Determinants of late ante-natal care booking among pregnant women in Marondera district, Mashonaland East, Zimbabwe.

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Abstract

Maternal mortality remains a huge public health problem in developing countries. Antenatal care (ANC) is one of the key strategies to improve maternal health, aiming to promote the well-being of the mother and fetus. ANC services utilization is influenced by several factors that vary from one community to another. The study sought to determine factors associated with late ANC booking among pregnant women in Marondera district in Zimbabwe. A 1:1 unmatched case control study was conducted among 180 pregnant women at 6 health facilities in Marondera district in Zimbabwe. Structured questionnaires were used to obtain information from study participants. Epi Info 7 software was used to generate frequencies, draw graphs, calculate odds ratios, and confidence intervals. Logistic regression analysis was used to identify variables associated with late ANC visits. At least 80% of both cases and controls were aware of most benefits of registering for ANC. 66.7% of cases and 98.9% of controls were aware that booking is done during 0-16 weeks of pregnancy. More than half of the participants were aware that pregnant women are expected to complete at least 4 ANC visits. Waiting for permission from others to access ANC (AOR 9.74 95% CI 1.92-49.34) and perceiving self as at low risk of developing complications (AOR 3.29 95% CI 1.67-6.49) were independent risk factors associated with late ANC booking. Receiving motivation from spouse (AOR 0.24 95% CI 0.12-0.48) and receiving motivation from health workers (OR 0.38 95% CI 0.19-0.77) was associated with a less likelihood to book late for ANC. Having attended previous antenatal care clinic (OR 0.51 95% CI 0.23-1.09) was associated with a less likelihood to book late for ANC by pregnant women in Marondera district. Majority of participants knew the importance of ANC. Late ANC booking among pregnant women in Marondera district has been shown to be influenced by waiting for permission from others to access ANC and perceiving self as at low risk of developing complications. Health education aimed at promoting uptake of ANC services should be intensified in the district to ultimately improve maternal and infant health.

Key words: maternal mortality, ante-natal care, late booking

Introduction

Antenatal care (ANC) or prenatal care is the care given to women during pregnancy. It is one of the pillars of maternal health service (Tariku, Melkamu and Kebede 2010). The goal of ANC is to promote the well-being of the mother and foetus (WHO 2003). The antenatal period presents an important opportunity for access to disease prevention programmes such as tuberculosis (TB) prevention, nutrition enhancement, immunization against tetanus, and prophylactic treatment of malaria, and human immune virus/acquired immune deficiency syndrome (HIV/AIDS) and other sexually transmitted infections (STIs). The antenatal period presents an important opportunity, yet it currently appears to be underexploited (Gebremeskel, Dibaba, and Admassu, 2015). Antenatal care is provided by nurses, midwives and doctors (Turyasiima et.al. 2014).

Antenatal care is more effective in preventing adverse pregnancy outcomes when sought early in the pregnancy and continued through to delivery. Health professionals recommend that the first antenatal visit should occur within 12 to 16 weeks of pregnancy. The second visit should occur at 28 weeks, the third visit at 32 weeks, and the fourth visit at 36 weeks. WHO recommends that a woman without complications should have at least four visits, women with complications, special needs, or conditions beyond the scope of basic care may require additional visits (2010-11 Zimbabwe Demographic and Health Survey (ZDHS)). The first antenatal booking visit offers the care provider the opportunity to collect basic information from the pregnant woman that will form the foundation of care for the rest of the pregnancy (Addah, Omietimi and Allagoa, 2015). Early booking makes fairly accurate dating feasible, especially in women who are unsure of their last menstrual period. Certain baseline measurements, such as blood pressure; body mass index and urinalysis done at this gestational age give a fair idea of the pre-pregnancy state of the patient (Adekanle and Isawumi, 2008).

Booking early for antenatal care allows service providers to screen out diseases like diabetes and chronic hypertension predating pregnancy and offer management protocols. Pregnant women can also be counseled, tested and if positive, commence antiretroviral treatment early to prevent vertical transmission of HIV (Tshabalala, 2012). Early utilization of ANC services is therefore important for early detection and treatment of adverse pregnancy related outcomes. Several studies have shown that women who start to attend ANC early and continue regularly, are more likely to be assisted during delivery by skilled health workers compared to those who initiate ANC late and attend only few visits (Turyasiima et al 2015). Antenatal care therefore exposes women to health education on risk factors and encourages them to be delivered by skilled health workers in health facilities. Delayed access to antenatal care ('late booking') has been linked to increased mortality and morbidity for mother and baby (Jones, Haddrill, Mitchell and Anumba 2011). However, in spite of advantages of early booking, late booking is common in the developing world (Adekanle and Isawumi, 2008). Existing evidence from developing countries indicate that few women seek antenatal care at early stages of their pregnancy (Teferra, Alemu, and Woldeyohannes, 2012).

Other studies reported late ANC enrolment after more than five months of gestation in sub-Saharan African countries (Ndidi and Oseremen, 2010). This defeats some of the objectives of antenatal care, which include early screening for pre-existing medical disorders, as well as early detection of pregnancy induced conditions that may affect the course and outcome of pregnancy, early commencement of health education and counseling on expected physiological changes will thus not be possible (WHO, 2002).

With the current trend of late ANC booking being experienced in Zimbabwe, early documentation of the women's baseline physiological and laboratory parameters for subsequent comparison and early detection of anomalies with the progress of pregnancy

becomes impossible. Furthermore opportunities for preventive health care services such as immunization against neonatal tetanus, prophylactic treatment of malaria through the use of intermittent presumptive treatment approach, and HIV counseling and testing become a hard target to reach. Late booking may result in failure to detect modifiable pre-existing medical conditions that may influence the course and outcome of pregnancy, such as cervical incompetence, chronic hypertension and diabetes mellitus.

Measures have been taken to ensure that pregnant mothers come for ANC services at health centres in Zimbabwe, and one such effort was the introduction of the Results Based Financing (RBF). The RBF program was introduced in two pilot districts Marondera and Zvishavane in July 2011. A World Bank team helped the government design the results-based financing program for rural Zimbabwe, focusing on the elimination of user fees. Cordaid, a Dutch development agency, serves as the implementation agency, working closely with the health ministry in contracting with health providers, verifying results, building in-country capacity, and providing oversight. The RBF program, is funded by a $15 million grant from the World Bank's multi-donor Health Results Innovation Trust Fund. (World Bank 2016).

Results Based Financing is a system strengthening approach that introduces checks and balances along the service delivery chain, encouraging better governance, transparence and enhanced accountability. It achieves this by linking payments directly to performance. Contrary to traditional input funding, hospitals and clinics receive their payment on the basis of agreed indicators and verified output (Table 1). A detailed monitoring and evaluation system is set up to track and award performance. Money is paid directly to the institutions on the basis of their actual output and performance. They are autonomous in how they spend the funds (Cordaid, 2015).

Table 1: Example of RBF payment calculation

Indicator	Unit Price	# of units	RBF Payment
Children fully immunized	$5.00	40	$200.00
Vitamin A distribution	$0.20	100	$20.00
Pregnant women received TT2+	$1.00	20	$20,00
Institutional deliveries	$20.00	30	$600.00
FP visit modern methods	$0.60	100	$60.00
ARV prophylaxis to HIV+ women	$5.00	10	$50.00
ANC visits all four completed	$8.00	40	$320.00
Postnatal care visit	$8.00	40	$320.00
Consultations OPD	$0.10	500	$50.00
Subtotal (I) RBF payment			**$1,640.00**
Score on quality checklist			60%
Subtotal (II) RBF payment			**$984.00**
Hardship bonus			10%
Total RBF payment to facility			**$1,082.40**

(Source: Zimbabwe Health Results Based Financing Project Information Document, 2011)

For patients, RBF means safer births, healthier children and no more user fees. For doctors, nurses and community health center committees, RBF means greater opportunity for local-level planning. World Bank (2016).

The bewildering fact however is that, despite the scrapping of maternity user fees at health centres, the number of women booking for the first ANC visit within the first trimester is still far below WHO recommendations that state that every pregnant woman should book before 16 weeks of gestation. Such a phenomenon is happening against the expectation that by now (2016) some five years later after the pilot project, Results-based financing has become widely known among people living in Zimbabwe, yet the number of women booking for first ANC in the first trimester remains low, thereby prompting one to investigate why this is transpiring.

The Problem Statement

In Mashonaland East Province, statistics from the Health Information System indicate that in the past 5 years, less than 25% of pregnant women who visit the ANC clinics do so during the first trimester which indicates that a lot of pregnant women book late for ANC.trimester, but Marondera District has a striking difference. Marondera district was a pioneering district of the Results Based Financing fund in 2011 which provides free maternal and child health services including free ANC booking yet pregnant mothers still book late. In addition, in 2012 the government rolled out the Health Transition Fund to strengthen the delivery of maternal, newborn and child health services. Despite these two interventions the number of women who have been booking for ANC before 16 weeks between 2011 and 2016 in Marondera district remained below 25 % of the total number of women who came to book for ANC. Given the compelling evidence on the benefits of early ANC booking there was need to carry out an investigation on why women are booking late for ANC despite the fact that the service is being offered for free in Marondera district.

Purpose of the study was to identify factors that contribute to late ANC booking in Marondera district, Mashonaland East Province

Research Objectives included:

- To assess the extent to which pregnant mothers view themselves as being at risk of having poor pregnancy outcomes in Marondera district, 2016
- To identify factors (cues to action) that influence women to decide when to book for ANC services in Marondera district, 2016
- To identify barriers (personal, institutional, socio-economic and infrastructural) to early attendance of ANC by pregnant women in Marondera district, 2016
- To make recommendations on ways to improve early utilization of ANC services

Antenatal Care and Safe motherhood

Antenatal care evolved over a period of about a century, with the trend changing gradually from inpatient to out-patient form of care that we have today (Omigbodun, 2002). Antenatal care is one of the pillars of the Safe Motherhood Initiative aimed at preventing adverse pregnancy outcomes (Onoh, 2012). Safe motherhood means creating the circumstances within which a woman is able to choose whether she will become pregnant, and if she does, ensuring that she receives care for prevention and treatment of pregnancy complications, has access to trained birth assistants, has access to emergency obstetric care if she needs it, and care after birth so that she can avoid death and disability from complications of pregnancy and childbirth (Todd, 1997). It encompasses a series of initiatives, practices, protocols and service delivery guidelines designed to ensure that women receive high-quality gynecological care, family planning, prenatal, delivery and postpartum care. The pillars of safe motherhood are family planning, ANC, clean/safe delivery and essential obstetric care. Safe motherhood works as a broad strategy to improve reproductive health through primary health care as illustrated in the Figure 1 below.

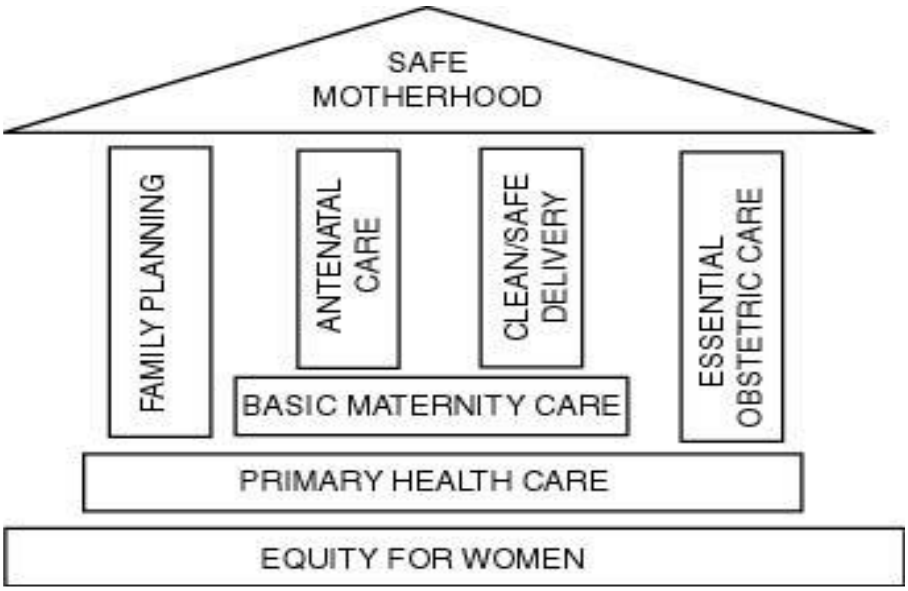

Figure 1: The four pillars of safe motherhood (Source: WHO 1994

Development of Antenatal Care

Antenatal care aims to detect and treat any complications early, to maintain or improve the health of the mother during pregnancy, and to ensure delivery of a healthy baby. For this to be done ANC should be problem oriented with each visit having well understood objectives (Obstetrics and Gynaecology manual, 2000). In the past interventions in antenatal care were provided in approximately 12-16 antenatal care visits during a pregnancy. Research has however, shown that numerous antenatal care visits (6 or more) were unnecessary or of unproven benefit (Banta, 2003).

As noted by Villar et al. (2001) a multi-country randomized control trial and a systematic review were done on the effectiveness and efficiency of the multiple ANC visits by the World Health Organisation (WHO). The results of the trail and the review prompted WHO to define a new model of ANC based on four goal-oriented visits at the following critical times of gestation; 8-12 weeks, 24-26 weeks, 32 weeks and 36-38 weeks. The new ANC model based

on four visits is called the Focused Antenatal Care (FANC) model. This new approach to ANC emphasizes the quality of care rather than the quantity (Stephenson, 2005).

FANC is goal oriented care that is client centered, timely, friendly, simple, beneficial and safe to pregnant women. It is care which is provided to pregnant women by skilled attendants which emphasizes on the woman's overall health, her preparation of childbirth, readiness for complications that may occur in pregnancy, labour, delivery and postpartum. The goal of focused antenatal care is to provide timely and appropriate care to women during pregnancy to reduce the maternal morbidity and mortality as well as achieving a good outcome for the baby (Tanzania Ministry of Health And Social Welfare, 2009). The WHO recommends that pregnant women make a first visit between 8-12 weeks after conception and make further three visits between 24 and 38 weeks of gestation (WHO, 2002). Table 2 below shows FANC model outlining the visits with corresponding gestational age in weeks.

Table 2: Focused antenatal care (FANC) model outlined in WHO clinical guidelines

First Visit (8-12 weeks)	Second Visit (24-26 weeks)	Third Visit (32 weeks)	Fourth Visit (36-38 weeks)
Confirm pregnancy and Expected Date of Delivery (EDD). Classify women for basic ANC (Four visits) or more specialized care. Screen, treat and give preventive measures. Develop a birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude Pregnancy Induced Hypertension (PIH) and anaemia. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude PIH, anaemia, multiple pregnancies. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude PIH, anaemia, multiple pregnancy and malpresentation. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.

(Source: WHO 2002)

Goals of Focused ANC

According to Stephenson (2005) the major goal of focused antenatal care is to help women maintain normal pregnancies through:

- Identification of Pre-existing Health Conditions:
- Early Detection of Complications:
- Health Promotion and Disease Prevention:
- Birth Preparedness and Complication Readiness:

Approximately 15 percent of women develop a life-threatening complications that are pregnancy related

Antenatal care attendance is mostly done late in Africa and Zimbabwe included. When a woman attends ANC late in the pregnancy, very little can be done to prevent complications and bad pregnancy outcomes. This poses a threat, in the form of continued high levels of maternal and neonatal deaths.

Socio-demographic factors

Studies done in Nigeria revealed that socially disadvantaged women, such as teenagers, unmarried women, and women with lower level of education or lower socio-economic status, tended to book late. Booking was found to be influenced by occupation (chi = 8.5066, P = 0.014) and level of education (chi = 8.1487, pr = 0.043) with the highest proportion of self-employed and secondary level education booking late (Kawungezi et al. 2015). Given the fact that in some areas, socio-demographic factors were found to have an influence on timing of ANC booking whereas in others it was found not to have any significant influence, there was need to explore its influence on late booking in Marondera district.

Socio-cultural factors

In a study that was done in Ntchisi district in Malawi by Banda (2013) participating women who reported that they seek permission from their husbands before visiting FANC were likely to make less than required (≥4) visits to the FANC (P=0.001). Waiting to obtain permission

was a factor which significantly resulted in less number of visits to FANC (P=0.007). In a study by Ebeigbe and Igberase (2005), high percentage of women booking late was due to a belief that late pregnancy and labor and delivery are when the woman is at greatest risk. This was proven by the fact that over a third booked in the third trimester. A similar survey in rural South African women found that women who booked late perceived the health threat during pregnancy as insignificant and saw labor and delivery as the time of greatest risk, requiring biomedical attention (Myer and Harrison, 2003). Taking note of the fact that Marondera district like any other society has its own prevailing cultural norms, believes and practices, there was need to investigate the impact that socio-cultural factors have on ANC booking in Marondera.

Maternal Age

Adekanle and Isawumi (2008) in a study they held in South Western Nigeria found out that women who were 25 years old and below, less educated, earning lesser income and unemployed were more likely to register late. In Kenya low ANC utilization was associated with extremes of reproductive age (van Eijk et.al, 2006). Elsewhere in in South East Nigeria, Emelumadu et.al, (2014) did not find any significant influence by the variable of age. Having observed that maternal age can either have no impact or some impact on ANC booking by pregnant mothers in some areas, there was need to assess its effect in Marondera district.

Previous obstetric complications

Adekanle and Isawumi (2008) found out that those who had no previous caesarean delivery, 262(81.9%) would more likely book late compared to those with previous caesarean section, 33(75.0%), $p > 0.05$. Those who had no complaints in index pregnancy, 321(82.1%) booked later than those who had complaints, 28(73.7%), $p > 0.05$. Those who had no problems in the last delivery, 246(81.7%) were more likely to book late compared to those who had problems, 50(75.8%), $p > 0.05$). In Northern Uganda, some multigravida mothers reported they decided

to enroll early for the current pregnancy due to the poor outcome of their previous pregnancies (Turyasiima et.al, 2014). Following the reported influence of past obstetric complications amongst pregnant women in other areas in Africa, there was need for one to check its influence on utilisation of ANC services in Marondera district.

Level of education

The researchers set out to establish any association between level of education of pregnant women and their utilization of ANC services.

Parity

In a study by Emelumadu et.al (2014) established that grand multiparous women were more likely to book for ANC after the first trimester ($\chi 2 = 5.9$, $P = 0.05$) and to have attended ANC less than 4 times prior to delivery ($\chi 2 = 9.50$, $P = 0.05$). Most studies agree with the notion that multiparous women tend to book late for ANC services, this however needed to be checked if it was the same in Marondera district.

Knowledge of the importance of ANC

Ignorance or misconception of the purpose and right timing of ANC has been identified as one of the reasons why pregnant women book late (Ebeigbe and Igberase, 2010). Some studies attribute low maternal care utilization in most rural communities to low awareness of benefits of ANC and to the belief that pregnancy is a natural process requiring no medical intervention. Given the reported association between late ANC booking and lack of knowledge on the importance of ANC booking and timing of booking, the researchers went on to explore this phenomenon in Marondera district.

Distance and cost

A study done in Malawi indicated that long distance significantly influenced the number of visits to FANC (P<0.001) (Banda 2013).In this study the researchers set out to establish the effect of distance on ANC booking in Marondera district.

Service related factors

A study done in Harare by Sibanda, Weller, Hakim and Cowan (2011) revealed that nurses were widely viewed by the community as discourteous. This is said to have prevented many women from registering for ANC on time. Long queues were also found to be a barrier.

Number of ANC visits

There are variations in the average number of ANC visits. In most cases, timing of ANC booking is poor. In Kenya, only 14% of the pregnant women in rural areas attend ANC for the first time in pregnancy during the first trimester, even though median ANC visit is 4 (van Eijk et.al, 2006). Kawungezi et.al (2015) reported that occupation influenced number of ANC visits Information on the number of ANC visits completed by women in Marondera district will create a basis for the comparison of pregnancy outcomes among mothers with at least three ANC visits versus those with less number of visits.

Conceptual Framework: Health Belief Model

The Health Belief Model (HBM) is a conceptual framework used to understand health behavior and possible reasons for non-compliance with recommended health action (Becker and Rosenstock, 1984). It can provide guidelines for program developments allowing planners to understand and address reasons for non-compliance. HBM was originally developed in the 1950s by social psychologists working at the U.S. Public Health Service to explain why many people did not participate in public health programs such as TB or cervical cancer screening.

It has subsequently been used to guide the design of interventions to enhance compliance with preventive procedures (Janz, Champion and Strecher, 2002).

According to Turner, Hunt, DiBrezzo and Jones (2004) the HBM addresses the following major components for compliance with recommended health action; perceived barriers of recommended health action; perceived benefits of recommended health action, perceived susceptibility of the disease, and perceived severity of the disease. In addition, there are modifying factors that can affect behavior compliance. Modifying factors would include media, health professionals, personal relationships, incentives, and self-efficacy of recommended health action. In the current study, HBM was adopted to help explain why many pregnant mothers book late for antenatal care in Marondera district, in Mashonaland East Province, Zimbabwe.

Perceived susceptibility

Perceived susceptibility refers to an individual's judgment of their risk of contracting a health problem. The likelihood of seeking health interventions increases as the level of perceived susceptibility increases (Rosenstock, 1974). For instance, pregnant women are more likely to seek medical attention in this case antenatal services if they believe that they are susceptible to developing pregnancy complications. Personal risk or susceptibility is therefore one of the more powerful perceptions in prompting people to adopt healthier behaviors. Implying that the greater the perceived risk, the greater the likelihood of engaging in behaviors to decrease the risk.

Perceived severity of the condition

The construct of Perceived severity/ seriousness speaks to an individual's belief about the seriousness or severity of a disease for example the likelihood that a problem/ illness or

disability, if contracted or left untreated, will have severe consequences such as pain, death, handicap, or reduced quality of life in general, (Backer and Maiman 1977).

Perceived benefits/barriers:

Individuals' choice of behavioral options depends on their perception of benefits and barriers. Therefore, a cost benefit analysis allows an individual to evaluate the outcome expectations and assess whether the expected benefit of a behavior outweigh the perceived expenditure incurred by engaging in the behavior (Rosenstock, 1974).

Modifying factors

The four major constructs of perception are modified by other variables such as culture, age, parity, religion, educational level, past obstetric experiences, beliefs and practices of pregnant woman in relation to utilization of ANC services. These are individual characteristics that influence personal perceptions.

Cues to action

In addition to the four beliefs or perceptions and modifying variables, the HBM suggests that behavior is also influenced by cues to action. Cues to action are events, people, or things that move people to change their behavior. Examples include illness of a family member, media reports (Graham, 2002), mass media, advice from others, reminder postcards from a health care provider (Ali 2002). Knowing a relative who lost a baby due to poor ANC attendance can be a significant cue to action for pregnant women to attend ANC services. Hearing or viewing radio or television news and programs about antenatal care can be cues to action for ANC attendance. Furthermore having ANC posters and flyers at strategic places can also serve as a cue to action.

Self-Efficacy

In 1988 self-efficacy was added to the original four beliefs of the HBM (Rosenstock, Strecher and Becker, 1988). It is defined as the belief in one's own ability to do something (Bandura, 1977). People generally do not try to do something new unless they think they can do it. If someone believes a new behavior is useful (perceived benefit), but does not think she is capable of doing it (perceived barrier), chances are that it will not be tried.

In principle, the HBM showcases that, modifying variables, cues to action, and self-efficacy affect our perception of susceptibility, seriousness, benefits and barriers and ultimately our behavior. Below is a diagrammatical presentation of the HBM:

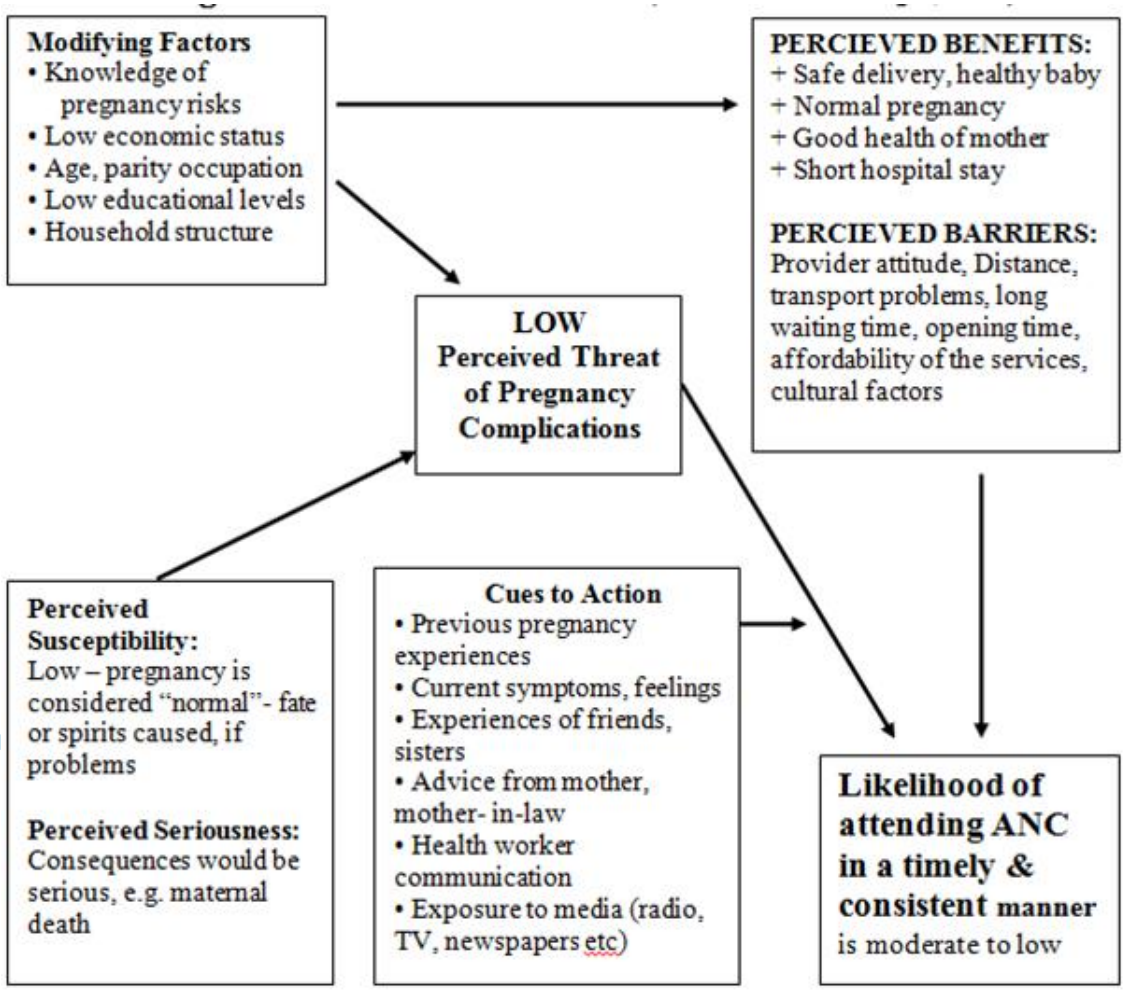

Figure 2: Health Belief Model (Modified from Brieger, 2006)

Literature review has shown that there is perennial late ANC booking among women in the developing world including Zimbabwe that warrants an immense public action.

METHODOLOGY

Study Design

An unmatched 1:1 case-control study was conducted. A **control** was a woman who booked for ANC before 16 weeks of gestation. A **case** was a woman who booked for ANC after 16 weeks of gestation. Focus group discussions were also used to gather data among the participants, the research thus employed a mixed method approach.

Inclusion criterion:

- Being pregnant at the time of recruitment and aged between 18-49 years
- Being a subsequent attendee (not first visit) of ANC in the targeted public clinics in Marondera district
- Being able to give informed consent (verbal or written)

The study sites were purposively selected to represent urban area based health facilities, rural area based hospitals and rural health centers and the following were included based on the fact that they were the ones with the highest number of clients who attended the ANC services that would serve as respondents for the study.

- Dombotombo and Nyameni Council Clinics (Urban area based health facilities)
- Mahusekwa District and Chiota Rural Hospitals (Rural area based hospitals)
- Dimbiti and Kushinga-Phikelela (Rural Health Centres)

Exclusion criterion:

- Pregnant women aged below 18 years
- If attending the ANC clinic for the first time
- Eligible participants unable to give informed consent
- Eligible participants unwilling to give consent

Study setting

The study was carried out in Marondera district at public health facilities (government and council facilities) that offer antenatal care services in which have information recorded on the District Health Information System – 2 (DHIS 2) and are under RBF funding.

Study Population

The study population was composed of all pregnant women that came to access ANC services at RBF funded health facilities that had been selected as study sites. The target population was pregnant women who were attending ANC on a subsequent basis in the targeted clinics in Marondera district who were aged between 18 years and above. The Health workers who provide ANC services at Health facilities in Marondera district were also part of the population that was considered for the purposes of this study. ANC registers and the pregnant women's ANC cards were used to verify the times when women came to book for the first ANC visit.

Sample size determination

Fleiss formula in StatCal (Epi Info 7) was used to calculate the sample size using the following assumptions; 95% Confidence Interval, 80% Power, 1:1 unmatched controls to cases ratio, 50% of controls exposed to low level education (primary or none), 72.2% of cases exposed to low level education (primary or none), 2.6 Odds ratio [adopted from a study by Adekanle and Isawumi (2008), in which pregnant women who had primary school education or none were more likely to book late compared to those who had secondary school education and above (OR 2.6, 95% CI, 1.28 – 5.38). The minimum calculated sample size after factoring in a non-response rate of 10% the sample was 168; however 30 participants were recruited from each of the six study sites resulting in 180 respondents being recruited into study.

Sampling procedure

Sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study (Burns & Grove 2005: 341). The sampling frame used in this study was the 16 public health facilities which are under the RBF funding in Marondera district and had ANC services information available on the DHIS-2. The hospitals and clinics were stratified according to their locations in the district and later judgmental sampling technique was used to choose at least one facility with high numbers of ANC attendees in each strata.

Data Collection

An interviewer administered questionnaire was used to collect data among pregnant women and the key informants**.** Twelve nurse-midwives (ANC providers) that were on duty on data collection days were conveniently selected to take part in the key informant interviews (KIIs) together with the District Nursing Officer (DNO) and the District Medical Officer (DMO)**.** A review of ANC records and case notes was done to check booking dates and number of ANC visits completed. For triangulation of findings from quantitative data, two focused group discussions (FGDs) were done to record pregnant women's views on the importance of ANC booking.

The FGDs were done at Dombotombo and Nyameni clinic with each having 10 participants. A Focus Group Discussion guide was used to provide an overall direction for the discussion on the topics and issues that were covered during the FGDs. The guide helped the researchers to proceed logically from one topic to another and contained unstructured open ended questions to obtain in-depth information about knowledge, attitudes and ANC practices in the community.

Data Analysis

Epi Info 7 software was used to generate frequencies, draw graphs, calculate odds ratios, and confidence intervals. The odds ratio was utilized to determine the strength of association between independent variables and ANC booking. Bivariate and multivariate logistic regression analyses were used to identify variables associated with late ANC visits. Logistic regression (LR) method was employed and variables with a p value of < 0.05 were considered as significantly associated with early ANC visit.

Ethical Considerations

Permission to carry out the study was sought from the Provincial Medical Director, District Medical Officer for Marondera, and Africa University Research and Ethics Council (AUREC) The recruitment of respondents took place in the health facilities that had been chosen as study sites, this occurred during regular subsequent ANC appointments of eligible participants. Information about the study was given by the research team after the nurses facilitated the process. The women were informed that the study was not part of their routine ANC, their participation was voluntary, and no one should force them or threaten them that they might not receive care as before if they refuse to participate. They were also informed that they could withdraw at any time even during interviews if they did not want to continue. They were further notified that all of them who were above 18 years of age were eligible to participate. Informed consent was obtained (Annex 5), thus the decision to participate in this study remained the sole responsibility of the eligible pregnant women. The participants were assured that, information would be kept in strict confidence.

RESULTS

Demographic characteristics

A total of 180 participants (90 cases and 90 controls) were recruited into the study. Socio-demographic characteristics of the participants were assessed and presented in tables below. Both cases and controls were comparable in terms of socio demographic variables except on highest levels of education. Bivariate analysis was conducted to establish measures of association for these significantly different socio-demographic characteristics.

Distribution of ANC Attendees by study site

An equal number of participants (30 from each) were selected from the 6 health facilities in Marondera District that were selected as study sites.

Percent Distribution of ANC Attendees by Age and Marital status -

The majority of the participants (73) among both the cases and the controls (40.6%) were between the ages of 25-32 years, followed by 60 participants that were between the ages of 33-40 (33.3%) and lastly those between the ages of 18-24 were 47 (26.1%). With regards to marital status, 155 (86.1%) participants were married, 18 (10%) were single and 5 (2.8%) were divorced. The age and marital status distribution among the participants was tabulated below.

Table 3: Distribution of ANC attendees by age and marital status, Marondera District, 2016

Variable	Category	Cases n=90 (%)	Control n=90 (%)	p-Value
Age (years)	18-24	28 (31.1)	19 (21.1)	0.13

	25-32	33 (36.7)	40 (44.4)	
	33-40	29 (32.2)	31 (34.4)	
Marital status	Married	74 (83.1)	81 (91.0)	0.13
	Single	12 (13.5)	6 (6.7)	
	Divorced	3 (3.4)	2 (2.2)	

Distribution of ANC Attendees by Parity

Amongst the ANC attendees 27 (20.6%) did not have any live born babies they had delivered before at the time of the study. The median parity among the participants was two with 51 (28.3%) having delivered two live born babies in the past (Figure 3).

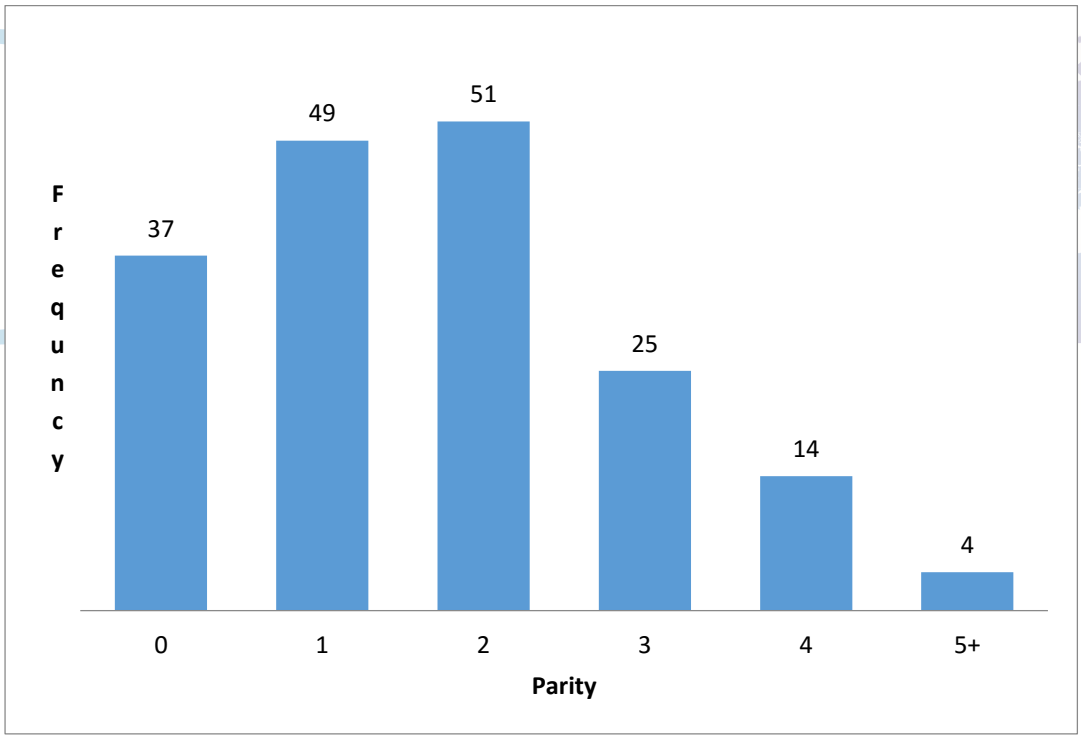

Figure 3: Distribution of ANC Attendees by Parity, Marondera District, 2016

Religious affiliation of ANC Attendees

About 42.2% of the participants described themselves as Pentecostals mostly from the following churches Zimbabwe Assemblies of God (ZAOGA), Apostolic Faith Mission (AFM),

and United Family International Church (UFIC). Thirty (16.7%) participants were members of the United Methodist Church, 25 (13.9%) were from the Johanne Masowe apostolic sect, 28 (15.6%) did not go to church (Figure 4).

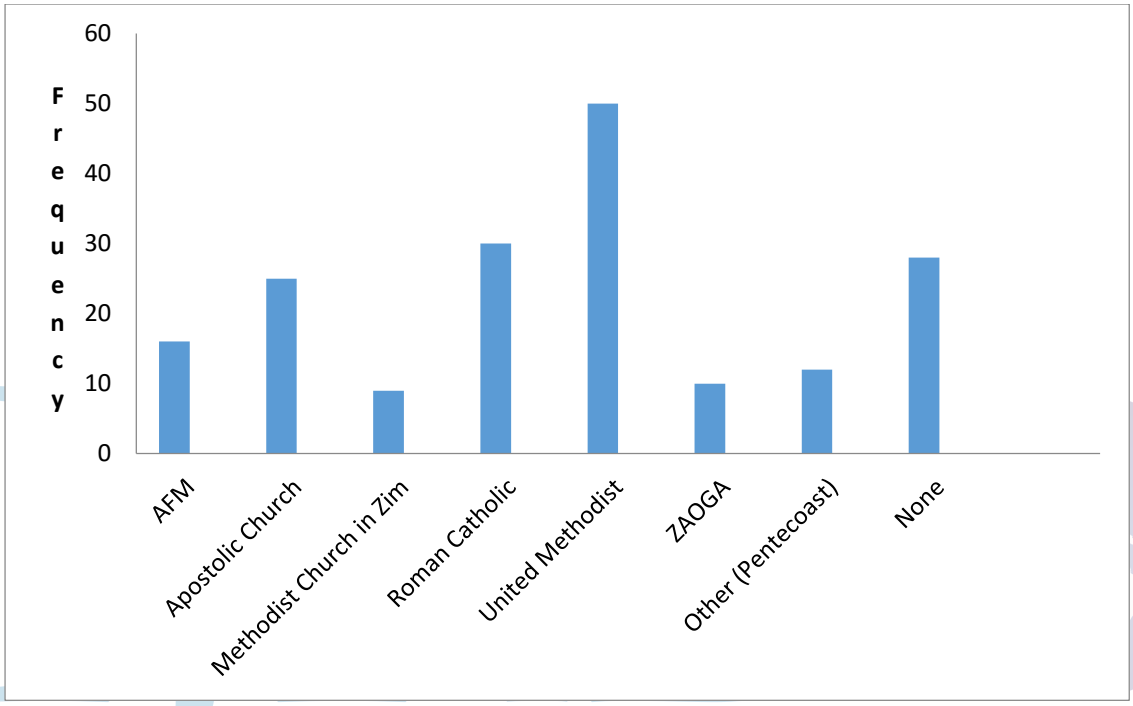

Figure 4: Religious affiliation of ANC Attendees, Marondera District, 2016

Distribution of ANC Attendees by Education levels

Above half of the women (60.6%) who participated in the study had reached secondary school level. 32.3% (58) participants had attained just primary education. Only 6.1% (11) had reached tertiary level and just 3 participants had never gone to school. (Table 4)

Table 4: Distribution of ANC Attendees by Education levels, Marondera District, 2016

Variable	Category	Cases n=90 (%)	Control n=90 (%)	p-Value
Highest level of education of pregnant women	None	2 (2.2)	1 (1.1)	0.01
	Primary	37 (41.1)	21 (23.3)	
	Secondary	50 (55.6)	58 (64.4)	
	Tertiary	1 (1.1)	10 (11.1)	

Employment status of ANC Attendees

About 8.3% of the participants were formally employed as civil servants. The vast majority of the participants (98) were informally employed and served as street vendors, cross border traders and small scale farmers. 54.4% of the participants were therefore informally employed. 67 (37.2%) participants said they were not employed and thus were full time housewives.

4.2 Key Informants' views on ANC

Key informants were constituted of 12 nurse-mid-wives two from each of the 6 study sites, the District Medical Officer (DMO) and the District Nursing Officer (DNO). All the key informants were females with the exception of the DMO. The age range of the key informants was between 30-48 years, and all of them had worked in the ANC clinic and the Maternity unity for at least three years implying that they all had experience with regards to ANC services delivery. All the health care workers who participated in the study had undergone formal training in Reproductive health.

All the key informants demonstrated knowledge of the benefits of early utilisation of the ANC services by pregnant women, for example they expressed that pregnant women should attend antenatal care for examination to see how the fetus is growing, identification of disease conditions like anemia, hypertension, HIV and STIs, and counseling. They also indicated that another benefit of going to ANC is to receive iron supplementation and syphilis screening. In addition they had knowledge of the problems that a woman can encounter if she does not start ANC in time like anemia, hypertension, malaria and death.

On measures that could be instituted in order to encourage women to start booking early for ANC, the key informants cited the need for good health worker attitude and creation of good rapport with the ANC clients. They also reiterated the fact that bad health worker attitude can prevent women from starting ANC in time. The key informants felt that other nurses and midwives at the ANC clinics were friendly while a few were considered as harsh and not friendly especially when the woman had a pregnancy out of wedlock.

The key informants pointed out that due to shortage of staff, sometimes women who come for ANC services end up being attended by one qualified staff member, a phenomenon which caused staff burn out as the few qualified personnel will have to serve all the clients. Nyameni and Dombotombo were the busiest and most affected facilities.

Discussions with the key informants also brought out a topical issue. Representatives from all the facilities indicated that they were having shortages of folic acid and ferrous and were therefore asking their clients to go and buy from private pharmacies, of which some of them could not afford to buy.

Focus Group Discussions

Two focus group discussions were carried out at Nyameni clinic and another at Dombotombo clinic each comprising of 12 participants. The discussions were conducted in an attempt to gather more insight into the factors related to late ANC booking. It emerged then, that the personal perceptions and experiences of the pregnant mothers, together with cultural beliefs regarding ANC utilisation and importance had a bearing on when a woman would decide to book for ANC. The study picked out that there were myths and beliefs that discourage pregnant women from starting ANC early in the first trimester. Women in their communities are discouraged to disclose pregnancies in the first trimester for fear of being fished out by witches. As a result it is difficult to start ANC in the first trimester. In addition some women wait for their spouses to tell them to go for ANC services because if they start ANC on their own the husbands may not provide necessary support.

It also emerged from the focus group discussions that, pregnancy was not viewed as an illness therefore people in the community saw no reason medical care. This perception that a pregnancy is not an illness combined by the fact that pregnant women in the community are told that they can access ANC when their pregnancy becomes more visible and will still be able to amass the benefits of ANC booking that will have been given to those who would have booked earlier results in delayed ANC booking. In addition to this, a great number of the focus group discussion attendees pointed out that the main purpose for booking was just to have access to the ANC card to be permitted to deliver in a health facility when in labour.

Socio-demographic determinants associated with late booking for ANC

Having a husband who attained none or primary as the highest level of education (OR 2.43 95% CI 1.24-4.74) and attaining none or primary as the highest level of education (OR 2.36 95% CI 1.25-4.47) were significant risk factors associated with late booking for ANC (Table 5).

Table 5: Socio-demographic factors associated with late booking for ANC, Marondera District, 2016

Determinants	Exposure status	Cases n=90 (%)	Control n=90 (%)	OR 95% CI	P-Value
None or primary level of education of husband as highest	Yes	48 (66.7)	55 (79.7)	**2.43**	**0.01**
	No	24 (33.3)	14 (20.3)	**1.24-4.74**	
None or primary level of education of women as highest	Yes	39 (43.3)	22 (24.4)	**2.36**	**0.01**
	No	51 (56.7)	68 (75.6)	**1.25-4.47**	

Personal determinants to early attendance of ANC by pregnant women

Having attended previous antenatal care clinic (OR 0.51 95% CI 0.23-1.09) was associated with a less likelihood to book late for ANC by pregnant women in Marondera district (Table 6). Small proportions, 4.4% (n=4) of cases and 18.9% (n=17) of controls completed at least 4 ANC visits. Some cases (12.2%, n=11) and controls (21.1%, n=19) delivered by caesarean section for their previous pregnancies. Some cases and controls had a history of complications in their previous pregnancy. For instance, 23.3% (n=21) of controls and 8.9% (n=8) of cases had obstructed labour, 10.0% of control and 8.9% (n=8) of cases had pregnancy induced hypertension and 8.9% of controls and 6.7% (n=6) of cases had fetal loss in their previous pregnancies.

Table 6: Personal determinants to early attendance of ANC by pregnant women, Marondera District, 2016

Determinant	Exposure status	Cases n=90 (%)	Control n=90 (%)	OR 95% CI	p-Value
Attended previous antenatal care clinic	Yes	48 (66.7)	55 (79.7)	0.51	0.08
	No	24 (33.3)	14 (20.3)	0.23-1.09	
First pregnancy	Yes	18 (20.0)	21 (23.3)	0.83	0.59
	No	72 (80.0)	69 (96.7)	0.40-1.67	

Factors (cues to action) that influence women to decide when to book for ANC services

Waiting for permission from others to access ANC (OR 5.80 95% CI 1.62-20.8) and perceived low risk of pregnancy complications (OR 4.42 95% CI 2.37-8.27) were significantly associated with late booking for ANC. Booking due to fear of complications (OR 0.23 95% CI 0.11-0.49), receiving motivation from husband (OR 0.24 95% CI 0.13-0.45) and booking for ANC to get health education (OR 0.33 95% CI 0.16-0.66) were significantly protective from booking late for ANC in Marondera district (Table 7).

Table 7: Factors (cues to action) that influence women to decide when to book for ANC services, Marondera district, 2016

Determinant	Expr status	Cases n=90 (%)	Control n=90 (%)	OR	95% CI	p-Value
Women to come for ANC when pregnancy is visible	Yes	31 (34.4)	2 (2.2)	**23.11**	**5.33-100.30**	**0.00**
	No	59 (65.6)	88 (97.8)			
Waited for permission from others to access ANC	Yes	15 (16.7)	3 (3.3)	**5.80**	**1.62-20.8**	**0.003**
	No	75 (83.3)	87 (96.7)			
Perceived low risk of pregnancy complications	Yes	61 (67.8)	29 (32.2)	**4.42**	**2.37-8.27**	**0.00**
	No	29 (32.2)	61 (67.8)			
Procrastination was a challenge for ANC booking	Yes	32 (35.6)	14 (15.6)	**3.00**	**1.47-6.12**	**0.002**
	No	58 (64.4)	76 (84.4)			
Booked due to fear of complications	Yes	56 (62.2)	79 (87.8)	**0.23**	**0.11-0.49**	**0.00**
	No	34 (37.8)	11 (12.2)			
Received motivation from husband	Yes	24 (26.7)	54 (60.0)	**0.24**	**0.13-0.45**	**0.00**
	No	66 (73.3)	36 (40.0)			
Booked for ANC to get health education	Yes	56 (62.2)	75 (83.3)	**0.33**	**0.16-0.66**	**0.001**
	No	34 (37.8)	15 (16.7)			
Received from relatives	Yes	52 (57.8)	50 (66.6)	1.09	0.61-1.97	0.76
	No	38 (62.2)	40 (33.4)			
Received motivation from media	Yes	5 (5.6)	6 (6.7)		0.82	0.76
	No	85 (94.4)	84 (93.3)		0.24-2.80	

Table 8: Pregnant women's knowledge on ANC, Marondera district, 2016

Knowledge Variable	Cases	Control

	n=90 (%)	**n=90 (%)**
Pregnant women register for antenatal care to be allowed to deliver in health facilities	90 (100.0)	90 (90.0)
Pregnant women register for antenatal care to ensure PMTCT of HIV	90 (100.0)	89 (98.1)
Pregnant women register for antenatal care to receive Iron and Vitamin A supplementation	90 (100.0)	87 (96.7)
Pregnant women register for antenatal care to get syphilis screening and treatment	90 (100.0)	89 (98.1)
Pregnant women register for antenatal care to receive preventive interventions such as TTV	89 (98.1)	88 (97.8)
Pregnant women register for antenatal care for early detection of risk conditions associated with pregnancy	88 (97.8)	90 (100.0)
Pregnant women register for antenatal care to assist the provider to give individualised health education on importance of ANC	87 (96.7)	88 (97.8)
Pregnant women register for antenatal care to receive ITNs and IPT	62 (68.9)	66 (74.2)
Pregnant women register for antenatal care for hookworm treatment	71 (78.9)	71 (78.9)
Booking is done during 0-16 weeks of pregnancy	60 (66.7)	88 (98.9)
Pregnant women expected to complete more than 4 visits	51 (56.7)	79 (87.8)
Received information about ANC from health workers	27 (30.0)	48 (53.3)
Received information about ANC from VHW	19 (21.1)	22 (24.4)
Received information about ANC from relatives/friends	42 (46.7)	19 (21.1)
Received information about ANC from radio/TV	2 (2.2)	1 (1.1)

At least 80% of both cases and controls were aware of most benefits of registering for ANC (Table 8). Most participants, 66.7% (n=60) of cases and 98.9% (n=88) of controls were aware that booking is done during 0-16 weeks of pregnancy. Further, 56.7% (n=51) of cases and 87.8% (n=79) were aware that pregnant women are expected to complete at least 4 ANC visits

Health service determinants associated with late booking for ANC

Receiving motivation from health workers (OR 0.38 95% CI 0.19-0.77) was associated with a less likelihood to book late for ANC. Those who were young and not married reported that they felt ashamed to go for ANC, as they feared to be judged by health workers. However this was not statistically significant (OR 1.54, CI 0.42-5.64, p-value 0.52) (Table 9).

Table 9: Health service determinants associated with late booking for ANC, Marondera districts, 2016

Factor	Exposure status	Cases n=90 (%)	Control n=90 (%)	OR 95% CI	p-Value
Spends more than 4 hours at health facility for ANC	Yes	67 (74.4)	58 (64.4)	1.61	0.15
	No	23 (25.6)	32 (35.6)	0.85-3.05	
Ashamed of coming for ANC	Yes	6 (6.7)	4 (4.4)	1.54	0.52
	No	84 (93.3)	96 (95.6)	0.42-5.64	
No complains with hours spend at a health facility	Yes	48 (53.3)	43 (47.8)	1.25	0.46
	No	42 (46.7)	47 (52.2)	0.70-2.24	
Received motivation from health workers	Yes	59 (65.6)	75 (83.3)	**0.38**	**0.01**
	No	31 (34.4)	15 (16.7)	**0.19-0.77**	
Health workers at health facility welcoming	Yes	77 (85.6)	83 (92.2)	0.50	0.15
	No	13 (14.4)	7 (7.8)	0.19-1.32	
Distance hindering access to ANC	Yes	15 (16.7)	24 (26.7)	0.55	0.10
	No	75 (83.3)	66 (73.3)	0.27-1.14	
Dedicated days for ANC per week adequate	Yes	54 (60.0)	58 (64.4)	0.83	0.54
	No	36 (40.0)	32 (35.6)	0.45-1.51	
Transport cost hindering access to ANC	Yes	24 (26.7)	26 (28.9)	0.90	0.74
	No	66 (73.3)	64 (71.1)	0.47-1.72	

Stratification

The effect of getting motivation from spouse on late booking for ANC modified by perceiving self as at low risk of pregnancy related complications

Table 10: The effect of getting motivation from spouse on late booking for ANC modified by perceiving self as at low risk of pregnancy related complications

Factor	Exp Status	Cases	Controls	OR	95% CI
Gets motivation from spouse: Perceive self as at low risk of pregnancy complications	Yes	11 (37.9)	39 (65.0)	0.33	0.13-0.82
	No	18 (62.1)	21 (35.0)		
Gets motivation from spouse: Perceive self as at high risk of pregnancy complications	Yes	13 (21.3)	15 (53.6)	0.23	0.09-0.61
	No	48 (78.7)	13 (46.4)		
Gets motivation from spouse: (Crude)	Yes	24 (26.7)	54 (60.0)	0.24	0.13-0.45
	No	66 (73.3)	36 (40.0)		
Adjusted OR (MH) 0.28 (0.14-0.55) χ^2 =0.24; p=0.62					

Crude Odds ratio falls within stratum specific Odds Ratios (0.23; 0.33) implying that there is effect modification (statistical interaction). Therefore, the effect of getting motivation from husband on booking was modified by whether the women perceived herself as being at risk of having pregnancy related complications or not. If they perceived themselves to be at low risk, the protective effect of getting motivation from spouse on late booking is low (OR 0.23) than when they perceived themselves to be at high risk (OR 0.33) (Table 10).

Logistic Regression

Independent risk determinants of late ANC booking, Marondera District, 2016

Table 11: Independent risk determinants of late ANC booking, Marondera District, 2016

Factor	Crude OR	Adjusted OR	95% CI	P-Value
Waited for permission from others to access ANC	5.80	9.74	1.92-49.34	0.006
Perceives self as at low risk of developing complications	4.42	3.29	1.67-6.49	0.001
Received motivation from spouse	0.24	0.24	0.12-0.48	0.000

Waiting for permission from others to access ANC (AOR 9.74 95% CI 1.92-49.34) and perceiving self as at low risk of developing complications (AOR 3.29 95% CI 1.67-6.49) were independent risk factors associated with late ANC booking. Receiving motivation from spouse (AOR 0.24 95% CI 0.12-0.48) was an independently protective factor (Table 11).

DISCUSSION

Research findings are discussed and interpreted. Evidence from previous research is examined and compared with findings of the current study.

The results of this study are presented in line with the Health Belief Model (Figure 2). From the model, demographic and socio-cultural factors associated with low utilization can be shown to be both modifying factors and perceived barriers that may affect health seeking behaviour of pregnant women. From the study results, parity and age are shown to be modifying factors of ANC utilization. Distance to the health facility, perceived risk of complications, fear of pregnancy complications and seeking permission to go to the clinic are under perceived barriers according to the health belief model associated with low utilization of ANC services in Marondera district.

Socio-demographic characteristics of women who book late for ANC

The socio-demographic variables of those who booked early and those who booked late were comparable except on highest levels of education of both the pregnant women and their spouses and these were significantly different. In this study having a husband who attained none or primary as the highest level of education and attaining none or primary as the highest level of education were significant risk factors associated with late booking for ANC. This is in line with other studies such as those by Kawungezi et al. (2015) and Roberts, Yawn, and Wickles et al: quoted in Ebeigbe and Igberase (2005). The indication by this study that low education levels impact negatively on early ANC utilisation is however in contrast to the findings by Ebeigbe and Igberase (2005 who noted that all socio-demographic factors, education level included were not responsible for late utilization of antenatal care in the Niger Delta, Nigeria.

The current study did not find any significant influence by the variable age, on the timing of first ANC visit and number of ANC visits. This finding is in sync with other studies such as the one that was done in South East Nigeria, by Emelumadu et.al, (2014), and elsewhere, for example in Kenya low ANC utilization was associated with extremes in reproductive age. Women that were above the age of 35 were more likely to book late (van Eijk et.al, 2006).

With exception of education levels of pregnant women and their spouses, this study has found that, socio-demographic data were not responsible for late utilization of ANC in Marondera district since there was no difference in initiation of ANC among all women of different ages, marital status, income status and religion, the majority started ANC late. The results coincide partly with the results of the study comparing demographic and obstetric characteristics of early and late attendees of antenatal care in the Niger Delta, Nigeria which found out that, age, parity,

level of education, social class, previous fetal loss, and previous obstetric complications did not differ significantly between women who booked early and those who booked late.

In Marondera district some cases (12.2%, n=11) and controls (21.1%, n=19) delivered by caesarean section for their previous pregnancies. Some cases and controls had a history of complications in their previous pregnancy. In the current study 23.3% of controls and 8.9% of cases had obstructed labour; this is in agreement with some studies such one by Kawungezi et.al (2015) who recorded that late booking followed absence of obstetric complications. In similar fashion, Adekanle and Isawumi (2008) found out that those who had no previous caesarean delivery, 262(81.9%) would more likely book late compared to those with previous caesarean section, 33(75.0%), $p > 0.05$ or previous obstertric complications.

Awareness of benefits of ANC booking and its Timing

Both the women who booked early and those who booked late for ANC services in this study showcased that they were aware of the benefits of ANC booking. At least 80% of both cases and controls were aware of most benefits of registering for ANC. Examples of the mentioned benefits included getting permission to deliver at health facilities, followed by access to vaccines such as Tetanus Toxoid Vaccinne, Iron and Vitamin A supplementation, Syphilis screening and treatment, access Intermittent Presumptive Treatment for Malaria and Long Lasting Insecticidal Treated Nets (LLITNs), hookworm treatment and Prevention of Mother to Child Transmission of HIV (PMTCT). Knowing the importance and benefits of utilisation of ANC services was thus not a problem in this study, however knowledge on the exact timing of ANC visits was, especially among those who booked late.

WHO recommends pregnant women to start ANC in their first trimester (WHO 2002). In this study despite the fact that ANC services are free, the majority (74.4%) of the women that booked late for ANC did so between 5-6 months of gestation. Most of them had not valued

early booking as they were of the opinion that they could still access the ANC services that would have been given to those who would have booked early. So they believed they could play 'catch up' later in the pregnancy and still be allowed to deliver at the health facilities and still receive interventions such as vaccines and ferrous and folic supplements. This is in agreement with some studies for example, a qualitative study done in Hlabisa district in Kwazulu Natal (KZN) indicated that most women's primary reason for seeking ANC was to receive an ANC attendance card that is required to deliver at a health facility (Myer *et al.* 2003). In a study by Tshabalala (2012) most of the women attended ANC to get an antenatal card for delivery usage. There is a serious need for health education to all women of child bearing age for them to understand the importance of completing at least 4 ANC visits and to book for ANC in the first trimester, and that they should desist from booking to merely get an ANC card.

Risk perception by pregnant women

In this study perceiving self as at low risk of developing complications (AOR 3.29 95% CI 1.67-6.49) was an independent risk factor associated with late ANC booking. On the contrary, booking due to fear of complications (OR 0.23 95% CI 0.11-0.49), was significantly protective from booking late for ANC. The findings of this study correspond with another study which pointed out that women do not perceive significant health threats during pregnancy but perceive labour and delivery as time of significant health risk that require biomedical attention (Myer et al. 2003). Similarly, Ebeigbe and Igberase (2005) found out that having a high percentage of women booking late was due to a belief that late pregnancy and labor and delivery are when the woman is at greatest risk. In agreement with the preceding studies, the current study has noted that perceived low risk of pregnancy complications (OR 4.42 95% CI 2.37-8.27) was significantly associated with late booking for ANC. Women's low perceived risk of developing pregnancy related illnesses and complications therefore needs to be addressed and have health

workers stressing the importance of early ANC visits and completion of at least 4 ANC visits due to the fact indicated by WHO (2002) that every pregnant women is at a risk of developing pregnancy related complications and all of them are therefore supposed to book in the first trimester of their pregnancies.

Factors influencing decisions on ANC booking

In a study that was done in Ntchisi district in Malawi by Banda (2013) participating women who reported that they seek permission from their husbands before visiting ANC were likely to make less than required (≥4) visits to the ANC (P=0.001). The study findings indicated that husbands (79%) mostly gave permission to start utilizing Focused Antenatal Care (FANC). This was cause for concern as it put the health of the pregnant women in danger. This finding differs with the arguments raised by Simkhada et al. (2010) asserting that mother in-laws and mothers alone negatively influence the utilization of FANC services. Waiting to obtain permission from either the husband or the mother - in - law was thus a factor which significantly resulted in less number of visits to FANC.

Along the same vein, in the current study, waiting for permission from others to access ANC (OR 5.80 95% CI 1.62-20.8) was significantly associated with late booking for ANC. This showcases that family members and friends play a major role in influencing the utilisation of ANC services. The role played by the community in ANC utilisation is further brought into play by the fact that a considerable number (33.9%) of the participants who booked late reported that they had received information on the need and some had been told to book for ANC just to have access to the ANC card in order to be allowed to deliver in a health facility.

In this study, receiving motivation from husband (OR 0.24 95% CI 0.13-0.45) and booking for ANC to get health education (OR 0.33 95 B% CI 0.16-0.66) were significantly protective from booking late for ANC in Marondera district (Table 7). The scenario emanating from the current

study's results suggests the need for male involvement as they are decision makers and providers of resources and this affects utilisation of ANC services. There is also need of the use of community mobilization campaigns on the importance of early ANC booking and to reach out to significant others such as the mothers and the mothers-in-law. There is need to provide outreach clinics to carter for long distant communities. Clients need to have access to Information Education and Communication (IEC) materials. These factors are achievable at facility level as all these form part of the primary health care package.

Receiving motivation from health workers (OR 0.38 95% CI 0.19-0.77) was associated with a less likelihood to book late for ANC in this study. This implies that the use of health care workers in the dissemination of information of ANC services is an effective tool for promoting the early and comprehensive utilisation of ANC services.s

Perceived barriers to ANC booking

It is a fact that ANC booking has its own benefits, however barriers to utilization of ANC service are also in existence and these can either be real or perceived by the targeted users. Ugandan Daily Monitor (2009) reported that a study done by Future Health Systems found that 62% of Ugandan women attended four ANC visits, but the main factors affecting utilization were transport costs, informal fees, demands for requirements such as gloves and poor attitude of the providers. Linda (2010) reported that many women in Kenya's Western Nyanza province reported that pre-natal HIV testing was a direct threat to their marriages. A study done by Rogers et al. (2006) revealed that although 85% expressed willingness to HIV Counselling and Testing (HCT), more were concerned about confidentiality and disclosing their HIV status because of fear of negative reactions from their partners, parents, family members and their community. In Marondera district half of the participants perceived long waiting time as a barrier but 90% of the participants perceived nurses' attitude as welcoming. Other barriers

noted in the current study include distance, transport problems, and procrastination (Table 9). These results support the findings of earlier studies in other settings as described above.

Relationship of the HBM and Study Findings

The HBM suggests that an individual's actions are based on perceptions. It stresses essential factors for decision making such as perceived susceptibility /risk, perceived severity of the outcome or conditions, benefit and the perceived barriers. In this study low perceived risk of developing complications (AOR 3.29 95% CI 1.67-6.49) was an independent risk factor associated with late ANC booking among pregnant women. They did not consider being pregnant as being a risk of developing complications that is why they felt that starting ANC when the pregnancy starts to be visible at around the 4^{th} or 5^{th} months was appropriate.

Socio-cultural barriers to early ANC booking in the form of waiting to get permission from significant others, and viewing a pregnancy not as a condition warranting health facility visit were identified in the current study as favorable to late utilisation of ANC services. Lack of knowledge on exact time for commencement of ANC booking has been revealed as another barrier to ANC utilisation in Marondera district. All these factors make women vulnerable to late ANC utilisation.

Conclusion

The study explored factors associated with late ANC booking among pregnant women in Marondera district. Several variables were found to be associated with late ANC booking among pregnant women in Marondera district. Other factors contributing to late ANC booking were, lack of knowledge on the effects of late initiation of ANC utilisation, long distance to the ANC facilities, limited transportation options as well as beliefs that pregnancy is not sickness and therefore it is not necessary for one to go for health check-ups in the form of ANC visits.

These results reflect inadequate empowerment of pregnant women with the right knowledge of modern ANC services. The beliefs also influenced attitudes and the behaviour of pregnant women. As a result, pregnant women were not able to recognize threats to their health status and the significant others were unable to support pregnant women improve their ANC behaviour and avoid negative pregnancy outcomes through early initiation of ANC.

Recommendations

Based on the findings of this study, the following recommendations were made which could be implemented to promote the early utilization of ANC.

- The District Health Executives (DHEs) should convene community mobilisation campaigns to sensitize communities on the importance of ANC booking and stipulate the recommended booking times.
- The Ministry of Health and Child Care (MoHCC) should recruit more nurses and other HCWs in order to ease the burden on the nurses and midwives working in the ANC department, this will reduce the clients' waiting time and will lower staff burnout.
- The Government of Zimbabwe in Partnership with UNFPA and UNICEF and other willing organisations should use mass campaign media to provide information on the importance of starting ANC early, e.g. through the use of radio stations, TV, newsletters, bill boards and the social media
- IEC materials on ANC and PMTCT should be provided not only to clinic attendees, but also to the communities by identifying strategic places and events where the health promotion teams can distribute information.
- The MoHCC should find strategies to involve men in the ANC clinics. The services should be friendly to promote their engagement.

Recommendations for further studies

The findings of this study suggest that future researchers could investigate the following

- Conduct a similar study in other districts and provinces on a larger scale for proper generalization of the findings.
- Explore how men could best be involved in maternal and child health programmes.

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