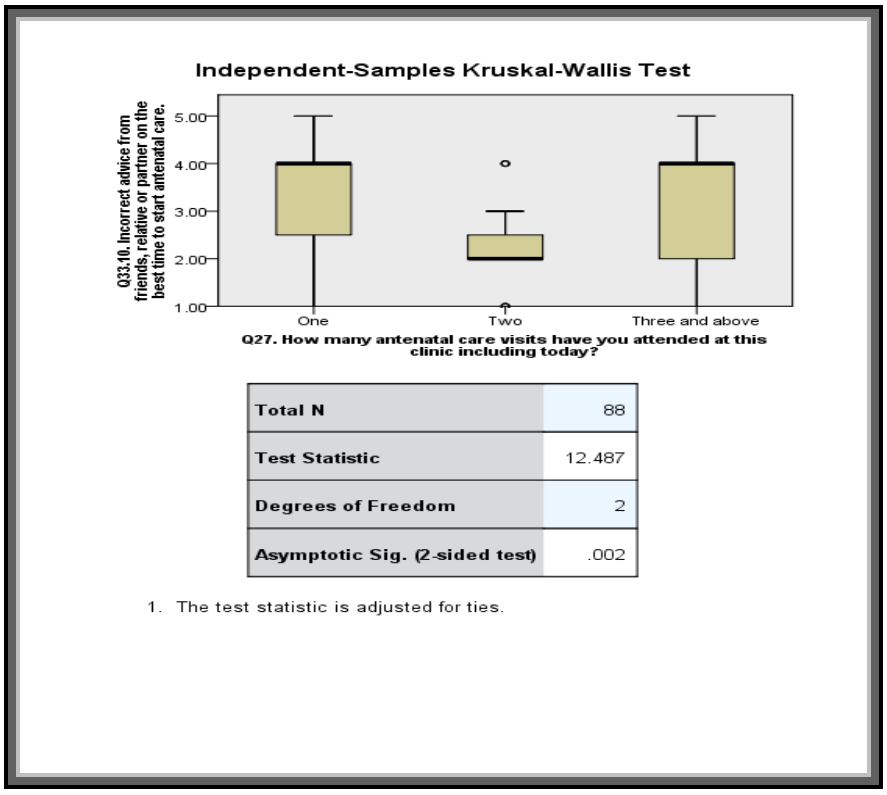


Figure 4.26: Kruskal-Wallis test for the factor incorrect advice from friends, relatives or partners on the best time to start antenatal care by number of antenatal visits (n = 88)

The ***Kruskal-Wallis*** test ***value = 12.487*** with a ***p-value < 0.05***. Thus, the null hypothesis of coming from identical populations was rejected and the test was highly significant. From the box plots (Figure 4.26) it can be observed that those who visited twice were more in disagreement than the other groups.

4.6.3 Challenges in utilising antenatal care

In investigating the factors that contribute to initiating ANC late, the respondents were asked to give their agreement level on aspects that they thought made it

difficult for them to attend antenatal clinics. There were eight items and the results of their responses are indicated in Table 4.32.

Table 4.32: Factors that make it difficult for one to use antenatal care services offered at the clinic

Statement	Level of Agreement			n– Value	Rank
	Agree	Neutral	Disagree		
Fear of the HIV test being positive	37.8% (34)	3.3% (3)	58.9% (53)	90	1
Lack of money to pay for transport costs to ANC service	34.8% (31)	4.5% (4)	50.7% (54)	89	2
Language differences which make it difficult to communicate with the health workers	31.1% (28)	4.4% (4)	64.5% (58)	90	3
Delays in attending to clients by health workers	27.9% (24)	11.6% (10)	60.5% (52)	86	4
Unable to get time off work to attend antenatal care	25.8% (23)	6.7% (6)	67.5% (60)	89	5
Unable to find someone to take care of the other children when coming for antenatal care	23.3% (21)	7.8% (7)	68.9% (62)	90	6
No power to make decisions on your own. Husband/partner or family member has to make the decision for you to attend antenatal care	16.7% (15)	4.4% (4)	78.9% (71)	90	7
Working hours at the antenatal clinic are not suitable for me to attend	12.4% (11)	6.7% (6)	80.9% (72)	89	8

All factors were below 40% in agreement levels. Thus, the respondents do not think these are major challenges in utilisation of ANC services.

4.6.3.1 Tests of association between variables and challenges faced in utilising antenatal care

Further tests were done to determine whether the listed challenges in utilising ANC are associated with certain variables. The same pattern of analysis on factors associated with early and late initiation was done to determine whether the challenges were associated with certain variables. Two tests were done. The Mann-Whitney U-test was used when determining whether ranking in levels of agreement differed between two groups; and the Kruskal-Wallis test was used when the groups were more than three.

4.6.3.1.1 Challenges faced in utilising antenatal care using Mann-Whitney U-test

The Mann-Whitney U-test was used to determine whether the level of agreement on challenges faced in utilising ANC differed by religion, nationality, current employment status and initiation of ANC. Levels of agreement to determine challenges faced in utilising ANC did not differ in having identical probability distributions in all the aspects, that is, by religion, nationality, current employment and initiation of ANC.

4.6.3.1.2 Challenges faced in utilising antenatal care using Kruskal-Wallis test

The null hypothesis that the samples come from identical populations was not rejected in all aspects except for these variables:

- Highest educational level
- Home language
- Employment status of husband
- Transport costs to clinic
- Number of pregnancies
- Number of ANC visits

Highest educational level

There was difference in the aspect 'Unable to get time off work to attend antenatal care' by current employment status as shown in Table 4.33.

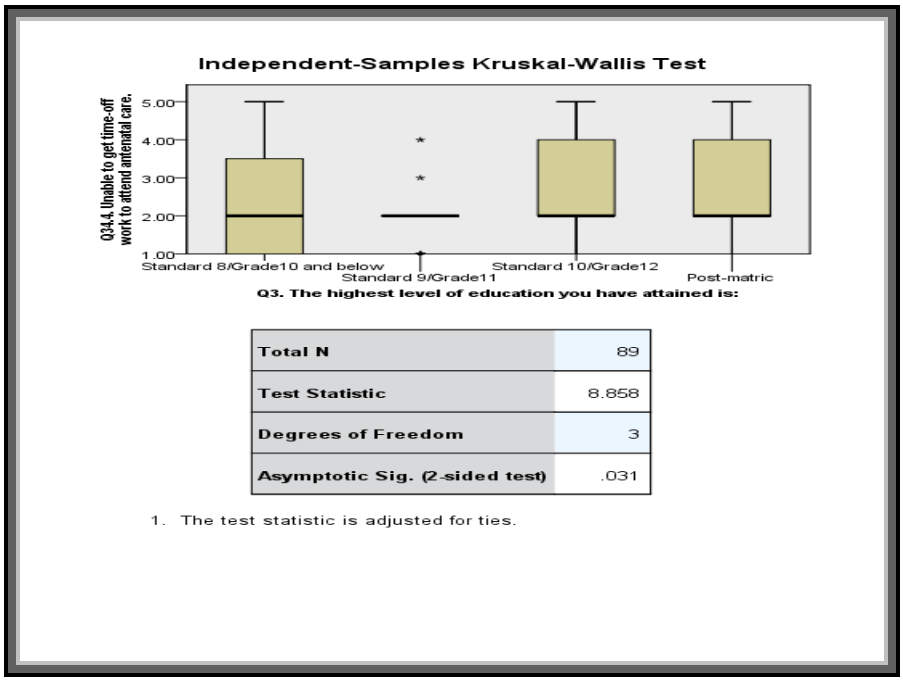
Table 4.33: Kruskal-Wallis test for difference in location in levels of agreement for the challenges in utilising antenatal care by highest educational level (n = 89)

Aspect	Group	Mean Rank	Kruskal Wallis Test value	p-value	Decision
Unable to get time off work to attend antenatal care	Standard 8 / Grade10 and below	38.21	8.858*	0.031	Reject the null hypothesis
	Standard 9 / Grade11	34.09			
	Standard 10 / Grade12	50.92			
	Post-matric	50.75			

Note: The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05

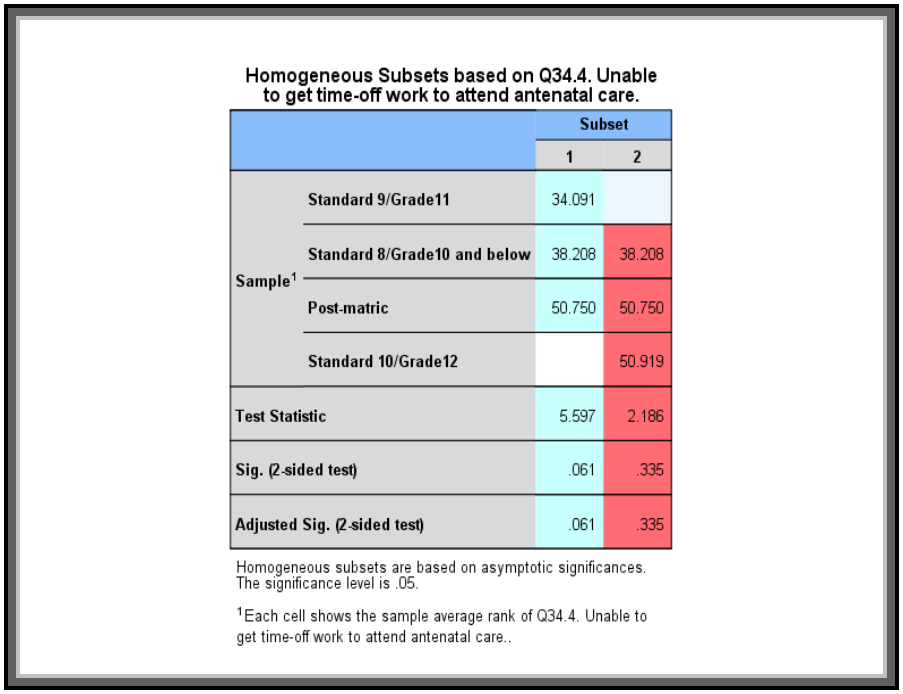
The Kruskal-Wallis test ***value = 8.858*** with a ***p-value < 0.05***. The null hypothesis of having identical probability distributions was rejected. One can conclude that those with high qualifications indicated the aspect 'Unable to get time off work to attend antenatal care' as a challenge. This may be attributed to most of them working.

The information is shown in Figure 4.27. There are two homogeneous groups. The majority of those with Standard 8 / Grade 10 or below gave lower rankings, indicating that the aspect was not a challenge.



Total N	89
Test Statistic	8.858
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.031

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.4. Unable to get time-off work to attend antenatal care.

		Subset	
		1	2
Sample[1]	Standard 9/Grade11	34.091	
	Standard 8/Grade10 and below	38.208	38.208
	Post-matric	50.750	50.750
	Standard 10/Grade12		50.919
Test Statistic		5.597	2.186
Sig. (2-sided test)		.061	.335
Adjusted Sig. (2-sided test)		.061	.335

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.4. Unable to get time-off work to attend antenatal care..

Figure 4.27: Kruskal-Wallis test for the aspect to get time off from work to attend antenatal care by highest educational level (n = 89)

Home language

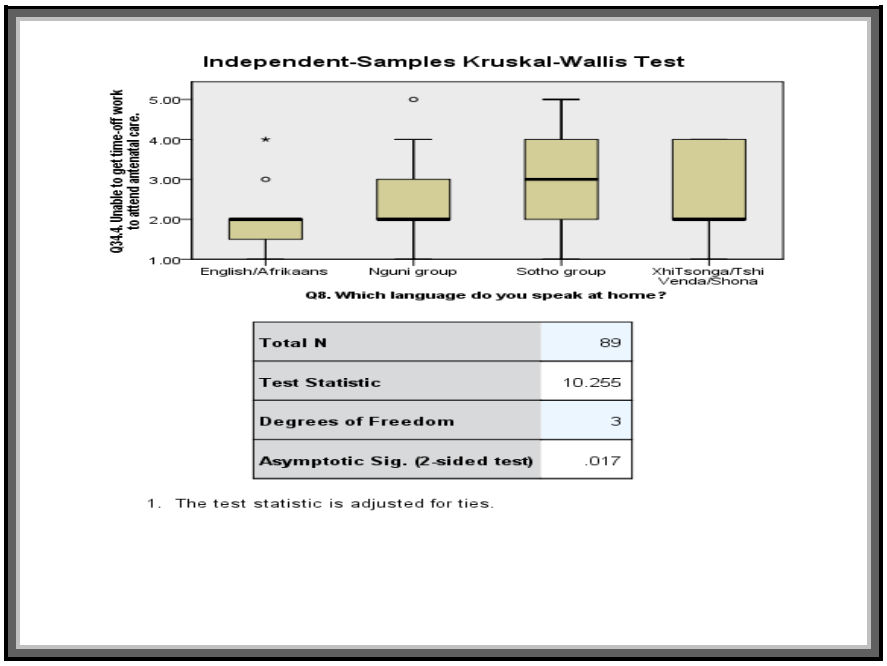
In terms of home language, three aspects showed there was difference in having identical probability distributions as shown in Table 4.34.

Table 4.34: Kruskal-Wallis test for difference in location in levels of agreement for the challenges in utilising antenatal care by home language

Aspect	Group	Mean Rank	Kruskal Wallis Test value	p-value	Decision
Unable to get time off work to attend antenatal care	English/Afrikaans	33.70	10.255*	0.017	Reject the null hypothesis
	Nguni group	42.48			
	Sotho group	56.02			
	XhiTsonga/TshiVenda/Shona	47.19			
Fear of the HIV test being positive	English/Afrikaans	33.53	9.686*	0.021	Reject the null hypothesis
	Nguni group	44.48			
	Sotho group	56.23			
	XhiTsonga/TshiVenda/Shona	44.88			
No power to make decisions on your own Husband/partner or family members have to make the decision for you to attend antenatal care	English/Afrikaans	37.80	12.689**	0.005	Reject the null hypothesis
	Nguni group	37.55			
	Sotho group	54.73			
	XhiTsonga/TshiVenda/Shona	57.85			

Note: The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05

In terms of the aspect 'Unable to get time off work to attend antenatal care', the Kruskal-Wallis test ***value = 10.255*** with a ***p-value < 0.05***, resulting in the rejection of the null hypothesis of having identical probability distributions. Two homogeneous groups were obtained as shown in Figure 4.28.



Total N	89
Test Statistic	10.255
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.017

1. The test statistic is adjusted for ties.

Homogeneous Subsets based on Q34.4. Unable to get time-off work to attend antenatal care.

		Subset	
		1	2
Sample[1]	English/Afrikaans	33.700	
	Nguni group	42.484	42.484
	XhiTsonga/TshiVenda/Shona	47.192	47.192
	Sotho group		56.020
Test Statistic		3.072	4.445
Sig. (2-sided test)		.215	.108
Adjusted Sig. (2-sided test)		.215	.108

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

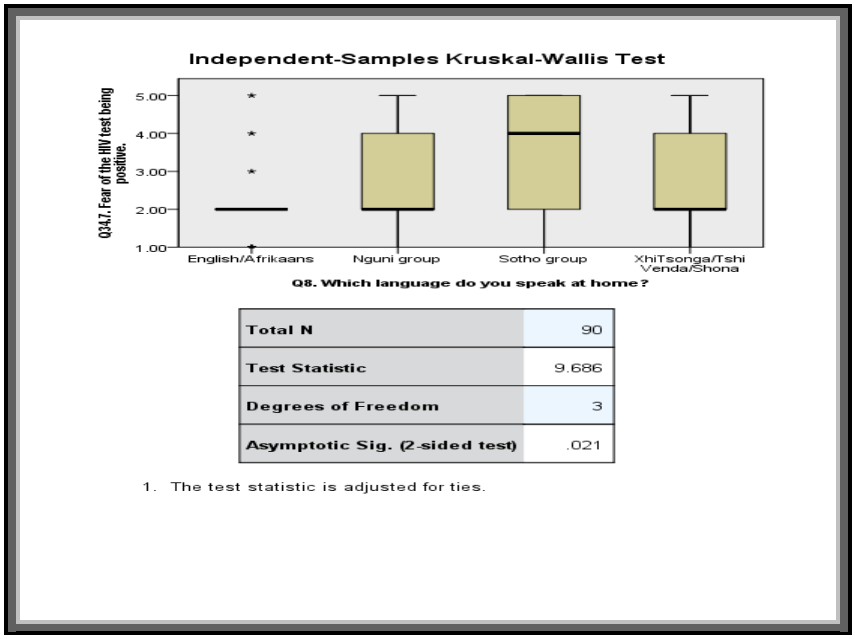
[1]Each cell shows the sample average rank of Q34.4. Unable to get time-off work to attend antenatal care..

Figure 4.28: Kruskal-Wallis test for the aspect to get time off work to attend antenatal care by home language (n = 89)

The lowest mean rank was 33.7 from the English/Afrikaans group and the highest mean rank was 56.00 from the Sotho-speaking people. The Sotho group ranked the aspect 'Unable to get time off work to attend antenatal care' higher, indicating that it was a challenge, followed by the XhiTsonga/TshiVenda/Shona

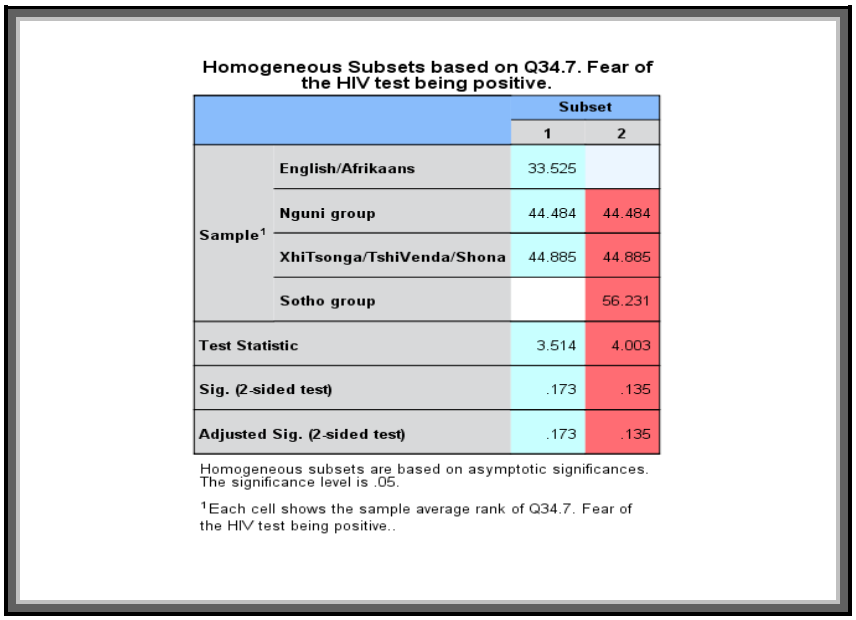
group. The box plot (Figure 4.28) showed that at least half of the people seem to have put a rank of at least 3 (neutral). Again this might be because most of the women, their husbands or accompanying persons are working incompatible hours with the ANC facility. This has been cited as having an effect on access to ANC (Boerleider et al. 2013:6). Unlike the Sotho and XhiTsonga/TshiVenda/Shona group who were challenged by getting time off work, women in San Antonio, Texas, reported that 'Getting time off work' was not being problematic (Sunil et al. 2010:138).

The aspect 'Fear of the HIV test being positive' resulted in two homogeneous groups as shown in Figure 4.29.



Total N	90
Test Statistic	9.686
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.021

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.7. Fear of the HIV test being positive.

		Subset	
		1	2
Sample[1]	English/Afrikaans	33.525	
	Nguni group	44.484	44.484
	XhiTsonga/TshiVenda/Shona	44.885	44.885
	Sotho group		56.231
Test Statistic		3.514	4.003
Sig. (2-sided test)		.173	.135
Adjusted Sig. (2-sided test)		.173	.135

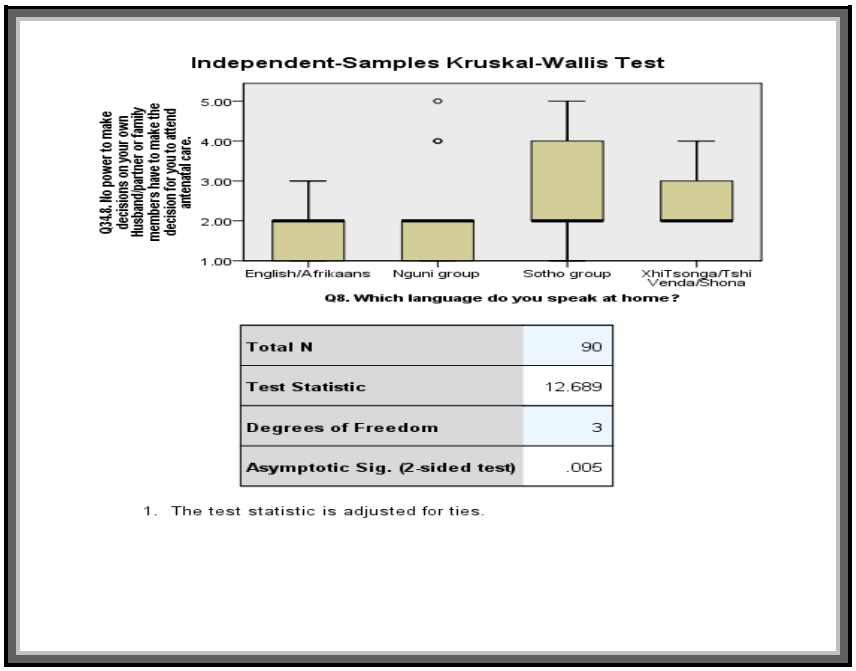
Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.7. Fear of the HIV test being positive..

Figure 4.29 Kruskal-Wallis test for the aspect fear of the HIV test being positive by home language (n = 90)

The Kruskal-Wallis test ***value = 9.686*** with a ***p-value < 0.05.*** Since 0.021 is less than 0.05, the null hypothesis of having identical probability distributions was rejected and it was concluded that there was difference in opinion over the aspect 'Fear of the HIV test being positive'. The lowest mean rank was 33.525 from English/Afrikaans-speaking women and the highest mean rank was 56.231 from Sotho-speaking people. The Sotho group ranked this aspect higher, indicating that it was a challenge, followed by the XhiTsonga/TshiVenda/Shona group. The box plot (Figure 4.29) showed that at least half of the Sotho people agreed that they do not attend ANC for fear of testing HIV positive.

In terms of the aspect 'No power to make decisions on your own; husband or partner or family members have to make the decision for you to attend antenatal care', the Kruskal-Wallis test **value = 12.689** with a **p-value < 0.01**, thus, resulting in the rejection of the null hypothesis of having identical probability distributions. The test was highly significant. Two homogeneous groups were obtained as shown in Figure 4.30.



Total N	90
Test Statistic	12.689
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.005

1. The test statistic is adjusted for ties.

Homogeneous Subsets based on Q34.8. No power to make decisions on your own Husband/partner or family members have to make the decision for you to attend antenatal care.

		Subset	
		1	2
Sample[1]	Nguni group	37.548	
	English/Afrikaans	37.800	
	Sotho group		54.731
	XhiTsonga/TshiVenda/Shona		57.846
Test Statistic		.042	.006
Sig. (2-sided test)		.837	.937
Adjusted Sig. (2-sided test)		.973	.996

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.8. No power to make decisions on your own Husband/partner or family members have to make the decision for you to attend antenatal care..

Figure 4.30: Kruskal-Wallis test for the aspect no power to make decisions on your own; husband/ partner or family members have to make the decision for you to attend antenatal care by home language (n = 90)

The lowest mean rank was 37.548 from the Nguni group and the highest mean rank was 57.846 from the XhiTsonga/TshiVenda/Shona group. The Sotho and

the XhiTsonga/TshiVenda/Shona groups agreed that this aspect was a challenge.

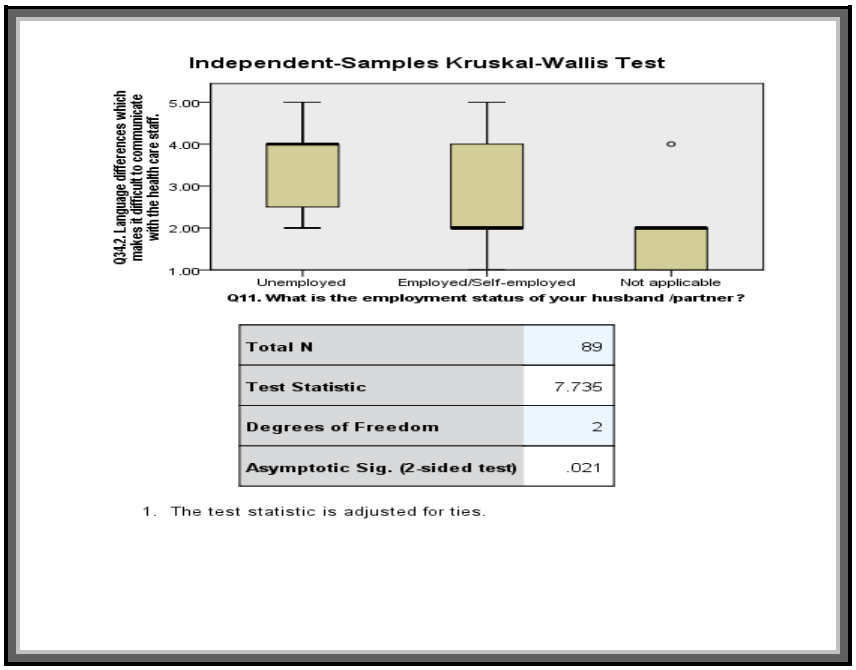
Employment status of husband

Two aspects showed that there was difference in challenges in utilising ANC by employment status of husband as shown in Table 4.35.

Table 4.35: Kruskal-Wallis test for difference in location in levels of agreement for the challenges in utilising antenatal care by employment status of husband (n = 89)

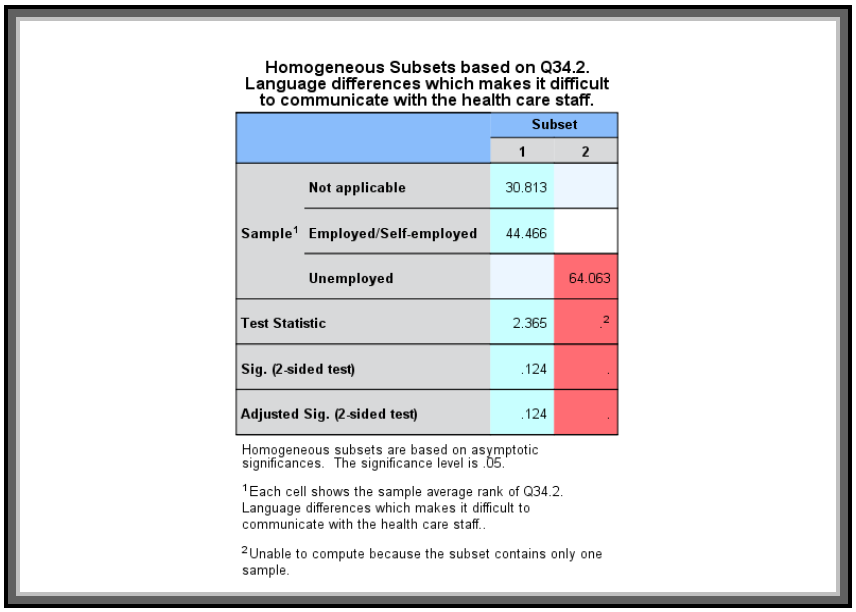
Aspect	Group	Mean Rank	Kruskal-Wallis Test value	p-value	Decision
Language differences which makes it difficult to communicate with the healthcare staff	Unemployed	64.06	7.735*	0.021	Reject the null hypothesis
	Employed/self employed	44.47			
	Not applicable	30.81			
No power to make decisions on your own. Husband/partner or family members have to make the decision for you to attend antenatal care	Unemployed	68.89	9.511**	0.009	Reject the null hypothesis
	Employed/self employed	43.46			
	Not applicable	35.38			

In terms of the aspect 'Language differences that make it difficult to communicate with the healthcare staff', the **Kruskal-Wallis** test ***value = 7.735*** with a ***p-value < 0.05*** as shown in Figure 4.31. Thus, the null hypothesis of coming from identical populations was rejected.



Total N	89
Test Statistic	7.735
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.021

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.2. Language differences which makes it difficult to communicate with the health care staff.

		Subset 1	Subset 2
Sample[1]	Not applicable	30.813	
	Employed/Self-employed	44.466	
	Unemployed		64.063
Test Statistic		2.365	.[2]
Sig. (2-sided test)		.124	.
Adjusted Sig. (2-sided test)		.124	.

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.2. Language differences which makes it difficult to communicate with the health care staff..

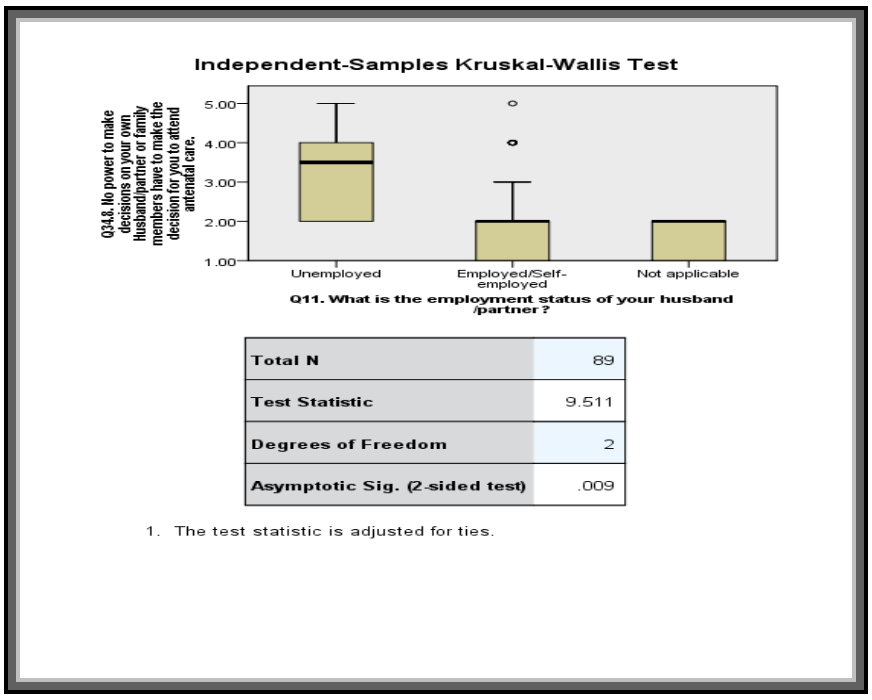
[2]Unable to compute because the subset contains only one sample.

Figure 4.31: Kruskal-Wallis test for the aspect language differences which make it difficult to communicate with the healthcare staff by employment status of husband (n = 89)

From the box plots (Figure 4.31), those who do not have a husband and those with husbands in employment did not see the aspect 'Language differences that make it difficult to communicate with the healthcare staff' as a challenge, while those with unemployed husbands did. Thus, two homogeneous groups were

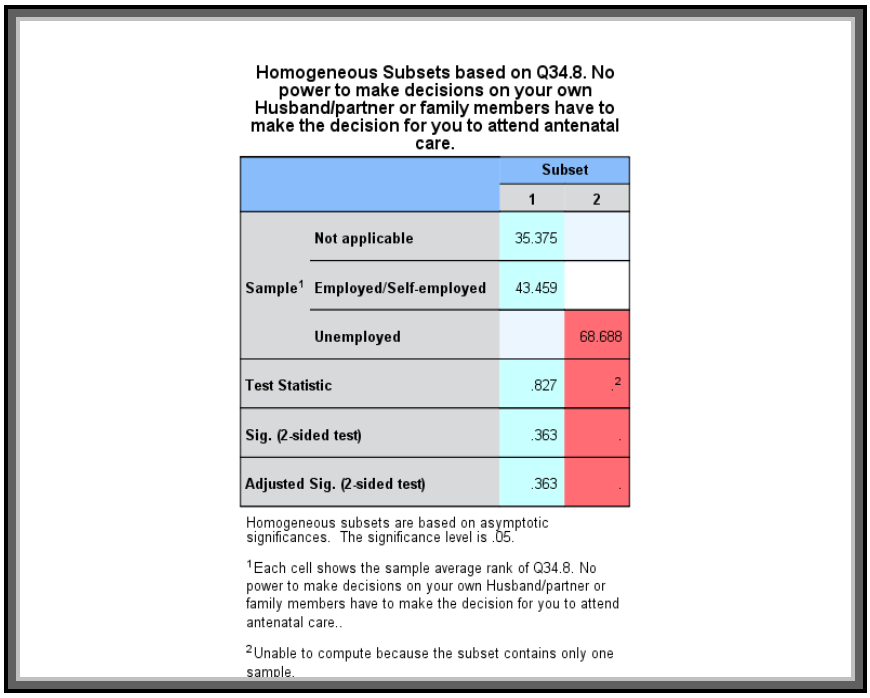
obtained. The lowest mean rank was 30.813 from the group without husbands in employment, while the highest mean rank was 64.063 from those with unemployed husbands. Poor communication owing to differences in language was highlighted as a barrier to accessing ANC (Boerleider et al. 2013:5). Similarly, poor language proficiency in Dutch among the non-Dutch ethnic groups in the Netherlands was associated with late start of ANC (Alderliesten et al. 2007:1235)

For the aspect 'No power to make decisions on your own. Husband/partner or family members have to make the decision for you to attend antenatal care', the Kruskal-Wallis test ***value = 9.511*** with a ***p-value < 0.01*** resulting in the rejection of the null hypothesis of having identical probability distributions. The test was highly significant. Two homogeneous groups were obtained, as shown in Figure 4.32.



Total N	89
Test Statistic	9.511
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.009

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.8. No power to make decisions on your own Husband/partner or family members have to make the decision for you to attend antenatal care.

		Subset	
		1	2
Sample[1]	Not applicable	35.375	
	Employed/Self-employed	43.459	
	Unemployed		68.688
Test Statistic		.827	.[2]
Sig. (2-sided test)		.363	.
Adjusted Sig. (2-sided test)		.363	.

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.8. No power to make decisions on your own Husband/partner or family members have to make the decision for you to attend antenatal care..

[2]Unable to compute because the subset contains only one sample.

Figure 4.32: Kruskal-Wallis test for the aspect 'No power to make decisions on your own. Husband, partner or family members have to make the decision for you to attend antenatal care' by employment status of husband (n = 89)

From the box plots (Figure 4.32), those whose husbands were unemployed saw this aspect as a challenge, while the other groups did not. Thus, two homogeneous groups were obtained. The lowest mean rank was 35.375 from the group without husbands, while the highest mean rank was 68.688 from those with unemployed husbands.

Transport costs to clinic

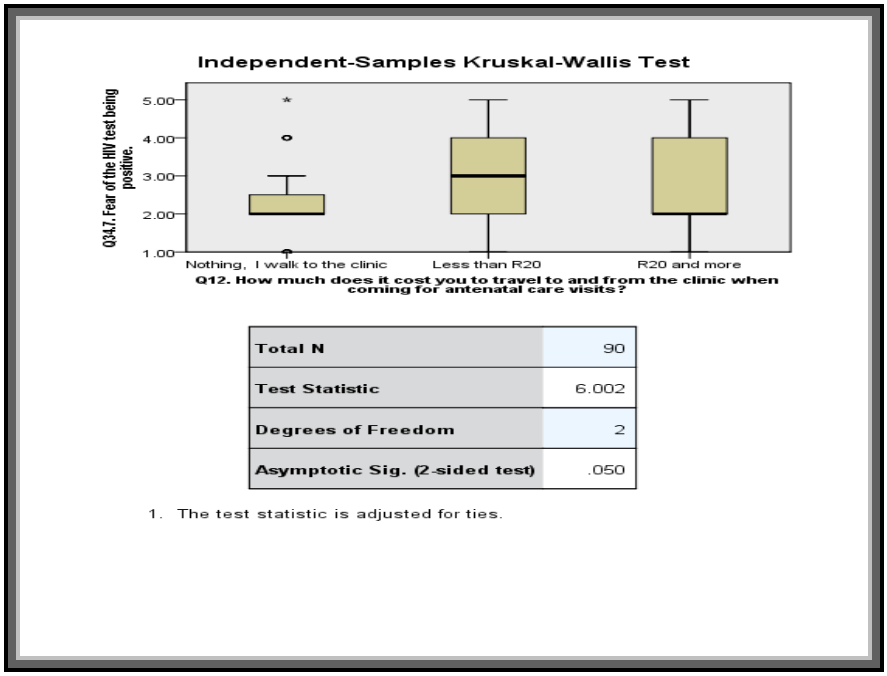
There was difference in the aspect 'Fear of the HIV test being positive' by transport costs to clinic as shown in Table 4.36. The Kruskal-Wallis test ***value = 6.002*** with a ***p-value < 0.05***. The null hypothesis of having identical probability distributions was rejected.

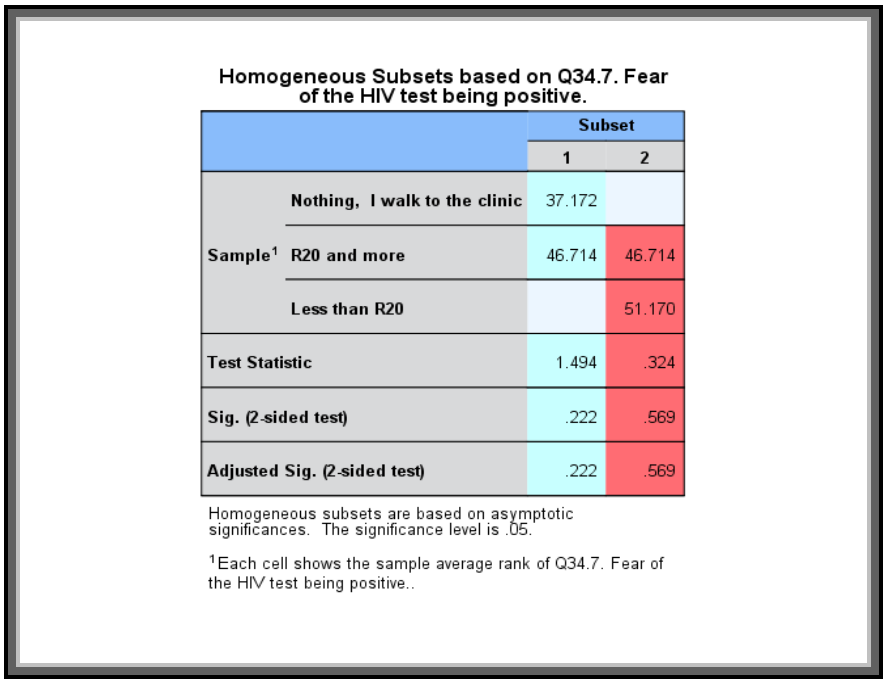
Table 4.36: Kruskal-Wallis test for difference in location in levels of agreement for the challenges in utilising antenatal care by transport costs to clinic (n = 90)

Aspect	Group	Mean Rank	Kruskal Wallis Test value	p-value	Decision
Fear of the HIV test being positive	Nothing, I walk to the clinic	37.17	6.002*	0.050	Reject the null hypothesis
	Less than R20	51.17			
	R20 and more	46.71			

Note: The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05

One can conclude that the respondents who pay less than R20 for transport costs agreed that the aspect 'Fear of the HIV test being positive' was a challenge. The information is shown in Figure 4.33. There are two homogeneous groups. The majority of those who do not have travel costs to clinic gave lower rankings, indicating that the aspect was not a challenge.





Homogeneous Subsets based on Q34.7. Fear of the HIV test being positive.

		Subset	
		1	2
Sample[1]	Nothing, I walk to the clinic	37.172	
	R20 and more	46.714	46.714
	Less than R20		51.170
Test Statistic		1.494	.324
Sig. (2-sided test)		.222	.569
Adjusted Sig. (2-sided test)		.222	.569

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.7. Fear of the HIV test being positive..

Figure 4.33: Kruskal-Wallis for the aspect fear of the HIV test being positive by transport costs to clinic

Number of pregnancies

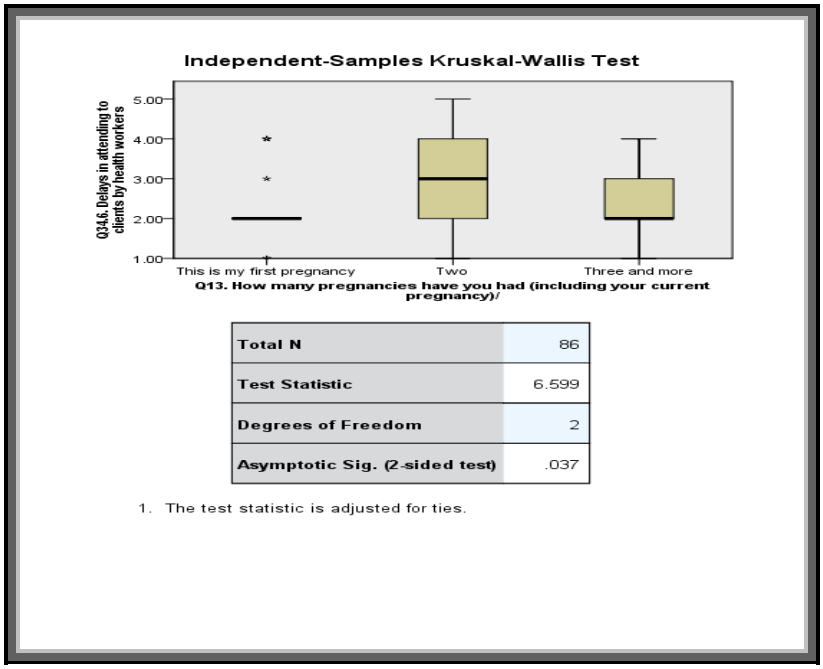
The aspect 'Delays in attending to clients by health workers' resulted in the null hypothesis of having identical probability distributions being rejected as shown in Table 4.37.

Table 4.37: Kruskal-Wallis test for difference in location in levels of agreement for the challenges in utilising antenatal care by number of pregnancies (n = 86)

Aspect	Group	Mean Rank	Kruskal Wallis Test value	p-value	Decision
Delays in attending to clients by health workers	This is my first pregnancy	39.38	6.599*	0.037	Reject the null hypothesis
	Two	50.14			
	Three and more	44.63			

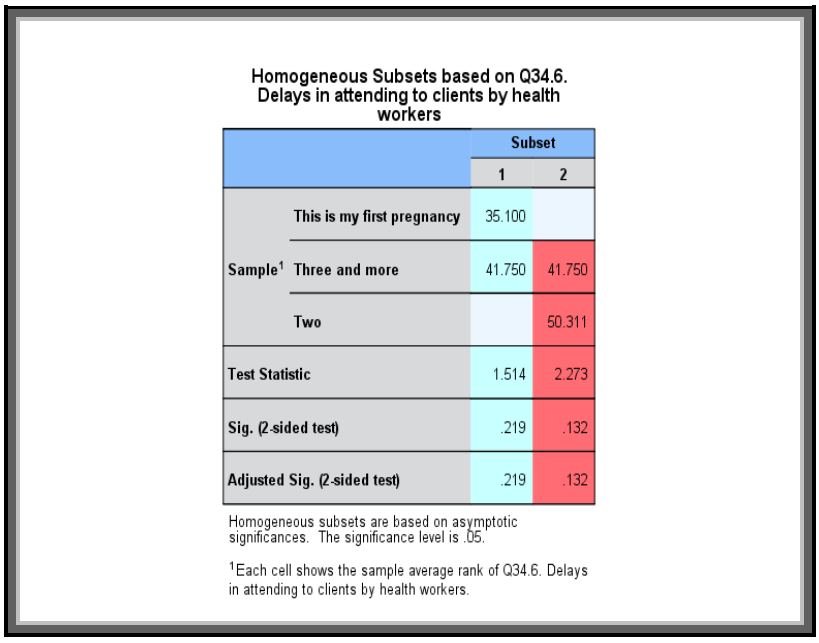
Note: The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05

The Kruskal-Wallis test ***value = 6.599*** with a ***p-value < 0.05***. Two homogeneous groups were obtained as shown in Figure 4.34.



Total N	86
Test Statistic	6.599
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.037

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.6. Delays in attending to clients by health workers

		Subset	
		1	2
Sample[1]	This is my first pregnancy	35.100	
	Three and more	41.750	41.750
	Two		50.311
Test Statistic		1.514	2.273
Sig. (2-sided test)		.219	.132
Adjusted Sig. (2-sided test)		.219	.132

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.6. Delays in attending to clients by health workers.

Figure 4.34: Kruskal-Wallis test for the aspect delays in attending to clients by healthcare workers by number of pregnancies (n = 86)

The lowest mean rank was 35.1 from those who were pregnant for the first time, and the highest mean rank was 50.311 for whom it was the second pregnancy. The box plot (Figure 4.34) showed that at least half of the women in their first pregnancy did not see this aspect as a challenge, while those on their second pregnancies were in agreement that it was. Those with three or more pregnancies did not agree. The main reason might be that the majority of them had been visiting other clinics and private hospitals and had accessed ANC at the clinic only later in their pregnancy (late initiation) and thus might not have visited the clinic several times. The findings are similar to previous research by Sunil et at. (2010:138), in which women identified 'Having to wait too long in the waiting room to see a doctor or nurse' as a barrier that prevented them from utilising ANC services.

Number of antenatal care visits

In terms of number of ANC visits, the aspects 'Lack of money to pay for transport costs to antenatal care service', 'Unable to find someone to take care of the other children when coming for antenatal care' and 'Fear of the HIV test being positive' resulted in the null hypothesis of having identical probability distributions being rejected as shown in Table 4.38.

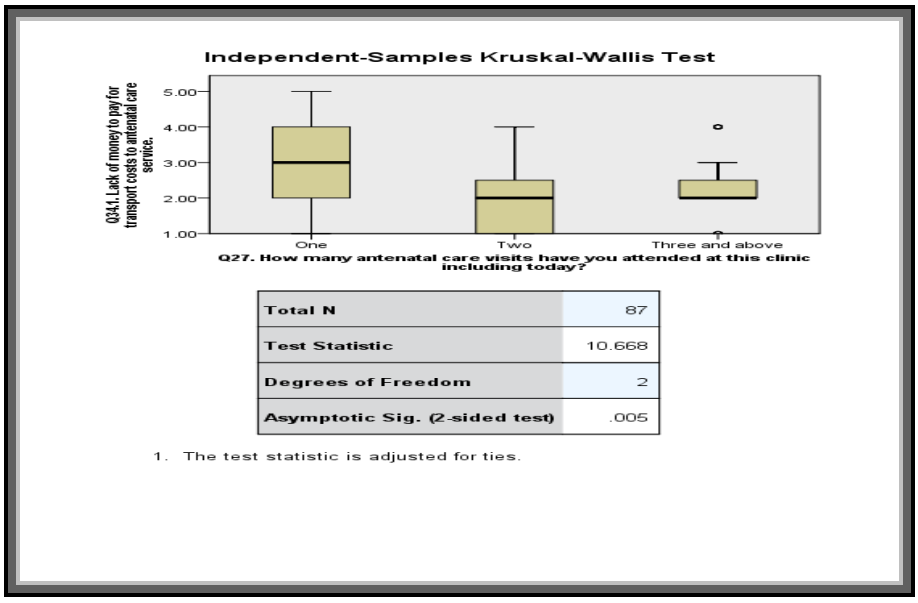
In terms of the aspect 'Lack of money to pay for transport costs to antenatal care service', the Kruskal-Wallis test ***value = 10.688*** with a ***p-value < 0.01***, which is highly significant.

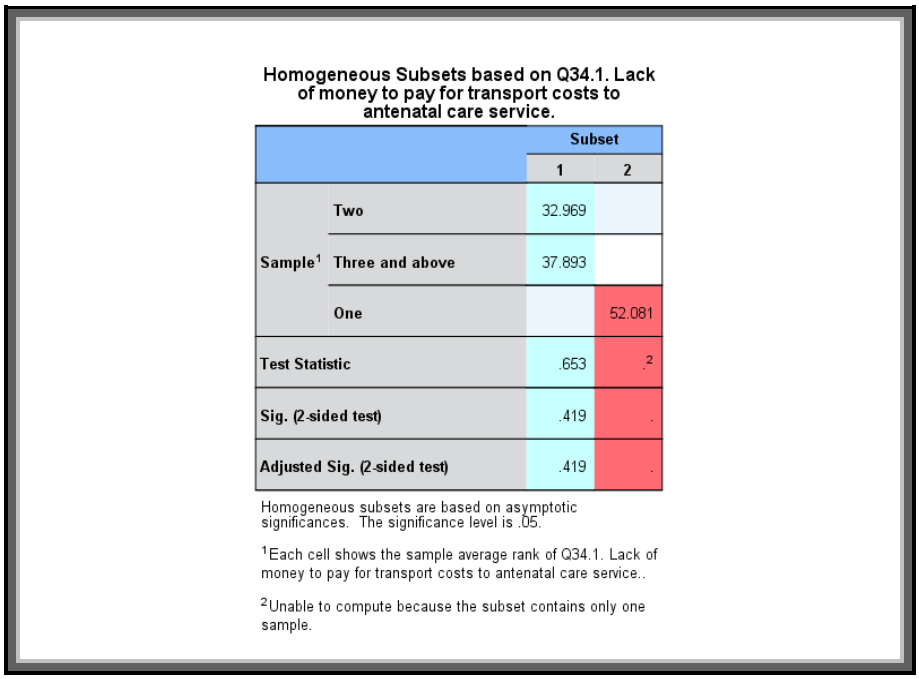
Table 4.38: Kruskal-Wallis test for difference in location in levels of agreement for challenges in utilising antenatal care by antenatal care visits

Aspect	Group	Mean Rank	Kruskal Wallis Test value	p-value	Decision
Lack of money to pay for transport costs to antenatal care service	One	52.08	10.668**	0.005	Reject the null hypothesis
	Two	32.97			
	Three and above	37.89			
Unable to find someone to take care of the other children when coming for antenatal care	One	50.41	7.402*	0.025	Reject the null hypothesis
	Two	44.62			
	Three and above	35.14			
Fear of the HIV test being positive	One	49.61	6.208*	0.045	Reject the null hypothesis
	Two	46.56			
	Three and above	35.29			

Note: ***The statistical significance of the chi-square values is ** for p<0.01 and * for p<0.05***

The null hypothesis of having identical probability distributions was rejected, and two homogeneous groups were obtained, as shown in Figure 4.35.





Homogeneous Subsets based on Q34.1. Lack of money to pay for transport costs to antenatal care service.

		Subset	
		1	2
Sample[1]	Two	32.969	
	Three and above	37.893	
	One		52.081
Test Statistic		.653	.[2]
Sig. (2-sided test)		.419	.
Adjusted Sig. (2-sided test)		.419	.

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

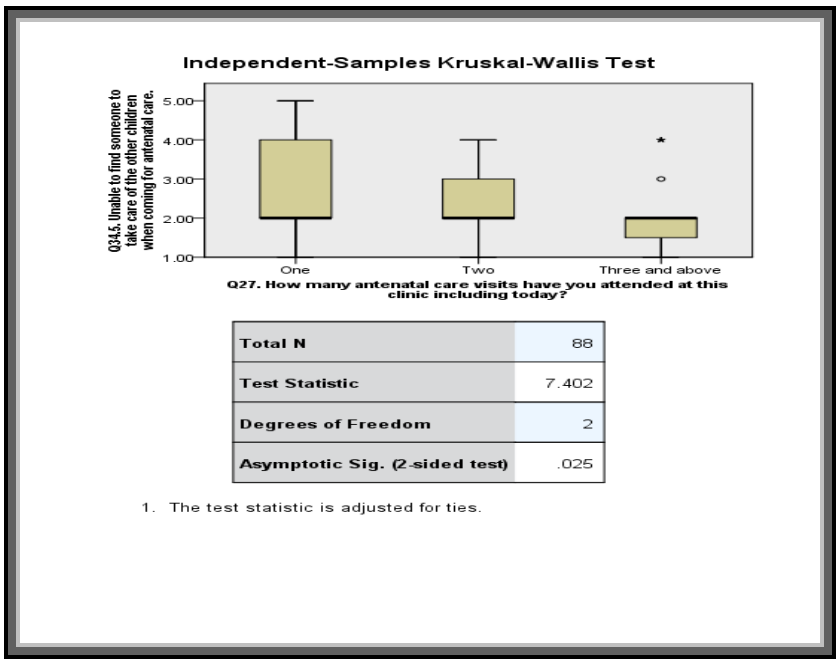
[1]Each cell shows the sample average rank of Q34.1. Lack of money to pay for transport costs to antenatal care service..

[2]Unable to compute because the subset contains only one sample.

Figure 4.35 Kruskal-Wallis test for the aspect lack of money to pay for transport costs by number of antenatal care visits (n = 87)

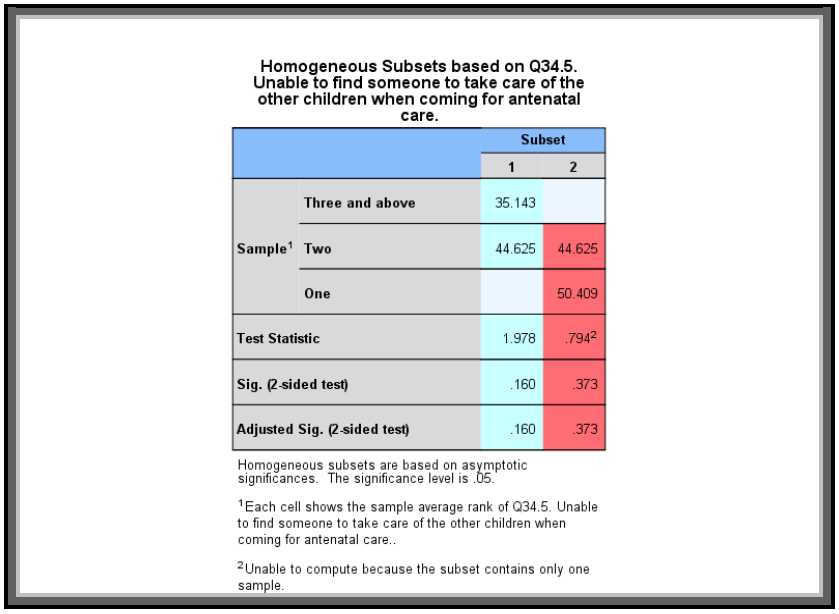
The lowest mean rank was 32.969 from those who had had two visits and the highest mean rank was 52.081 from those who had had one visit. Those who had had one visit ranked the aspect 'Lack of money to pay for transport costs to antenatal care service' higher, thus indicating that it was a challenge. Those who had visited twice did not see it as a challenge.

The aspect 'Unable to find someone to take care of the other children when coming for antenatal care' resulted in two homogeneous groups as shown in Figure 4.36.



Total N	88
Test Statistic	7.402
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.025

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.5. Unable to find someone to take care of the other children when coming for antenatal care.

		Subset	
		1	2
Sample[1]	Three and above	35.143	
	Two	44.625	44.625
	One		50.409
Test Statistic		1.978	.794[2]
Sig. (2-sided test)		.160	.373
Adjusted Sig. (2-sided test)		.160	.373

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.5. Unable to find someone to take care of the other children when coming for antenatal care..

[2]Unable to compute because the subset contains only one sample.

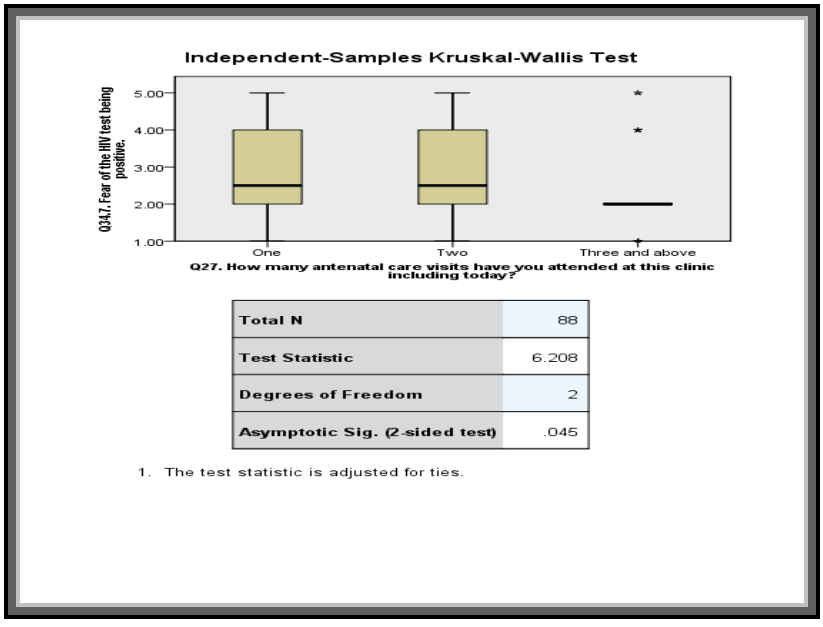
Figure 4.36 Kruskal-Wallis test for the aspect unable to find someone to take care of the other children when coming for antenatal care by number of antenatal care visits (n= 88)

The Kruskal-Wallis test ***value = 7.402*** with a ***p-value < 0.05.*** Since ***p-value < 0.05***, the null hypothesis of having identical probability distributions is rejected, and the conclusion is that there was difference in opinion in this aspect. The

lowest mean rank was 35.143 from those who had visited the clinic three times or more and the highest mean rank was 50.409 from those who had visited once. Those who had one ANC visit saw this aspect as a challenge. The box plot (Figure 4.36) showed that at least half of those who had visited three times or more disagreed that this factor was a challenge. These women may have made arrangements for someone to take care of the other children, while those with one visit have not yet done so.

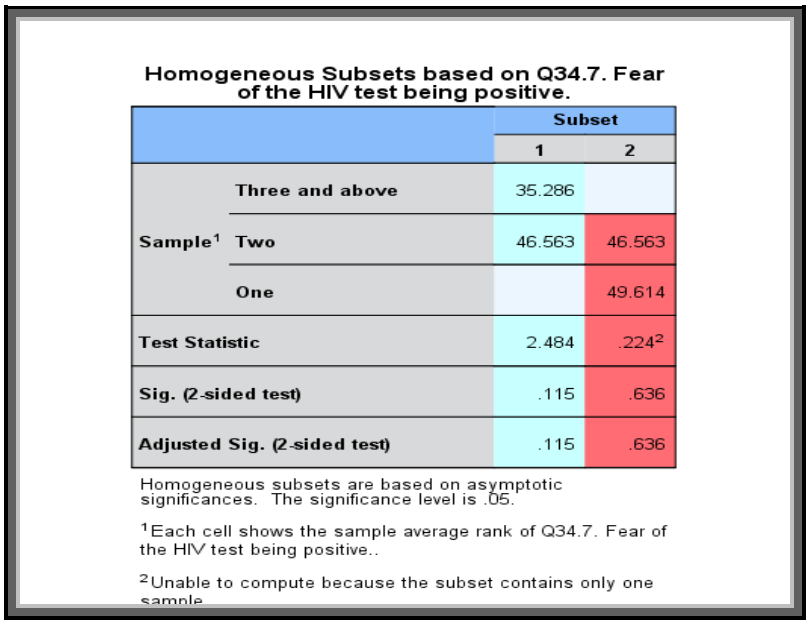
According to Hossain (2010:402), many women may not be able to go for ANC if they have other children in the household, and do not have anybody to look after them in their absence. The effect of lack of childcare on attending ANC classes and medical care is felt mostly by multiparous women (Boerleider et al. 2013:9). Similar concern was raised by women in a study by Sunil et al. (2010:138), who perceived 'not having child care' as a barrier to getting ANC service.

In terms of the aspect 'Fear of the HIV test being positive', the Kruskal- Wallis test ***value = 6.208*** with a ***p-value < 0.05***, resulting in the rejection of the null hypothesis of identical probability distributions. Two homogeneous groups were obtained as shown in Figure 4.37.



Total N	88
Test Statistic	6.208
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.045

1. The test statistic is adjusted for ties.



Homogeneous Subsets based on Q34.7. Fear of the HIV test being positive.

		Subset	
		1	2
Sample[1]	Three and above	35.286	
	Two	46.563	46.563
	One		49.614
Test Statistic		2.484	.224[2]
Sig. (2-sided test)		.115	.636
Adjusted Sig. (2-sided test)		.115	.636

Homogeneous subsets are based on asymptotic significances. The significance level is .05.

[1]Each cell shows the sample average rank of Q34.7. Fear of the HIV test being positive..

[2]Unable to compute because the subset contains only one sample.

Figure 4.37: Kruskal-Wallis test for the aspect fear of the HIV test being positive by number of antenatal care visits (n = 88)

The lowest mean rank was 35.286 from those who had at least three ANC visits and the highest mean rank was 49.614 from those who had one visit. Those who had not more than two visits agreed that this aspect was not a challenge. This is evidenced by the box plots (Figure 4.37) with the median close to two (agree). Perhaps those women who had made one visit had not done the HIV test, so were not aware of their HIV status. Those who had come for three or more visits had done the test and knew their status; hence this factor was no longer a challenge. Studies have reported fear of testing positively as a significant barrier to checking one's HIV status. According to the European Centre for Disease Prevention and Control (ECDC 2010:8), the main fear among populations was negative social consequences such as stigma, discrimination and rejection rather than death or illness. This fear was even reported among individuals who were able to assess their personal risk accurately.

4.7 CONCLUSION

This chapter has presented, interpreted and discussed the results of the study using descriptive statistics and inferential statistics accompanied by frequency tables, charts and graphs. The results of the study indicate that women are still initiating ANC late, with 56.7% (n = 51) of the pregnant women having started ANC after the first three months and only 43.3% (n = 39) in the first trimester. The reasons for late start of ANC included 'Was not aware that I was pregnant', 'Was not aware of when I should start', 'Could not get time off work' and 'No time to go to the clinic'. Women with overall good knowledge about ANC were 67.8% (n = 61), and 32.2% (n = 29) had poor knowledge about ANC. Respondents' knowledge of medication and screening tests and danger warning signs during pregnancy was poor. Their knowledge varied according to age, marital status and highest level of education. In terms of factors associated with initiation of ANC, women with a high level of education tended to initiate ANC late ($p < 0.05$); women who paid higher transport costs to the clinic tended to initiate ANC early ($p < 0.05$); and language was significantly associated with initiation of ANC ($p < 0.05$). Thus, the respondents had identified several factors that result a woman starting ANC late, as well as the challenges they face in utilising ANC.

The next chapter gives the conclusions of the study, discusses its limitations and make recommendations for future studies.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter gives the conclusions of the research in relation to the research questions that were asked. The limitations of the study are highlighted, and some recommendations are made. The aim of the study was to investigate the knowledge and utilisation of ANC services by pregnant women at a clinic in Ekurhuleni. To fulfil the aim of the study, data were collected from a planned sample of 90 pregnant women.

5.2 SUMMARY OF THE FINDINGS

The study had to fulfil three objectives. This section focuses on evaluating whether the objectives of the study were met, based on the results of the study that were discussed in chapter 4. Conclusions are given for each specific objective.

- Establish the timing of the first ANC visit by pregnant women

The findings indicate that although most respondents in the study discovered that they were pregnant in the first month (43.3%; n = 39) or second month (34.4%; n = 31) of pregnancy, the majority of them initiated ANC later than the WHO recommendation that pregnant women should go for their first ANC visit in the first trimester (WHO 2002:12). In this study, 56.7% (n = 51) of the pregnant women started ANC after the first three months, and only 43.3% (n = 39) initiated ANC in the first trimester. The most frequent reasons given by late initiators were: ‘I was not aware that I was pregnant’, ‘I was not aware of when I should start’, ‘I could not get time off work’, ‘No time to go to the clinic’ and ‘It’s not customary to make pregnancy public too early’. Not all of the respondents had started ANC at the clinic under study. Some (24.4%; n = 22) had attended other ANC facilities before coming to the clinic, while

75.6% (n = 68) had not visited another clinic. Of the 51 respondents who were late for ANC, 23.5% (n = 12) went for ANC elsewhere before visiting the clinic, while 76.5% (n = 39) did not. Of those who visited other facilities, 58.3% (n = 7) consulted a private doctor, 33.3% (n = 4) attended a public clinic and 8.3% (n = 1) visited a public hospital. The study did not investigate whether those respondents who went for ANC elsewhere initiated ANC within the specified period or whether they went because of ill-health, to confirm pregnancy, or to continue with ANC.

- Assess the pregnant women's level of knowledge about ANC

Knowledge about ANC was judged in terms of services offered at the ANC clinic; medication and screening tests during pregnancy; danger warning signs during pregnancy; and HIV, pregnancy and the baby. The results revealed that only 67.8% (n = 61) had good knowledge about ANC, whereas 32.2% (n = 29) had poor knowledge. Respondents' knowledge of services offered was very good as the mean value of the knowledge score was 3.32 out of 4 statements. The majority knew that ANC was very important to the pregnant woman, as it ensures the wellbeing of the mother and the child, and informs the mother how to identify the danger signs of pregnancy (94.4%; n = 85 and 88.9%; n = 80, respectively). Only 77.8% (n = 70) knew the best time to start ANC, and this supports the evidence that most women in this study booked late.

In terms of medication and screening tests during pregnancy, the respondents' knowledge was poor. Most women did not know that 'Women with first pregnancy receive tetanus toxoid injections on their first visit, 4 weeks later, and 6 weeks after delivery against tetanus' and 'Taking iron tablets during pregnancy prevents anaemia'. These statements were judged correct by only 48.9% (n = 44) and 55.6% (n = 50), respectively.

In terms of danger warning signs during pregnancy, the majority of the women identified vaginal bleeding as a danger sign, and diabetes and high blood pressure as conditions that may result in complications during

pregnancy. However, the respondents' knowledge of the aspects 'Drainage of liquid (water) from the vagina is normal during pregnancy' and 'Severe abdominal pain is normal during pregnancy' was very poor, as only 40% (n = 36) and 34.4% (n = 31), respectively, could identify these statements as false.

Knowledge of HIV, pregnancy and the baby was good, as the respondents gave the right answer to an average score of 3.23 out of 4 statements. A high percentage (96.7%; n = 87) of the women knew that HIV testing is important for the health of the mother and the unborn baby, that an unborn baby can be prevented from getting HIV from its mother if the mother is HIV positive (86.7% n = 78) and that breast milk provides the newborn with adequate nutrition to protect against infections (81.1%; n = 73). However, knowledge of exclusive breastfeeding was very poor. Only 58.9% (n = 53) knew that giving the baby breast milk only for six months reduces the risks of transmitting HIV to the baby.

The highest level of education, age and marital status were identified as determinants of knowledge level about ANC in pregnant women. The overall level of knowledge about ANC and knowledge of services offered varied according to level of education. Respondents who were more educated were more knowledgeable about ANC ($p < 0.05$) and services offered ($p < 0.05$) than those who were not. Knowledge about HIV, pregnancy and the baby varied according to level of education ($p < 0.05$) and age ($p < 0.05$). Respondents with higher level of education were more knowledgeable than those who had reached Standard 8 / Grade 10 and below. Respondents who were young tended to be more knowledgeable about HIV, pregnancy and the baby than older women.

Marital status was a factor that resulted in variation of level of knowledge of medication and screening tests, and danger warning signs during pregnancy. Thus married women were more knowledgeable than single pregnant women ($p < 0.05$).

However, no association was found between level of knowledge about ANC and number of children, number of pregnancies, initiation of ANC and number of ANC visits.

- Determine the factors associated with early and late initiation of the first ANC visit.

Transport costs were identified as a factor that was associated with early initiation of ANC (at 10% significance level). Respondents who paid more in the cost of transport to the antenatal clinic initiated ANC early ($p < 0.05$). Home language and highest level of education were significantly associated with late initiation of ANC (at 5% and 10% level of significance respectively). In terms of the variable 'Home language', the majority of the Nguni group and Sotho group tended to register late for ANC ($p = 0.05$). On the other hand, women with a higher level of education tended to initiate ANC later ($p = 0.05$).

The pregnant women identified certain factors that may result in a woman initiating ANC late. These factors had an agreement level of more than 50% and included delay in recognising that one is pregnant (71.3%; n = 62); inadequate knowledge of the benefits of ANC (63.8%; n = 51); incorrect advice from friends, relatives or partners on the best time to start ANC (56.7%; n = 51); and partner not accepting the pregnancy (51.1%; n = 45).

Difference in location in levels of agreement of factors associated with late initiation of ANC identified these aspects: current employment status, number of children, transport costs to clinic, number of antenatal visits,

Current employment status

Women who were not employed agreed that 'Partner not accepting pregnancy' and 'Unable to meet transport costs to the health facility' are factors that can result in a woman initiating ANC late ($p < 0.05$) on all factors).

Number of children

A clear majority of those with two or three children disagreed that 'fear of disclosing pregnancy early due to cultural/religious factors' was associated with late registration of ANC ($p < 0.05$).

Transport costs to clinic

Respondents who pay at least R20 in transport fares agreed that 'Poor service offered at the clinic (long waiting time, overcrowding)' *was* a factor that was associated with late registration of ANC ($p < 0.05$).

Number of antenatal visits

Women who went for two visits were more in disagreement that 'Partner not accepting the pregnancy' results in women initiating ANC late ($p < 0.05$). Those who visited the clinic twice were more in disagreement than the other groups that 'Incorrect advice from friends, relative or partner on the best time to start antenatal care' results in late initiation of ANC ($p < 0.05$).

No major challenges were named by respondents as affecting their utilisation of ANC services. However, certain challenges were identified as being associated with the variables of highest level of education, home language, unemployment status of husband or partner, transport costs to clinic, number of pregnancies and number of ANC visits.

Women with high qualifications indicated that the aspect 'Unable to get time off work to attend antenatal care' was a challenge ($p < 0.05$), as did the Sotho-speaking group, followed by the XhiTsonga/TshiVenda/Shona group ($p < 0.05$). Again the Sotho and the XhiTsonga/TshiVenda/Shona groups and respondents whose husbands or partners were unemployed saw the aspect 'no power to make decisions on your own, husband/partner or family members have to make the decision for you to attend antenatal care' as a challenge ($p < 0.01$ on all factors). Women whose husbands or partners were unemployed identified 'Language differences that make it difficult to communicate with the healthcare staff' as a challenge to them ($p < 0.05$), but

it was not a challenge to women with husbands or partners who were working.

The aspect ‘Fear of the HIV test being positive’ was more of a challenge ($p < 0.05$) to respondents who pay less than R20 for transport costs to the clinic, and the Sotho-speaking group, followed by the XhiTsonga/TshiVenda/Shona group ($p < 0.05$) and women who had one visit to the clinic ($p = 0.045$). At least half of the women in their first pregnancy did not see the aspect ‘Delays in attending to clients by health workers’ as a challenge, while those in their second pregnancies agreed that it was indeed a challenge ($p = 0.037$). Women with one visit cited ‘Lack of money to pay for transport costs to antenatal care service’ and ‘Unable to find someone to take care of the other children when coming for antenatal care’ as challenges they face when they want to utilise ANC services ($p < 0.01$ and $p < 0.05$ respectively).

5.3 RECOMMENDATIONS

The findings support the evidence that women still initiate ANC late, although the service is available and is free. This calls for other forms of media to raise awareness to promote starting ANC early. Continued education of women on initiating ANC early during their ANC visits is not enough, because it will not make a difference to those who would have started ANC late (Kisuule et al. 2013:5). Women with first pregnancies are also at a disadvantage. If they are not informed about the benefits of starting ANC early, they may change their behaviour only on later pregnancies after having received education during the first pregnancy.

- Other forms of media (television, radio, billboards, school curricula, pamphlets, family planning clinics) should be used to raise awareness of the importance of initiating ANC early.

- DoH should consider introducing antenatal classes that are separate from antenatal check-up visits. These could be used as a platform to educate women on ANC and fill in the gaps in their knowledge.
- DoH should carry out a massive campaign on the importance of exclusive breastfeeding to improve women's knowledge and prevent the transmission of HIV/AIDS to the baby.
- DoH should consider changing working hours to accommodate working women. For example, ANC clinics could open on Saturdays or late in the evening on selected days of the week.
- Awareness should be raised of how the benefits of knowing one's HIV status outweigh the fear of being tested. This may eventually dispel the fear that women have of being tested.

Recommendations for further study

- The study could be duplicated to the whole district of Ekurhuleni, other districts, and provinces to enable generalisation of findings on a large scale.
- Researchers could explore ways in which the challenges faced by women in utilising ANC can be solved.
- A study could investigate the reasons that some women visit private health facilities before attending ANC at a public facility.
- An in-depth study is needed of the differences brought about by language in initiation of ANC.
- An in-depth study could be initiated on ways in which culture influences initiation of ANC

5.4 LIMITATIONS OF THE STUDY

The use of probability sampling to select respondents for this study allows the results to be generalised on a small scale to the target population of women utilising ANC services at the clinic. The study results, however, cannot be generalised to the total population of women in Ekurhuleni health

district because the study site was chosen through convenience sampling, which is a non-probability method and this tends to limit generalisation of findings to the total population.

Bias might have been introduced by respondents on questions on women's attitude towards their current pregnancy (if the pregnancy was planned and if they were happy when they discovered that they were pregnant). Some might have given answers to impress the researcher rather than tell the truth.

The researcher is not fluent in the languages used in the country. This meant that only English could be used on the instrument for data collection. Only women who could communicate in English were eligible for the study. Thus the opinions of those who could not communicate in English were not represented in this study.

5.5 CONCLUDING REMARKS

The study discovered that most pregnant women who utilised the clinic initiated ANC later than the period recommended by WHO of within three months of pregnancy. The main reasons cited for late start of ANC call for raising awareness of the best period to start ANC and the importance of starting ANC early. Gaps were identified in pregnant women's knowledge of ANC and recommendations were made in order to improve this knowledge. Factors associated with the late start of ANC were identified, thus giving the service providers insights into populations that need to be targeted when promoting an early start to ANC.

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ANNEXURE A

UNISA university of south africa

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

HSHDC/142/2013

Date: 6 February 2013 Student No: 4519-950-7

Project Title: Utilisation of antenatal care services by pregnant women at a clinic in Ekurhuleni.

Researcher: Sesedzai Peggie Matyukira

Degree: Masters in Public Health Code: DLMPH95

Supervisor: Prof JH Roos
Qualification: D Litt et Phil
Joint Supervisor: -

DECISION OF COMMITTEE

Approved [√] **Conditionally Approved** [ ]

Prof L Roets
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

Dr MM Moleki
ACTING ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

ANNEXURE B

Unit 10 Crescent Gardens
Parkhill Gardens
Germiston 1401

10 April 2013

The Head of Department
The Department of Health
Ekurhuleni South District

Attention: Mr Vukile Mlungwana

Dear Sir

REQUEST TO CONDUCT A STUDY ON UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI

I am a Masters student in Public Health (student Number 45199507) at the University of South Africa in the Department of Health Studies.

The proposed study will be in fulfilment of there requirements of the above mentioned degree. The aim of the study is to investigate the utilisation of antenatal care services by pregnant women at Elsburg Clinic in Ekurhuleni.
I kindly request permission to collect data at your clinic. The data will be collected from the pregnant women who will be visiting the clinic for antenatal care. A structured questionnaire will be used as a data collection tool. If allowed to conduct the study, I will be liaising with the midwife responsible for antenatal care at the clinic. Please find attached the provisional questionnaire. Any changes on the questionnaire will be communicated to you before it is used.

All the participating respondents will be given full information about the study. It will be explained to them that the information they provide will be confidential and

anonymous. Before the data is collected the participants will have to give a written consent to participate in the study. The participants have a right to discontinue with the study if they no longer wish to do so.

For further communication with regards to the above request, please use the contact details below.

Yours sincerely,

Sesedzai P. Matyukira
Tel: 0118241680
Cell: 0790504176/0847166056
Email: sesematyuu@yahoo.com

Name of Supervisor

Prof. JH Roos
University of South Africa
Tel: (012) 429-6447/ 6514
Fax: (012) 429-6688
E-mail: roosjh@unisa.ac.za

ANNEXURE C

Ekurhuleni
METROPOLITAN MUNICIPALITY

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

RESEARCH ETHICS CLEARANCE CERTIFICATE

Research Project Title: Utilization of antenatal care services by pregnant women at a clinic in Ekurhuleni

Research Project Number: 13-06-2013-03

Name of Researcher(s): Mrs.Sesedzai Peggie Matyukira

Division/Institution/Company: UNISA

DECISION TAKEN BY THE EKURHULENI HEALTH DISTRICT ETHICS PANEL (EHDEP)

- *THIS DOCUMENT CERTIFIES THAT THE ABOVE RESEARCH PROJECT HAS BEEN FULLY APPROVED BY THE EHDEP. THE RESEARCHER(S) MAY THEREFORE COMMENCE WITH THE INTENDED RESEARCH PROJECT.*
- *NOTE THAT THE RESEARCHER WILL BE EXPECTED TO PRESENT THE RESEARCH FINDINGS OF THE PROPOSED RESEARCH PROJECT AT THE ANNUAL EKURHULENI RESEARCH CONFERENCE HELD IN JULY/AUGUST.*
- *THE ETHICS PANEL WISHES THE RESEARCHER(S) THE BEST OF SUCCESS.*

DR. J. SEPUYA

DEPUTY CHAIRPERSON: EKURHULENI METROPOLITAN MUNICIPALITY

Dated: 04/09/2013

DR. R. Kellerman

CHAIRPERSON: GAUTENG DEPARTMENT OF HEALTH (EKURHULENI REGION)

Dated: 04/09/2013

ANNEXURE D

PART 1 THE INFORMATION SHEET

KNOWLEDGE AND UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI

Dear participant,

My name is Mrs Sesedzai P Matyukira. I am a Masters student in Public Health (student Number 45199507) at the University of South Africa in the Department of Health Studies. The aim of this letter is to ask for your permission to participate in the above-named study which is being carried out in fulfilment of my studies at the university. The aim of the study is to investigate the knowledge and utilisation of antenatal care services by pregnant women at this Clinic in Ekurhuleni. This research will provide understanding on what determines the pregnant woman's decision to start antenatal care early or late. This information is important in assisting planners of health education to plan effective health interventions for pregnant women and eventually improve the health education of women. The study was approved by University of South Africa Higher Degrees Ethical committee on 6 February 2013.

The study is targeting pregnant women who are using antenatal services at Elsburg clinic. Participation in the study is voluntary and you are free to withdraw from the study at any given time. If you agree to participate in this study you will be asked to answer some questions on the questionnaire provided. You do not need to identify yourself, and similarly, I will uphold anonymity in that there will be no possibility of any respondent being identified or linked in any way to the research findings in the final research report. The information you provide me will be used strictly for this research only and it will not be shared with other researchers.

The information collected from you will be collated and analysed in order to give us an accurate picture of the utilisation of antenatal care services by pregnant women in Ekurhuleni Municipality, Gauteng, South Africa. This will in turn assist me to make findings and propose recommendations to improve the utilisation of antenatal care services.

You are free to ask me any questions concerning the study so as to get a better understanding of the research. If you are fully satisfied and you agree to participate in the study you may sign the consent form provided.

For further inquiries about the study you may contact me on the following contact details:

S.P Matyukira
Cell phone: 0790504176
Home Telephone: 0118241680

ANNEXURE D

PART 2 CONSENT FORM

KNOWLEDGE AND UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI

I ……have clearly understood the explanation by the researcher on what the research is about and I was given an opportunity to ask questions and seek clarity where I did not understand. I understand that I have a right to withdraw from this study without facing any penalties. I understand that the information I have provided will be kept confidential and anonymous.

Participant's signature……..…… Date……

ANNEXURE E

QUESTIONNAIRE SURVEY

RESEARCH PROJECT: KNOWLEDGE AND UTILISATION OF ANTENATAL CARE SERVICES BY PREGNANT WOMEN AT A CLINIC IN EKURHULENI

FOR OFFICE USE

1	2	3

Instructions:
Please answer all the questions as honestly as possible. The information collected for this study will be collated and analysed in order to form an accurate picture of this research project on the utilisation of antenatal care services by pregnant women in Ekurhuleni Municipality in Gauteng, South Africa. It will assist the researcher to make findings and propose recommendations to improve the utilisation of antenatal care services. You do not need to identify yourself and, similarly, the researcher will uphold anonymity in that there will be no possibility of any respondent being identified or linked in any way to the research findings in the final research report. Where required please indicate your answer with a cross (X) in the appropriate box or write a response in the space provided. For the open-ended questions, please write your responses clearly and legibly in the space provided.

SECTION A: SOCIO-DEMOGRAPHIC DATA	**FOR OFFICE USE**
Q1. What is your age? Below 20 – 1 20-24 – 2 25-29 – 3 30-34 – 4 35-39 – 5 40 and above – 6	4
Q2. Marital status: Married and living together – 1 Single – 2 Divorced/separated – 3 Widowed – 4 Living with a man in union – 5 Married but separated – 6	5
Q3. The highest level of education you have attained is	

None	1	
Standard 8/Grade 10 and below	2	
Standard 9/Grade 11	3	
Standard 10/Grade 12	4	
Certificate	5	
Further studies – incomplete	6	
Certificate/Diploma/other post school – complete	7	6
Degree	8	
Postgraduate degree	9	
Other (please specify)		

Q4. Whom do you live with?

Spouse/Partner	1	
Parents	2	
Friends	3	
Relative	4	
Alone	5	7
Other (Please specify)		

Q5 Religion:

Christianity	1	
Islam	2	
African traditional belief	3	
Hinduism	4	8
Other (Please specify)		

Q6. How many children do you have?

None	0	
One	1	
Two	2	
Three	3	9
Four and above	4	

Q7. What is the age of your last child?

Less than 1 year	1	
1-2 years	2	
3-4 years	3	
5 -6 years	4	
Seven years and above	5	10
Not applicable	6	

Q8. Which language do you speak at home? (choose only one)

English	1	

Afrikaans	2	
IsiZulu	3	
seSotho	4	
xhiTonga	5	
IsiNdebele	6	
sePedi	7	
seTswana	8	
IsiSwati	9	
tshiVenda	10	
IsiXhosa	11	11
Other (Please Specify)		

Q9. What is your nationality?

South African citizen	1	
Zimbabwean	2	
Swazi	3	
Mosotho	4	
Congolese	5	
Nigerian	6	12
Other (Please Specify)		

SECTION B: ECONOMIC FACTORS

Q10. What is your current employment status?

Unemployed	1	
Employed full-time	2	
Employed part-time	3	13
Self employed	4	

Q11. What is the employment status of your husband / partner?

Unemployed	1	
Employed full-time	2	
Employed part-time	3	14
Self employed	4	
Not applicable	5	

Q12. How much does it cost you to travel to and from the clinic when coming for antenatal care visits?

Nothing, I walk to the clinic	1	
Less than R20	2	15

R21 - R25	3	
R26 - R30	4	
R31 and more	5	

SECTION C: OBSTETRIC HISTORY

Q13. How many pregnancies have you had (including your current pregnancy)

This is my first pregnancy	1
Two	2
Three	3
Four	4
Five and more	5

16

(If this is your first pregnancy skip to item Q19a)

Q14. On your previous pregnancies how many were normal (vaginal) live deliveries?

One	1
Two	2
Three	3
Four and more	4
None	5

17

Q15. On your previous pregnancies how many were live Caesarean section deliveries?

One	1
Two	2
Three	3
Four	4
None	5

18

Q16. On your previous pregnancies how many miscarriages did you have?

One	1
Two	2
Three	3
Four and more	4
None	5

19

Q17. On your previous pregnancies how many were stillborn?

One	1
Two	2

Three	3	
Four and more	4	20
None	5	

Q18. Did you have any medical problems or complications during your past pregnancy? (For example high blood pressure, sugar diabetes, bleeding)

No	1	21
Yes	2	

If yes, please specify…….

SECTION D: CURRENT PREGNANCY AND ATTIDUDE ABOUT CURRENT PREGNANCY

Q19a There are different ways of delaying, postponing and stopping getting pregnant (called family planning methods). Are you aware of any of these methods?

No	1	22
Yes	2	

Q19b Have you ever used anything or tried in any way to delay or avoid getting pregnant before this pregnancy?

No	1	23
Yes	2	

(If the answer is 'No' skip to item Q21)

Q19c What family planning method did you use before you fell pregnant with your current pregnancy?

Pills	1	24
Intrauterine devices	2	
Injections	3	
Condoms	4	
Breast Feeding	5	
Abstinence	6	
Nothing	7	
Other (Please Specify)		

Q20 Did the family planning method you mentioned on Q19c worked for you?

No	1
Yes	2

25

Q21 Did you plan to have this pregnancy?

26

No	1
Yes	2

Q22a. Were you happy when you discovered that you were pregnant?

27

No	1
Yes	2

Q22b. If the answer to item Q22a is 'No,' please give reasons

28

…….

Q23a Did your husband/ partner accept your current pregnancy?

No	1
Yes	2
I did not tell him	3

29

Q23b If the answer to item Q23a is 'No' or 'I did not tell him,' please give reasons why.

……..

30

……....

SECTION E: TIMING OF ANTENATAL CARE

Q24. For your current pregnancy when did you find out that you were pregnant?

During the 1st month of pregnancy (4 weeks & below)	1
During the 2nd month of pregnancy (5-8 weeks)	2
During the 3rd month of pregnancy (9-12 weeks)	3
During the 4th month of pregnancy (13-16 weeks)	4
During the 5th month of pregnancy (17-20 weeks)	5

31

After the 5th month of pregnancy (week 21 & above)	6

Q25. When did you start antenatal care?

During the 1st month of pregnancy (4 weeks & below)	1
During the 2nd month of pregnancy (5-8 weeks)	2
During the 3rd month of pregnancy (9-12 weeks)	3
During the 4th month of pregnancy (13-16 weeks)	4
During the 5th month of pregnancy (17-20 weeks)	5
After the 5th month of pregnancy (week 21 & above)	6

32 ☐

(If your answer falls between 1st to 3rd month please skip to question Q27)

Q26 If you did not seek antenatal care during the first three months into your pregnancy, what was the main reason?

		Yes	No		For office use	
26.1	Was not aware that I was pregnant				33	
26.2	Not necessary				34	
26.3	It's not customary to make pregnancy public too early				35	
26.4	Could not get time off work				36	
26.5	Too far/ no transport				37	
26.6	Poor quality of service				38	
26.7	No time to go to the clinic				39	
26.8	Family did not allow				40	
26.9	Was not aware of when I should start				41	
26.10	Shortage of healthcare workers at the clinic				42	
26.11	Other (Please Specify)				43	

44 ☐

Q27 How many antenatal care visits have you attended at this clinic including today?

One	1
Two	2
Three and above	3

45 ☐

Q28a For this current pregnancy, did you go for antenatal care anywhere else before you came to this clinic?

No	1
Yes	2

46

(if the answer is 'No' skip to item Q29)

Q28b If 'Yes', where did you seek antenatal care?

At a private doctor	1
At a public clinic	2
At a public hospital	3
At a private clinic	4
At a private hospital	5
Other (Please specify)	

47

Q28c If the answer to item Q28a is 'Yes', how many visits did you make?

One	1
Two	2
Three	3
Four and more	4

48

SECTION F: KNOWLEDGE ABOUT ANTENATAL CARE

Please indicate whether the following statements about antenatal care are true or false.

Q29 SERVICES OFFERED	**TRUE**	**FALSE**	**I DON'T KNOW**	**FOR OFFICE USE**	
29.1 The best time for a pregnant woman to start antenatal care is before three months of pregnancy.				49	
29.2 It is not necessary to go for all follow-up visits as advised by the healthcare staff.				50	
29.3 Antenatal care is very important to the pregnant woman as it ensures the wellbeing of the mother and the baby.				51	
29.4 Antenatal care informs the mother on how to identify danger signs of pregnancy.				52	
Q30 MEDICATION AND SCREENING TESTS DONE DURING PREGNANCY					

30.1 Taking iron tablets during pregnancy prevent anaemia.				53		
30.2 Women with first pregnancy receive tetanus toxoid injections on their first visit, 4 weeks later, and 6 weeks after delivery to protect them against tetanus.				54		
30.3 HIV screening is one of the services provided to pregnant women.				55		
Q31 DANGER WARNING SIGNS DURING REGNANCY						
31.1 Drainage of liquid (water) from the vagina is normal during pregnancy.				56		
31.2 Vaginal bleeding is a danger sign in pregnancy.				57		
31.3 Diabetes and high blood pressure are conditions that may result in complications during pregnancy.				58		
31.4 Severe abdominal pain is normal during pregnancy.				59		
Q32 HIV, PREGNANCY AND THE BABY						
32.1 HIV testing is important for the health of the mother and the unborn baby				60		
32.2 An unborn baby can be prevented from getting HIV from its mother if the mother is HIV positive.				61		
32.3 Giving the baby breast milk only for six months reduces the risks of transmitting HIV to the baby.				62		
32.4 Breast milk provides the newborn baby with adequate nutrition to protect against infections.				63		64

SECTION G: FACTORS ASSOCIATED WITH LATE INITIATION OF ANTENATAL CARE

Q33 Do you agree or disagree that the following factors may result in **late start** of antenatal care by pregnant women.

FACTORS	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	FOR OFFICEUSE	
33.1 Inadequate knowledge of the benefits of antenatal care.	1	2	3	4	5	65	
33.2 Unplanned pregnancy.	1	2	3	4	5	66	
33.3 Delay in recognising that one is pregnant.	1	2	3	4	5	67	
33.4 Partner not accepting the pregnancy.	1	2	3	4	5	68	
33.5 Waiting for the foetus (baby) to move before going for antenatal care.	1	2	3	4	5	69	
33.6 Unable to meet the transport costs to the healthcare facility.	1	2	3	4	5	70	
33.7 Poor service offered at the clinic (long waiting time, overcrowding).	1	2	3	4	5	71	
33.8 Feeling well and not having any serious problems which need the nurse or doctor's attention.	1	2	3	4	5	72	
33.9 Fear of disclosing pregnancy early due to cultural/religious factors	1	2	3	4	5	73	
33.10 Incorrect advice from friends, relative or partner on the best time to start antenatal care.	1	2	3	4	5	74	

SECTION H: CHALLENGES IN UTILISING ANTENATAL CARE

Q34 Do the following factors make it difficult for you to use antenatal care services offered at the clinic?

FACTORS	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	FOR OFFICE USE	
34.1 Lack of money to pay for transport costs to antenatal care service.	1	2	3	4	5	75	
34.2 Language differences which makes it difficult to communicate with the healthcare staff.	1	2	3	4	5	76	
34.3 Working hours at the antenatal clinic are not suitable for me to attend.	1	2	3	4	5	77	
34.4 Unable to get time off work to attend antenatal care.	1	2	3	4	5	78	
34.5 Unable to find someone to take care of the other children when coming for antenatal care.	1	2	3	4	5	79	
34.6 Delays in attending to clients by health workers.	1	2	3	4	5	80	
34.7 Fear of the HIV test being positive.	1	2	3	4	5	81	
34.8 No power to make decisions on your own. Husband/partner or family members have to make the decision for you to attend antenatal care.	1	2	3	4	5	82	

Any other comments

……..…….

THANK YOU

ANNEXURE F

STATISTICIAN CERTIFICATE

This is to confirm that I, Suwisa Muchengetwa assisted Sesedzai Peggie Matyukira with data analysis of the dissertation titled **"Knowledge and utilisation of antenatal care services by pregnant women at a clinic in Ekurhuleni."**

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Signature ..... **Date** 08/01/2014

ANNEXURE G

To whom it may concern

09 January 2014

As an experienced professional editor, I have edited the thesis of Sesedzai Peggie Matyukira titled ‘Knowledge and utilisation of antenatal care services by pregnant women at a clinic in Ekurhuleni’.
In doing so, I have applied the conventions of proper English language usage, punctuation and spelling, and have amended errors in concord and syntax. The content of the thesis, however, is entirely the student’s concern and at no stage have I exceeded my remit and encroached on content, the author’s voice or her style of writing.

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