

BARRIERS TO UTILIZATION OF FOCUSED ANTENATAL CARE  
AMONG PREGNANT WOMEN IN NTCHISI DISTRICT IN MALAWI

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## ABSTRACT

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BANDA CHRISTINA LEAH: BARRIERS TO UTILIZATION OF FOCUSED  
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### Background

Maternal mortality remains a huge public health problem in developing countries. One of the strategies to improve maternal health is the implementation and appropriate use of focused antenatal care (FANC) services. Utilization of FANC is influenced by several factors that vary from one country to another.

### Aim

The aim of the study was threefold; first to assess the level of knowledge of women on importance of FANC; second to determine factors associated with low utilisation of focussed antenatal care services among pregnant women in Ntchisi district in Malawi; and third to establish the current practices and perceptions of health care providers towards FANC.

### Methods

This was a cross sectional quantitative study conducted among pregnant women, postnatal mothers and health workers from 12 health facilities in Ntchisi district in Malawi. The study included pregnant women who were 36 weeks' gestation and above and postnatal mothers whose infants were below 6 weeks of age. A total of 120 pregnant women, 84 postnatal mothers and 36 health workers were enrolled in the study. Two structured questionnaires were used to obtain information from study participants, one for both pregnant and postnatal mothers and a different one for health workers. In the present study low utilisation of FANC services among pregnant women was determined based on number of visits. SPSS software was used to generate descriptive statistics and cross tabulations with  $\chi^2$ -test were performed to explore associations between variables.

### Results

Almost all (96%) participating women had at least some knowledge of FANC, also 85% of the participating women agreed that FANC would enable them to receive vaccines, supplements and malaria prophylaxis. Maternal age range of between 20-25 years and higher parity were significantly associated with low utilization of FANC ( $P < 0.05$ ). Long distance to the health facility, seeking permission to start and use FANC, were also significantly associated with low utilization of FANC ( $P < 0.001$ ). Maternal perception of showing off the pregnancy was associated with late initiation of FANC visits ( $P < 0.001$ ). Fear associated with witchcraft was marginally associated with low FANC utilization. Almost all health workers (94%) were conversant with FANC guidelines and principles, only 72% implemented FANC guideline on individualized health education. A positive perception towards FANC among health workers was also shown in this study.

## **Conclusion**

The study has shown that majority of participating mothers knew the importance of FANC. Low utilization of FANC among pregnant women and postnatal mothers in Ntchisi district has been shown to be influenced by higher parity, Age range between 21-25 years, long distance, seeking permission and pregnancy associated beliefs notably witchcraft. Health workers are acquainted with FANC and demonstrated a positive perception. Health education aimed at promoting uptake of FANC services should be intensified in the district to ultimately improve maternal and infant health.

## **Key words**

Focused antenatal care, maternal mortality, developing countries, pregnant women, low utilization

## Table of contents

1. INTRODUCTION .....	1
2. LITERATURE REVIEW .....	3
<b>2.1 Maternal health</b> .....	3
<b>2.2 Antenatal care</b> .....	6
2.2.1 Description of antenatal care.....	6
2.2.2 Benefits of antenatal care.....	8
<b>2.3 Focused antenatal care</b> .....	8
2.3.1 General overview of FANC .....	8
2.3.2 Aim and objectives of FANC .....	11
2.3.3 FANC in Malawi .....	12
2.3.4 Demographic and socio-cultural factors and FANC/ANC.....	12
2.3.5 General knowledge on FANC/ANC .....	14
2.3.6. Health care workers perspective.....	14
<b>2.4 Conceptual Framework: Health Belief Model</b> .....	20
<b>2.5 Summary of Literature review</b> .....	23
3. AIMS OF THE STUDY .....	24
4. MATERIALS AND METHODS.....	25
<b>4.1 Study area</b> .....	25
<b>4.2 Study subjects</b> .....	28
<b>4.3 Study design</b> .....	29
<b>4.4 Description of the main study variables</b> .....	29
4.4.1 Low utilization .....	29
4.4.2 Knowledge of women on importance of FANC.....	30
4.4.3 Demographic and social and cultural factors associated with low utilisation of FANC.....	30
<b>4.5 Pre-testing</b> .....	31
<b>4.6 Data handling</b> .....	31
<b>4.7 Ethical considerations</b> .....	31
<b>4.8 Data analysis and statistical methods</b> .....	32
5. STUDY RESULTS .....	33
<b>5.1 Participating mothers</b> .....	33
5.1.1 Demographic characteristics .....	33
5.1.2 Knowledge on FANC .....	34
5.1.3 FANC utilization .....	36
5.1.4 Demographic and sociocultural factors related to low utilization of FANC.....	37
<b>5.2 Health care workers</b> .....	41
5.2.1 Demographic characteristics .....	41
5.2.2 Training and current practices.....	41

5.2. 3. Health care workers perception towards FANC.....	42
6. DISCUSSION OF STUDY FINDINGS .....	44
<b>6.1 Knowledge about FANC .....</b>	<b>44</b>
<b>6.2 Demographic and Socio-cultural factors associated with low utilization .....</b>	<b>45</b>
<b>6.3 Demographic characteristics, current practices and perception of the health workers .....</b>	<b>48</b>
<b>6.4. Strengths and weaknesses of the study .....</b>	<b>51</b>
<b>6.5 Implications for further studies and recommendations .....</b>	<b>51</b>
7. CONCLUSIONS .....	52
8 ACKNOWLEDGEMENTS.....	53
9. REFERENCES .....	54
10. APPENDICES .....	64
<b>Appendix 1: Sample size calculation .....</b>	<b>64</b>
<b>Appendix 2: Questionnaire for women.....</b>	<b>65</b>
<b>Appendix 3: Questionnaire for health workers.....</b>	<b>72</b>
<b>Appendix 4: Clearance Letter.....</b>	<b>77</b>
<b>Appendix 5: Approval Letter from Ministry Of Health .....</b>	<b>78</b>
<b>Appendix 6: Letter to the District council .....</b>	<b>79</b>
<b>Appendix 7: Approval Letter from District Commissioner .....</b>	<b>80</b>
<b>Appendix 8: Approval Letter from District Health Officer.....</b>	<b>81</b>
<b>Appendix 9: Informed Consent .....</b>	<b>82</b>

## **Abbreviations**

ANC	Antenatal care
FANC	Focused antenatal care
HMIS	Health management information system
IEC	Information, education and communication
MDG	Millennium Development Goals
MMR	Maternal mortality ratio
MDHS	Malawi Demographic and Health Survey
TTV	Tetanus toxoid vaccine
WHO	World Health Organization
UNICEF	United Nations Children's Fund

## **1. INTRODUCTION**

Globally there has been a tremendous decline in maternal mortality ratio (MMR). Despite this recent decline, Sub-Saharan Africa has the highest MMR in the world albeit strategies and interventions that prioritize maternal health (Hogan et al. 2010; WHO 2012). In sub-Saharan Africa MMR was estimated to be 500 per 100,000 live births in 2010. The United Nation Millennium Development Goals (MDG) on maternal health aims to reduce the number of women dying during pregnancy and childbirth by three-quarters between 1990 and 2015. To achieve this goal, it is estimated that an annual decline in maternal mortality of 5.5% is needed; however, between 1990 and 2010 the annual decline was only 1.7% in the sub-Saharan region, (WHO 2012). Thus many countries in sub-Saharan Africa will not be able to achieve the goal by 2015.

One of the strategies aimed at addressing maternal mortality in developing countries is the implementation of focussed antenatal care (FANC), which is the care a woman receives throughout her pregnancy (WHO 2002). Trials conducted in Argentina, Cuba, Saudi Arabia, and Thailand proved that FANC was safe and was a more sustainable, comprehensive, and effective antenatal care (ANC) model (WHO 2002). Based on results from trials on FANC, the World Health Organization (WHO) in 2001 issued guidance on this new model of ANC for implementation in developing countries. The new FANC model reduces the number of required antenatal visits to four, and provides focused services shown to improve both maternal and neonatal outcomes.

However, many women in Africa, Malawi inclusive, under-utilise FANC services. Usually they come late for the services and make fewer than recommended number of FANC visits. In Niger Delta, 77% of the pregnant women start utilising FANC in the second trimester (Ndidi and Oseremen 2010) while in Kenya 45% in the third trimester (Magadi et al. 1999). In Malawi 48% of the pregnant women start utilising FANC in the second trimester (Malawi Demographic and Health Survey 2010). In terms of number of visits, in developed countries, 97% of the pregnant women make at least one antenatal visit and 99% of these pregnant women deliver with skilled birth attendants (Mrisho et al. 2009). To the contrary, in developing countries, including Malawi, 49% of pregnant women make at least have one FANC visit and oftentimes two thirds of these women deliver with unskilled birth attendants (Mrisho et al. 2009; MDHS 2010).

Studies have linked low utilization to poor pregnancy outcomes, which ultimately lead to higher maternal and neonatal morbidity and mortality (Raatikainen et al. 2007).

Globally scientific evidence has shown that low utilisation of FANC services is influenced by some factors such as low maternal education, teenage pregnancies, multiparity, unplanned pregnancies and cultural factors (Simkhada et al. 2008). In Malawi there are only a few studies done on FANC (Chiwaula 2011). Furthermore no study has been carried out in Ntchisi district in Malawi on FANC. Ntchisi Health management information system (HMIS) reports of 2008 and 2011 indicate that less than 12% of the pregnant women came for antenatal care in the first trimester and oftentimes women only made an average of two visits per pregnancy. A lot of initiatives are in place to encourage adequate FANC utilization, these include intensive information, education and communication (IEC) on maternal health services offered in all health facilities. It is worrying that despite availability of the reproductive health policy and initiatives promoting adequate utilization of FANC services, very few pregnant women utilize these services.

Therefore this study aims at determining factors associated with low utilisation of FANC services among pregnant women in Ntchisi district in Malawi. Further the study will determine the demographic and socio-cultural factors that may negatively affect utilization of FANC services in the district. Additionally, it will help to identify whether there are any gaps in knowledge, training of current practices and perceptions of health care workers towards FANC. Moreover, the study will inform the design of strategies that will seek to improve the uptake of FANC services thereby positively impacting on reducing high infant and maternal mortality in the district.

## 2. LITERATURE REVIEW

### 2.1 Maternal health

In medical terminology the term maternal health is simply understood as pregnancy related health. Three different types of indicators have mostly been used to describe maternal health. These include; maternal mortality, morbidity for selected illnesses, and nutrition related problems during pregnancy (Bergstrom and Goodburn 2001). Maternal mortality still remains a burden to health care system especially in the developing world. MMR is expressed as number of maternal deaths per 100,000 live births whereas maternal death is defined as the death of a woman while pregnant or within forty-two days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental causes, (WHO 2005). Great disparities in MMR occur between developed and developing countries, with majority occurring in developing countries, for instance 1140 deaths per 100,000 live births in Malawi compared to 5 deaths per 100,000 live births in Australia in 2008 (Table 1). In 2008 the MMR for Ntchisi district was 624 deaths /100, 000 live births (Ntchisi HMIS 2008), lower than the national MMR.

**Table 1: Maternal mortality rate (MMR) for developed and developing countries, 1980-2008, deaths per 100,000 live births**

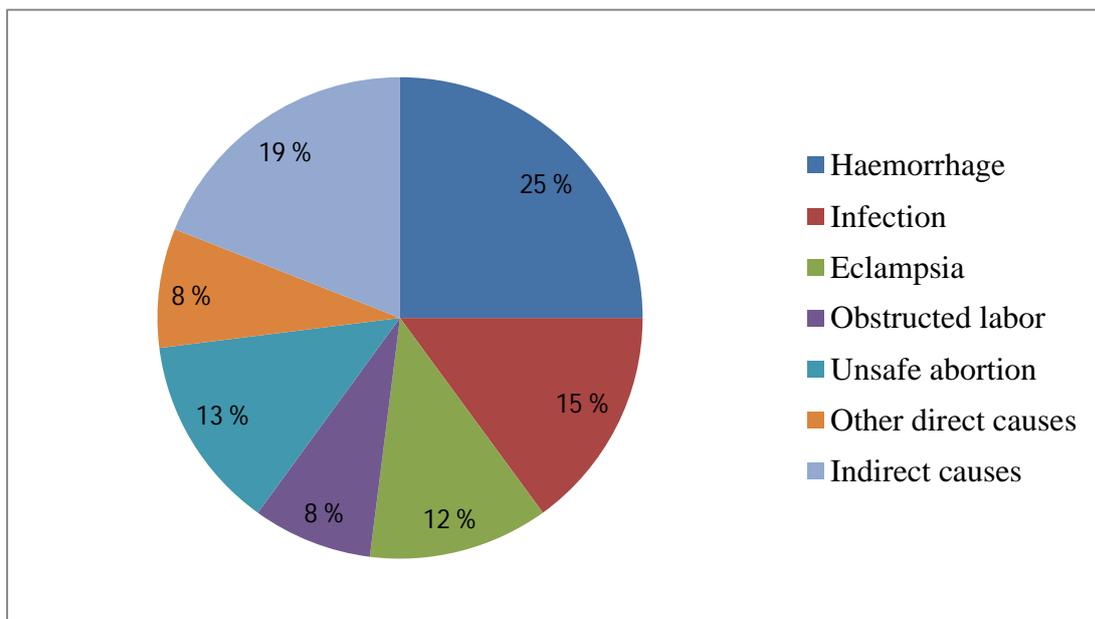
Country	1980	1990	2000	2008
Australia	9	6	5	5
Canada	7	6	6	7
Finland	7	7	7	7
Japan	20	12	8	7
United Kingdom	10	8	8	8
Nepal	865	471	343	240
Swaziland	559	359	609	736
Sierra Leone	1240	1044	1200	1003
Malawi	632	743	1662	1140
Central African Republic	990	1757	1988	1570

Source: Hogan et al. 2010

In developing countries, including Malawi and Ntchisi district, complications of pregnancy and child birth are the leading causes of deaths among women of reproductive age (WHO 2012; Rosato et al. 2006). Most these maternal deaths and injuries are caused by biological processes, not from disease, which can be prevented and have been largely eradicated in the developed world. Hemorrhage is one of those biological processes, and accounts for 25% of maternal deaths globally (Figure 1), 34% in developing countries and 13% in developed countries. Sepsis, indirect causes (malaria, anaemia), unsafe abortion, obstructed labor, eclampsia and other direct causes accounts for over a half of all maternal mortality (Figure 1). Insufficient obstetric care in poor resource settings, low utilization of both antenatal and postnatal care as well as low coverage of births attended by skilled labor further exacerbate the MMR (Hogan et al. 2010).

In Malawi, the most common causes of maternal deaths are similar to those identified globally, for instance studies have shown that hemorrhage accounts for 33%, ruptured uterus and obstructed labour 30%, eclampsia 7%, abortion 7% and indirect causes such as anemia 13%. Furthermore, infections such as meningitis 7% and AIDS 7% also contribute to maternal mortality (Geubbels 2006).

**Figure 1: Global distribution of causes of maternal mortality**

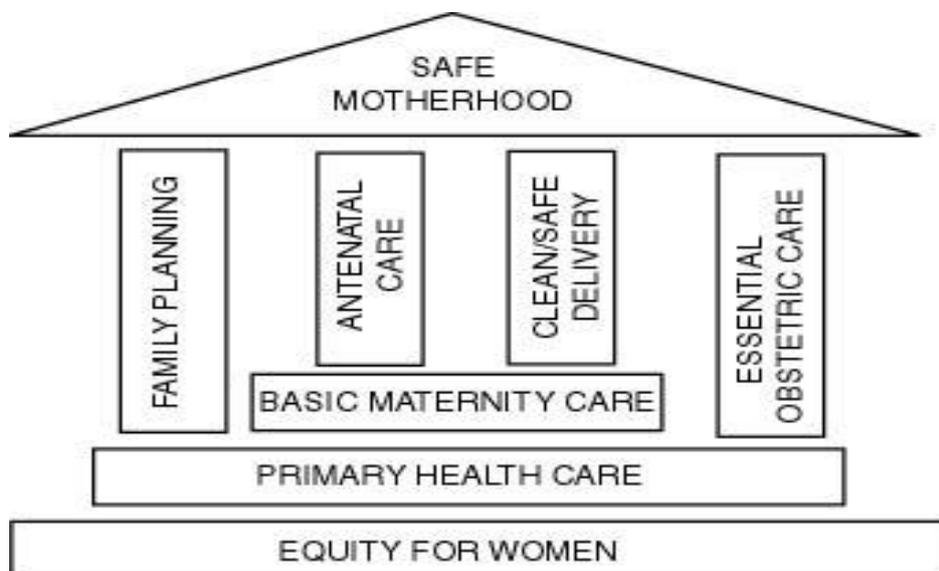


Sourced from WHO; the world health report 2005

Improving maternal health is the fifth United Nations MDG aiming to reduce maternal deaths. WHO has been advocating for improvements of maternal health through safe-motherhood initiative. Safe motherhood initiative was developed in 1987 in Nairobi, Kenya at an international consortium of United Nation agencies, governments, Non-governmental organizations as well as donors in response to the escalating levels of maternal and infant morbidity and mortality in most developing countries. Its main aim was to ensure that most pregnancies and deliveries are handled safely both at the community and health facility level in an act to reduce maternal deaths by 70% from 1990 to 2015 (WHO 2012). Although, most maternal and infant deaths can be prevented through safe motherhood practices, millions of women worldwide are still being affected by maternal mortality and morbidity from preventable causes.

Safe motherhood 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 (Figure 2). The pillars of safe motherhood are family planning, ANC, clean/safe delivery and essential obstetric care. In an act to preserve health of the mother and baby, it is substantial to implement Safe motherhood in a vertical and coordinated manner and form part of a broad strategy to improve reproductive health through primary health care as illustrated in the Figure 2 below. Thus all interventions should be applied holistically within the general context that promotes equity in access to quality care by all women in reproductive age.

**Figure 2: The four pillars of safe motherhood**



Source: WHO 1996

## **2.2 Antenatal care**

### **2.2.1 Description of antenatal care**

Antenatal care refers to the regular medical and nursing care recommended for women during pregnancy. Furthermore, it is a type of preventive care with the goal of providing regular checkups that allow doctors or midwives to prevent, detect as well as treat potential health problems that may arise in a pregnant woman, (WHO 2005). ANC offers a woman advice and information about appropriate place of delivery, depending on the woman's condition and status. It also offers opportunity to inform women about the danger signs and symptoms which require prompt attention from a health care provider. Furthermore, ANC may assist in abating the severity of pregnancy related complications through monitoring and prompt treatment of conditions aggravated during pregnancy, such as pregnancy induced hypertension, malaria, and anaemia which put at risk both the life of the mother and unborn baby (Bloom et al. 1999; Bhatia and Cleland 1995).

ANC has long been considered a basic component of any reproductive health care programme. Different models of antenatal care have been put into practice all over the world. These models are the result of factors such as socio-cultural, historical, traditional nature as well as economy of the particular country. Moreover, human and financial resources of the specific health system substantially play a part in building the model (Shah and Say 2007). Most developed countries use traditional model of prenatal care which is based on larger number of visits, approximately 7-10 visits. They include starting antenatal as early as possible, monthly visits up to 28 weeks, followed by weekly up to 36 weeks until delivery, (Say and Raine 2007). Pregnant women in these high income countries receive adequate prenatal care which includes frequent tests, and ultra sound evaluation. They also give birth under supervision of medically trained personnel and have prompt access to emergence treatment if complications arise. On the contrary, most low income countries incorporated in their health systems a new model called Focused antenatal care the details of which will be elaborated in subsequent sections. The traditional ANC had not done well in most developing countries including Malawi as indicated in Table 2, many of those who attend antenatal care clinics come only once or twice and sometimes late in pregnancy (Shah and Say 2007).

**Table 2: Percentage of women who had at least four antenatal visits with trained health personnel during the most recent pregnancy, 2000-2005**

<b>Country</b>	<b>Year</b>	<b>Percentage (%)</b>
<b><u>Asia</u></b>		
Cambodia	2000	8
Nepal	2001	12
Bangladesh	2004	14
Philippines	2003	66
<b><u>Africa</u></b>		
Mauritania	2001	8
Rwanda	2000	10
Chad	2004	16
Malawi	2000	53
Ghana	2003	68
<b><u>Latin America</u></b>		
Nicaragua	2001	55
Bolivia	2003	55
Colombia	2005	83

Source: Shah and Say 2007

The WHO developed ten principles reflecting effective prenatal care (Chalmers et al. 2001). The principles emphasize that care for normal pregnancy and birth should be comprehensive and simplified whenever possible. Furthermore, care should be based on the use of appropriate technology, without overusing sophisticated or complex technology when simpler procedures may suffice. One of the principles reiterates that scientific evidence should be the basis of care and implementation should be decentralized based on an efficient referral system. Multidisciplinary and holistic approaches should be incorporated in caring for pregnant women's biological, intellectual, emotional, social, and cultural needs. The WHO principles also considered the need to make care family centered, culturally appropriate and also aim at women empowerment. The final principle stipulates that care should be based on respect for privacy, dignity and confidentiality of pregnant women, (Chalmers et al. 2001).

### 2.2.2 Benefits of antenatal care

Antenatal care contributes to good pregnancy outcomes and oftentimes benefits of antenatal care are dependent on the timing and quality of the care provided, (WHO and UNICEF 2003). It has been shown that regular antenatal care is necessary to establish confidence between the woman and her health care provider, to individualize health promotion messages, and to identify and manage any maternal complications or risk factors (Hollander 1997). During antenatal care visits, essential services such as tetanus toxoid immunization, iron and folic acid tablets, and nutrition education are also provided (Magadi et al. 1999). Lack of antenatal care has been identified as one of the risk factors for maternal mortality and other adverse pregnancy outcomes in developing countries (Anandalakshmy et al. 1993; Fawcus et al. 1996). Moreover, many studies have demonstrated the association between lack of antenatal care and perinatal mortality, low birth weight, premature delivery, pre-eclampsia, and anaemia (Ahmed and Das 1992; Coria-Soto et al. 1996).

In a study conducted in Mexico by Coria-Soto et al. (1996), inadequate number of visits was associated with 63 per cent higher risk of intra uterine growth retardation. Similar results were reported in a Bangladeshi study where birth weight was positively correlated with the frequency of visits at antenatal clinics (Ahmed and Das 1992). All these results point to the important role of antenatal care in identifying and mitigating the potential complications during pregnancy. Moreover, a study conducted in Canada by Heaman et al. (2008) on inadequate prenatal care and association with adverse pregnancy outcome indicated that preterm birth, low birth weight, small-for age gestational and increased mortality rate were associated with inadequate prenatal care. Raatikainen et al. (2007) showed similar findings in a study conducted in Finland, where an increase in low birth weight infants, more fetal deaths, and more neonatal deaths were common among those under attending ANC.

## **2.3 Focused antenatal care**

### 2.3.1 General overview of FANC

FANC is a personalized care provided to a pregnant woman with emphasis on the woman's overall health, preparation for childbirth and readiness for complications. It is said to be timely, friendly, simple and safe service to a pregnant woman, furthermore, it

contributes to maternal and neonatal outcomes similar to those of traditional ANC model (WHO and UNICEF 2003). FANC is goal oriented, has no adverse effects on the pregnant mother and unborn baby even though the number of antenatal visits have been reduced to at least four, where each visit is focused rather than routine (Villar et al. 2001). Most low income countries have incorporated FANC in their health systems. The model has fundamental public health implications especially in developing countries where health care resources are inadequate. It curtails the costs of the woman in terms of time traveling to and from the clinic, waiting time, transport costs where clinics are located far, loss of working hours, and care of other children at home. Consequently, time and energy would be saved by the health care personnel as well (Birungi et al. 2008).

Studies have been conducted both in Africa and other regions of the world to assess the feasibility, acceptability and effects of implementing FANC. It was eminent in studies conducted in Ghana, Kenya and South Africa that FANC is acceptable to clients and providers in Africa and can improve quality of care (Nyarko et al. 2006; Birungi and Onyango-Ouma. 2006; Chege et al. 2005), which explains why most developing countries have welcomed FANC (Birungi et al. 2008). Table 3 shows FANC model outlining the visits with corresponding gestational age in weeks. 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 3: Focused antenatal care (FANC) model outlined in WHO clinical guidelines**

<b>First Visit (8-12 weeks)</b>	<b>Second Visit (24-26 weeks)</b>	<b>Third Visit (32 weeks)</b>	<b>Fourth Visit (36-38 weeks)</b>
<p>Confirm pregnancy and expected date of delivery, classify women for basic ANC (four visits) or more specialized care. Screen, treat and give preventive measures such as iron and folate supplements, tetanus toxoid vaccine (TTV) and sulfadoxine pyrimethamine. Develop a birth and emergency plan. Advise and counsel on reproductive health, breastfeeding, tobacco and alcohol use.</p>	<p>Assess maternal and fetal well-being. Exclude pregnancy induced hypertension and anemia. Give preventive measures such as iron supplements. Review and modify birth and emergency plan. Continue advising and counseling.</p>	<p>Assess maternal and fetal well-being. Exclude pregnancy induced hypertension, anemia and multiple pregnancies. Give preventive measures such as iron and second TTV administration. Review and modify birth and emergency plan. Continue advising and counseling</p>	<p>Assess maternal and fetal well-being. Exclude pregnancy induced hypertension, anemia, multiple pregnancy and malpresentation. Give preventive measures such as iron supplements. Review and modify birth and emergency plan. Repeat advice given from previous visits.</p>

Source: WHO 2002

### 2.3.2 Aim and objectives of FANC

The main aim of FANC is to achieve a good outcome for the mother and the baby, and prevent any complications that may occur in pregnancy, labour, delivery and postpartum. This could be achieved through the following objectives;

*Early detection and treatment of complications:* It mainly focuses on assessment and examination of a pregnant woman for chronic conditions and infectious diseases. Conditions that may threaten the life of the mother and baby when not treated are; HIV/AIDS, Syphilis, other sexually transmitted diseases, malnutrition, tuberculosis and malaria. Furthermore, conditions such as severe anemia (Hb <7g/dl), vaginal bleeding, eclampsia, fetal distress, fetal mal-presentation after 36 weeks, and chronic conditions such as kidney failure, diabetes and heart problems should also be taken into consideration if we are to save the life of the mother and unborn ( JHPIEGO 2007).

*Prevention of complications:* It entails that a health service provider should ensure prevention of complications by providing TTV to prevent maternal and neonatal tetanus, and iron and folic acid to prevent anemia. Moreover, the provider should ensure use of intermittent preventive treatment and insecticide treated nets to prevent malaria, and environmental hygiene to prevent diarrhea and intestinal worms (JHPIEGO 2007).

*Birth preparedness and complication readiness:* It provides a woman with a plan about place of delivery, transportation, companionship, blood donor, items for clean and safe delivery. In addition the woman is imparted with knowledge about danger signs, and actions to take if they arise. Data indicates that 15% of women develop pregnancy related complications, and that these women could die if nobody was there to make timely decision at home and health facility, and also if no plans for transportation and finances are made (JHPIEGO 2007).

*Health promotion and counseling:* Encourage dialogue between the woman and service provider. Issues affecting a woman's health and that of the newborn are discussed at length. It includes dietary and nutrition education, for example how to get essential nutrients. Furthermore, the woman is given information about risk of smoking, use of herbs, rest, hygiene, safer sex, and medication. Information regarding family planning, exclusive breast feeding as well as immunization and care of the newborn is included in counseling (JHPIEGO 2007).

### 2.3.3 FANC in Malawi

In Malawi provision of FANC is integrated with under-five clinics, family planning, post natal care and other reproductive health services. MDHS (2010) demonstrates that 73% of the FANC care services are provided at primary health facilities which includes health centres, dispensaries, maternity units on daily basis while 27% are provided at secondary and tertiary health delivery levels (district hospitals and central hospitals). The same MDHS Report (2010) indicates that 9% of the pregnant women in Malawi start utilising FANC care in the first trimester ranging from 4% in Chiradzulu district to 27% in Rumphi district. Ministry of Health report (2007) illustrates that Malawi adopted use of WHO guidelines that recommends use of FANC services in 2003. The reports further argue that an average three visits are made per pregnancy against the recommended of at least four visits. In Malawi, the overall implementation of FANC is above WHO standards, while, the process of delivery of services in terms of performance is below WHO standards (Lungu et al. 2011).

### 2.3.4 Demographic and socio-cultural factors and FANC/ANC

Both FANC and ANC utilization can be influenced by demographic and socio-cultural factors. Maternal age has been shown to be both negatively and positively influence utilization of FANC and ANC in general. A study conducted in Turkey demonstrated that teenage mothers were statistically less likely to use FANC services (Ciceklioglu et al. (2005). However, in other studies teenage mothers were more likely to start utilizing ANC services earlier than their older counter parts (Bhatia and Cleland 1995). Other than age, maternal education has also been shown to influence utilization of FANC. Matsumura and Gubhaju (2001) in study conducted in Nepal demonstrated that women with higher education were more likely to utilize FANC than those with lower education. Pallikadavath et al. (2004) found similar results, in their study they had demonstrated that both maternal and paternal education positively influence utilization of FANC. Other demographic factors such as marital status, occupation, religion, family size and ethnicity also statistically significantly influence utilization of FANC (Table 4).

Studies on social factors influencing utilization of FANC demonstrates that, desirability of pregnancy, is a statistically significant determinant of FANC use. Pregnant women with unplanned pregnancies were found to make less FANC visits (Magadi et al. 2000,

Erci 2003, Paredes et al. 2005). Place of residence has also been shown to influence FANC utilization, women in urban areas were more likely to use FANC more than rural women in Ecuador (Paredes et al. 2005) and Nepal (Sharma 2004). On the other hand, a study by Navaneetham and Dharmalingam (2002) in India found that women in urban areas of Karnataka were less likely to receive ANC than those living in rural areas. Distance to the health facility is inversely associated with ANC utilization (Glei et al. 2003). A study conducted by Magadi et al. (2000) in Kenya demonstrated that an increase in distance to the nearest healthcare facilities was associated with fewer antenatal visits. Moreover, uncomfortable transport, poor road conditions and difficulties in crossing big rivers have also been shown to be barriers to utilization of FANC in studies conducted in Zimbabwe (Mathole et al. 2004) and in Pakistan (Mumtaz and Salway 2005).

Some cultural beliefs have also been found to influence utilization of FANC. The study conducted by Simkhada et al. (2010) in Nepal found that mother in laws negatively influenced utilization of FANC by their daughter in-laws. In this study Simkhada et al. (2010) found that mother in laws tend to persuade their daughter in laws to fulfil household duties instead of visiting ANC care. Lee et al. (2009) in a study conducted in Taiwan also found that mother in laws and spouse, heavily influence decision about where and whether to go for antenatal care. Engaging men as partners is a critical component of FANC, but their involvement has been low (Byamugisha et al. 2011) and there's hence a need to encourage male participation to promote the uptake of FANC by pregnant women. The influence of male involvement on utilization of FANC would then be established from qualitative studies which may be designed to investigate the direction of the influence (Mullick et al. 2005). Furthermore, in Zimbabwe Mathole et al. (2004), found that the early period of pregnancy was the most vulnerable to Witchcraft associated fears, which was the reason for pregnant women not attending FANC in first trimester. A study conducted in Malawi by Chiwaula (2011) also demonstrated that cultural beliefs negatively influence utilization on FANC.

### 2.3.5 General knowledge on FANC/ANC

Knowledge on FANC and ANC is critical in determining pregnant women's use of antenatal services (Simkhada et al. 2007). Studies have shown that exposure to mass media particularly television and radio significantly predicts utilization of FANC. Pallikadavath et al. (2004) and Sharma (2004) in studies done in India and Nepal, respectively, found that pregnant women who were watching television every week were more likely to use FANC. Moreover, studies have shown that adequate knowledge of ANC has a positive and statistically significant effect on FANC use (Paredes et al. 2005, Nisar and White 2003). In the study conducted by Ndyomugenyi et al. (1998) in rural area of Uganda indicated that pregnant women with inadequate knowledge of Maternal and child health were likely not to utilize ANC. A similar study was conducted in Nigeria by Amosu et al. (2011), the findings indicated that health care provider and pregnant women ignorance about FANC was one of the factors affecting utilization of FANC.

### 2.3.6. Health care workers perspective

Health care workers compliance, perception and attitude play a crucial role as regards to utilization of FANC. Mathole et al. (2004) explains that poor attitude of health care providers towards pregnant women contributes to low utilization of FANC services in Zimbabwe. He further contends that many of these mothers prefer to deliver with unskilled birth attendants in the villages. Conrad et al. (2011) substantiate this finding in a multicentre study conducted in Tanzania, Uganda and Burkina Faso where it was noted that health care workers did not comply with the procedures stipulated in FANC guidelines and this had a tremendous effect on the utilization of FANC. Conversely, Yengo (2007) refuted the claim that health workers (nurses) perception affects implementation and utilization of FANC in Tanzania. She argued that health care workers perceive FANC as beneficial both to the pregnant mother and the unborn, but rather shortage of human and material resources impede successful implementation of FANC.

**Table 4: Review of studies on factors affecting utilization of both Traditional and Focused antenatal care in developing countries.**

Author/Year	Country	Study Design	Sample Size	Results	Comments
<b>Demographic and Social-Cultural Factors</b>					
Andalakshmy et al.1993	India	Case Control study	504 mothers (252 cases and 252 controls)	Social and cultural factors affect utilization of ANC, and that low utilization of ANC affects risk of maternal mortality	Most mothers were brought to the hospital in a critical condition, therefore the high risk was an exaggerated picture.
Bhatia and Cleland 1995	Bangladesh	Cross-sectional study	3595 women under thirty-five years who had at least one child under five	Age affect utilization of ANC. Women below 18 years started antenatal early	Large sample size
Gage1998	Kenya and Namibia	Cross sectional Demographic Health survey		Unwanted pregnancy and poor timing of pregnancy was associated with low utilization of ANC	
Magadi et al. 2000	Kenya	Kenya cross sectional demographic and health survey	5104 women aged 15–49 receiving ANC	Utilization of ANC was positively associated with high socio-economic status of pregnant women, whereas unwanted pregnancies and being married were negatively associated with FANC utilization	
Matsumura and Gubhaju 2001	Nepal	Nepal cross sectional family health survey 1996	1388 ever married women aged 15–49	Utilization of FANC was positively associated with pregnant women's education and household economic status	
Navaneetham and Dharmalingam 2002	India	India cross sectional National family and health survey	1594 in Andhra Pradesh and 1951 in Karnataka	Women in urban areas were less likely to utilize FANC services. Women's education, husband's education and high living standards were positively associated with FANC utilization.	

Erci 2003	Turkey	Cross-sectional survey	446 women who had delivered infants but still in hospital	Utilization of ANC was positively associated with occupation, education, high parity among pregnant women and planned pregnancy	
Glei et al. 2003	Guatemala	Guatemalan Survey of family health 1995	2872 women aged 18–35 whose last two live births occurred within five years	High parity and long distance to the facility were associated with low utilization of FANC.	
Mathole and et al. 2004	Zimbabwe	Cross-sectional study	44 women and 24 men participated in the study.	Long distance and cultural beliefs had great negative influence on FANC utilization	
Pallikadavath et al. 2004	India	Indian National family health survey in 1998–1999	11,369 ever married women	Pregnant women’s education, husband education, women’s autonomy and exposure were positively associated with utilization of FANC, religion and parity were negatively associated with FANC utilization.	
Sharma 2004	Nepal	Cross sectional study	5257 currently married women	Residing in urban areas and high economic status found to be positively affecting use of FANC	
Ciceklioglu et al 2005	Turkey	Prospective Cohort study	245 pregnant women	level of education, husbands occupation, maternal age negatively affect FANC utilization	Limited sample size. Lack of record system that enables follow up of all pregnant women during antenatal period
Mumtaz and Salway 2005	Pakistan	Cross sectional study	7848 women	Uncomfortable transport, poor road conditions and difficulties in crossing big rivers were barriers to utilization of FANC	

Paredes et al. 2005	Ecuador	Cross-sectional survey	1016 women with a pregnancy duration greater than 20 weeks who were delivered at the labour unit	Knowledge positively influenced FANC utilization while undesired pregnancy, parity, rural residence negatively influenced FANC utilization	
Mullick et al. 2005	South Africa	Prospective cohort study	2 082 women and 584 male	Found that male involvement in antenatal care was acceptable and feasible	
Tann et al.2007	Uganda	Retrospective Community Survey	413 women who reported of their most recent pregnancy	Distance to health facility, inadequate media exposure contributes to low utilization of FANC	Small sample size, problem of recall bias.
Lee et al 2009	Taiwan	Cross-sectional exploratory study	101 pregnant Vietnamese women living in Taiwan	Spouses and mother-in-laws influenced decision about where and whether to go for antenatal care, loneliness as well travel distance to health facility also affects utilization of ANC	The limited sample and use of non-probability sampling limit the generalizability of study findings
Simkhada et al. 2010	Nepal	Cross-section study mixed methods study	50 participants (30 antenatal mothers, 10 husbands, 10 mother in-laws.	Mother in-laws and illiteracy negatively affect utilization of FANC,	Small sample size. The study also failed to explore the relationship between literacy and uptake of FANC
Byamugisha et al. 2011	Uganda	Randomized clinical trial	1060 new antenatal attendees (530 intervention and 530 control)	male involvement positively affects utilization of antenatal care	High loss to follow-up rate of approximately 40% reducing the precision and power of the trial to detect differences

Chiwaula 2011	Malawi (Lilongwe)	Cross-sectional study, using both Qualitative and quantitative methods	408 respondents (384 pregnant mothers and 24 key informants)	Lack of knowledge of proper timing to initiate ANC, cultural beliefs and unplanned pregnancies were the major factors contributing to late initiation of ANC	Small sample size hence difficult to generalize the results.
<b>Knowledge on FANC</b>					
Nisar and White 2003	Pakistan	Cross-sectional survey	295 married women of reproductive age 15–49 ever had pregnancy	Adequate knowledge was positively associated with FANC utilization	
Ndyomugenyeni et al. 2007	Uganda	Cross-Sectional study using both Quantitative and Qualitative methods	149 pregnant women responded to questions through an administered questionnaire, 10 FGD with pregnant women, 4 In depth interviews with TBAs and 4 in-depth interviews with Health service providers	One of the factors contributing to low utilization of FANC was inadequate knowledge of pregnant women on maternal and child health.	Smaller sample size for quantitative method.
Amosu et al.2011	Nigeria	cross-sectional study	600 hundred Health workers.	Ignorance about FANC was one of the factors affecting FANC, and lack of policy to enforce FANC also influences FANC	Homogenous population was recruited for the study

<b>Health workers perspective</b>					
Yengo 2009	Tanzania	Cross-sectional study, quantitative method.	143 Nurses	Nurses viewed FANC as beneficial to women and their perception did not affect implementation of FANC. Human and material resources at health facilities affect implementation of FANC	Small sample size. The study was conducted on one district hence difficult to generate findings to other regions.
Mrisho et al. 2007	Tanzania	Cross sectional	74 women participated in FGD and in depth interviews	Health care workers negative attitude as well as inadequate knowledge and strategies for detecting early pregnancies and informing their clients influenced negatively women's understanding on some ANC interventions. Shortage of staff also affected utilization of ANC.	
Conrad et al. 2011	Tanzania, Burkina Faso and Uganda	Cross-sectional study. Descriptive systematic observation	788 ANC sessions and service providers were observed	Service providers noncompliance of procedures in FANC guidelines was one of the factors contributing to low utilization of FANC	Presence of the observer might have affected the Outcomes.

## **2.4 Conceptual Framework: Health Belief Model**

Conceptual framework refers to a set of concepts that are linked and described by broad generalizations which are formulated by an individual for a purpose (Rosenstock 1974). This study will be based on Health Belief Model (Figure 3), a modification of Becker and Maiman (1974) and Rosenstock (1974). Health Belief Model was adopted in this study to explain the concepts pinned in the study, because quantitative studies need to be based on existing body of knowledge or theory. The Health belief model emanated from a foundation of cognitive theories of behavior. Theorists of cognitive belief believe that behavior is contingent upon; the value that an individual places on a desired outcome, and the belief that a behavior, if performed well, will result in the desired outcome, (Bandura 1977). Furthermore, the model explains that a range of health behaviors can be predicted based on information from determinants such as perceived susceptibility, perceived severity, perceived benefits/barriers and modifying factors associated with engaging in a behavior. The application of the model in this study has been outlined in subsequent paragraphs below.

*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 would be more likely to seek medical attention in this case antenatal services if they believe that they are susceptible of developing pregnancy complications.

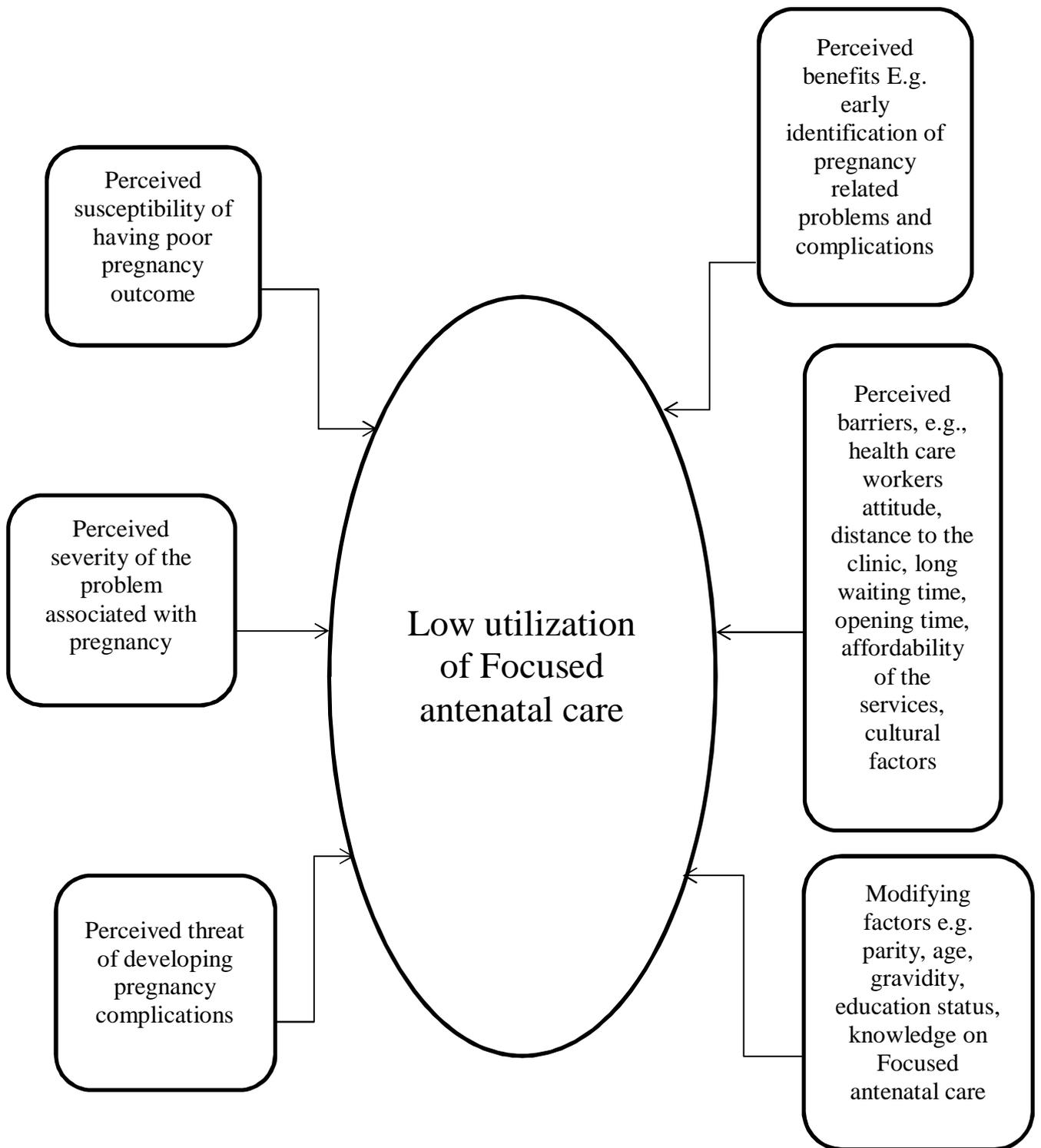
*Perceived severity:* Perceived severity refers to the subjective evaluation of the likelihood that a problem/ illness or disability, if contracted or left untreated, will have severe consequences such as pain, death, handicap, or reduced quality of life in general, (Becker and Maiman 1977). In the context of this study, willingness of pregnant mother to utilize FANC would depend also on personal evaluation of the seriousness of the consequences associated with pregnancy complications for example, death of the fetus.

*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). Compliance with recommended health seeking behavior is impeded to the extent that perceived barriers outweigh perceived benefits that would result from engaging in the health behavior (Rosenstock 1974). For example, inconveniences such as long waiting time at antenatal clinic, distance to the health facility would act as barriers to utilization of FANC. A pregnant woman would opt not to go to the clinic if she sees no benefit in doing so. Furthermore, health care workers negative attitude towards focused antenatal care, inadequate resources both material and human, inadequate equipment and supplies, lack of knowledge regarding benefits of FANC would also impede utilization of FANC (Simkhada et al.2008).

*Modifying factors:* These may include socio-cultural factors as well as demographic aspects such as age, parity, religion, educational status, social values, beliefs and practices of pregnant woman in relation to utilization of FANC (Chivonivoni et al. 2008).

**Figure 3: the Health Belief Model**



(Modified from Rosenstock 1974; Maiman and Backer 1974)

## **2.5 Summary of Literature review**

The body of evidence on global trend of maternal mortality reviewed has shown persistent high MMR in developing countries. The problem of increased maternal mortality is largely compounded by poor social economic status in most developing countries. It has also been shown that there is low utilization of FANC, and absence of quality emergency obstetric care exacerbates the situation. Furthermore, the literature highlighted some factors associated with low utilization of FANC. These include inadequate knowledge of both pregnant mothers and health service providers on FANC, some social-cultural factors as well as perception of health service providers' towards FANC. The literature also unveils the benefits of early FANC attendance in identifying and mitigating the potential complications during pregnancy and birth that may cause both maternal and infant morbidity and mortality. The health belief model was adopted in this study to illustrate the concepts related to the utilization of FANC in developing countries.

### **3. AIMS OF THE STUDY**

The main aim of the study was to determine factors associated with low utilisation of FANC services among pregnant women in Ntchisi district in Malawi.

The specific aims of the study were:

1. To assess the level of knowledge of women on importance of FANC in Ntchisi district
2. To determine the demographic and social and cultural factors that may contribute to low utilisation of FANC
3. To establish the current practices and perceptions of health care providers towards FANC services

## **4. MATERIALS AND METHODS**

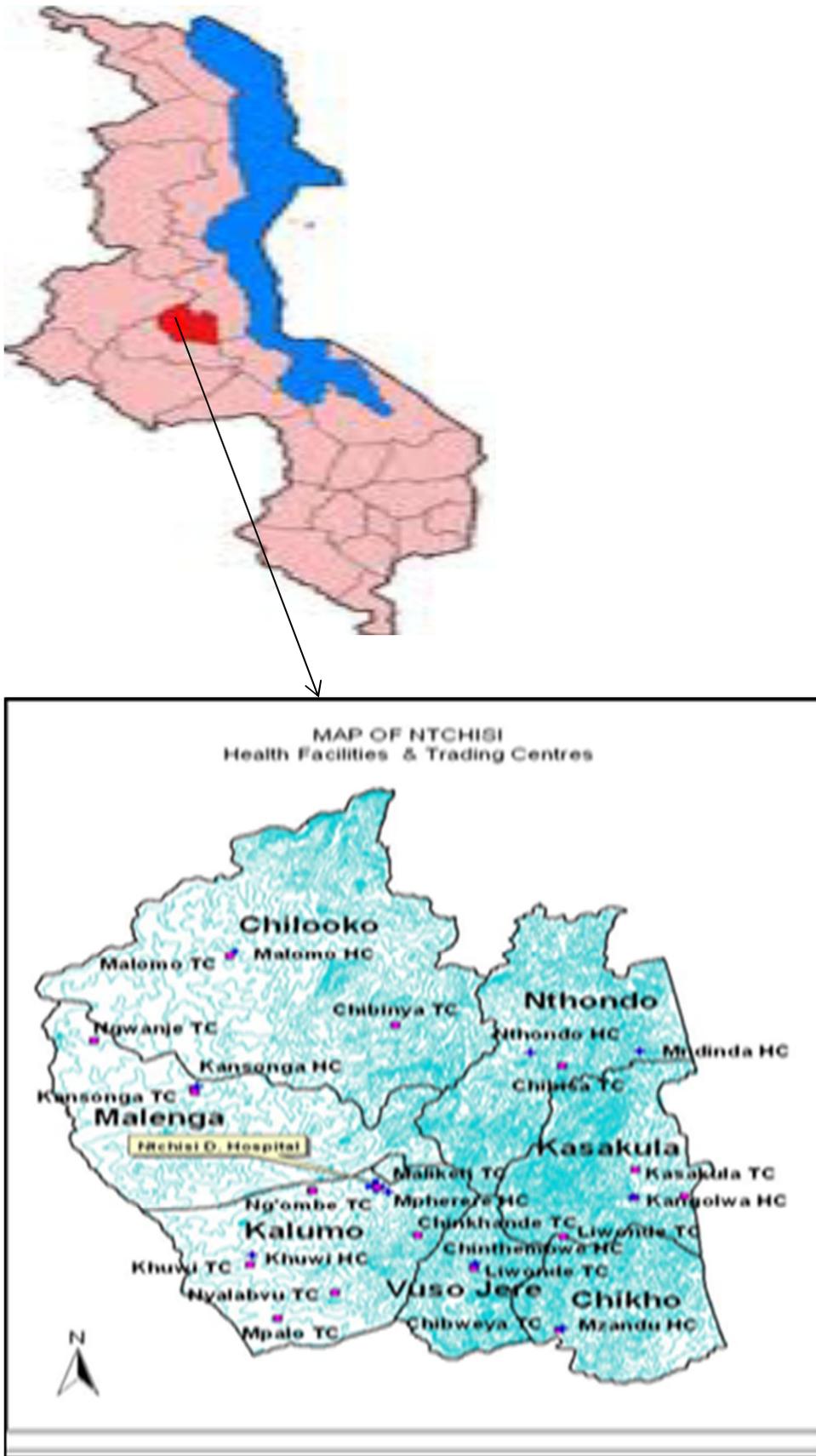
### **4.1 Study area**

The study was carried out in Ntchisi District, located in the central region, 96 km north of Lilongwe the capital city of Malawi, (Figure 4). Malawi is a small landlocked country that is bordered to the north and northeast by Tanzania and to the East, South and Southwest by Mozambique and to the west by Zambia. It has a total surface area of 118, 846 square kilometres of which 94, 276 square kilometres is land, the rest is covered by Lake Malawi (MDHS 2010). Malawi has an estimated gross domestic product of 5.1 billion US dollars (World Bank 2012) and is one of the poorest countries in the world. Malawi's economy is largely agro-based with 30% of the gross domestic product coming from Agriculture (MDHS 2010). The 2008 Population and Housing Census indicate that Malawi has a population of 13.1 million people of which 85% live in rural areas. The crude birth rate and crude death rate are 39.5/ 1000 population and 10.4/1000 population respectively for the country (MDHS 2010), WHO (2010) indicate that life expectancy at birth for Malawi is 47 years which is the lowest globally. Malawi is also among countries with high HIV prevalence, currently 11% of adult population between 15 to 49 years are infected with HIV. The national literacy levels for males and females are 72% and 42% respectively. Majority of Malawians are engaged in subsistence agriculture, with women contributing 58% and 50% of males contributing to the labour force in agriculture.

The 2008 Population and Housing Census report for Malawi, shows that Ntchisi district has a population of 224, 098 people, making it the fifth smallest district in the country. The predominant religion in the district is Christianity with Chewa as the main ethnic group. Family organization is matrilineal, whereby men move to the wife's village at the time of marriage. However men are normally considered heads of households because they have stronger influence. According to the recent MDHS (2010), Ntchisi district has similar education attainment levels to that of national proportions. At national level 19% of females and 11% of males have never attended any school, whereas for Ntchisi district 18% of females and 13.4% of the males have never attended any school (MDHS 2010). Overall Ntchisi has low education attainment which is also similar to the national figures. Majority of the population just have some primary education, 64.8% for females and 64.4% for the males. The major occupational activity

for Ntchisi district is agriculture, with 64.4% of women and 68.2% of Males being engaged in subsistence farming. The vital statistics for the district shows that the health situation is relatively similar to the national statistics.

Figure 4: Map of Malawi and Ntchisi



The health delivery system in the district includes government and Christian Association of Malawi (CHAM), with health services being offered at Ntchisi district hospital and the following health centres; Malomo, Nkhuzi, Nthondo, Khuwi, Chinguluwe, Mndinda, Kangolwa, Kamsonga, Nzandu and Malambo, Chinthembwe. The latter two health centers are operated by CHAM while the rest are government facilities. Data for the current study were collected from all these facilities. The distribution of health facilities is as shown in (Figure 4). The district government hospital is the major health facility providing secondary health care services. Primary health care is delivered through the 11 health centers. In terms of personnel, the entire Ntchisi district has 2 medical doctors and 60 nurses including 20 medical assistants and about 14 clinical officers.

#### **4.2 Study subjects**

The recruitment period for the study was from mid-June to end of August 2012, recruitment was done by the researcher and 11 research assistants who were nurses from each of the 11 health centres. The interviewing nurses were trained to conduct and administer the questionnaires. The study recruited 204 pregnant and postnatal mothers (see Appendix 1 for sample size calculation) and all 36 healthcare workers working in the antenatal sections. In each health facility, 10 pregnant women above 35 weeks of gestation who were waiting to deliver at the facility were included in the study. Also from each of the 12 health facilities 7 postnatal mothers, who had come to the facility for immunization of their babies, were enrolled into the study. Participating mothers were conveniently sampled; the research team visited the maternity and postnatal section of the facility and explained the purpose of the study to the nurse of the section.

The nurses responsible for the section were asked to identify potential women to participate in the study. Nurses used the health passport for mothers to confirm the gestation and postnatal details, eligible mothers were given information for the study and asked if they were willing to participate. Participating mothers were consequently recruited until the sample size was reached. Potential mothers were not excluded based on religion, ethnicity, parity, gravidity and age. We recruited three health workers from the antenatal section of each health centre and 3 from the district hospital based on their

availability in the section at the time of conducting the study. Two of the participating health workers were male nurses, the rest were females. Thirty one were nurse midwives technicians, diploma holders, 4 were community health nurse by training also diploma holders and only one was a registered nurse midwife with a bachelor's degree.

### **4.3 Study design**

This was a cross sectional descriptive study in which quantitative data was collected based on deductive approach using questionnaires. The purpose for employing the deductive approach was to obtain data on different variables at a given point of time so that the variables are measured and compared and eventually assist in drawing inferences on the research findings. There were 2 kinds of questionnaires; one for prenatal and postnatal women and the other for the health workers (Appendices 2 and 3). The former questionnaire was administered to the women by the research assistants, the latter questionnaire was self-administered. The women questionnaire was administered in an interview format because the majority of the participating women were illiterate thus the questionnaires would not be self-administered. The questionnaire for participating mothers was designed to collect information on knowledge of FANC, also to assess demographic and socio-cultural factors that may contribute to low utilization of FANC. The questionnaire for health workers was designed to capture their current practices as well as their perception towards FANC.

### **4.4 Description of the main study variables**

The variables used in the present study were selected to answer specific study objectives; the general description of categories of variables on the two questionnaires is given below.

#### **4.4.1 Low utilization**

Utilization in the present study refers to the number of visits pregnant women made as well as gestation age at which initial FANC visit was made by pregnant women. Women were asked to mention the number of FANC visits they had made. The number of visits was categorized as low or adequate based on recommended WHO FANC visits. Therefore, low utilization, which is the outcome variable in the study, referred to less than 4 FANC visits during the entire pregnancy.

#### 4.4.2 Knowledge of women on importance of FANC

Participating women were asked questions on whether they have ever heard about FANC as well as the sources of the information regarding FANC. A list of potential sources of information on FANC such as radio, relatives, health workers and traditional birth attendants, was read to the participating mothers, who were then asked to indicate the sources of their FANC information. Also, using Likert scale (a psychometric scale of ascribing quantitative value to qualitative data to make it amenable to statistical analysis) participating mothers were asked to rate their agreements with the statement on the benefits of FANC, the detailed questions are on part C of the women questionnaire as shown in Appendix 2.

#### 4.4.3 Demographic and social and cultural factors associated with low utilisation of FANC

Demographic variables for participating mothers used included age, parity, occupation, education, ethnicity, religion and marital status. Age was categorized into 7 categories, 11-15, 16-20, 21-25, 26-30, 31-35, 36-40, and 41-49 years. Education was also categorized into junior primary, senior primary, secondary and tertiary level. Part A of the women questionnaire contains details of the remaining demographic variables as shown in appendix 2. Some of the socio-cultural variables included distance to the nearest health facility, transportation, seeking permission to use FANC and male involvement. Furthermore women were asked to mention some of the social and cultural beliefs which they perceived as barriers to utilization of FANC; the responses were categorized and coded based on similarity for analysis.

#### 4.4.4 Current practices and perceptions of health care providers towards FANC

In order to assess health workers' current practices questions were designed among others to capture their professional level, training on reproductive health and FANC in general and duration of their involvement in reproductive health. Health workers perception on FANC was assessed using likert scale. Health workers were asked to indicate the level of agreement or disagreement, on a scale ranging from strongly agree to strongly disagree. Health workers were also asked to provide their perception on FANC utilization in Ntchisi district in line with barriers associated with low utilization.

#### **4.5 Pre-testing**

Pre-testing was done at Mtengowanthenge Mission Hospital, which is not part of the study catchment area. The hospital was chosen so as to avoid bias which may arise in case same women who participated in the pretesting may have been re-sampled in the actual study. Permission was obtained from the hospital's administration, to allow health workers and waiting mothers as well as postnatal mother to participate in pretesting of the study tools. Pre-testing of the data collection tools was done with a team of research assistants who eventually collected data for the study. Pretesting was done two weeks prior to actual data collection to allow for final adjustments and modifications to the questionnaire as well as training. After pretesting the research assistants were retrained on some aspects of the questionnaire and how to administer it. Some questions were reformulated to get consistent responses when asked by different research assistants. Furthermore, some culturally sensitive words related to reproductive health were revised to enable participating mothers freely express their views.

#### **4.6 Data handling**

Data were checked for completeness and validity of information by the researcher once questionnaires were back from the health facilities. This was done to check for missing data, correct mistakes, in order to avoid deviations and errors in the data collected. The corrected data sheets were serially numbered by the researcher. The checked questionnaires were kept by the researcher ready for data processing and analysis.

#### **4.7 Ethical considerations**

Ethical approval to conduct the study was sought (Appendix 4) and obtained from the Malawi health sciences research committee under Ministry of Health, (Appendix 5). Permission to conduct the study was sought from Ntchisi district council and Ntchisi district health office (Appendices 6, 7, and 8). Verbal consent was obtained from participating mothers and written consent was obtained from the health care workers (Appendix 9). To maintain confidentiality for participating mothers and health worker numbers instead of names were used on the questionnaires.

#### **4.8 Data analysis and statistical methods**

Data were entered and analysed using SPSS statistical software for Windows version 20. Descriptive statistics including frequencies and cross tabulations were run to generate output on all variables. The number of FANC visits was categorized into dichotomous variables; FANC visits  $< 4$  denotes low utilization and FANC visits  $\geq 4$  denoting adequate utilization. Identification of demographic and socio-cultural variables associated with low utilization was carried out using cross tabulations. Statistical significance, evaluated at 0.05 level, was assessed with Pearson Chi-Square Tests. Explanatory variables were dichotomized prior to running cross tabulations, Yes or No (0 or 1) responses were assigned to some socio-cultural variables. Demographic variables such as marital status (married and unmarried), parity (nulliparous and multiparous), ethnicity (Chewa and other), religion (Christianity and other), gravidity (primigravidae and multigravidae) and occupation (farming and others) were also dichotomized. Participating mothers' responses to open ended questions on barriers associated with low utilization were put into themes, and thereafter responses were coded and dichotomized (Yes or No). Frequencies and percentages were generated from participating mothers' responses regarding sources of information and FANC knowledge. Likert scale based responses on FANC knowledge were categorized and then dichotomized (agree and not agree, not sure was put under not agreeing). Percentages were used to describe FANC knowledge among participating mothers.

Responses of health workers on current practices were mainly Yes or No based, the data were analysed using frequencies and percentages to describe information and services they render to their clients. On perception Likert scale was used to capture responses from the health workers, the likert scale responses were categorised and dichotomized (Agree or disagree). Percentages were generated from the dichotomized categories, and the mean percentage of those who agreed was calculated to provide a general perception whether positive or negative, using the cut-off point of 50%, so that above 50 will denote positive perception and below denoting negative.

## 5. STUDY RESULTS

### 5.1 Participating mothers

#### 5.1.1 Demographic characteristics

Table 5 summarizes the characteristics of the participating mothers. Of all the women who participated in the study, 42% fall within the age range of 21-25 years, 29% within the range of 16-20 years, and 3% within the range of 11-15 years. Majority of the women were married (93%) and a considerable proportion belonged to Chewa ethnic group (95%). With few exceptions respondents were Christians (93%). Sixteen women (8%) had no formal education, 36% were educated up to junior primary level, 55% up to senior primary level, and 4% up to secondary level. Considerably, 50% of women had given birth once, and only 19 % were primi-gravid women. Farming was the major income generating activity reported by most women (91%); furthermore higher percentage of women (75%) reported that their husbands are engaged in farming.

**Table 5: Characteristics of the pregnant women and postnatal mothers who participated in the study (n=240)**

<b>Characteristics</b>	<b>n (%)</b>
<b>Age</b>	
11-15 years	6 (2.9)
16-20 years	59 (28.9)
21-25 years	85 (41.7)
26-30 years	43 (21.1)
31-35 years	5 (2.5)
36-40 years	3 (1.5)
41-45 years	3 (1.5)
<b>Marital status</b>	
Married	189 (92.6)
Single	10 (4.9)
Divorced	3 (1.5)
Widowed	1 (0.5)
Separated	1(0.5)
<b>Ethnicity</b>	
Chewa	193 (94.6)
Tumbuka	4 (2.0)
Ngoni	1 (0.5)
Yao	4 (2.0)
Tonga	2 (1.0)

<b>Religion</b>	
Christian	189 (92.6)
Muslim	6 (2.9)
Traditional	9 (4.4)
<b>Level of Education</b>	
None	16 (7.8)
Junior primary	74 (36.3)
Senior primary	112 (54.9)
Secondary	8 (3.9)
<b>Respondent's occupation</b>	
Business	12 (5.9)
Piece work	5 (2.5)
Office work	1 (0.5)
Farming	186 (91.2)
<b>Husband's occupation</b>	
Business	20 (9.8)
Piece work	15 (7.4)
Office work	2 (1.0)
Farming	152 (74.5)
<b>Parity</b>	
None	38 (18.6)
One	102 (50.0)
Two	48 (23.5)
Three	9 (4.4)
Four	3 (1.5)
More than four	4 (2.0)

### 5.1.2 Knowledge on FANC

The study explored participating mothers' knowledge regarding utilization of FANC. In this study almost all participating mothers (96%) had any knowledge of FANC (Table 6). The major sources of information on knowledge of FANC cited were the radio (96%), nurses (85%) relatives (82%) and traditional birth attendants (62%). The responses on the recommended number of visits to the FANC clinic when there is no problem were varied with 75% of the respondents indicating 4 times.

Variability on the number of visits when the pregnant woman is experiencing problems was quite big in this study population; however, majority (63%) indicated that the pregnant woman is supposed to visit the FANC more than 4 times. Regarding the

perceived benefits of FANC, about 78% of the respondents agreed that FANC would be useful in establishing a rapport between the pregnant mother and the nurse. Similarly more participants had agreed with the notion that antenatal care would help in early detection of risk conditions associated with pregnancy. Just over half (52%) of the respondents agreed that FANC would assist the health worker to distribute Information Education and Communication materials, on the contrary 35% disagreed. About 85% of the respondents also agreed with the fact that the FANC would enable the pregnant woman to receive tetanus toxoid vaccine (TTV), Vitamin A, iron supplementation, insecticide treated nets, intermittent preventive treatment and hookworm treatment.

**Table 6: Sources of information and knowledge of participating mothers on FANC**

	n (%)
<b>Sources of information</b>	
Health worker	175 (85.8)
Radio	196 (96.1)
Traditional Birth Attendants	127 (62.3)
Relatives	166 (81.4)
Friends	164 (80.4)
<b>Number of visits when there is no problem</b>	
<4 visits	17 (9.7)
4 visits	133 (76.4)
>4 visits	24 (13.9)
<b>Number of visits when there are problems</b>	
<4 visits	5 (3)
4 visits	58 (34.1)
>4 visits	107 (62.9)
<b>Benefits of FANC</b>	
Establishing rapport	162 (79.4)
Early detection of pregnancy associated risks	156 (76.4)
Assist provider to give individualized information, education and communication	105 (51.5)
Reception of pregnancy related vaccines and supplements	173 (84.8)

### 5.1.3 FANC utilization

This section focuses on discussing issues around FANC in general and especially decisions related to whether the participants had free will choice to start FANC or not. Almost all the participants (95%) attended FANC at some point during their previous or current pregnancy (Table 7). Regarding time at initiation FANC (Table 7), 75% of the respondents reported starting FANC visits at between 4 and 6 months of pregnancy. The

number of visits throughout the pregnancy in the present study was varied, with the mean visits being 3. Majority of the women (80%) made less than four visits.

**Table 7: Attendance, gestational age at initiation and number of visits**

Characteristics	n (%)
Attended Focused Antenatal care	194 (95.1)
Gestational age at initiation	
0month-3month	34 (16.7)
4months-6months	153 (75.0)
7month-9month	8 (3.9)
do not know	3 (1.5)
Number of visits	
<4 visits	157 (79.4)
4 visits	30 (15.2)
>4 visits	11 (5.6)

#### 5.1.4 Demographic and sociocultural factors related to low utilization of FANC

*Demographic factors* .Table 8, shows demographic factors associated with low utilization of FANC service. Results show that, age was marginally ( $P=0.051$ ) related to the number of visits, with those between 11-20 and 26-45 having more visits that those between 20-25 years. Parity was significantly inversely associated with number of visits to the FANC ( $P=0.01$ ), those with first pregnancy were more like likely to have visited FANC for more than 4 times compared to those who have ever had pregnancies. Education level in general did not appear to influence the number of visits to the FANC clinic ( $P=0.252$ ), but those with secondary level education were more like to make more visits to FANC. There were no statistical differences in the utilization of FANC between the categories of gravidity marital status, tribe, mother's or father's occupation and religion ( $P>0.05$ ).

**Table 8: Demographic factors associated with low utilization of FANC**

Variable	<4 visits (%)	n	≥4 visits (%)	n	p value
Age					
11-20 years	47 (29.9%)		15 (36.6%)		0.051
21-25 years	74 (47.1%)		11 (26.8%)		
26-45 years	36 (22.9%)		15 (36.6%)		
Parity					
no child	30 (19.1%)		15 (36.6%)		0.017
one or more children	127 (80.9%)		26 (63.3%)		
Education					
none	14 (8.9%)		2 (4.9%)		0.252
primary	143 (96.6%)		37 (92.5%)		
secondary	5 (3.4%)		3 (7.5%)		
Gravidity					
Primigravid	26 (16.6%)		11 (26.8%)		0.133
multigravid	131 (83.4%)		30 (73.2%)		
Marital status					
married	145(92.4%)		38(92.7%)		0.944
not married	12(7.6%)		3(7.3%)		
Tribe					
chewa	147 (93.6%)		40 (97.6%)		0.328
others	10 (6.4%)		1 (2.4%)		
Religion					
christian	144 (91.7%)		39 (95.1%)		0.463
others	13 (8.3%)		3 (4.9%)		
Mothers occupation					
Farming	143 (91.1%)		37 (90.2%)		0.868
others	14 (8.9%)		4 (9.8%)		
Husbands occupation					
Farming	115 (79.3%)		32 (84.2%)		0.499
others	30 (20.7)		6 (15.8%)		

*Socio-cultural factors:* Participating women who reported that they seek permission before visiting FANC were very likely to make less than required ( $\geq 4$ ) visits to the FANC ( $P=0.001$ ). Waiting to obtain permission was also a factor which significantly resulted in less number of visits to FANC ( $P=0.007$ ). Long distance also significantly influence the number of visits to FANC ( $P<0.001$ ). Perception of showing off the pregnancy was also a highly significant factor ( $P<0.001$ ) associated with low utilization of FANC, which is reflected in the high proportions of women starting antenatal visits in second trimester (4-6months). Those who reported personal reason (just not wanting to make lots of visits) were also significantly less likely to attend FANC ( $P=0.007$ ). Fear that wizards may terminate the pregnancy was marginally associated with the number of visits women made, ( $p=0.051$ ). Some of the participating mothers who made less than four visits reported fear that wizards/witches would terminate the pregnancy and this negatively affected the number of visits they made (Table 9).

**Table 9: Socio-cultural factors associated with low utilization of FANC**

Variable	< 4 visits n (%)	≥ 4 visits n (%)	p value
sought permission	124 (79.0%)	22 (53.7%)	0.001
Waiting to get permission	130 (82.85%)	26 (63.4%)	0.007
Long distance	149 (94.9%)	11 (26.8%)	<0.001
Perceived as showing off the pregnancy	108 (70.1%)	14 (35.9%)	<0.001
Never wanted to make a lot visits	84 (54.9%)	12 (30.8%)	0.007
Fear that wizards may terminate the pregnancy	43 (27.9%)	5 (12.8%)	0.051
Source of permission			
Husband	95 (81.0%)	26 (78.8%)	0.780
others	22 (19.0%)	7 (21.2%)	
Accompanied by husband	24 (15.3%)	7 (17.1%)	0.779
Benefits of being accompanied by husband			
Encouragement	71 (45.2%)	24 (58.5%)	0.129
Support	86 (54.8%)	21 (51.2%)	0.684
Forced and coincidentally conceived	29 (18.5%)	8 (19.5%)	0.879
Took it as a normal time of starting antenatal	110 (70.1%)	24 (58.5%)	0.160
Friends, relatives influence	31 (19.7%)	6 (14.6%)	0.455
Transport problem	106 (67.5%)	32 (78.0%)	0.191
no desirability	75 (47.8%)	17 (41.5%)	0.471
Perception of not being at high risk	143 (91.1%)	33 (80.5%)	0.055
concern that there may be no midwife	14 (8.9%)	2 (4.9%)	0.398
Not satisfied with the services	62 (39.5%)	13 (31.7%)	0.360
Poor health workers attitude	38 (24.2%)	12 (29.3%)	0.506
Incomplete trust in health workers	20 (13.0%)	6 (15.4%)	0.695
Long waiting time	84 (53.5%)	19 (46.3%)	0.414
Shortage of staff	48 (30.6%)	13 (31.7%)	0.889
Clinic schedules	27 (17.2%)	5 (12.2%)	0.438
Male involvement initiative	109 (69.4%)	27 (65.9%)	0.660
Paying for FANC services	13 (8.3%)	4 (9.8%)	0.764
unaffordable services	4 (30.8%)	2 (50.0%)	0.720
Late pregnancy recognition	27 (17.5%)	7 (17.9%)	0.951
Denial of being pregnant	10 (6.5%)	4 (10.3%)	0.418
Apathy or Laziness	66 (42.9%)	15 (38.5%)	0.619
Shyness or embarrassment	83 (53.9%)	17 (43.6%)	0.250
Fear of encountering world animals	75 (48.7%)	25 (64.1%)	0.086

## 5.2 Health care workers.

### 5.2.1 Demographic characteristics.

Of the 36 nurses who participated in the study, 86% were nurse mid-wife technicians, 11% were community health nurses and only 3% were registered nurse mid-wife, (Table 10). Most nurses who participated in the study fall within the range of 21-30 years 42%. The highest age range of 51-60 years constituted 3% of the respondent. Table 10 shows the age range and percentages in each group.

**Table 10: Demographic characteristics of health workers**

Characteristics	n (%)
Age	
21-30 years	15 (41.7%)
31-40 years	13 (36.1%)
41-50 years	7 (19.4%)
51-60 years	1 (2.8%)
Category	
Registered nurse	1 (2.8%)
Nurse midwife technician	31 (86.1%)
Community Health Nurse	4 (11.1%)

### 5.2.2 Training and current practices

All the health care workers who participated in the study (100%) had undergone training in Reproductive health, whether formal or informal kind of training (Table 11). However, 3% and 5% were not trained in Safe motherhood and FANC respectively. All the nurses who were trained in FANC said that they remembered what they have been taught during the training. Table 11, presents the number of nurses who had different aspects of any knowledge gained from FANC training and summarizes the nurses current practices regarding FANC.

**Table 11: Training, knowledge gained from FANC and current practices of health care workers in regard to Reproductive Health and FANC**

<b>Category</b>	<b>n (%)</b>
<b>Training</b>	
Reproductive Health training	36(100%)
Safe-motherhood training	35 (97.2%)
Focused antenatal care	34 (94.4%)
<b>Knowledge gained from FANC training</b>	
FANC guidelines and principles, detection and treatment of treatment, Health promotion and disease prevention, individualized birth preparedness	34 (94.4%)
<b>Current practices (information and services provided to pregnant mothers)</b>	
Tetanus toxoid vaccine, Sufadoxine pyrimethamine (SP), iron supplementation, HIV testing and counseling, Deworming of hookworms, schedule for the next visit.	36 (100%)
Individual Health education.	27 (72.2%)
Information regarding danger signs in pregnancy is given to women.	36 (100%)
Information about hygiene.	32 (88.8%)
Nutrition and breast feeding information, Process of pregnancy and its complications.	34 (94.4%)
Early detection of risks and treatment of complications as well as plans for delivery.	35 (97.2%)
Plan for postpartum.	26 (72.2%)
Effects of using tradition medicine.	33 (86.1%)
Harmful practices of drug abuse and tobacco smoking.	28 (77.8%)

### 5.2. 3. Health care workers perception towards FANC

All the health care workers who participated in the study indicated that FANC training was helpful. 97% of the health care workers agreed that FANC implementation was perceived positively. However, 53% of the participating health care workers agreed that the facility they were working in was ready to provide FANC services and 39% agreed that there were some obstacles and limitations which have not been attended to. Moreover, 92% and 83% of the participating health care workers assented that pregnant women were satisfied with the 4 visits and FANC services respectively. In the study, 95% of the participating health workers agreed that the properly followed guidelines results into health and mother of the baby.

**Table 12: Nurses perception towards FANC**

<b>Variable</b>	<b>Agreed n (%)</b>
FANC training was helpful	36 (100%)
FANC implementation was perceived positively.	35 (97.2%)
Health facility is ready to provide FANC services	19 (52.8%)
Obstacles and limitation have been attended to	14 (38.9%)
Pregnant women are satisfied with 4 visits	33 (91.7%)
Pregnant women are satisfied with FANC services	30 (83.3%)
Properly followed guidelines results into health mother and baby	34 (94.4%)
<b>Average Percentage</b>	<b>79.7 %</b>

## **6. DISCUSSION OF STUDY FINDINGS**

### **6.1 Knowledge about FANC**

The study has demonstrated that participating women had varied sources of information on FANC. Table 6 shows that the radio is the most popular source of information followed by health workers. Also more than a third of the participating mothers had indicated that they get information from traditional birth attendants; apparently Ministry of Health policy discourages women from accessing antenatal services including delivery at traditional birth attendants. Furthermore other studies have also demonstrated that the radio is a significant source of FANC knowledge and that those who were watching television and listening to the radio were more likely to use FANC (Pallikadavath et al. 2004; Sharma 2004).

The present study has demonstrated that majority of the participating women have knowledge on the importance of FANC services, almost all respondents indicate they know the existence and importance of FANC. It would be expected that knowledge of the role played by FANC would have brought positive results in terms of utilization of the FANC services (Nisar and White 2003). However, there has been a downward trend in terms of proportion of women utilizing FANC services. In the present study a very small proportion of respondents had indicated that they use FANC services as recommended by national and WHO protocols. At district level, there has been a negative trend in the proportion of women utilizing FANC services; the district level utilization rate is at below 30% which has not been improving over the years.

Results of the study have also demonstrated that respondents have adequate knowledge on the benefits of utilizing FANC services. One of the most prominent benefits cited by participating mothers was that FANC assists in creating good rapport between health workers and the service users. This finding is in agreement with Hollander (1997) who found rapport building amongst women using antenatal care services as a pre-requisite for continuation of service utilization. Other benefits mentioned are shown in Table 6. Adequate knowledge on FANC services would contribute to reduction in maternal mortality rate, as suggested by the WHO (2010). The study further established that participating mothers were aware that individualized health education amongst the service users assists in transferring of knowledge from service providers to pregnant

women. Regarding specific knowledge on recommended number of visits a woman is supposed to make whether or not there is a problem; participating women also demonstrated higher knowledge of recommended visits. More than three quarters of the participating mothers had indicated that 4 visits should be made when there is a problem, however, over two thirds indicated that more than 4 visits should be made when there is a general health or pregnancy related problem. These results demonstrate that the general knowledge among participating mothers on FANC is quite high; nevertheless, knowledge is not translated into utilization as pointed out that only small proportion of participating mothers indicated appropriately utilizes FANC.

## **6.2 Demographic and Socio-cultural factors associated with low utilization**

Age in general influenced utilization of FANC among the respondents, participating mothers within the age group of 20 to 25 made least number of FANC visits. This finding is in line with published data on the association between age and utilization of antenatal services. Weller et al. (1987) had indicated that age alone may not influence uptake of antenatal care services but pregnancy desirability as mistimed or unwanted pregnancies are associated with irregular and late FANC utilization. The observation by Weller et al. (1987) has been supported by other studies. Magadi et al. (2000) reported that younger women were more likely to delay starting prenatal care and also made few antenatal visits. In Bangladesh Bhatia and Cleland (1995) had also shown that age is associated with low utilization of antenatal care particularly among women older than 18 years. A review by Simkhada et al. (2008) on use of antenatal care in developing countries had shown conflicting findings on the influence of age of the pregnant woman on use of antenatal services. However it was pointed out that the effect of confounders may have resulted in suppressing the influence of age on antenatal use. This finding reinforces the need to intensify advocacy messages aimed at promoting FANC utilization among women of reproductive age group.

Our study has also demonstrated an inverse relationship between parity and utilization of FANC, with multiparous women making significantly fewer visits to FANC than nulliparous women. This could be due to the fact that nulliparous women perceive themselves as being at high risk of developing pregnancy related complications, whereas their multiparous counterparts perceive themselves as being at low risk owing to

experience from previous pregnancies and births. Others have found similar results, in Kenya Magadi et al. (2000) also demonstrated that higher parity was associated with low utilization of FANC services. However, Ethiopian multiparous mothers were more likely to use FANC services than nulliparous counterparts (Mekonnen and Mekonnen 2003). These findings allude to the fact that there is still more need to continue with community sensitization on the need to maximize FANC regardless of parity.

In this study education level did not affect utilization of FANC, which is not in line with most published results. Matsumula and Gubhaju (2001) demonstrated that low utilization of FANC is associated with low education. The lack of effect of education on utilization of FANC in our study may be due to high levels of low education among the participating women making it hard to show a difference. Moreover, Pallikadavath et al. (2004) argues that education assists in adequate utilization of FANC services. However, education has no direct influence on utilization of FANC as argued as utilization may be determined by several factors as indicated in the preceding paragraphs. Table 8 also shows other factors which were not associated with low utilization of FANC. The study has established that marital status had no influence of service utilization in antenatal services. This finding differs with Tann et al. (2007) that unmarried status influenced less uptake of antenatal care services. Although other studies indicate that multigravidity is associated with low utilization of FANC as argued by Bhatia and Cleland (1995) the results of this study found no association between low utilization and gravidity. The findings of the study elucidated that occupation status of both the husband and the participating mothers was not associated with low utilization of FANC services.

The study further explored socio-cultural factors which would affect utilization of FANC in Ntchisi district. Almost all of the participating mothers indicated that socio-cultural factors played a greater role in low utilization of FANC services. Distance to the health facility significantly determined both the probability and frequency of attending FANC clinics. Longer distance to the health facility is indicated as highly associated with few visits. These findings are consistent with other studies (Magadi et al. 2000; Gleit et al. 2003). Interestingly, the study also found that timely starting FANC earlier is a sign of bragging or showing off to fellow women who are not pregnant and have no children. This resulted in low utilization of FANC as reflected in few number of

antenatal visits women made. To the researcher's knowledge, this is the first study to report that fear of being perceived as showing off the pregnancy contributes to low utilization of FANC, thus further research on the subject can facilitate formulation of education messages to improve utilization of FANC.

Another striking finding was the prevalence of superstition related to pregnancy. The study found that participating mothers feared wizards and witches would terminate their pregnancy if they would be seen going for FANC visits, this resulted in marginally significant number participating women making less FANC visits. Apparently witchcraft related myths are still prevalent in some parts of sub-Saharan Africa, Mathole et al. (2004) also reported low utilization of FANC due to witchcraft related fears. This also highlights the need to intensify education to dispel myths and beliefs that impedes progress on utilization of FANC.

Furthermore, the study elucidated that seeking permission to go for antenatal care is significantly associated with low utilization of FANC, on a similar note, participating mothers who were waiting to seek permission made significantly fewer than required number of visits for FANC, this practice has been reported elsewhere, (UNICEF 2008; Aarnio et al. 2009; Waweru et al. 2004). Apparently this study showed that husbands (79%) mostly gave permission to start utilizing FANC, implying that male dominance in decision making on women reproductive deserves more attention in order to minimize negative impacts but maximize desirable issues. So that instead of women seeking permission they should ask for husband involvement in antenatal care services. This thinking is equally supported by Theuring et al. (2009) who argues that pregnant women who first sought permission from husbands before utilizing FANC services are likely to make fewer than required number of visits.

Furthermore, 85% of the participating mothers expressed concern that their husbands did not take an active role in FANC services. It was noted that although the husbands did not get involved in reproductive health activities, the wives explained of plausible benefit if the husbands took an active role. The study findings are in line with Byamugisha et al. (2011) that attracting male partners in focused antenatal services is very difficult. The researcher agrees with Byamugisha et al. (2011) that male

involvement in antenatal care services plays a major role as they make most decisions for their wives.

The study findings indicated that husbands (79%) mostly gave permission to start utilizing FANC was very worrisome as it puts the health of the pregnant women in danger. This finding differs with the arguments raised by Simkhada et al. (2010) who contend that mother in-laws and mothers alone negatively influence the utilization of FANC services. However, the researcher agrees with Paredes et al. 2005 that low utilization of FANC services may not only be influenced by individual mother's characteristics but also other socio neighborhood such as availability of services within reachable distances, inadequate media exposure and inadequate transport options due to lack of birth preparedness plans. The researcher further asks for authorities to take deliberate efforts to motivate men in antenatal care services uptake. Lee et al. (2009) also supports this notion by arguing that spouses and mother in-laws persuade pregnant women to fulfill household duties instead of visiting antenatal care services.

The present study results are in accord with the Health Belief Model (Figure 3). 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 foregoing discussion of the study results, parity and age are shown to be modifying factors of FANC utilization. Moreover, distance to the nearest health facility, witchcraft associated fear and seeking permission to go to the clinic are under perceived barriers according to the health belief model associated with low utilization of FANC in Ntchisi district.

### **6.3 Demographic characteristics, current practices and perception of the health workers**

Majority of the participating health care workers (78%) were aged between 21-40 years. This has some benefits in terms of delivery of FANC services in that younger work force is still more productive than the aging health work force. Young et al. (2003) had indicated that there is an inverse association between quality performance and age of health workers. The association was observed health workers between 50 and 60 years. All the health care workers who participated in the present study had undergone former

training of midwifery, however, at district level there is only one registered nurse midwife. This is encouraging in that health care workers in Ntchisi district are qualified to perform their duties and by implication they are ready to offer FANC services as expected.

The study looked at training in reproductive health and FANC in general. Specifically looking at whether the health care workers were complying with WHO outlined FANC procedures. All health workers indicated being trained in reproductive health, 94% of health care workers were trained in FANC. Health care workers had specifically gained knowledge on FANC guidelines and principles. This is beneficial in that health care workers are kept up to date with current relevant knowledge and skills for effective FANC implementation which would eventually contribute towards reduction in maternal and infant mortality. Regarding current practices on FANC, all health care workers (100%) in this study had indicated that they follow all recommended FANC procedures, like provision of tetanus toxoid vaccine, sulfadoxine pyrimethamine, iron tablets, HIV testing and counseling and deworming of hookworms. These findings are also encouraging in that compliance with FANC guidelines is very likely to lead to good pregnancy outcomes, for instance HIV testing would help to inform appropriate measures aimed at prevention of vertical transmission thus ensuring a healthy baby. Also provision of malaria prophylaxis like Sulfadoxine Pyrimethamine helps to prevent maternal morbidity and mortality (WHO 2002), the same with iron supplementation at recommended doses.

With respect to information provision to pregnant women, 72% of the health workers had indicated that they provide individualized health education to pregnant women. One of the reasons for failure to provide individualized health education could be related to shortage of health care workers in health facilities (Yengo 2009). However, each and every pregnant woman is unique and individualized health education is vital to respond to specific individual pregnancy related problems issues. High proportion (94%) of health care workers indicated discussing nutrition and appropriate infant feeding practices with the pregnant women, which is critical for infant growth, development and survival (Bhutta et al. 2008). All health care workers (100%) had indicated that they provide information regarding danger signs in pregnancy to pregnant women. This is also a positive finding in that informing mothers about potential danger signs would

help the pregnant women to promptly seek medical assistance if they experience some of the danger signs thereby minimizing the risk of morbidity and mortality. Regarding effects of using traditional medicine, 86% of health workers had indicated discussing the subject with pregnant women. Studies have shown that use of traditional medicines in pregnancy is associated poor pregnancy outcomes (Banda et al. 2007), thus it would be expected that all health care workers inform pregnant mothers of the dangers of using traditional medicine. Furthermore, 97% of health care workers indicated that they inform pregnant women on the early detection of risks and treatment of complication as well as plans for delivery. Consequently this adherence to FANC procedures by health care workers is very likely to contribute towards meeting both national and international goals on maternal and child health. This is in line with Tita et al. (2005), who indicated that improvement in maternal and perinatal outcomes was due to effective dissemination of information on reproductive health to pregnant women.

The study explored perception of health workers on FANC in general. The study has shown high proportion (80%) of health care workers in Ntchisi district with positive perception about FANC. Positive perception of health care workers has also been reported in some parts of sub-Saharan Africa. Yengo (2009) reported positive perception of nurses on FANC in Tanzania. It is well established that health care workers' perception and attitude play a significant role in FANC utilization by pregnant women (Conrad et al. 2011). Negative perception and attitude of health care providers towards FANC contributes to low FANC utilization and often leads to women preferring to deliver with unskilled birth attendants (Mathole et al. 2004). All health care workers (100%) in the present study indicated that FANC training was helpful; this is an encouraging finding considering that a well trained workforce is required to implement FANC since it's a relatively new concept. While health workers in this study had positive perception as well as training on FANC, almost 50% of them indicated that their facilities were not ready to provide FANC. Furthermore, 40% of the health workers also indicated that there are still more obstacles and limitations which need to be addressed in order to fully implement FANC in health facilities. These findings illustrate that the workforce is ready to implement FANC, but more needs to be done to ensure facilities are equipped and ready for effective FANC implementation.

#### **6.4. Strengths and weaknesses of the study**

The study has a number of strengths; firstly data was obtained from both health care workers and users of the health services including pregnant mothers as well as postnatal women. This design provided a clearer understanding on FANC implementation in the study catchment area. Furthermore, the study was conducted among women who were currently using or had very recently been using FANC, thus the data was not based on women who had used FANC several years prior to the study. The study managed to recruit all planned subjects, none of the approached mothers and health care workers refused to participate in the study. There were also very few missing data as such almost all the variables were analysed without being affected by missing data. However, the study had some limitations which included being cross sectional, there was a potential for recall bias regarding issues related to early pregnancy. In this study, potential confounding factors were not taken into account at analysis level by using multivariate models. Also the sample did not include women who benefited from mobile health clinic services since we only recruited from the health facilities. Furthermore we did not include those who may have been using traditional birth attendants.

#### **6.5 Implications for further studies and recommendations**

Information, education and communication strategies promoting health seeking behaviours should be enhanced both at health facility and community level. Some of the issues to be intensified should be dispelling myths associated with pregnancy, informing communities that any pregnant woman is at risk and requires medical attention during the entire pregnancy period. Communities should further be informed that regardless of age of the woman and parity all pregnant women must be supported to utilize FANC services. The messages can be disseminated through already existing structures such as health awareness campaigns, open days, drama, songs and dances.

The government, communities and other development partners should increase health infrastructure so that distance to the health facility can be reduced. This will allow pregnant women to fully benefit from FANC services. Communities should be assisted to come up with strategies which will promote utilization of FANC services for instance agreeing to reward families adhering with maternal and child health established policies. There should be multi-sectoral approach to promotion of maternal and child health.

There is need to conduct larger prospective studies to better understand national level FANC utilization. This will help to establish in-depth qualitative data on demographic and social-cultural issues affecting FANC utilization.

## **7. CONCLUSIONS**

The study has shown that almost all pregnant women in Ntchisi district have at least some knowledge of the FANC. Furthermore, the study has found that the major sources of FANC information for pregnant women in Ntchisi are health workers, radio, relatives and traditional birth attendants. Thus this study demonstrates that knowledge of FANC in general and its benefits is quite high among pregnant women in Ntchisi district. Furthermore, the present study has shown that parity and age are the only demographic factors associated with low utilization of FANC in pregnant women in Ntchisi district. Long distance to health facilities, perception of showing off or bragging about the pregnancy, fear of witchcraft as well as individual choice of not wanting to make many visits also contributed to low utilization of FANC among pregnant women in Ntchisi district. The present study has also demonstrated that seeking permission to utilize FANC significantly contributed to low utilization of FANC by pregnant women in Ntchisi district.

The study had shown that all health care workers in the antenatal sections were trained in reproductive health and FANC in general. Health care workers in the present study demonstrated a positive perception towards FANC; they also reported to be complying with FANC procedures as stipulated in the WHO FANC package.

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## 10. APPENDICES

### Appendix 1: Sample size calculation

In order to calculate number of pregnant women that were sampled to estimate the proportion of women who would make fewer than required number of FANC visits to within 3.65% of true population proportion with 95% confidence the following formula was used.

Where  $p$  = proportion and  $n$  = number of pregnant women. The number of pregnant women required was calculated using the formula where  $z = 1.96$

And  $p = 0.5$  to provide a conservative estimate.

$$n = p \pm z \sqrt{p(1-p)} / \alpha$$

$$n = 0.365 \times 0.365 \times \{1.96/0.05\}^2$$

$$n = 204.718$$

Thus 204 participating were required to be in the study.

**Appendix 2: Questionnaire for women**

**FACTORS CONTRIBUTING TO LOW UTILISATION OF FOCUSED ANTENATAL CARE SERVICES IN NTCHISI DISTRICT IN MALAWI**

Questionnaire No. :.....  
Date :.....  
Village :.....  
Name of interviewer :.....  
Name of health facility.....Urban/Rural.....

**INSTRUCTIONS**

- (a) Explain the purpose of the interview to the mother,
- (b) Ask for consent before proceeding with the interview
- (c) Make sure all questions are answered
- (d) Tick as appropriate

**PART A: RESPONDENTS PERSONAL CHARACTERISTICS**

1. How old are you?

- (a) 11-15
- (b) 16-20
- (c) 21-25
- (d) 26-30
- (e) 31-35
- (f) 36-40
- (g) 41-45

2. What is your marital status

- (a) Married
- (b) Single
- (c) Divorced
- (d) Widowed
- (e) Separated

3. What is your tribe or ethnic group?
- (a) Chewa
  - (b) Tumbuka
  - (c) Ngoni
  - (d) Yao
  - (e) Lomwe
  - (f) Others (Specify).....
4. What is your religion or denomination?
- (a) Christian
  - (b) Muslim
  - (c) No religion
  - (d) Others (Specify).....
5. Have you ever attended school?
- (a) Yes
  - (b) No
6. If yes, what is your highest level of education?
- (a) Junior primary
  - (b) Senior Primary
  - (c) Secondary
  - (d) Tertiary
7. What do you do for a living?
- (a) Business
  - (b) Piece work
  - (c) Office work
  - (d) Farming

8. What does your husband do for a living?

(a) Business

(b) Piece work

(c) Office work

(d) Farming

9. How many deliveries have you ever had?

(a) None

(b) One

(c) Two

(d) Three

(e) Four

(f) More than four

10. How many children are alive?

(a) None

(b) One

(c) Two

(d) Three

(e) Four

(f) More than four

**PART B: QUESTIONS ABOUT FOCUSED ANTENATAL CARE (FANC)**

11. With regard to your previous pregnancy, did you attend Antenatal care clinics?

(a) Yes

(b) No

12. Before you started antenatal care, was it necessary for you to get permission from anyone to attend the antenatal care clinics?

(a) Yes

(b) No

13. From whom did you ask for permission to attend antenatal care clinics?

(a) Husband

(b) Uncle

(c) Mother

(d) Mother In-law

(e) Other (Specify).....

14. Does your spouse accompany you to antenatal clinics?

(a) Yes

(b) No

If yes, what benefits does this have on your reproductive health?

.....  
.....  
.....  
.....  
.....  
.....

15. What influenced you to be pregnant?

(a) Wanted to have a child

(b) Husband forced me

(c) It was accidentally conceived

(d) Grandmother wanted many grandchildren

16. At which month of the pregnancy did you start antenatal care?
- (a) 0 – 3 months (0-12 Weeks) D
  - (b) 4 – 6 months (13-24 Weeks) D
  - (c) 7 – 9 months (25-36weeks) D
  - (d) Don't Know D

17. Do you remember having any obstetric problems with previous pregnancies?
- (a) Yes D
  - (b) No D
- If yes could this have an influence on antenatal care visits?
- (a) Yes D
  - (b) No D

18. Do you have any specific reasons why you started antenatal care at that period?

.....

.....

.....

.....

.....

19. Do you have your antenatal care card for the previous pregnancy?
- (a) Yes D
  - (b) No D

20. How many antenatal care visits is a pregnant woman supposed to make during the whole pregnancy period? Enter Number
- (a) When there is no problem \_\_\_\_\_ D
  - (b) When there are problems \_\_\_\_\_ D

21. Were you satisfied with the services offered at this facility regarding focused antenatal care?
- (a) Yes D
  - (b) No D

22. What are the benefits of antenatal care? For benefits not mentioned probe further

BENEFIT		Strongly agree	Agree	Not agree	Not sure
A	Establishing rapport between pregnant mother and antenatal care provider				
B	For early detection of risk conditions associated with pregnancy				
C	Assist the provider to give individualised health education on importance of FANC				
D	For pregnant women to receive preventive interventions such as TTV immunisations, Iron and Vitamin A supplementation, SP, ITNs, hookworm treatment				

**Knowledge about focused antenatal care**

23. Where did you receive information about importance of utilising focused antenatal care?

- (a) Health worker D
- (b) Radio D
- (c) Traditional Birth Attendants D
- (d) Relatives D
- (e) Others (Specify)..... D

24. What made you start utilising focused antenatal care today/ If in the first trimester?

- (a) It is time to start antenatal D
- (b) Sickness D
- (c) Told by others (Friends/relatives/neighbours) D
- (d) Previous pregnancy complications D
- (e) Previous foetal loss D

25. When you wanted to start focused antenatal care, was each of the following a problem or not?

	Parameter	Problem	Not a problem
A	Transport money		
B	Long distance		
C	Desirability		
D	Perception of being a low risk		
E	Waiting to get permission to start focused antenatal care clinics		
F	Concern that there may not be a midwife		
G	Limited transportation options		

26. What would you like most about focused antenatal care services at this facility?

- (a) Good health worker attitude D
- (b) Short waiting hours D
- (c) Availability of staff D
- (d) Flexibility of clinic schedules D
- (e) Male involvement initiative D

23. Do you have to pay in order to start focused antenatal care clinics?

- (a) No D
- (b) Yes D

How much K .....

24. How affordable is this amount to you?

- (a) Cheap D
- (b) Fair D
- (c) Expensive D

27. Are there any barriers or pregnancy related traditional beliefs that prevent pregnant women from starting antenatal care in the first trimester?

.....

.....

.....

.....

**Thank you very much for taking part in this study.**



4. When did you last receive in-service training in life skills in Obstetric or integrated maternal and neonatal care.
- (a) One year
  - (b) Two years
  - (c) Three Years
  - (d) Four years
  - (e) More than four years

5. Have you ever been trained in Focused Antenatal care?
- (a) Yes
  - (b) No

6. If yes, what knowledge did u gain during the training? please tick all applicable areas.
- (a) How to use focused antenatal guidelines.
  - (b) Early detection and treatment of problems and complications.
  - (c) Principles underlying FANC
  - (d) Individualised birth preparedness (IBP) and complications readiness.
  - (e) Intermittent Prevention and treatment of Malaria (IPT)
  - (f) Health promotion and disease prevention during pregnancy.
  - (g) Others specify.....

7. What role do you play in focussed antenatal care delivery?

.....

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.....

8. During antenatal visits, do you agree that these services are provided to individual clients?  
*Please answer by selecting appropriate number from each instance.*

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- (a) HIV Testing and Counselling (HTC) D
- (b) Administration of Tetanus Toxoid Vaccine (TTV) D
- (c) Iron supplementation D
- (d) Individualised health education D
- (e) Deworming of hookworms D
- (f) Vitamin A supplementation D
- (g) Early detection of risk and treatment of complications D
- (h) Presumptive Malaria treatment with SP D

9. During antenatal visits, do you agree that the following information is provided to clients?  
*Please answer by selecting appropriate response from each instance.*

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- (a) Process of pregnancy and its complication D
- (b) Nutrition and breast feeding D
- (c) Personal hygiene D
- (d) Danger signs in pregnancy D
- (e) Exclusive breast feeding D
- (f) Harmful habits e.g. drug abuse, smoking D
- (g) Use of traditional medicine D
- (h) Plans for delivery D
- (i) Schedule for next visit D
- (j) Plan for postpartum D
- (k) Effects of STI D

10. How many information education and communication sessions are conducted per week on focussed antenatal care?

.....  
.....  
.....  
.....  
.....

11. What problems are encountered in the course of providing antenatal care services to pregnant women?

- (a) Insufficient Equipment and supplies
- (b) No guidelines and checklist for provision of focused antenatal services. D
- (c) Lack of transport/fuel D
- (d) No wireless communication D
- (e) Shortage of professional staff D
- (f) Lack of essential drugs D
- (g) Inadequate rooms to provide focused antenatal services D
- (h) Community attitudes towards health workers D

12. How many times a week do you offer FANC services?

- (a) Every day of the week D
- (b) Once a week D
- (c) Twice a week D
- (d) Three times a week D

13. At this health centre, what time do you open and close the antenatal clinic?

- (a) 7:30am-4:30pm D
- (b) 8:00am - 4:30pm D
- (c) 8:30am-4:30pm D

14. Perception of nurses towards Focused antenatal care services offered at the facility.  
*please answer by selecting appropriate number from each instance.*

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- (a) This particular health facility was ready to start providing focused antenatal care services D
- (b) Obstacles/limitations in effectively implementing focused antenatal care at this facility have been attended to D
- (c) Training in FANC was so helpful to all nurses providing ANC services D
- (d) Implementation of focused antenatal is perceived as acceptable, goal directed and of good quality D
- (e) Pregnant women are satisfied with the 4 recommended visits D
- (f) Pregnant women are satisfied with the antenatal services provides Properly followed guidelines for implementation of focused antenatal care results in a healthy mother and baby D

14. **What is your comment regarding barriers to utilisation of focussed antenatal care services in Ntchisi district?**

.....  
 .....

**Thank you for taking part in this study**

#### Appendix 4: Clearance Letter

University of Tampere  
FI-33014 Finland  
TEL +358 (0) 3 355111  
FAX +358 (0) 3 213 4473  
EMAIL: registry@uta.fi

The Secretary for Health  
Ministry of Health  
P.O. Box 30377  
Capital city  
Lilongwe 3

Attention: **The Chief Research Officer**

Dear Sir,

**APPLICATION FOR A NATIONAL CLEARANCE TO CONDUCT A RESEARCH STUDY  
ON FACTORS ASSOCIATED WITH LOW UTILISATION OF ANTENATAL CARE  
SERVICES IN NTCHISI DISTRICT**

I am a student at the University of Tampere-department of Health sciences. I am registered for the Master's Degree in Public Health (MPH). The study is for meeting the requirements of the mentioned degree.

I kindly request permission to collect data in the health facilities of Ntchisi District. Data will be collected from pregnant mothers attending antenatal clinic as well as health workers providing antenatal care services, using questionnaire as an administrative tool.

The purpose of the study is to determine factors that contribute to low utilization of Focused antenatal care services among pregnant women in the district.

All respondents will be given full information about the study and verbal consent will be sought from the participants. Issues of confidentiality, anonymity and about their right to withdraw from the study if they feel uncomfortable will also be clarified to the participants.

Please use the contact below for communication regarding the above request.

Yours Faithfully,

Christina Leah Banda  
**RESEARCH STUDENT**

*Christina Leah Banda  
Ntchisi District Hospital  
P.O Box 44  
Ntchisi.  
Tel: 0999669051  
Email: [Christina.banda@uta.fi](mailto:Christina.banda@uta.fi)*

**NAME OF SUPERVISOR**  
*Dr Tarja kinnunen  
University of Tampere  
Email: [Tarja.i.kinnunen@uta.fi](mailto:Tarja.i.kinnunen@uta.fi)*

## Appendix 5: Approval Letter from Ministry Of Health

Telephone: + 265 789 400

Facsimile: + 265 789 431

All Communications should be addressed to: The Secretary for Health

REF. NO. MED. 09/12

Dear Miss Banda,

**APPROVAL FOR YOUR RESEARCH STUDY ON FACTORS ASSOCIATED WITH LOW UTILIZATION OF FOCUSED ANTENATAL CARE AMONG PREGNANT WOMEN IN NTCHISI DISTRICT**

I hereby write this letter to inform you that the National Health Systems Research Council reviewed your proposal in which you requested for an approval.

The council wishes to inform you that the proposal has been approved and you may proceed to carry out the study in Ntchisi district as planned.

However, you are advised to serve a copy of final report of this research study to this council for record purposes and publication in the Medical Journal in future.

We wish you all the best as you carry out the study.

Yours Faithfully,



Dr. D. Kathyola

For: **THE SECRETARY FOR HEALTH**



*In reply please quote No.*

MINISTRY OF HEALTH  
P.O. BOX 30377  
LILONGWE 3  
MALAWI

1<sup>st</sup> June, 2012

## Appendix 6: Letter to the District council

University of Tampere  
FI-33014 Finland  
TEL +358 (0) 3 355111  
FAX +358 (0) 3 213 4473  
EMAIL: [registry@uta.fi](mailto:registry@uta.fi)

The District Commissioner  
Ntchisi District Council  
Private Bag 1  
Ntchisi

Dear Sir,

### **APPLICATION FOR PERMISSION TO CONDUCT A STUDY IN NTCHISI DISTRICT**

I hereby write this letter in respect of the above subject matter.

I am a student at University of Tampere undergoing a Master of Public Health. This research project is in partial fulfilment of the award of a Master of Public Health.

The topic of the study project is factors associated with low utilisation of Focused

Antenatal care services among pregnant women in Ntchisi District. The results of the study will assist to improve on interventions already offered in the promotion of reproductive health services uptake

I will be looking forward to hear from you soon.

Yours Faithfully,

Christina Leah Banda

**RESEARCH STUDENT**

## Appendix 7: Approval Letter from District Commissioner



# NTCHISI DISTRICT COUNCIL

---

All correspondences to be addressed to:

The District Commissioner  
Private Bag 1,  
Ntchisi  
Tel: 01 285 326  
Tel / Fax: 01 285 286

Our Ref.: NSDC/

Your Ref: HMMK/Antenatal/12

Date: 2012.06.10

---

To: Miss Christina Banda

### PERMISSION TO CONDUCT RESEARCH STUDY IN THE DISTRICT OF NTCHISI

I write this communication to draw to your attention that the district council looked at the submitted study proposal on Factors associated with low utilization of Focuses Antenatal Care among pregnant women in the district.

The council critically looked at the proposal and found it very useful for the council.

You are allowed to proceed with the study, and inform the district health officer as well about this study so that he may assign some health workers to assist you in the data collection exercise.

The district council would appreciate to have a copy of the final report after completion of the study.

Yours Sincerely

P. Manyungwa

**THE DISTRICT COMMISSIONER**

**Appendix 8: Approval Letter from District Health Officer**

Telefax: 01 285 264  
Telephone: 01 285 286  
Communications to be addressed to:  
The District Health Officer



In reply please quote  
MDHADMIN/008 025  
NTCHISI DISTRICT HOSPITAL  
P.O. BOX 44  
NTCHISI  
15<sup>th</sup> June, 2012

**TO WHOM IT CONCERN**

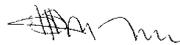
**PERMISSION TO CARRY OUT RESEARCH ACTIVITY IN NTCHISI DISTRICT**

This is to inform you that the bearer of this letter is a student worker from this district health office pursuing a Master of Science in Public Health with University of Tampere.

Render to her all the necessary support she may need as the results of the study would assist the district health office to develop the interventions that may help to improve the uptake of Focused Antenatal Care services among pregnant women in the district. .

I am looking forward to your usual cooperation

Yours Faithfully'



Dr. Webster Chirambo  
**THE DISTRICT HEALTH OFFICER**

## Appendix 9: Informed Consent

University of Tampere  
FI-33014 Finland.  
TEL +358 (0) 3 355111  
FAX +358 (0) 3 213 4473  
EMAIL: registry@uta.fi

Dear Respondent

You are being invited to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please ask the researcher if there is anything that is not clear or if you need more information

I am a student at University of Tampere doing a Master of Public Health. I intend to carry a study as one of the programme requirements. The main purpose of the study is to identify factors contributing to low utilization of focused antenatal care among pregnant women in Ntchisi district.

The results of this study will hopefully improve the uptake of focused antenatal services among pregnant women and thereby help to reduce the burden of maternal morbidity and mortality. I have attached a questionnaire which asks you to respond to a series of statements and questions. The items in the questionnaire focus on your knowledge as regards to focused antenatal care. The items also seek to identify some social-economic and cultural factors that may influence low utilization of focused antenatal care. Finally the questionnaire includes statements that help to establish your attitude towards focused antenatal care.

I want to stress that your participation in this study is voluntary and all efforts to protect your identity and keep the information confidential will be taken. There is no risk connected to the study. Refusal to participate will not affect your work or care you shall seek at any of the health facilities in any way.

If you have questions regarding your rights as a research subject, or if problems arise which you do not feel you can discuss with the researcher, please contact the chief researcher at the Ministry of Health (Research unit) on **01726422**

Should you have any questions about the research or any related matters, please contact the researcher at **0999669051**.

Your participation will be greatly appreciated.

Yours Faithfully,

Christina Leah Banda

**RESEARCH STUDENT**