Antenatal care, an investigation of the time interval between the confirmation of pregnancy diagnosis and commencement of antenatal care in the Metro West district in Cape Town

By

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Declaration by Applicant

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We have co-supervised the research which Dr Molatelo Linneth Moshokwa has undertaken.

We are satisfied that this was Dr Molatelo Linneth Moshokwa's original work and that this dissertation should be submitted in part fulfilment of the requirements for the degree MMed (O &G) within the University of Cape Town.

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Abstract

Introduction

This study aimed to investigate the time interval between the confirmation of pregnancy diagnosis and the commencement of antenatal care at the Metro West district of Cape Town, and to explore reasons for delays between the confirmation of pregnancy and the first antenatal booking.

Methods

A cross sectional descriptive study was conducted in September 2015 at Vanguard MOU, in which 120 pregnant women were interviewed at their first antenatal visit, using a structured questionnaire. Subjects were grouped into those with a short time interval (less than 60 days) between confirmation of pregnancy diagnosis and booking, and those with a long time interval (more than 60 days). The two groups were compared. The study hypothesis was that income would be a significant determinant of this time interval. The data were divided into descriptive and categorical variables. A logistic regression analysis was conducted to determine the association between independent variables and the dependent variable (time interval).

Results

The average gestational age at confirmation of pregnancy was 10.75 ± 5.88 weeks and the average gestation at booking was 18.27 ± 7.27 weeks. The mean time interval between confirmation of pregnancy diagnosis and first antenatal visit was 7.50 ± 6.63 weeks. Seventy-three (60.83%) reported a short time interval (SI) while 47 (39.17%) reported a long time interval (LI).

The prevalence of late booking (defined as booking at or after 20 weeks) in the total study sample was 38.30%. There was a significant association between late attendance and LI with 70.21% of the LI group attending late, as compared to 17.81% of the SI group (OR 10.88; 95% CI 4.23-28.43).

The time interval was significantly influenced by the women's type of residence, the perception of the women regarding knowledge of the timing of antenatal care, and perception of the timing of pregnancy complications. It was not influenced by monthly income, thus refuting our hypothesis. Previous obstetric complications did not influence the time interval.

Private confirmation of pregnancy by a general practitioner or home pregnancy test was significantly associated with a long interval; 37 (78.7%) in the LI group compared to 43 (59.9%) in the SI group, (p= 0.016).

Reasons for the delay in booking were mostly related to poor understanding by women of the role of antenatal care and the ideal time of booking.

Discussion and Conclusion

Even though some women confirm their pregnancy as early as three weeks, there were notable delays in booking for their first antenatal visit, thus delaying antenatal care. However, the time delays seemed shorter than found in the previous Cape Town study, and compared to other studies in Africa. Many women perceived antenatal care to be curative rather than preventive. It is suggested that the site where women confirm their pregnancy (pharmacy, general practitioner or family planning clinic) should refer women immediately for antenatal booking. Also antenatal care sites should offer pregnancy testing services so that booking could occur after pregnancy is confirmed on the same day and at the same site.

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Abbreviations

AIDS	Acquired immune deficiency syndrome
ANC	Antenatal care
BANC	Basic antenatal care
BMI	Body mass index
CEMACH	Confidential Enquiry into Maternal and Child health
CEMD	Confidential Enquiry into Maternal Death
CMACE	Centre for Maternal and Child Enquiries
DOH	Department of Health
GP	General Practitioner
GSH	Groote Schuur hospital
HIV	Human immunodeficiency virus
KZN	Kwa-Zulu Natal
LI	Long time interval
MDGs	Millennium Development Goals
MOU	Midwife Obstetric Unit
NSH	New Somerset Hospital
NICE	National Institute of Health and Clinical Excellence
OR	Odds ratio
SA	South Africa
SD	Standard deviation
SI	Short time interval
TOP	Termination of pregnancy
UK	United Kingdom
USA	United State of America
WHO	World Health Organization
$\chi 2$	Chi-square

Chapter 1: Background

1.1 Introduction

Antenatal care (ANC) programmes were first designed and developed in Europe in the first decades of the 20th century and were initially directed at women in socially difficult living conditions, with the objective of improving the maternal and perinatal outcome for the least privileged groups. Gradually ANC was expanded to include more specific screening procedures to detect defined medical problems in pregnancy (1, 2).

The primary objective of antenatal care is a good quality outcome of pregnancy for both mother and child as it offers the opportunity for timely detection and treatment of conditions likely to result in adverse pregnancy outcomes (3, 4).

The importance of antenatal care for prevention of maternal and infant mortality in developing countries is frequently emphasised. In addition to preventing perinatal mortality, the role of antenatal care includes detecting foetal malformations and other risk factors (2).

Some studies show that women in South Africa (SA) usually suspect they are pregnant early, (at around three weeks) due to symptoms of amenorrhea and on the basis of the physical changes associated with pregnancy (5, 6). They then may confirm their pregnancy by a self-administered pregnancy test and/or by visiting general practitioners, pharmacies or public sector clinics within two months of their last menstrual period (6). Some confirm pregnancy with a traditional birth attendant.

Ideally, confirmation of pregnancy should be offered by midwife obstetric units (MOUs) and other facilities that offer antenatal care, so that the patients can be booked for their first antenatal care visit at confirmation of the pregnancy. This does not happen in practice in many settings in SA. Patients still commence formal antenatal care in the latter half of pregnancy, despite the early confirmation of the pregnancy (7).

Effective confirmation of pregnancy is a basic component of reproductive health services. It is a determinant for accessing ANC whether the pregnancy is planned or unintended. Early confirmation and booking allow those women who are pregnant, but do not wish to continue with pregnancy, to be referred early for termination of pregnancy (TOP) (7, 8).

For ANC to be fully effective, the first appointment in pregnancy should ideally be before twelve weeks gestation. Similarly TOPs that take place in the first trimester are safer and more

cost effective than second trimester TOPs. First trimester booking will make TOP services more accessible and increase the feasibility of abortion becoming a primary level service, as nurses in SA are allowed to perform first trimester TOP (8).

The South African Department of Health (DOH) recommends that women commence ANC as soon as they realise they are pregnant and definitely before 20 weeks of gestation (9). The World Health Organization (WHO) recommends a smaller number of goal-orientated antenatal care visits (usually four) with the first booking before or at sixteen weeks of gestation (10).

In the UK, the comprehensive 2008 National Institute of Health and Clinical Excellence (NICE) guideline for routine ANC for healthy women recommends ten scheduled appointments for nulliparous and seven for multiparous with uncomplicated pregnancies (11). In the United State of America (USA) the recommended gestation for booking is within the first twelve weeks of pregnancy (12).

The United Kingdom (UK) national guidelines state that the appointment for antenatal care should take place by the tenth week of pregnancy and the Confidential Enquiry into Maternal and Child Health (CEMACH) recommends that women should be booked in by the twelfth week of gestation (13).

Although risk assessment in early pregnancy does not identify all women who will develop problems later in pregnancy, it will identify a number of women who will benefit from additional care (14, 15, 16). Early booking makes fairly accurate pregnancy dating feasible, especially in women who are unsure of when their last menstrual period occurred, and it enables screening for chromosomal and other congenital anomalies. Certain baseline measurements such as blood pressure, body mass index (BMI), and urinalysis done at this gestational age give a reasonable reflection of the pre-pregnancy state of the patient (14).

High rates of perinatal mortality and morbidity in South Africa remain major problems despite national initiatives to reduce these rates. Efforts to stress the importance of ANC to pregnant women in SA have not been satisfactory (6). Although South Africa has demonstrated high levels of ANC coverage, late commencement of ANC remains a problem and has been documented in several studies in other sub-Saharan countries (17).

Since 1994, comprehensive ANC has been available free of charge to all South African women. Despite the availability of these services, many women book for ANC late in pregnancy and many attend only once, limiting the quality of care provided. Even when facilities are

accessible and quality services are available, some women may recognise pregnancy only relatively late in gestation (18).The current South African guidelines state that all primary healthcare facilities should screen women at their first presentation to the clinic for pregnancy, ideally before 20 weeks of gestation (9).

Delayed access to ANC has been linked to increasing mortality and morbidity for mothers and babies. The triennial Saving Mothers Reports in SA (2008-2010) identify non-attendance and infrequent ANC attendance as common patient related avoidable factors for maternal mortality (19). The Confidential Enquiry into Maternal Deaths in the UK reported that 17% of the maternal deaths, from direct or indirect causes, booked for maternity care after 22 weeks gestation, had missed more than four routine antenatal visits, and/or did not seek care at all. The UK CEMD reports associate this pattern of behaviour with social vulnerability and an increased risk of maternal death (13).

Late booking means that women may not have the opportunity to benefit from screening tests, antenatal education, health advice or supported decision making regarding the place and choice of delivery.

Despite worldwide support for safe motherhood initiatives, as laid out in the Millennium Development Goal (MDGs), high maternal mortality and morbidity rates remain a pressing public health concern, yet they affect predominantly those in developing regions. Maternal mortality rates in developing regions are fifteen times more than those in developed regions. The risk of maternal mortality due to pregnancy complications is highest in sub-Saharan Africa (20).

Many maternal deaths are preventable using proven interventions. About 60% of maternal deaths are caused by factors that can be detected and addressed during the antenatal period. They include hypertension, HIV/AIDS, and pre-existing medical conditions and infections (20).

Several factors affecting the utilisation of ANC in developing countries have been identified. These include maternal education, husband's education, marital status, availability of services, cost of services, household income, women's employment, media exposure, having a history of obstetric complications, cultural beliefs about pregnancy, high parity, and poor knowledge about the appropriate time for booking. In addition, there may be health system and health worker related issues, such as clinic booking procedures where, due to high workload or the way the clinic is organised, pregnant women are not booked on the day of attendance but are

asked to return again for their first ANC at another date which could be several weeks later (7, 15, 21, 22). In addition, harsh attitudes by healthcare providers can be deterrents to seeking care (23).

Findings from studies in Africa highlighted insensitivity, rudeness, humiliation, neglect, abuse and physical violence by healthcare workers as key features in limiting women's accessing antenatal care (24, 25, 26, 27).

There are indigenous beliefs and practices around cultural traits (21, 28). These beliefs may influence the decision to seek care in pregnancy and the timing of booking for ANC.

1.2 Rationale of the study

Late booking in antenatal care is still a challenge in developing countries. Many women appear to have their pregnancy confirmed early by a general practitioner, or by a self-administered pregnancy test, but they still book late for antenatal care. This late booking contributes to delays in the commencement of antiretroviral therapy, screening for congenital abnormalities, screening for high risk pregnancies and delay in early identification of those patients with unplanned pregnancy who may require termination of pregnancy.

The South African DOH recommends that women should access ANC as soon as they realise they are pregnant and definitely before 20 weeks of gestation (9). Antenatal care is free in South Africa and current guidelines state that all primary healthcare facilities should screen pregnant women at their first presentation at the clinic, ideally before 20 weeks of gestation (9).

The purpose of this study was to assess the time interval between the confirmation of pregnancy diagnosis and the first antenatal visit for women who receive maternity care in Metro West; and to explore reasons for delays between the confirmation of pregnancy and the first antenatal booking.

Chapter 2: Literature Review

2.1 Confirmation of pregnancy diagnosis

A study done in Durban identified that most pregnant women confirm their pregnancy by visiting general practitioners (GPs). It was found that among the early bookers, 30.9% had confirmed their pregnancy within two months following their last menstrual period. Over sixty percent (60.6%) of women confirmed their pregnancies in the public sector; 35.2% did so by visiting GPs; and 4.2% confirmed their pregnancies themselves on the basis of the physical changes associated with pregnancy (6). Of the late bookers, 49% had their pregnancies confirmed by GPs, 32.4% confirmed their pregnancies in the public sector; and 17.2% had pregnancy confirmed by a family member. There was a delay of two months between confirmation of pregnancy and booking visits in 46.5% of the early bookers. Over sixty-one percent (61.4%) of the late bookers booked at six months and the average delay was three months between confirmation of pregnancy and first booking (6).

Mathole et al., in a study done in Zimbabwe, reported that women confirm their pregnancy early but decide to keep it a secret. They attend traditional and faith healers for strengthening and to protect their unborn babies from witchcraft; and only attend their first ANC visit when the pregnancy is visibly obvious (28).

In a study conducted by Ngomane et al. in Bohlabela district, Limpopo, pregnant women confirmed their pregnancy early within three months of amenorrhea and attended traditional healers for strengthening the pregnancy (21).

Mabale et al. reported that women in Atteridgeville, Pretoria, suspected they were pregnant early at three months, following symptoms of amenorrhea (5).

Jeffery et al. in their descriptive study done in Atteridgeville and central Pretoria demonstrated that it is possible to shift the commencement of antenatal care to an earlier gestational age by offering women a one stop pregnancy confirmation and first visit antenatal clinic. This improved early booking rates (7). In this study Jeffery et al. advertised in newspapers, on posters, and with handbills in healthcare facilities and community centres, the availability of pregnancy confirmation services, which included ultrasound introduced in public antenatal clinics in Atteridgeville and central Pretoria (7).

2.2 Prevalence of early and late booking for ANC in African countries

Early booking refers to those women who have their first antenatal visit before 20 weeks of gestation and late booking to those who present for ANC after 20 weeks of gestation. Buchmann et al. in their study in Johannesburg reported the prevalence of early booking to be 37% and 38% in 2012 and 2013, respectively (29).

Mean gestational age at booking was 20.3 ± 6.2 weeks with the prevalence of late booking for antenatal care of 82.6% in a study done by Adekanle and Isawumi from south west Nigeria (15). Ndidi and Oseremen reported in their study in Delta Niger in Nigeria that 73.6% of women booked in the second trimester and 26.4% in the third trimester (14).

Solarin and Black in their study conducted in inner city Johannesburg reported a high ANC attendance of 97.0% with 46.0% seeking care before 20 weeks gestation. However, 19.2% of the women were asked to return for the booking visit more than a month later, resulting in a three month delay in commencing ANC (17).

Kisuule et al. and Myer et al. demonstrated a median gestation for first ANC visit of 25 weeks and 27.9 weeks, respectively in their studies (4, 18). A study conducted in Cape Town by Morroni and Moodley demonstrated a mean gestational age of first presentation to be 23 weeks and 13 weeks for antenatal care and TOP, respectively. The study examined the role of urine pregnancy test testing in the timing of presentation for antenatal care and for TOP. They found a decrease in the gestational age at presentation of five weeks, and one and half weeks for antenatal booking and TOP, respectively when a pregnancy test was obtained and performed by the woman herself. They recommended urine pregnancy testing services to be readily available in the public sector clinics in South Africa in order to reduce gestational age at first antenatal care (8).

2.3 Studies on reasons for late bookings

According to the literature reviewed, most African studies demonstrated that reasons for late booking for ANC were multifactorial. The most common reasons identified in several studies were related to misconceptions about the purpose of ANC, and lack of knowledge about the right time to commence ANC. The attitudes of women seem governed by a perception that ANC is primarily to detect or treat serious diseases. ANC seems to be viewed by most women as curative rather than preventative, which is in contrast with the goals of ANC which are mainly preventative (14).

Socio-demographic factors such as the level of education, marital status, employment and household income; as well as antenatal booking procedures in health facilities, seem to be barriers for utilisation of ANC.

2.3.1 Socio-demographic factors

Most sub-Saharan studies demonstrated that socio-economic status, maternal and partner's education; and household income affect the utilisation of ANC. Low socio-economic status further limits some women from seeking ANC early as they may not be able to afford transport to the respective ANC facilities.

Kisuule et al. in a study done in Uganda reported that 110 (27.5%) women in their study gave the reason for late booking as due to not having money for transport to take them to the hospital, and 37 (9.3%) thought that they would have to pay for ANC services. They demonstrated that many women in their study had low socio-economic status; also the majority of the women had attained only secondary level education and were full-time housewives (4).

Hagey et al. reported in their study done in Kigali, Rwanda that poverty or problems of health insurance were among the reasons for late booking. Although there are no costs associated with attendance for antenatal visits, there are many secondary costs associated with attending the health centre and those could become barriers (20).

Solarin and Black in their study in the inner-city Johannesburg demonstrated that socio-demographic factors had an influence on late booking. Late booking was more common in women in the black population group (101 women, 51.35%), women with lower levels of education or no secondary school education (60 women, 60%), and those who were unemployed (58 women, 48.3%). South African women (63, 51.6%) booked later for antenatal care compared to foreign women (44, 51.2%) (17).

Sibeko and Moodley in their Durban study demonstrated that the booking pattern was not influenced by socio-demographic factors, such as the level of education and employment (6).

2.3.2 The accessibility and availability of antenatal healthcare facilities

Lack of physical access to healthcare facilities can be a barrier to utilisation of ANC. Myer and Harrison in their study conducted in Hlabisa, KwaZulu-Natal, demonstrated that poor physical access to the clinic was a major barrier to ANC. Of the 22 women booking for the first time, only nine (41%) lived close enough to the clinic to come on foot. The other 13 had to use taxi services to access the clinic, the cost of which ranged from R2.00 to R12.00 depending on the

proximity of the clinic. Inability to pay for taxis was noted as a major concern by all women who lived further than walking distance (18).

The Sibeko and Moodley study in Durban did not demonstrate any correlation between late booking and accessibility since most women, (155, 51.5%) in their study lived within walking distance of the health facility. Of those who needed public transport, the fare ranged from R3 to R16; only five women (1.7%) had either not booked or booked late because of financial reasons (6).

2.3.3 Antenatal health seeking behaviour of pregnant women

Lack of knowledge, and misconceptions about ANC by women present a fundamental barrier to improving antenatal care services. A review of the literature shows that women view early attendance as unnecessary if there are no medical concerns, and that they misunderstand the purpose and timing of ANC. Women value ANC more for the role it plays in ensuring a safe delivery by enabling access to care in labour (14, 17).

Studies by Myer, Ndidi and Solarin indicated that women book in the second and third trimester solely to acquire the maternity care booklet required for facility-based delivery, which many perceive as necessary to expedite their access to care when they go into labour (14, 17, 18).

In the study done in Nigeria reasons given for delayed attendance for ANC included the following: 73 (21%) said they did not have any serious problems; 18 (5.21%) women said they had no problems in early pregnancy that needed intervention and 28 (8.1%) thought that there was no benefit in early booking (14).

Jones et al. in their UK study identified four key groups of women with explanatory sub-themes for late booking: (i) the not-knowers (absence of classic symptoms, misinterpreters, not believing pregnant); (ii) the knower-avoiders (ambivalence, fear); (iii) the knower-postponers (fearful, on the move, undecided, not valuing ANC); (iv) the knowers-delayers (professional and system failures, knowledge and acceptance that the system was poor and therefore not accessing the system) (30).

Myer and Harrison in their Kwa-Zulu Natal (KZN) study reported that 14 (22.6%) women commented that it was appropriate to begin ANC once the foetus starts moving and many women only recognised pregnancy relatively late in gestation (18). It was also frequently observed that women, despite having been informed in a previous pregnancy of the appropriate time for booking and its benefits, still booked late (18).

Kisuule et al, in a study done in Uganda reported that 72.7% of women in their study did not know the appropriate gestational age at which a pregnant woman should start attending antenatal care. Amongst the 27.3% of women who knew the right gestational age for booking, 76.1% started at three months, 15.6% at four months, 5.5% at two months, and 2.8% when a menstrual period is missed. The women who knew had been taught in health facilities during health education in a previous pregnancy. Thus, a primigravida who never attended ANC will not know this information (4).

In the same study done by Kisuule, 53.3% of women stated that they did not have problems in the current pregnancy and saw no reason for early booking; 2.8% were given dates to come at a later date by sisters at the clinic; 1.7% had not known where the ANC clinic was located; 0.6% reported that doctors and nurses pay no attention when they try to book early; and some multipara had got tired of ANC during past pregnancies (4).

In the Johannesburg study by Buchmann et al., the reasons for the delay in starting antenatal care were associated with women's failure to see a health provider soon after knowing they were pregnant, resulting in a long time interval before booking (29).

Solarin and Black in their study reported that reasons for late booking included: delay in diagnosing pregnancy; 21.9 % did not know they were pregnant; 20.8% said they had no time to book; and 17.1% were seeing a GP for ANC in the first few months. A few women mentioned that they knew that they would not be seen at the clinic if they attended any earlier (17).

Sibeko and Moodley in their Durban study reported that common reasons given by women for their delay in the initiation of ANC were: "still early to book"; they had been attending ANC privately; inconvenient clinic hours; work-related reasons; and also that when they presented themselves for confirmation of pregnancy they were not informed when to commence ANC. Five women (1.7%) had either not booked or booked late because of financial reasons, 72 (23.7%) found the antenatal clinic hours to be inconvenient, and 30 (10.2%) were not aware that antenatal care is free. Some other reasons given for late booking in this study were women being unhappy with the public sector, unwanted pregnancies, no ID book and long queues (6).

2.3.4 Antenatal booking procedures and health workers

Due to heavy workload or the way the clinics are organised, many pregnant women are not booked on the day of first attendance but are asked to return again for the first ANC at another date, which could be several weeks later (7, 15, 21, 22).

Poor quality of care continues to be a major concern at many healthcare facilities due to high patient volume.

Ngomane et al. reported that women in the Bohlabela district, Limpopo, reported that they were afraid of going to the hospital because they feared being scolded by nurses, and they resorted to consulting traditional birth attendants for care (21).

In the Johannesburg study by Buchmann et al., the reasons for the delay in starting antenatal care were associated with failure of primary care providers to channel women to antenatal clinics after confirming pregnancy; and women being turned away from antenatal clinics when they presented themselves for antenatal care (29).

Solarin and Black in their study reported that reasons for late booking included delay in diagnosing pregnancy, and the clinic procedures which involved women being asked to return on another day in order to be booked for ANC (17).

Sibeko and Moodley in their Durban study reported that reasons given for late booking were: women being unhappy with the public sector ('nurses scolding them because of their age or high parity'); dislike of the nearest clinic because of previous experiences; and because they were turned away by the clinic of their preference because they were not in its catchment area (6).

Findings from studies in Africa highlighted insensitivity, rudeness, humiliation, neglect, abuse and physical violence by healthcare workers as important factors that inhibited women from accessing antenatal care (24, 25, 26, 27).

In a study done in Tanzania, it was highlighted that delay in seeking care in facilities was not always an oversight borne of lack of knowledge or education, but an active decision made by women based on previous experiences of verbal and physical abuse, and feeling ignored, neglected or mistreated (24). A Cape Town based study showed that many patients experienced verbal abuse in the form of scolding, being shouted at and general rudeness from healthcare providers in maternity facilities (27).

2.3.5 Indigenous beliefs and practices

Indigenous beliefs and practices take shape around the cultural traits that are passed down from one generation to the next. Women believe they have to follow cultural rituals in order to preserve their pregnancy state and give birth to healthy infants (21, 28). The pregnancy needs to be strengthened with herbs to prevent malformation of the foetus and miscarriages (21).

Mathole et al. indicated in their Zimbabwean study that women in Zimbabwe felt that pregnancy had to be kept secret during its first stages for fear of witchcraft. The pregnancy needs to be protected from evil spirits who may harm the formation of the foetus in the first three months of pregnancy (28).

2.4 Aim and objectives of the study

The aim of this study was to investigate the time interval between the confirmation of pregnancy diagnosis and the commencement of antenatal care in the Metro West district in Cape Town, and to explore the reasons for any delays identified.

Specific objectives

- To determine where, how, and at what gestation the pregnancy diagnosis was confirmed.
- To determine the time interval between confirmation of pregnancy diagnosis and the first antenatal care booking visit.
- To explore reasons for long time intervals between confirmation of pregnancy diagnosis and antenatal care booking visit.

Chapter 3: Methods

3.1 Study design

This study had a cross sectional descriptive study design with comparative components in which women were recruited for interview during their booking antenatal care visit at Vanguard MOU.

3.2 Study setting

The study was conducted at Vanguard MOU. This MOU falls under the catchment area of New Somerset Hospital (NSH). NSH is a level two hospital situated in Green Point in Cape Town providing antenatal care and conducting 6,000 deliveries per year for referred obstetric patients and some low-risk patients in the immediate catchment area. The majority of women book for antenatal care at local MOUs and Basic Antenatal Care (BANC) primary clinics.

There are three facilities that refer complicated obstetric patient to NSH namely, Vanguard MOU, and Wesfleur and Vredenburg District Hospitals. MOUs are primary care units which provide primary obstetric care, including deliveries for low risk pregnant women. These units are run by midwives and there is an outreach visit from NSH doctors once a week to these units. BANC clinics are primary care clinics which provide basic obstetric care for low risk patients but do not offer delivery services. Obstetric patients requiring tertiary care are referred to Groote Schuur hospital maternity unit.

The Vanguard MOU and its satellite BANC clinics serve a disadvantaged population which includes Langa (predominantly black African women) and Bonteheuwel (predominantly coloured women).The MOU performs approximately 1,800 deliveries per annum.

3.3 Study subjects

All pregnant women booking at Vanguard MOU during the study period 01 September, 2015 to 15 September, 2015, and who agreed to participate in the study were included as study subjects. These study subjects were then interviewed. Women who declined to participate in this study were therefore excluded.

3.4 Sample size

Eligible women were categorised into those who had a short time interval (SI) between confirmation of pregnancy diagnosis and booking (defined as less than two months/ 8 weeks 5 days/ 60 days) and those who had long time interval (LI) (defined as equal to or more than two months/ 8 weeks 5 days/ 60 days). These time intervals were based on the expectation that ideally women would suspect and diagnose pregnancy after a missed period i.e. in the first month; and then book before the end of the first trimester (three months) which would be, at the most, a two-month interval.

The SI and LI groups were compared for various parameters. The sample size was calculated using Open Epi (#REF) (31). A two-sided significance level of 95 was used. The power (1-beta) was set at 80. The SI group were the study group and the LI group the controls. We assumed that the ratio of long time interval to short time interval would be 3:2, i.e. 1.5:1. Our hypothesis was that income would be an important determinant of time interval between the diagnosis of pregnancy and booking. We assumed that 60% of the patients with long time intervals would have a low income, defined as an income of less than R2,000 per month. We also assumed that the proportion of patients who had short time interval with low income would be 20%. This generated a minimum sample size requirement of 60 patients to demonstrate a significant difference between the groups. It was then planned to recruit a larger sample of 120 women in order to improve the validity and significance of the study.

3.5 Data collection

Data were collected in the form of a structured questionnaire administered by trained research workers who conducted interviews of the study subjects. Women were recruited in Vanguard MOU. All subjects were consecutively selected at Vanguard MOU during their booking antenatal visit by the research workers. The study was explained to the subjects, and if they were eligible they were invited to participate. Informed consent was obtained from subjects who agreed to participate in the study. The interviews were conducted in isiXhosa, Afrikaans or English, according to the subject's preference. The enrolled women who gave informed consent were interviewed in a private room on a one-to-one basis in the maternity unit of the institution concerned.

The questionnaire included details of the method and timing of pregnancy confirmation, date of ANC booking visit, reasons for any delays between pregnancy confirmation and booking as

well as socio-demographic data (age, parity, employment, education, etc.), details of past obstetric history and history of the index pregnancy prior to booking.

The questionnaire had not been validated and previous research studies on this topic have used different questionnaires. The findings from previous research studies on delays between pregnancy diagnosis and booking, and the reasons for these delays were used to inform the choice of questions in the current study questionnaire.

Maternal data were extracted from the maternity record books during the interview. Maternal data that were extracted from the maternity record books included age, parity, gravidity, HIV status, gestation at first booking and risk evaluation. The information from completed questionnaires was entered into a database using Microsoft Excel spreadsheet facilities. Data were re-entered or checked for errors (by two different people).

3.6 Ethics

Approval for this study was obtained from the department of Obstetrics and Gynaecology research committee, and the provincial research committee (WC_2015RPo_14). Ethical approval was given by the Health Science Faculty HREC ethics committee of the University of Cape Town (HREC/ REF: 083/2015) prior to commencing with this study. Participation in this study was voluntary and all information was treated confidentially and in accordance with the Declaration of Helsinki (32).

Written informed consent was sought from the study subjects before enrolling them in the study. Minors (women younger than 18 years) were included in the study and were required to give assent, together with parental informed consent. There were no interventions in this study and the questionnaire focused on logistical issues around pregnancy diagnosis and booking, which were not perceived to be distressing. The additional information that was provided by minors who may have particular problems with pregnancy diagnosis and booking for antenatal care, were the reasons that it was important to include them in the current study. Strict confidentiality was practised, no names of the subjects were recorded in the questionnaire. The data collection forms with subjects' information were kept in a secure office.

3.7 Statistical analysis

The data collected were analysed with the help of a statistician. A database was created using Microsoft Excel and data were captured onto a spreadsheet. Data analysis was performed using statistical software packages, Statistica 13 and Graph Pad 2. The data were divided into

descriptive and categorical variables. A logistic regression analysis was conducted to determine the association of the independent variable/s (socio-demographics, parity, previous caesarean sections etc.) on the dependent variable (time interval). A multivariate logistic regression was employed to further control for confounders and to identify statistically significant associations among variables. To check the distribution of the continuous non-parametric variables, and to check the significant differences between the two groups, a Mann-Whitney U test was used. While categorical data are expressed as frequencies; some sections of the data analysis present means and standard deviations (SD) where appropriate. The percentages were presented within the parenthesis, while the numbers of observations, n, precedes the parenthesis, i.e. n (%). Statistical significance was accepted at $p<0.05$.

Chapter 4: Results

A total of 120 women participated in the study. The data were collected over the period 01 September 2015 to 15 September 2015 from women at their booking visit at Vanguard MOU.

4.1 Time interval between confirmation of pregnancy diagnosis and first ante-natal care visit

The gestational age at confirmation of pregnancy ranged from three weeks and one day to 34 weeks. The mean for the gestational age at confirmation of pregnancy was 10.75 weeks with standard deviation of 5.88. The gestational age at first antenatal booking ranged from five weeks and three days to 37 weeks. The mean for the gestational age at first antenatal booking was 18.27 weeks with standard deviation of 7.72. The time interval between confirmation of pregnancy diagnosis and first antenatal visit ranged from zero to 27 weeks. The mean time interval was seven weeks and five days, with a standard deviation of 6.63.

Table 4.1: Time interval between confirmation of pregnancy and the first antenatal booking

Weeks	n = 120 (%)
< 2 weeks	34 (28.33)
2-4 weeks	16 (13.33)
>4 weeks	20 (16.66)
≥ 8 weeks	19 (15.83)
≥ 12 weeks	31 (25.83)

Thirty-four (28.33%) subjects booked within the first two weeks of the confirmation of pregnancy. Of the 34 subjects, 23 booked during the same week as the confirmation of pregnancy and nine of the 23 subjects booked on the same day as the confirmation of the pregnancy. The subjects were categorised into those with short time interval (SI) of less than two months (≤ 60 days) between confirmation of pregnancy diagnosis and booking and those with long time interval (LI) of more than two months (> 60 days) between confirmation of pregnancy diagnosis and booking. Of the 120 women, seventy-three (60.83 %) reported a short time interval while forty-seven (39.17%) reported a long time interval (Figure 4.1).

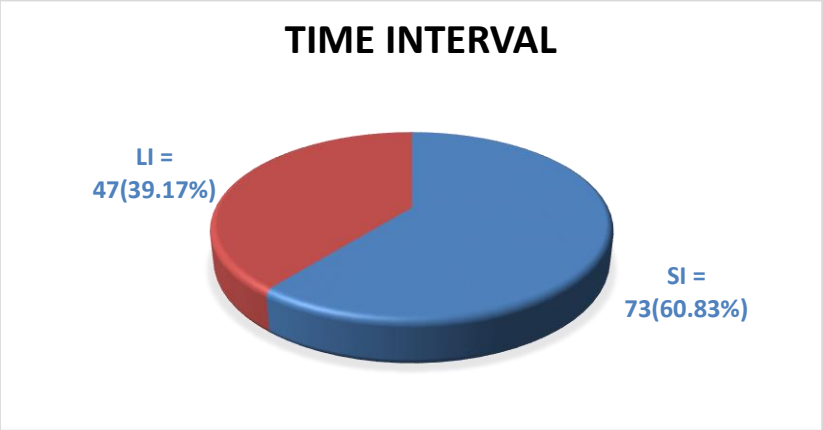

Figure 4.1: Time interval distribution

The number of subjects with late booking (at/after 20 weeks gestation) in the total study group was 46 (38.33%) compared to 74 (61.67%) with early booking (before 20 weeks gestation). Of the 73 subjects in the SI group, 60 (82.19 %) booked before 20 weeks and 13 (17.81%) booked late. Among the 47 in the LI group, 14 (29.79%) booked before 20 weeks and 33 (70.21%) booked after 20 weeks. The Odds Ratio (OR) for this finding is 10.88, indicating that women who book for antenatal care after 20 weeks gestation are also 10 times more likely to have had a long interval between diagnosis of pregnancy and booking for antenatal care. This OR is statistically significant (p<0.0001; 95% CI: 4.23 - 28.43).

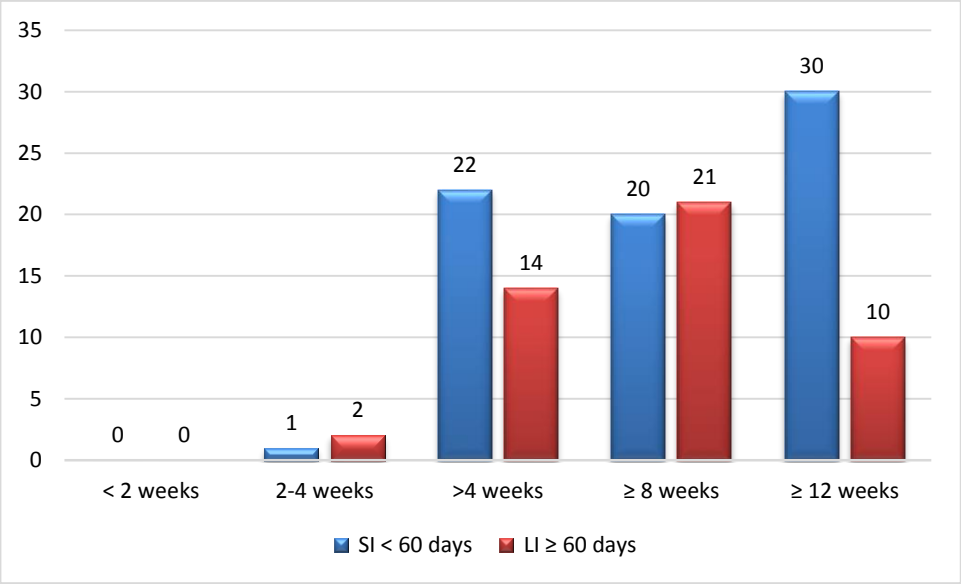

Figure 4.2: Gestational age at confirmation of pregnancy diagnosis for SI and LI groups and whole study population

The gestational age at confirmation of pregnancy was compared between the SI and LI groups (see Figure 4.2). Three (2.50%) subjects confirmed their pregnancy within four weeks of pregnancy, one (1.37%) in the SI group, and two (4.26%) in the LI group. Thirty-six (30.00%) subjects confirmed their pregnancy between four weeks and eight weeks of gestational age, with 22 (30.14%) of the SI group and 14 (29.79%) in the LI group. The majority of subjects 41 (34.17%) confirmed their pregnancy between eight weeks and 12 weeks of pregnancy, with 20 (27.39%) in the SI group and 21 (44.68%) in the LI group. The p-value is 0.078, showing that there was no statistical difference in gestational age at confirmation of pregnancy between the SI and LI groups.

Table 4.2: Method of pregnancy confirmation

Pregnancy confirmation	**SI < 60 days**	**LI ≥ 60 days**	**Total**
Self-pregnancy test	28 (38.35)	25 (53.19)	53 (44.17)
General practitioner (GP)	15 (20.54)	12 (25.53)	27 (22.50)
Private obstetrician	0 (0.00)	0 (0.00)	0 (0.00)
MOU	5 (6.84)	0 (0.00)	5 (4.17)
Family planning clinic	15 (20.54)	4 (8.51)	19 (15.83)
Public hospital	0 (0.00)	1 (2.13)	1 (0.83)
BANC	6 (8.22)	5 (10.64)	11 (9.17)
CHC	4 (5.48)	0 (0.00)	4 (3.33)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

To confirm pregnancy 53 (44.17%) of the subjects used a self-administered pregnancy test; 27 (22.50%) had their pregnancy confirmed by a GP; 19 (15.83%) confirmed their pregnancy at a family planning clinic when they went for contraceptives; and four (3.33%) confirmed their pregnancy at a community health centre (CHC) when they went for consultation for a sickness, not knowing they were pregnant. Private confirmation of pregnancy by GP or home pregnancy test was significantly associated with a long interval; 37 (78.7%) in the LI group compared to 43 (59.9%) in the SI group, (p-value = 0.016).

4.2 Socio-demographic characteristics of the two groups

All subjects were of either black or coloured ethnic origin. The mean maternal age of subjects was 26.60 years ± SD 5.439, ranging from 14 to 43 years old.

Table 4.3: Age distribution of study population

Age (years)	SI < 60 days	LI ≥ 60 days	Total
≤ 19	4 (5.48)	4 (8.51)	8 (6.67)
20 - 29	47 (64.38)	35 (74.47)	82 (68.33)
30 - 39	20 (27.39)	7 (14.89)	27 (22.50)
≥ 40	2 (2.74)	1 (2.13)	3 (2.50)
Total	**73 (100)**	**47 (100)**	**120 (100)**

The mean maternal age for SI subjects was 26.12 years ± SD 4.85, ranging from 14 to 41 years. For LI subjects it was 26.9 years ± SD 4.85 ranging from 17 to 43 years. The majority of the subjects 82 (68.33%) were in the 20 to 29 year age group; which included 47 (64.38%) subjects from the SI group and 35 (74.47%) from the LI group. The group with the least number of subjects was the ≥ 40 years age group with a total of three (2.50%) subjects, distributed as two (2.74%) subjects reporting in the short-time interval and one (2.13%) in the long-time interval.

Table 4.4: Marital status in the SI and LI groups and whole study population

Marital status	SI < 60 days	LI ≥ 60 days	Total
Stable relationship	32 (43.86)	20 (42.55)	52 (43.33)
Cohabiting	8 (10.96)	3 (6.38)	11 (9.17)
Married	32 (43.86)	20 (42.55)	52 (43.33)
Divorced	0 (0.00)	1 (2.13)	1 (0.83)
Separated	1 (1.37)	3 (6.38)	4 (3.33)
Total	**73 (100)**	**47 (100)**	**120 (100)**

The number of subjects in a stable relationship in the two groups was comparable; 32 (43.86%) of the SI compared to 20 (42.55%) of the LI. Thirty-two (43.86%) of the SI group were either married legally or traditionally compared with 20 (42.55%) of the LI group. The SI group was slightly more likely to be married, in a stable relationship or cohabiting, as compared to the LI group.

Table 4.5: Educational status for SI and LI groups and whole population

Education	SI < 60 days	LI ≥ 60 days	Total
None	0 (0.00)	0 (0.00)	0 (0.00)
Primary	2 (2.74)	0 (0.00)	2 (1.67)
Secondary	65 (89.04)	44 (93.67)	109 (90.83)
Tertiary incomplete	5 (6.84)	1 (2.13)	6 (5.00)
Tertiary completed	1 (1.37)	2 (4.26)	3 (2.50)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

In both groups the majority of subjects had some level of education, with the largest proportion in each group reporting to have secondary school level of education (n = 65, 89.04% for the SI group and n = 44, 93.67 % for the LI group).

Table 4.6*:* Employment status for SI and LI groups and whole population

Employment	SI < 60 days	LI ≥ 60 days	Total
Student	4 (5.48)	2 (4.26)	6 (5.00)
Unemployed	27 (36.98)	21 (44.68)	48 (40.00)
Employed	32 (43.86)	17 (36.17)	49 (40.83)
Self-employed	2 (2.74)	1 (2.13)	3 (2.5)
Housewife	8 (10.96)	6 (12.76)	14 (11.6)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

There were six school girls in the total sample. Thirty-two (43.86%) of the SI and 17 (36.17%) of the LI were employed. Larger proportions of the SI subjects had some form of employment; formal employment (43.86%) and self-employed (2.74%) with less unemployed, compared with LI women, of whom (44.68%) were unemployed.

Table 4.7*:* Types of residence for SI and LI groups and whole study population

Residence	SI < 60 days	LI ≥ 60 days	Total
Informal dwelling	23 (31.51)	17 (36.17)	40 (33.33)
Flat	10 (13.69)	13 (27.66)	23 (19.17)
Backyard room	4 (4.47)	0 (0.00)	4 (3.33)
House/town house	36 (49.31)	17 (36.17)	53 (44.17)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

The majority of the subjects were living in a formal house; 53 (44.17%) subjects, which included 36 (49.31%) subjects in the SI group and 17 (36.17%) in the LI group. A larger

proportion of SI subjects were residing in a house or town house compared to the LI group. In the LI group, the proportions living in informal housing and flats were greater compared to the SI group.

Table 4.8: Financial support for SI and LI groups and whole study population

Financial support	SI < 60 days	LI ≥ 60 days	Total
Self-financial support	23 (31.51)	12 (25.53)	35 (29.17)
Partner	38 (52.05)	24 (51.06)	62 (51.67)
Grant	1 (1.37)	2 (4.26)	3 (2.50)
Parents	10 (13.69)	5 (10.64)	15 (12.50)
Siblings	1 (1.37)	4 (8.51)	5 (4.17)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

Most subjects in the two respective groups were dependent on their partner for financial support; thirty-eight (52.05%) in the SI group and 24 (51.06%) in the LI group. All subjects in the two groups had some form of financial support.

Table 4.9: Income for SI and LI group and whole study population

Household income (R)	SI < 60 days	LI ≥ 60 days	Total
≤2000	10 (13.69)	11 (23.40)	21 (17.50)
>2000	63 (86.30)	36 (76.59)	99 (82.50)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

Among the SI group, 63 (86.30%) had an income of more than R2,000. For the LI group, 36 (76.59%) had income of more than R2,000. There was no significant difference between the two groups with regard to household income. (P-value = 0.172).

Table 4.10: Access to the clinic for SI and LI group and whole study population

Distance to clinic	SI < 60 days	LI ≥ 60 days	Total
> 10km	26 (35.62)	14 (29.79)	40 (33.33)
≤ 10km	47 (64.38)	33 (70.21)	80 (66.67)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

Of the 120 subjects, 80 (66.67%) lived in the vicinity of the clinic, within a distance of about 10km or less. This included 47 (64.38%) in the SI group and 33 (70.21%) in the LI group. Among the 120 total subjects, 40 (33.33%) had to travel a distance of more than 10km, ranging from 11km to 30km. These 40 subjects included 26 (35.62%) in the SI group and 14 (29.79%) in the LI group.

Table 4.11*:* Cost of return trip to clinic

Return trip cost (R)	SI < 60 days	LI ≥ 60	Total
0	42(57.53)	23(48.94)	65(54.17)
< 20	8(10.95)	9(19.15)	17(14.17)
≥ 20	23(31.51)	15(31.91)	38(31.67)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

Most subjects walked to the clinic; 42 (57.53%) of the SI group and 23 (48.94%) of the LI group, and therefore had no need for transport. Eight subjects (10.96%) in the SI group and nine (19.15%) in the LI group spent less than R20 on transport. There were 23 (31.51%) in the SI group and 15 (31.91%) in the LI group who had spent more than R20 on transport, ranging from R12 to R40. The most commonly used transport was taxis.

4.3 Obstetric history

Table 4.12*:* Gravidity and time intervals for SI group, LI group and whole study population

Gravidity	SI < 60 days	LI ≥ 60 days	Total
G 1	22 (30.14)	8 (17.02)	30 (25.00)
G 2	23 (31.51)	21 (44.68)	44 (36.66)
G 3	21 (28.77)	13 (27.66)	34 (28.33)
G 4	3 (4.11)	4 (8.51)	7 (5.83)
G 5 and more	4 (5.48)	1 (2.13)	5 (4.16)
Total	**73 (100%)**	**47 (100 %)**	**120 (100%)**

Of the 120 subjects, 30 (25.00%) were primigravida, while 85 (70.83%) were multigravida and five (4.16%) were grand multigravida.

Table 4.13*:* Influence of past obstetric history on time interval for SI and LI groups for multigravida women

Past obstetric history	SI n (%)	LI n (%)	Total n (%)	p-value
No previous pregnancy complications	29 (56.86)	25 (64.10)	44 (55.00)	0.498
Chronic hypertension	3 (5.88)	5 (12.82)	8 (10.00)	0.283
Previous preterm labour	4 (7.84)	1 (2.56)	5 (6.25)	0.328
Antepartum haemorrhage	2 (3.92)	1 (2.56)	3 (3.75)	0.777
Postpartum haemorrhage	2 (3.92))	0 (0.00)	2 (2.50)	0.318
Previous still birth	1 (1.96)	1 (2.56)	2 (2.50)	0.866
Miscarriage	7 (13.72)	3 (7.69)	6 (7.50)	0.395
Previous gestational diabetes	1 (1.96)	0 (0.00)	1 (1.25)	0.566
Caesarean section	1 (1.96)	3 (7.69)	7 (8.75)	0.246
Ectopic pregnancy	2 (3.92)	0 (0.00)	2 (2.50)	0.318
Total	**51 (100%)**	**39 (100%)**	**80 (100)**	

Fifty-five percent of subjects with previous pregnancy did not have prior adverse obstetric history. Table 4.13 shows that past history of obstetric complications did not influence the time interval between confirmation of pregnancy and the first antenatal booking. However, the numbers of past complications in both the SI and LI group were small and the study was not powered to investigate this parameter. There were no subjects who had a past history of intrauterine growth restriction.

4.4 Knowledge and perceptions of the reasons for antenatal care and optimal timing of the first antenatal care visit

Table 4.14*:* Knowledge and perceptions of reasons for antenatal care

Reason for ANC	SI < 60 day	LI ≥ 60 days	Total
Told to attend	0 (0.00)	1 (2.13)	1 (0.83)
Important to acquire maternity care booklet	6 (8.22)	6 (12.76)	12 (10.00)
What supposed to do	0 (0.00)	3 (6.38)	3 (2.50)
Check HIV status	2 (2.74)	1 (2.13)	3 (2.50)
Get ANC card	1 (1.37)	1 (2.13)	2 (1.67)
Prevent HIV	0 (0.00)	0 (0.00)	0 (0.00)
Personal health and baby health	63 (86.30)	35 (74.47)	98 (81.67)
Screen for miscarriage and preterm labour	1 (1.37)	0 (0.00)	1 (0.83)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

The most common reason given by subjects for attending ANC was for the health of the baby and their personal health (81.67%), and because it was important to acquire the maternity care booklet for preparation of delivery of the baby (10.00%). There was no statistical difference between the two groups with regard to knowledge and perceptions of reasons for antenatal care.

Table 4.15*:* Perception of the right time to book for ANC

Right time to book	SI < 60 days	LI ≥ 60 days	Total
1st trimester	67 (91.78)	35 (74.47)	102 (85.00)
2nd trimester	2 (2.74)	6 (12.76)	8 (6.67)
3rd trimester	0 (0.00)	0 (0.00)	0 (0.00)
Pregnancy is visible	4 (5.48)	4 (8.51)	8 (6.67)
Don't know	0 (0.00)	2 (4.26)	2 (1.67)
Total	**73 (100%)**	**47 (100%)**	**120 (100%)**

When the study subjects were asked when was the right time to book for antenatal care, 102 (85.00%) of the total sample knew that the first trimester was the right time to book for antenatal care (Table 4.15). There was a difference between the two groups, with 67 (91.78%) in the SI group compared with 35 (74.47%) in the LI group specifying the first trimester.

Table 4.16: Perception of the timing of pregnancy complications

Timely complications	SI < 60 days	LI ≥ 60 days	Total
1st trimester	10 (13.69)	1 (2.13)	11 (9.17)
2nd trimester	4 (5.48)	6 (12.76)	10 (8.33)
3rd trimester	7 (9.59)	5 (10.64)	12 (10.00)
Anytime	47 (64.38)	24 (51.06)	71 (59.17)
In labour	3 (4.11)	7 (14.89)	10 (8.33)
Post delivery	2 (2.74)	4 (8.51)	6 (5.00)
Total	**73 (100)**	**47 (100)**	**120 (100)**

Table 4.16 shows the subjects' perceptions of when a pregnant woman is most likely to encounter complications during pregnancy that require attention by a healthcare worker. For the total sample, seventy-one (59.17%) subjects reported 'anytime in pregnancy' and six (5.00%) reported 'after delivery of the baby'. There was a significant difference between the two groups with more of the SI group indicating that pregnancy complication may occur anytime (p-value = 0.019).

Table 4.17: Reason for the longer time interval between pregnancy confirmation and first antenatal visit (LI group)

Reasons for the delay	n=47 (100%)
Financial constraints	1 (2.13)
Kept on putting it off until it was too late	9 (19.15)
Pregnancy was not yet made public	4 (8.51)
Did not know where the antenatal clinic was located	4 (8.51)
It was the appropriate time to book	4 (8.51)
They did not have problems with their current pregnancy so did not see any reason to book early	3 (6.38)
Still waiting for foetal movement	2 (4.27)
Did not have an identity document	1 (2.13)
Work related constraints	8 (17.02)
Clinic of preference/ changed address	4 (8.51)
Considering termination of pregnancy	7 (14.89)
Total LI Group	**47 (100)**

When asked the reason for the long time interval, the most common group of reasons reflected poor understanding of ANC by the subjects. Nine (19.15%) cited that they kept on putting it off until it was too late; four (8.51%) said pregnancy was not yet made public; four (8.51%) did not know where the antenatal clinic was located; four (8.51%) thought it was the appropriate time to book; three (6.38) cited that they did not have problems with their current pregnancy so did not see any reason to book early; two (4.27) were still waiting for foetal movement; and one (2.13%) subject did not have an identity document.

In addition, eight (17.02%) subjects cited that they could not get time off from work; seven (14.89%) subjects cited that they were considering termination of pregnancy; and four (8.51%) did not like their local clinic because of past experiences in a previous pregnancy. Only one (2.17%) subject had delayed because she did not have money for transport to the clinic.

4.5 Further analysis of factors associated with time intervals using regression analysis

This section presents results of bivariate and multivariate analyses of the association of several factors with the time interval between pregnancy confirmation and booking.

4.5.1 Association of participants' socio-demographic factors with time interval between confirmation of pregnancy diagnosis and booking for antenatal care

A binary logistic regression was done on socio-demographic variables and time interval. The results of the analysis with regard to residence, showed that respondents who resided in a flat were 2.8 times more likely to report in the long time interval as compared to the referents, in this case respondents who live in a house (COR= 2.753, 95% CI, 1.007- 7.529). The association is significant at p-value = 0.049.

Other socio demographic variables such as education, employment, income and marital status did not show a statistically significant association with booking time interval. Details of the bivariate analyses are summarised in Table 4.18 below.

Table 4.18: The association between the socio-demographic factors with time interval

Variable		SI n (%)	LI n (%)	Crude OR 95% CI	p-value
Age	≤20	6 (5.00)	4 (3.33)	4.3(0.614– 30.570)	0.141
	21 – 34	54 (45.00)	41 (34.17)	4.9 (1.055-23.091)	0.043*
	≥35	13 (10.83)	2 (1.67)	1	
Marital status	Unmarried	40 (33.34)	23 (19.17)	0.1 (0.015 – 1.365)	0.091
	Married	32 (26.67)	20 (16.67)	0.2 (0.016 – 1.499)	0.108
	Divorced/ separated	1 (0.83)	4 (3.33)	1	
Education	Primary and below	2 (1.67)	0 (0.00)	0.0 (0.000 − 0.0)	0.999
	Secondary and above	71 (59.17)	47 (39.16)	1	
Income	≤2000	10 (8.33)	11 (9.17)	1.9 (0.745 – 4.974)	0.176
	>2000	63 (52.50)	36 (30.00)	1	
Employment	Employed	34 (28.34)	18 (15.00)	0.7 (0.212 – 2.350)	0.570
	Unemployed	31 (25.83)	23 (19.17)	0.9 (0.302 – 3.245)	0.986
	Housewife	8 (6.67)	6 (5.00)	1	
Residence	Informal dwelling	23 (19.17)	17 (14.17)	1.6 (0.668 – 3.669)	0.303
	Flat	10 (8.33)	13 (10.83)	2.8 (1.007 −7.529)	0.049*
	Backyard room	4 (3.33)	0 (0.00)	0.0 (0.000 – 0.0)	0.999
	House	36 (30.00)	17 (14.17)	1	

*Statistically significant at p<0.05; 1 = Reference category

4.5.2 Association of participants' obstetric history with booking time interval

A binary logistic regression was done on obstetric history variables; however none of the variables showed a statistically significant association with booking time interval. Details of the bivariate analyses are summarised in Table 4.19 below.

Table 4.19: The association between obstetrics history and time interval

Variable		SI	LI	Crude OR	p-value
Gravidity	Primigravida	22 (30.13)	8 (17.02)	1.5 (0.141 – 15.039)	0.753
	Multigravida	47 (64.38)	38 (80.85)	3.2 (0.347 – 30.155)	0.303
	Grand multigravida	4 (5.47)	1 (2.13)	1	
Parity	Zero	22 (30.13)	8 (17.02)	2.2 (0.905 – 5.554)	0.081
	≥1	51 (69.86)	39 (82.98)	1	
Previous CS	Yes	1(1.96)	3 (7.69)	4.1 (0.416 – 41.699)	0.225
	No	50 (98.04)	36 (92.30)	1	
Past medical history	Yes	22 (43.14)	14 (35.90)	1.6 (0.671 – 4.022)	0.278
	No	29 (56.86)	25 (64.10)	1	
Planned Pregnancy	Planned	26 (36.62)	11 (23.40)	0.6 (0.241 – 1.264)	0.160
	Unplanned	47 (64.38)	36 (76.59)	1	
Previous Pregnancy	Yes	51 (69.86)	39 (82.98)	2.0 (0.804 – 5.011)	0.135
	No	22 (30.14)	8 (17.02)	1	
TOP	Yes	1 (1.96)	1 (2.56)	1.3 (0.079 – 21.569)	0.851
	No	50 (98.04)	38 (97.43)	1	
Miscarriage	Yes	7 (13.72)	3 (7.69)	0.5 (0.138 – 1.664)	0.247
	No	44 (86.27)	36 (92.30)	1	
Ectopic	Yes	2 (3.92)	0 (0.00)	0.0 (0.000 –)	0.999
	No	49 (96.07)	39 (100)	1	

1 = Reference category

Table 4.20: Logistic regression predicting likelihood of planned pregnancy, previous pregnancy, and previous pregnancy problems on time interval

	B	S.E.	Wald	Df	p	Adj OR	95% C.I. for OR	
							Lower	Upper
Planned	-0.814	0.443	3.379	1	0.066	0.443	0.186	1.055
Previous	1.077	0.509	4.480	1	0.034*	2.935	1.083	7.952
Previous Pregnancy	-0.462	0.465	0.988	1	0.320	0.630	0.253	1.568
Constant	-0.895	0.418	4.580	1	0.032	0.408		

*Statistically significant at p<0.05; 1 = Reference category

A binomial logistic regression was performed to ascertain the effects of previous pregnancy, planned pregnancy, and previous pregnancy problems on the likelihood that subjects report in short time interval. The Hosmer and Lemeshow test is not statistically significant, χ^2 (3) = 2.364, p = 0.500, indicating that the model is a good fit. The model explained 7.8% (Nagelkerke R^2) of the variance in booking time interval and correctly classified 60.5% of cases. Sensitivity was 40.4% and specificity was 73.6%. The results show that of the three predictor variables, only previous pregnancy was statistically significant (as shown in Table 4.20). Thus, subjects who had had previous pregnancies had 2.94 times higher odds to report in short time interval than those who were pregnant for the first time.

4.5.3 Multivariate association of selected variables by booking time interval

A multivariate analysis was done to further ascertain independent predictors on the likelihood that subjects make bookings in a time interval. The logistic regression model was statistically significant, χ^2 (13) = 29.044, p < 0.005, indicating that the model was a good fit. The model explained 37% (Nagelkerke R^2) of the variance in booking time interval and correctly classified 71.1% of cases. The model's sensitivity, which is the percentage of cases that had the observed characteristic which were correctly predicted by the model (i.e., true positives), was 76.5%. Specificity, which is the percentage of cases that did not have the observed characteristic and were also correctly predicted as not having the observed characteristic (i.e., true negatives) was 64.1%.

Table 4.21: The multivariate association of selected variables by booking time interval

Variable		SI (n (%))	LI (n (%))	Crude OR	Adjusted OR
Age**		73 (100)	47 (100)	0.9 (0.908 –1.042)*	0.8 (0.728 – 0.971)*
Education	Primary and below	2 (2.74)	0 (0.00)	0.0 (0.000 - 0.0)	0.0 (0.000 - 0.0)
	Secondary and above	71 (97.26)	47 (100)	1	
Distance to Clinic**		73 (100)	47 (100)	0.9 (0.910 – 1.034)	0.8 (0.741 – 0.985)*
Mode of Transport	Walk	42 (57.53)	23 (48.94)	0.7 (0.356 –1.553)*	0.1 (0.024 – 0.619)*
	Car, Train, or Taxi	31 (42.46)	24 (51.06)	1	
Income	> 2000	63 (86.30)	36 (76.59)	1.9 (0.745 – 4.974)	3.1 (0.751 – 12.872)
	≤ 2000	10 (13.69)	11 (23.40)	1	
Previous pregnancy problems	Yes	22 (43.14)	14 (35.90)	1.4 (0.895 – 2.216)	2.9 (0.861 – 9.985)
	No	29 (56.86)	25(64.10)	1	
Previous CS	Yes	1 (1.96)	3 (7.69)	4.1 (0.416 –41.699)	19.8 (0.850-46.341)
	No	50 (98.04)	36 (92.30)	1	
Planned Pregnancy	Yes	26 (35.62)	11 (23.40)	0.6 (0.241 – 1.264)	3.0 (1.040 – 8.955)*
	No	47 (64.38)	36 (76.59)	1	
Previous pregnancy	Yes	51 (69.86)	39 (82.98)	2.0 (0.804 – 5.011)	0.4 (0.124 – 1.586)
	No	22 (30.14)	8 (17.02)	1	
Parity	Parity 0	23 (31.51)	8 (17.02))	0.4 (0.154 – 1.261)	0.0 (0.000 – 0.000)
	Parity 1	31 (42.46)	24 (51.03)	0.9 (0.414 – 2.321)	0.6 (0.169 – 2.485)
	Parity ≥ 2	19 (26.03)	15 (31.91)	1	
Perceived right time to book	1st trimester	67 (91.78)	35 (74.47)	0.0 (0 - 0)	0.0 (0 - 0)
	2nd trimester	2 (2.74)	6 (12.76)	0.0 (0 - 0)	0.0 (0 - 0)
	3rd trimester	0 (0.00)	0 (0.00)	0.0 (0 - 0)	0.0 (0 - 0)
	Pregnancy visible	4 (5.78)	4 (8.51)	0.0 (0 - 0)	0.0 (0 - 0)
	Don't know	0 (0.00)	2 (4.25)	1	

*p- value significant at p<0.05, ** - continuous variable not categorised.

The results of the analysis revealed that age, distance to clinic, mode of transport and planned pregnancy were found to show a statistically significant association with booking time interval (as shown in Table 4.21).

Increasing age was associated with a decreasing likelihood of subjects reporting in the long time interval. The older the subjects were, the more likely they were to report in the short time interval (AOR = 0.8, 95% CI, 0.728 – 0.971). This indicates that subjects were 20% less likely

to book in the long time interval if they were older, compared to those who were younger. The increasing distance travelled to clinic was associated with an increasing likelihood of subjects reporting in the long time interval. Thus, the farther the subjects travelled to clinic, the more likely they were to report in the long time interval (AOR = 0.8, 95% CI, 0.741 – 0.985).

The subjects with planned pregnancy were less likely to report in the long time interval as compared to the unplanned pregnancy (AOR = 0.4, 95% CI, (0.124 – 1.586).

This indicates that subjects with planned pregnancy were 60% less likely to report in the long time interval compared to the subjects with unplanned pregnancy. Subjects who walked to the clinic were most likely to report in the short time interval than those who used any mode of transport 0.1 (0.024 – 0.619). This means that the closer they live to the clinic the earlier they are likely to attend the clinic.

Chapter 5: Discussion

Our study showed that although many of the study subjects confirmed their pregnancy early (average gestational age at confirmation of pregnancy of 10.75 weeks), there were still substantial delays until commencement of antenatal care (average gestation at booking of 18.27 weeks). The time interval ranged from same day booking to a 27 week delay from pregnancy diagnosis to booking for antenatal care.

The discussion will be structured around the three study objectives.

5.1 Confirmation of pregnancy

Subjects in our study reported that they confirmed their pregnancy using a urine pregnancy test. This study showed that subjects who had a self-administered pregnancy test or had their pregnancy test done by general practitioners were more likely to have a long time interval.

This finding was in contrast to the study by Morroni in Cape Town and Jeffery in Pretoria who reported that women who self-administered pregnancy tests were more likely to have a shorter time interval before booking (7, 8). This may be because better health educational messages have been publicised since the Morroni study; also pregnancy tests are now readily available at the family planning clinics and BANC sites. At the time of the study by Morroni, the urine pregnancy tests were not readily available at the clinics, so the women had to go to private pharmacies to buy their own pregnancy test.

5.2 Time interval between confirmation of pregnancy and first antenatal visit

In our study 41.66% of subjects had a time interval of less than a month. This compared with only 12% in the Morroni study. Also, 25.83% of subjects in our study had a time interval of more than 12 weeks as compared to 75.00% of women in the Morroni study (8). In the Morroni study the time interval was influenced by the availability of a urine pregnancy test (8).

The subjects who had their pregnancy confirmed in the public sector booked earlier and thus were associated with a short time interval between confirmation of pregnancy and the first antenatal booking visit. This may be because the healthcare workers in the public sector advised on the importance of ANC and encouraged women to go and book for antenatal care early, and that in some cases the pregnancy was confirmed and booked at the same facility.

The shorter time intervals in our study may reflect concerted efforts by the Western Cape Department of Health promoting earlier booking, with targets for all antenatal care sites.

Our study showed that most subjects confirm their pregnancy early, irrespective of their booking status, and the LI group delayed in the commencement of their first antenatal booking visit. This finding is similar to the study by Sibeko and Moodley in Durban (6).

The average gestation at booking was similar to the study done by Ifenne (19.12 ± 7.8 weeks) in Nigeria and the study done by Gudayu (17.70 ± 7.5 weeks) in Ethiopia (33, 34). However, these finding were different to those reported by Morroni (23.00 weeks) in South Africa and by Addah (20.86 ± 6.89 weeks) in Nigeria (8, 35).

If most women confirm their pregnancy at ten weeks of gestation but make their first antenatal visit only at eighteen weeks, pregnancy related issues cannot be optimised. Substantially decreasing the median gestational age at presentation for antenatal care is critical for improving maternal and child health in SA (8).

Early confirmation and booking will allow those women who are pregnant but do not wish to continue with pregnancy to be referred early for termination of pregnancy and for early screening of timely complications associated with pregnancy (7, 8). Late booking contributes to delays in initiation of antiretroviral therapy, screening for congenital abnormalities, screening for high risk pregnancies, and delay in early identification of those patients with unplanned pregnancy who may require termination of pregnancy.

The prevalence of late booking for ANC was lower in our study compared to other studies in developing countries (4, 14, 15, 20). Possibly this lower prevalence of late booking was influenced by the fact that the Metropolitan area of Cape Town has better access to health facilities compared to other provinces and other regions in sub-Saharan Africa. Most subjects in the LI group booked after twenty weeks. This indicated that women who booked for antenatal care after twenty weeks gestation were more likely to have a long time interval between the diagnosis of pregnancy and the first antenatal care booking. An intervention needs to be put in place to encourage women to book as soon as they realise that they are pregnant. Making pregnancy testing readily available in the MOU may help to decrease the time interval since the nurses in the MOU confirm that the pregnancy patient will be booked the same day as the confirmation of pregnancy.

5.3 Reasons for the delay in booking

The reasons for the delay in the time interval were related mainly to women's perceptions of antenatal care, although the difficulty getting time off from work is concerning. The former

reason can be influenced by public education and the latter by employers following legislation which allows women time off work to attend antenatal clinics during pregnancy. The long queues, or hours spent waiting at the clinic on the day of the appointment, could also have been a deterrent to missing work and thus losing income.

Women are encouraged to book for antenatal care at their local antenatal clinic. This presented a barrier for early initiation of their first antenatal booking for some women because of the bad experiences they had at their local antenatal clinic or labour ward during a previous delivery. They had to relocate to book at another clinic of their own preference.

In our study most subjects lived in the vicinity of the clinic. The issue of transport or financial constraints did not have any influence as most women walked to the clinic. We had only one subject who reported a financial constraint as a barrier for timely booking. Therefore accessibility and availability of ANC facilities did not contribute as a barrier for timely commencement of antenatal care after the confirmation of pregnancy.

Most subjects reported antenatal care as important, yet delayed in their first antenatal booking visit after confirmation of pregnancy. Some of the subjects reported that they did not have any problems in the current pregnancy, so they did not see the need to book early for their first ANC. Subjects valued antenatal care as a means of ensuring access to care for safe labour and treatment for pregnancy related conditions, therefore they regarded ANC not for its preventative role but as curative, as described in other studies in the sub-Saharan region. Also those with long time intervals did not appreciate the need to book in the first trimester as much as those with a short time interval.

Although there was a small proportion of subjects with long time intervals, none of them reported being turned away when they went to book and being given a later date. This is because Vanguard MOU books their pregnant women as at the women's first encounter with the clinic for their antenatal booking. This finding was different to the report of Solarin et al. done in Johannesburg, South Africa where women were not booked on their first presentation to the clinic as per DOH guidelines, but were given later dates. Also none of our subjects reported fear of harsh health worker attitudes as being reasons for the delay, although it is possible they may not have admitted this to the doctor who interviewed them for fear of being prejudiced.

Okhiai et al. in their study done in Nigeria, reported that the reason for delay in their study (68%) was associated with lack of time and poor understanding of the importance of early

booking which is similar to the findings in our study. Only one subject in our study mentioned lack of identity document as a barrier (4, 36). In the past some facilities in Cape Town did not book women without their ID book. Although this is no longer practised, some subjects still think they need an ID book in order to be attended to.

5.4 Determinants of time interval between confirmation of pregnancy diagnosis and first antenatal visit

The results showed that most socio-demographic factors such as income, marital status and the level of education, did not influence the time interval between the confirmation of pregnancy and the first antenatal visit. Regression analysis showed that the time interval was significantly influenced by the subject's type of residence, the perception of the women regarding knowledge of the timing of antenatal care and perception of the timing of pregnancy complications.

The perception of subjects on the appropriate time to book for antenatal care being the first trimester was found to be a strong predictor for short time interval. This finding was in line with the finding reported by Fisseha (37). Those subjects who had the view that booking should occur after three months of gestation were more likely to book late than those who thought that booking should occur earlier. This was also similar to the study done by Ndidi in Nigeria where woman who perceived that the first trimester was the right time to book, booked early (14).

Women's knowledge of the appropriate time in pregnancy to make the first antenatal visit was high (85%) in our study. This compared favourably with the Morroni study where 86% of women did not know the appropriate time to book, thinking it should be after three months of gestational age. The perception of the women regarding knowledge of the timing of antenatal care was statistically significantly associated with timely entry to ANC.

On further analysis with the bivariate analysis the significant predictors for long time interval included pregnant women residing in flats. Household income did not influence time interval as had been predicted in our hypothesis. The women in our study reported higher monthly income than in other studies; people with better income had the ability to pay for transportation and other costs. This finding was not supported by the studies done by Kisuule in Uganda, Adekanle in Nigeria and Gebremeskel in Ethiopia, which showed that household income was significantly associated with delay in the commencement of antenatal care, and pregnant women who had low monthly income were more likely to book late for their first antenatal care booking compared to their counterparts with high monthly income (4, 14, 38).

The results of the multivariate analysis revealed that age taken as a continuous variable, distance to clinic, mode of transport, and planned pregnancy were found to show a statistically significant association with booking time interval.

Increasing age was associated with a decreasing likelihood of participants reporting in the long time interval. The older the participants were, the more likely to report in the short time interval. Perhaps this was due to the fact that older women had previous experiences and learned from previous antenatal bookings so that they were appropriately informed on the right time to initiate their first antenatal booking. The other reason may be that the younger women lack information on the right time to commence as they could be having their first pregnancy and they do not have any previous experience. This finding was supported by a study done by Cresswell in the UK and a study by Adekanle in Nigeria (15, 39). This finding was not supported by the several studies done in Ethiopia and Saudi Arabia which had a different prediction; they found that younger women were more likely to book for ANC earlier than older women (34, 40, 41, 42). Other socio-demographic variables such as education, employment, income and marital status did not influence the time interval.

The increasing distance travelled to clinic was associated with an increasing likelihood of participants reporting in the long time interval. Thus, the further the pregnant women travelled to clinic, the more likely they were to report in the long time interval. Patients that lived far from the clinic were more likely to report in the long time interval because of the long distance and the cost of travelling to the clinic. The other reason could be that they have to wait in long queues for transport. This finding was supported by the study done by Banda et al. in Zambia which reported that longer travelling time and greater distances to healthcare facilities was a significant factor affecting delay in seeking the first antenatal care after confirmation of pregnancy (43). Pregnant women who walked to the clinic were most likely to report in the short time interval than those who used any mode of transport. This is because they were walking for a short distance and walking is free so there are no costs involved.

The pregnant women with planned pregnancy were more likely to report in the short time interval as compared to the unplanned. This might be because planned pregnancy is more cared for by both the pregnant woman and her partner; this leads women to book timely for the antenatal care so as to seek proper care to ensure healthy development of their pregnancy (38, 43, 44).

Chapter 6: Limitations, Recommendations and Conclusions

6.1 Limitations of the study

The study was done in one institution (MOU), which may have included women with better education and good monthly income. Also the MOU may have better practices than others, and therefore the results might not be generalisable to the whole of Metro West. This may have influenced our comparisons with the Morroni study because that covered more than one MOU. Our study had a small sample size, and was therefore not powered for many parameters. It included only urban pregnant women who have access to proper services. Different results may be found in a SA rural population. The data collection on pregnancy diagnosis was based on self-reporting and recall by the women with no means of verification so it could have lacked accuracy. Also the fact that the subjects were interviewed in the facility where they were commencing their care, may have meant that they were reluctant to complain about the service or health system barriers to accessing care for fear of it jeopardising their future care. The questionnaire had not been strictly validated and was based on questionnaires used in other studies, so some questions may have not been optimally phrased.

6.2 Recommendations

As women present themselves for confirmation of pregnancy, the institution (pharmacy, GP) where they buy the pregnancy test or where they confirm their pregnancy, should take time to advise women on early commencement of booking for antenatal care and the benefits of screening for maternal and foetal conditions. They should refer immediately for ANC, or ideally implement the first antenatal care visit the same day. The MOU could provide a pregnancy confirmation service with same day booking. This would shift the gestational age at which the women commence their antenatal care, would aid in identifying those pregnant women who wish to terminate their pregnancy early, and could help with the early diagnosis of ectopic pregnancy. However, management of early pregnancy problems and counselling would require additional human resources and space in already overcrowded MOUs. Nevertheless, it should be considered because of the potential benefits.

In addition, deterrents to attending for antenatal care, such as long waiting times, need to be addressed. This also affects the willingness of women to miss work to attend the clinic. However, in SA it is the woman's right to attend for antenatal care visits and this right needs to be respected by employers, without women fearing job loss.

Public awareness campaigns, through media or community based education, about the importance of early confirmation of pregnancy and early presentation for antenatal care may help with reducing the time interval. Respectful, effective educative maternity care would also encourage women to book early in their subsequent pregnancy.

6.3 Conclusions

Our study showed that, even though women confirm the pregnancy as early as three weeks, many delay in the commencement of booking for their first antenatal visit.

Our study demonstrated that the delay between pregnancy confirmation and first antenatal visit appears to be less than in a previous Cape Town study by Morroni and Moodley, and other studies in Africa, but it is still too long in many cases. The comparative part of the study suggests that women's lack of understanding of the role of ANC is a factor, as well as some demographic factors such as the women’s type of residence.

Interventions are required to promote the linkage of confirmation of pregnancy diagnosis to the first antenatal visit.

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Appendix A: Questionnaire

ANTENATAL CARE, AN INVESTIGATION OF THE TIME INTERVAL BETWEEN THE CONFIRMATION OF PREGNANCY DIAGNOSIS AND COMMENCEMENT OF ANTENATAL CARE

QUESTIONNAIRE

PATIENT NO : ……..

DATE OF INTERVIEW: ……

PLACE OF INTERVIEW: …….

(A)SOCIO-DEMOGRAPHIC:

1. Age in years_____

2. Marital status	
Single in a stable relationship	1
Single and cohabiting	2
Legally married	3
Traditionally married	4
Divorced	5
Separated	6

3. Level of education	
None	1
Primary	2
Secondary	3
Tertiary- incomplete	4
Tertiary-completed	5

4. Employment status	
Student	1
Unemployed	2
Employed	3
Self employed	4
House wife	5
Other, specify_____	6
If employed specify	7

5. Type of residence	
Informal dwelling	1
Flat	2
Room in the backyard	3
House/ town house	4
Other, specify_____	5

6. Financial support	
Self	1
Partner	2
Grant	3
Parents	4
Siblings	5

7. Household income per month_____Rands.

(B) OBSTETRICS HISTORY

8. Have you ever been pregnant	
Yes	1
No	2

If yes to the above question answer the question 9-18 and if no proceed to question 19

9. Gravidity	
10. Parity	
11. Miscarriages	
12. Termination of pregnancy	
13. Ectopic pregnancy	
14. Previous caesarean section	
15. History of problems in previous pregnancy	
Yes	1
No	2

16. If yes to question 15 specify	
Hypertension	1
Preterm labour	2
Antepartum haemorrhage	3
Postpartum haemorrhage	4
Still birth	5
Neonatal death	6
Other, specify_____	7

17. Did you attend ANC in the previous pregnancies	
Yes	1
No	2

18. When did you book for ANC in your previous pregnancies?_____ months

_____cannot remember

(C) INDEX PREGNANCY

19. Any medical condition	
Yes	1
No	2

20. If yes to 19 specify	
Prior HIV	1
Hypertension	2
Diabetes Mellitus	3
Asthma	4
Epilepsy	5
Other, specify_____	6

21. Is this pregnancy planned	
Yes	1
No	2

22. If unplanned, what did you think about it	
Accepted	1
Had consider abortion/TOP	2
Ambivalent	3

23. When did you miss your periods? Date_____

24. When did you suspect you were pregnant? Date/ months_____

25. When did you confirm your pregnancy? _____Date

_____gestational age

26. Who confirmed your pregnancy	
Self-administered pregnancy test	1
GP	2
Private Obstetrician	3
MOU	4
Family planning clinic	5
public hospital	6
BANC	7
Other, specify_____	8

27. Did the facility that confirmed your pregnancy give you advice for ANC?	
Yes	1
No	2

28. If yes in 26 what advice did they give you	
To book for antenatal care	1
To seek help from GP	2
To buy haematinics	3
To go for ultrasound	4
Other, specify_____	5

29. When did you book for 1st ANC? _____ date or

_____gestational age

If delay between pregnancy confirmation and 1st antenatal booking is more than 2 weeks answers question 30

30. Reasons for the delay in 1st ANC booking	
Perceive it is appropriate time	1
Was considering abortion	2
Attending GP initially	3
Booked earlier with a private Obstetrician	4
Keep putting off	5
Not known I had to go any earlier	6
Not know where to go	7
Would be sent away from the clinic if attend early	8
Visited ANC more than once before securing a booking	9
Tried to book early but was turn away	10
Tried to book and was given a date after month	11
Not conducting ANC on that day of the week	12
They have reached their limit for the day	13
Not accepting new patients	14
Lack of identity document	15
No money for transport	16
Couldn't get time off work	17
Did not make pregnancy public	18
Did not have any serious problems	19
Other, specify_____	20

(D) ANC AND BOOKING EXPERIENCES

31. Action you took following confirmation of pregnancy	
Nothing/ did not seek immediate care	1
Seek antenatal care at the MOU/BANC	2
Seek ANC at GP	3
Visited private Obstetrician	4
Seek care at hospital	5
Other, specify_____	6

32. What happened at your first attendance for ANC booking?	
Booked	1
Referred to my nearest clinic	2
Not booked/ not screened but given a return date.	3
Other, specify_____	4

33. If given date after how long? _____ Date/gestational age	
Given return date within 2 weeks	1
Given return date in 1 months	2
Given return date more than a month later	3
Not told when to come back	4

34. Reasons for attending ANC	
I was told to attend	1
It is important to go to ANC	2
That what you do when pregnant	3
To check HIV status	4
Need ANC card/ book to get a bed in labour ward	5
To prevent HIV infection in the baby	6
To check personal health or baby health	7
Other, specify_____	8

35. When do you think is the right time to book for ANC	
1ST three months (trimester)	1
2ND three months	2
3RD three months	3
When pregnancy is visible	4
Other, specify_____	5

36. How far do you stay from the antenatal clinic? _____km

37. What mode of transport do you use to come for ANC? _____

38. How much do you pay for transport for a return trip to the ANC clinic? _____ Rands

39. When do you think women are likely to have problems in pregnancy requiring attention by a health care provider?

1st trimester	1
2nd trimester	2
3rd trimester	3
anytime	4
In labour	5
Post delivery	6

Appendix B: Consent Form

ANTENATAL CARE, AN INVESTIGATION OF THE TIME INTERVAL BETWEEN THE CONFIRMATION OF PREGNANCY DIAGNOSIS AND COMMENCEMENT OF ANTENATAL CARE

I agree to participate in the study that is being conducted by researchers from Department of Obstetrics and Gynaecology. The study has been fully explained to me in a language of my choice by researcher. I understand that the purpose of the study is to investigate the time interval between confirmation of pregnancy and first booking, with the aim to improve early booking. I understand that I will be interviewed in private and all information will be kept confidential.

The results of the study will be submitted as part of a postgraduate degree to the Department of Obstetrics and Gynaecology and University of Cape Town.

I understand I may withdraw from the study without compromising my medical care. There will be no payment made to me for participating in the study. I will complete a questionnaire with assistance from the interviewer.

Name of participant Signature of participant

……. …….

Name of the researcher Signature of researcher

…… …….

Name of witness Signature of a witness

……. ……

Date……

Appendix C: Information Leaflet

ANTENATAL CARE, AN INVESTIGATION OF THE TIME INTERVAL BETWEEN THE CONFIRMATION OF PREGNANCY DIAGNOSIS AND COMMENCEMENT OF ANTENATAL CARE

The Department of Obstetrics and Gynaecology of the University of Cape Town is doing a study at your clinic. It has been approved by the Research Ethics Committee at University of Cape Town. We think you are eligible for the study and wish to invite you to participate.

Reason for doing the study

Late booking for antenatal care is still a challenge. Many women confirm their pregnancy early but still book late for antenatal care. It is recommended that women book for antenatal care as soon as they realised they are pregnant and definitely before 20 weeks of gestation. Early booking makes fairly accurate dating feasible especially in women who are unsure of their last menstrual periods and screening for chromosomal and other congenital anomalies. Late booking means that women may not have the opportunity to benefit from screening tests.

It is the purpose of this study to assess the reason why women confirm their pregnancy early but delay to book for antenatal care. This study will help to improve in early antenatal care attendance for women to be screened for congenital anomalies and recognition of diseases and prevention of the complications associated with the disease and for those women with unwanted pregnancy who require termination of pregnancy to access it early.

Suitable patients for the study

All pregnant women booked for antenatal care in the first, second or third trimester irrespective of age and parity.

The investigators are from the Department of Obstetrics and Gynaecology of the University of Cape Town. If you are interested in participating, the investigators will interview you using a questionnaire. You will receive your usual routine medical care at the clinic and your decision to participate, or decline to participate in this study, will not influence your care in any way. The questionnaire will take about fifteen to twenty minutes to complete, and will not delay you at the clinic. The answers you give to the questions are confidential and will not share with your care givers at the clinic or hospital that you attend.

Risks anticipated

You will be completing a questionnaire with the help of trained interviewers, and there are no specific risks to you.

Benefits

The study may not benefit you directly in the short term. There will be no monetary gain for the participants or investigators.

Confidentiality

You will be interviewed privately. Your name and contact details will not be available when the data are analysed. We do need your name and signature for the consent form, which will not be attached to the questionnaire to ensure that there is no link between your answers and your identity. The questionnaires will be kept in a secure place, and will be property of the University of Cape Town.

The research results will be presented by the investigators to the Department of Obstetrics and Gynaecology at the University of Cape Town. The study will be submitted to the University of Cape Town for completion of a postgraduate degree.

The health care workers at your clinic will also have eventually access to the results of the study, but not your personal contribution, to help improve the services they provide to their patients.

Contact details

If you have any further queries regarding this study, please feel free to contact:

Dr Molatelo Linneth Moshokwa: Principal investigator. Department of Obstetrics and Gynaecology, University of Cape Town.

- Telephone: 0724178145
- Email: lmoshokwa@webmail.co.za

Professor S Fawcus, Supervisor, Department of Obstetrics and Gynaecology, University of Cape Town. Telephone: 021-6595578

If you wish to discuss this research with someone who is not involved in the study, you may contact: Dr G Petro Telephone: 021-402 6464

Prof Marc Blockman, Chairman of Research Ethics Committee, Faculty of Health Sciences: Telephone: 021- 404 6492/Fax 021- 406 6411

Appendix D: University Approval

Dear Molatelo

Candidature Approval (MSHMOL009)

Degree: MMed in Obstetrics & Gynaecology

Title: Antenatal care, an investigation of the time interval between the confirmation of pregnancy diagnosis and commencement of antenatal care in the metro west district in Cape Town

Department: Obstetrics & Gynaecology

Supervisor: Prof S Fawcus

Ethics Approval: 083/2015

I am pleased to advise that the Chair of the Dissertations/Doctoral & Masters Committee has approved your candidature for the above degree on behalf of the Committee. Formal approval was obtained by publication in the Dean's Circular, PG-Med June-July 2015.

Yours sincerely

Jackie Cogill

Appendix E: Research Approval Application Letter HREC

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492 • **Facsimile** [021] 406 6411
Email: Sumayah.ariefdien@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

30 March 2015

HREC/REF: 083/2015

Prof S Fawcus
Department of Obstetrics & Gynaecology
H-Floor
OMB

Dear Prof Fawcus

Project Title: ANTENATAL CARE, AN INVESTIGATION OF THE TIME INTERVAL BETWEEN THE CONFIRMATION OF PREGNANCY DIAGNOSIS AND COMMENCEMENT OF ANTENATAL CARE IN THE METRO WEST DISTRICT IN CAPE TOWN (MMED Dr M L Moshokwa)

Thank you for your response letter dated 06 March 2015, addressing the issues raised by the Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above mentioned study.

Approval is granted for one year until the 28 March 2016.

Please submit a progress form, using the standardised Annual Report Form, if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

We acknowledge that the following student:-Dr Molatelo Moshokwa is also involved in this project.

Please note that the on-going ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

Hrec/ref:083/2015

Appendix F: Research Approval Letter from PGWC

Western Cape Government
Health

STRATEGY & HEALTH SUPPORT
Health.Research@westerncape.gov.za
tel: +27 21 483 6857; fax: +27 21 483 9895
5th Floor, Norton Rose House,. 8 Riebeek Street, Cape Town, 8001
www.capegateway.gov.za)

REFERENCE: **WC_2015RP0_14**
ENQUIRIES: Ms Charlene Roderick

University of Cape Town
Anzio Road
Observatory
Cape Town
7935
For attention: **Prof Sue Fawcus**

Re: ANTENATAL CARE, AN INVESTIGATION OF THE TIME INTERVAL BETWEEN THE CONFIRMATION OF PREGNANCY DIAGNOSIS AND COMMENCEMENT OF ANTENATAL CARE.

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.
Please contact the following people to assist you with any further enquiries in accessing the following sites:

Vanguard CDC **L Mbanga** **Contact No: 021 695 8244**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.
2. Researchers, in accessing provincial health facilities, are expressing consent to provide the department with an electronic copy of the final feedback (annexure 9) within six months of completion of research. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).
3. The reference number above should be quoted in all future correspondence.

Yours sincerely

A/ Hawkridge.

DR A HAWKRIDGE
DIRECTOR: HEALTH IMPACT ASSESSMENT
DATE: 2/7/2015.
CC **S KARIEM** **CD: GENSES**