

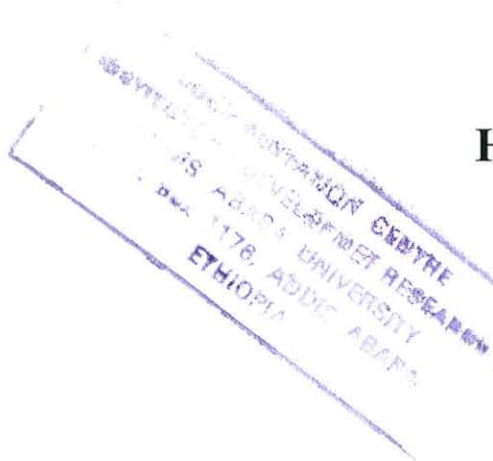
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**ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

*Factors Affecting Antenatal Care Attendance in Machew Town,  
Southern Tigray*

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## LIST OF ABBREVIATIONS

- ANC - Antenatal Care
- MCH - Maternal and Child Health
- LMP - Last Menstrual Period
- TT - Tetanus Toxoid
- STIs - Sexually Transmitted Infections
- SNNPR - South Nations Nationalities and Peoples Region
- WHO - World Health Organization
- CHA - Community Health Agents
- CI - Confidence Interval
- U.S - United States of America
- UNICEF - United Nations Children Fund

## **ABSTRACT**

*Antenatal care is potentially one of the most effective health intervention for preventing maternal morbidity and mortality particularly in places where the general health status of women is poor; but its importance remained under utilized in Ethiopia.*

*A community based cross-sectional study was conducted from February 1-30, 2008 in Maichew Town, Tigray Regional state, to assess factors affecting utilization of antenatal care services among women during their third trimester of pregnancy and within 12 months post delivery preceding the survey. Interviewer administered structured questionnaire was used for data collection. Data were collected from three Kebeles with access to ANC services and a total of 419 study subjects were included in the study. The data were cleaned, edited, and entered into a computer and analyzed using SPSS window version 15. Odds ratios were calculated using logistic regression model to control confounders. Statistical tests were done at a level of significance of  $p < 0.05$ .*

*The study revealed that about 80% of the women had at least one antenatal visit during their recent pregnancy. Most of the antenatal care (ANC) attendants made their first visit during their second and third trimester of pregnancy. Among ANC users close to 22% had less than four antenatal care contacts. The main reasons for non-attendance at ANC clinic were related to being healthy and lack of time.*

*There was a significant association ( $P < 0.05$ ) between antenatal care utilization and socio-demographic variables such as schooling, high parity, income, age and marital status.*

*It was also observed that non-attendance was higher for those with unplanned pregnancy, low knowledge of unhealthy pregnancy and*

*those whose husband or partner's attitude to ANC attendance were negative.*

*In addition those women who perceived the quality was poor and long waiting time at ANC services and those who had no confidence on the services were significantly associated with ANC non-attendance.*

*The study revealed low antenatal care utilization in the area taking the WHO recommendation that ANC for all pregnant women. Socio-demographic factors were found to be barriers to utilization of antenatal care services. Based on the above findings, improving the quality of service delivery, education and effective behavioral change and communication are recommended to bring about proper antenatal care service utilization by the study community.*

# CHAPTER ONE

## 1.1 INTRODUCTION

Maternal and child health care begins with the immediate health problems of mothers and children and extends to health through out life and to the health of the community (WHO, 1976).

Antenatal care, the care that a woman receives during pregnancy, helps to ensure healthy outcomes for women and newborns (WHO, 1992). It is considered as one of the most important for the health of the mother and optimal development of the fetus as well as for preventing or minimizing the complication of pregnancy (UNICEF, 2004).

Antenatal care clinics are expected to provide pregnancy surveillance of the woman and her unborn child, preventive measures, including immunization (especially with tetanus toxoid) and screening for underlying conditions and diseases such as anemia, malaria, sexually transmitted infections (of which syphilis is particularly important owing to its negative impact on maternal and neonatal health and the links to a high incidence of stillbirth and low birth weight), HIV infection, and symptoms of stress. They are also expected to provide management of pregnancy-related complications, treatment of diseases (particularly prevention of HIV transmission from mother to child), advice and support to the women and her family in developing a birth and emergency preparedness plan as well as health education and promotion for the women and her family, including nutritional support (WHO, 2006).

In recognition of the potential of care during the antenatal period to improve a range of health outcomes for women and children, the world summit for children in 1990 adopted antenatal care as a specific goal, namely "Access by all pregnant women to antenatal care, trained

attendants during child birth and referral facilities for high risk pregnancies and obstetric emergencies” (WHO, 1990).

The antenatal period offers opportunities for delivering health information and services that can significantly enhance the health of women and their infants, but its potential remains insufficiently exploited specially in developing countries.

## **1.2 Statement of the Problem**

Pregnancy and childbirth are natural and often eventful processes that many women are at risk for developing complications during pregnancy and childbirth. Complication of pregnancy and childbirth are the leading causes of disability and death among women in the reproductive age (15-49) years in developing countries (WHO, 1991). Globally one woman dies each minute as the result of pregnancy. An estimated 500,000 maternal deaths occur every year and over 99% of these deaths take place in developing countries (WHO, 1992).

The lifetime risk for a woman in sub-Saharan Africa of dying from pregnancy related causes is about 1 in 16 which is more than 500 times higher than for a woman in northern Europe (Koblinsky, 1993). Maternal mortality is only the tip of the ice-berg. For every mother who dies a maternal death, 15 to 20 others will suffer serious long-term complications, while over 100 will suffer acute complications (WHO, 1992; Koblinsky, 1993). Over 90% of low birth weight infants (infants with a birth weight less than 2,500 grams) in the world are born in developing countries (William, 1989). These babies account for 30% to 40% of all infant deaths (Wallence, 1990).

In Ethiopia the material mortality rate has been estimated to be 673 per 100,000 live births (EDHS, 2005). This is one of the highest rates in the

world. About 13% of the children are born with low birth weight and the infant mortality rate is 77 per 1000 live births, which is 10 to 20 times higher than for developed countries (Ministry of Health, 2006/7). In Tigray infant mortality rate is 67 per 1000 live births (Ministry of Health, 2006/7).

The main proximate causes of maternal mortality include hemorrhage, infection, unsafe abortions, eclampsia / hypertension, and obstructed labor (WHO & UNICEF, 2004), most of which much be addressed by adequate emergency obstetric care. A systematic review of successful interventions to reduce maternal mortality (Wallence, 1990) identifies appropriate antenatal care, including iron supplementation during pregnancy and skilled attendance at delivery as important complements to a functioning emergency obstetric care delivery system.

Antenatal care (ANC) is an integral component of maternal and child health care (MCH) as part of global strategies for achieving health for all (Mesham, 1992). It is an effective health intervention tool for reducing the risk of maternal morbidity and mortality, particularly in places where the general health status of women is poor (Lain and Erica, 1989). The purpose of antenatal care is to screen for sign of illness or other complications that may occur during pregnancy. For instance, blood-pressure measurements and urine analysis done during antenatal care visits can screen pregnant women for hypertensive disorders of pregnancy (including pre-eclampsia and eclampsia) and to seek medical attention when the condition appears (WHO, 2006). It is also an opportunity to treat existing diseases, which may be aggravated by pregnancy such as sexually transmitted diseases, anemia, hypertension, etc (UNICEF/WHO, 2004). The provision of iron tablets during pregnancy has been shown to reduce the risk of being anemic, which is an important risk for hemorrhage and cardiac failure during pregnancy

(William, 1989). It also provides an opportunity to be immunized against tetanus toxoid. Both of these interventions are considered highly effective (WHO, 1990; William, 1989). In late pregnancy, antenatal visits can help identify women at risk for difficult deliveries (including cephalo-pelvic disproportion and a breech or transverse presentation) and direct them to appropriate delivery care (UNICEF & WHO, 2001). Antenatal care use has been shown to influence women's use of delivery services, as well; neonatal and infant health has been shown to be significantly affected by women's use of antenatal care (Mesham, 1992; Melkamu, 2005).

The gains from expanded antenatal health-care utilization are greatest in countries such as Ethiopia where fertility and mortality are high. According to the 2005 Ethiopia demographic and health survey (DHS) only 28 % of mothers who have had a live birth in the five years preceding the survey received prenatal care from health professionals.

Antenatal care coverage of the world is 72% (developing countries 68%, and industrialized countries 98%) (UNICEF, 2004). Antenatal care coverage of Ethiopia is 52.1% and percentage of deliveries at health care facilities is 16.4% (Ministry of Health, 2006/7). Antenatal care coverage of Tigray region is 60.5% and percentage of deliveries at health care facilities is 10.4%. A more important problem is however, delayed start of antenatal care attendance (Bureau of Health, 2005).

Despite the fact that antenatal care utilization is essential for further improvement of maternal and child health, little is known about factors affecting the use of this service in Ethiopia in general and in Tigray Region in particular. Thus, this paper aims to fill this gap using primary data collected from the study area.

### **1.3 Significance of the Study**

The anticipated applications of the results from this study are: -

1. Increase awareness of health professionals, and all others concerned about the possible causes of non-attendance of antenatal care in the study area.
2. Utilization for planning and evaluation of MCH services in the study area.

### **1.4 Objectives of the Study**

The main objectives of this study would be: -

#### **General objective**

- To assess the factors that affect antenatal care attendance in order to improve maternal and child health services in the study area.

#### **Specific objectives**

1. To estimate the level of antenatal care attendance by pregnant women in Maichew Town.
2. To examine what factors influence women's attendance and non-attendance of antenatal care in the study area.
3. To examine services received by pregnant women in the study area at antenatal care clinics.

### **1.5 Research Questions**

1. Do age, parity, occupation, ethnicity, religion and marital status are determinants for antenatal care attendance?
2. Are pregnant women with low income, low educational status and low knowledge of unhealthy pregnancy causing not to attend antenatal clinics?
3. Do planned pregnancy and positive attitude of husband's or partner's increase antenatal care attendance?

4. Does distance of antenatal clinics affect antenatal care attendance?
5. Do quality of care, length of time, confidence on the services and client privacy at ANC affect antenatal care attendance?

## 1.6 Operational Definitions

1. **Antenatal care attending woman:** - is a pregnant woman in her third trimester and those women with in 12 months of post delivery at the time of the interview and has attended antenatal clinics at least once.
2. **Antenatal care non-attending woman:** - is a pregnant woman in her third trimester and those women with in 12 months of post delivery at the time of the interview and has not attended antenatal clinics at all.
3. **A pregnant woman in the third trimester:** - is a woman whose menstrual period is above 6 months or a woman who claims to be 7, 8 and 9 months pregnant during registration.
4. **Economic status-** is measured in terms of monthly family income reported by the respondents.
5. **Permanent residence:** - lived in the study area more than one year at the time of the survey.
6. **Husband:** - the term husband is used to refer to both husbands and partners.
7. **Better knowledge:** - those women who are able to name two or more of the accepted danger signs of pregnancy.
8. **Poor knowledge:** - those women who are able to name one or none of the accepted danger signs of pregnancy.

## 1.7 Study Variables

### 1.7.1 Dependent Variable

- Antenatal care attendance or non-attendance.

### 1.7.2 Independent Variables

- *Socio-demographic factors* (age of woman, religion, ethnicity, marital status, occupation, education, and parity).
- *Economic factors* (monthly family income).
- *Individual factors* (attitude towards pregnancy, and husband's or partner's attitude).
- *Knowledge* (knowledge of dangerous health problems related to pregnancy).
- *Health service barriers* (distance and women's opinion about the quality of care).

## 1.8 Limitation of the Study

Some factors like age and parity preceded antenatal care attendance where as others such as knowledge of danger signs of pregnancy could either follow or precede the out come of interest. In addition since the study is a cross sectional one, the result should be interpreted in caution.

The study tried to assess several factors such as social, demographic, knowledge, and economic aspects of respondents and characteristics of antenatal clinics that could be associated with antenatal care attendance. The list however was not exhaustive and factors not considered here (e.g. media exposure, women believe on the importance of ANC, cost, etc...) might have significant associations.

## CHAPTER TWO

### 2. REVIEW OF LITERATURE

#### 2.1 Determinants of ANC Service Utilization

##### 2.1.1 Socio-Demographic Variables

Several studies have examined ANC use in relation to demographic and socio-economic variables (WHO, 1990). A number of socio-demographic characteristics of the individuals affect the underlying tendency to seek care. In this regard good examples are maternal age, parity, lower educational attainment and family income, which have been repeatedly examined as determinants of health care utilization (Mekonen, 1997; Melkamu, 2005). A similar study in South Africa demonstrated that women who didn't obtain ANC were more likely to be of lower socio-economic status, higher parity and farther away from health services than were ANC- attenders (Pattison, 1990). Among the several reasons for failure to obtain ANC given by those who did not attend were lack of support (21%), lack of time (44%), family responsibility (20%), and other reasons.

Education is a strong predictor of ANC service utilizations but the extent and nature of relationship between the two is not uniform across social settings. For instance in Bangladesh and Thailand women with primary education did not differ from women with no schooling in ANC utilization (UNICEF, 2000). In Peru and Guatemala women with primary level of education were more likely to utilize ANC services than those no schooling women (Nnadi, 1987).

Similarly, a few studies in Ethiopia revealed that education is a major factor determining utilization of antenatal care services. According to Ethiopian DHS 2005, about 75% of women with at least secondary schooling receive antenatal care. Another study conducted on determinants of antenatal care utilization in Arsi zone, Central Ethiopia,

revealed that 71% women with at least secondary schooling receive antenatal care services (Mesfin and Farrow, 1996).

### **2.1.2 Cultural Practices and Women's Decision Making Power**

In most developing countries women's powerlessness and their unequal access to material resources and their inability to make informed choices are the fundamental causes of maternal death. In many parts of the world women's power to make decisions is limited even in matters directly related to their own health (Omar, 1994; Celik, 2000). In Bangladesh, it is usually the husband (mother-in-law) who makes the decision to seek (or not to seek) care (Navaneetham, 2002).

Similarly in Pakistan, for example, a study found that 2/3 of women delivered at home because of the husbands or other family members forbidding hospital delivery (Kwast, 1992).

In most African rural communities maternal health services co-exist with traditional health care services, therefore, women must choose between the two options (Addai, 1998). When obstetric complications are seen as the reflection of the "will of God" or the influence of "evil spirits", families often choose traditional healers for care and only take women to health facilities at last resort when it may be too late. Another important factor is the availability of women's time. In developing countries women spend more time on their multiple responsibilities such as child care, collecting water or fuel, cooking, cleaning, etc than on their own health (Kebede, 1997; Jepson, 1992).

### **2.1.3 Psychosocial and Personality Factors**

The use of modern health services is often influenced by individual perception of the quality of modern health services and the religious beliefs of individual women. A woman's attitude towards her pregnancy

and the presence of social support have been found to influence ANC use in developing countries (Wallence, 1990; Perez-wood, 1990). A study revealed that women with low social support, who were younger, more often single, who had lower level of education and income, who smoked more have higher biological risks than women with adequate social supports and/or lower anxiety (Abbas, 1986; UNICEF, 2000).

A women's attitude towards her pregnancy has been found to influence ANC use. In the U.S., a comparative study found that women with few or no ANC visits had more negative attitudes about being pregnant and the importance of ANC than did those who had adequate care (Pagal, 1990). In Muslim countries such as Bangladesh, rural women do not usually converse with unknown persons, particularly males. This behavior is particularly pertinent because male physicians attend most deliveries at rural health centers. This situation acts as an important social and religious barrier to use health care services (Rumsey, 2002).

In Ethiopia, there are few studies that revealed the various barriers to women's use of ANC. A community-based study carried out in Addis Ababa showed the risk of non-attendance was high for pregnant women whose income was low, whose husband's attitude was negative or unknown, and who were first pregnant at the age of 10 to 18 years (Fantahun, 1992; Berhane, 2000). Similarly, kwast et al. in their study on maternal mortality found women who did not have prenatal care were often those of high risk, i.e. illiterate, had low level of awareness of problems of child bearing, had low income and were unmarried (Kwast and Liff, 1988).

## **2.1.4 Health Service Factors**

### **2.1.4.1 Quality of Health Services**

As several studies from developed and developing countries indicated, health service barriers and women's perception of quality of ANC were other important factors affecting women's attendance during pregnancy. Though women's knowledge and experience about child bearing might influence their use of ANC, if the attitude of the health provider and his/her treatment of the service seeker are deemed poor, the service seeker will be less likely to return and use the services. Several studies in both developed and developing countries have documented that a long wait for short consolation time, lack of respect for the client, and poor communication have been found to be major factors in women's perception of care (Paine, 1989; Poland, 1987; Pettiti, 1991).

The role that quality of care plays in the decision to seek care is related to people's own assessment of service delivery, which largely depends on their own experiences with the health system and those of people they know (Nnadi and Kaba, 1987; WHO, 1990). The two mechanisms through which quality of care affects the decision to seek care are satisfaction or dissatisfaction with the out come (e.g. Effective ness of the treatment and remedies prescribed), and satisfaction or dissatisfaction with the service received (e.g. staff attitude, long waiting time, hospital procedure, availability of supplies and efficiency (Kalizer, 1981; Pettiti, 1991). These factors will act as inhibitors of future utilization which affect the decision to seek care.

### **2.1.4.2 Physical Accessibility of Health Services**

Physical accessibility of health services has been to be an important determinant of utilization of health services in developing countries. A study in Jordan found that distance between residence and the service as well as time and cost involved in traveling to services were all

significantly associated with non-use of the ANC services (Abbas, 1986). According to a household survey in southern Iraq, the relationship between health unit and place of residence has shown that utilization rates decline sharply with increasing distance traveled (Habib and Vavgan, 1986). WHO also reported that distance from MCH services, and the time and the cost involved in traveling to services to be all highly significantly associated not only with ANC use but also with the use of institutional delivery, postnatal and infant care services (WHO, 2006).

On the other hand, improved access to health care through manipulation of cost and distance may not increase health care utilization. For example, a study from Brazil with an accessible population (15 minutes walking distance and free medication) showed that use of health services was related to confidence in the service given and waiting time (Paine, 1989).

In Ethiopia, studies addressing the factors influencing the utilization of maternity care services are scant. A large-scale community and family survey in SNNPR concluded that although a number of socio demographic factors are important in urban areas, they are of less relevance in the rural part of the study area. Socio demographic factors including parity, age, and education appeared to be influence the use of maternity care services in urban areas. In contrast, distance and travel time were identified as important factors in the rural part of the country (Mekonnen, 1997).

### **2.1.5 Need and Perceived Morbidity**

In developing countries most women lack knowledge on risks of pregnancy and childbirth, which in turn influences the felt need for ANC. In Jamaica, for instance, while most women surveyed were able to name obstetric complication they had experienced themselves, fewer than 10%

of them identified any other specific risk, danger or problem of pregnancy and birth (Working paper, 1990).

Other studies from developing countries showed that not only does women's knowledge of risks affect their use of ANC, but also does their knowledge of the severity of risks and their feeling of susceptibility to those risks. In India for instance, it has been demonstrated that lack of recognition of health problems was significant reason for not seeking outside health care that accounted for half of maternal death (Bhatia, 1986). A household survey in Iraq showed the level of perceived sickness was the most important factor affecting utilization of health services (Habib and Vavgan, 1986).

In Ethiopia a study in Addis Ababa showed that absence of illness and lack of awareness are among the major reason for non-attendance of antenatal care (Fantahun, 1992). Another study in Ayssaita and Dubti towns, Afar regional state, indicated that lack of knowledge on the danger signs of pregnancy is one of reasons for non-attendance of ANC and delivery care (Melkamu, 2005).

To sum up, factors that affect for antenatal care attendance varies in different areas as it was indicated in the review literature. Thus, the investigator wanted to assess factors that affect ANC attendance in the study area using primary data.

## CHAPTER THREE

### 3. MATERIALS AND METHODS

#### 3.1 Study Design

A community based cross-sectional study design that employed quantitative data collection methods, was carried out to assess factors influencing utilization of ANC services in Maichew town.

#### 3.2 Profile of the Study Area

Maichew town is located in Southern Tigray at a distance of 660 km from Addis Ababa and 120 km from the region capital, Mekele. The town is the capital of both Southern Tigray zone and Endamohony wereda. Maichew is renowned for its historical significance as the site of the battle between Ethiopia and Italy in 1935/36.

Geographically, the town is located at of 12°47'N Latitude and 39°32'E Longitude at an average elevation of 2400 meters. Maichew town has *Dega* climate with cold air condition. The mean annual rainfall is 785 mm. The mean annual minimum and maximum temperatures of the town are 9°C and 22°C, respectively. The town is divided into four kebeles and is administered by the town's council.

The total population of Maichew town is estimated to be 35,463. About 7,447(21%) of the population, are women in the reproductive age group (15-49 years of age). In Maichew town there is one referral hospital, one health center and one clinic that have been giving services for the total population. In addition, there are also three private clinics that have given health services to the population. The referral hospital has been giving services not only for the population of the town but also for the population of other weredas of the southern region of Tigray. It was estimated that 1,773 pregnant women are found in the study area, which is 5% of the total population (35,463)(Wereda Health Office, 2006).

### 3.3 Study Population

#### The Study Population consists of

Pregnant women in their third trimester of pregnancy and women with in twelve months of post delivery in Maichew town.

#### The Study Participants

Pregnant women in their third trimester of pregnancy, and those with in 12 months of post delivery, irrespective of the outcome of pregnancy were included in the selected kebeles.

### 3.4 Inclusion and Exclusion Criteria for the Study Population

#### Inclusion Criteria

- i) All women in their third trimester of pregnancy.
- ii) All women with in 12 months of post delivery and those who terminated pregnancy beyond six months preceding the date of interview regardless of out comes of pregnancy.
- iii) Permanent resident of the study area.
- iv) Living with in 5 kilometers from a healthy facility.

#### Exclusion Criteria

- i) Women, who are not in the third trimesters, critically ill, could not talk or listen, and those who lived for less than one year in the area at the time of the interview were excluded from the study.

### 3.5 Sample Size Determination

Sample size was determined using the formula for single population proportion based on the following assumptions (Julie P., 2004).

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

e<sup>2</sup>

Where: - n= is the size of the sample

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

E=error of precision

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

### Assumptions

1. In the absence of the previous prevalence data on the population under study, and to obtain the maximum sample size, p is assumed to be= 0.5
2. Margin of error e= 5% is accepted
3. A confidence interval of 95% is assumed ( $z_{\alpha/2}=1.96$ ).

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

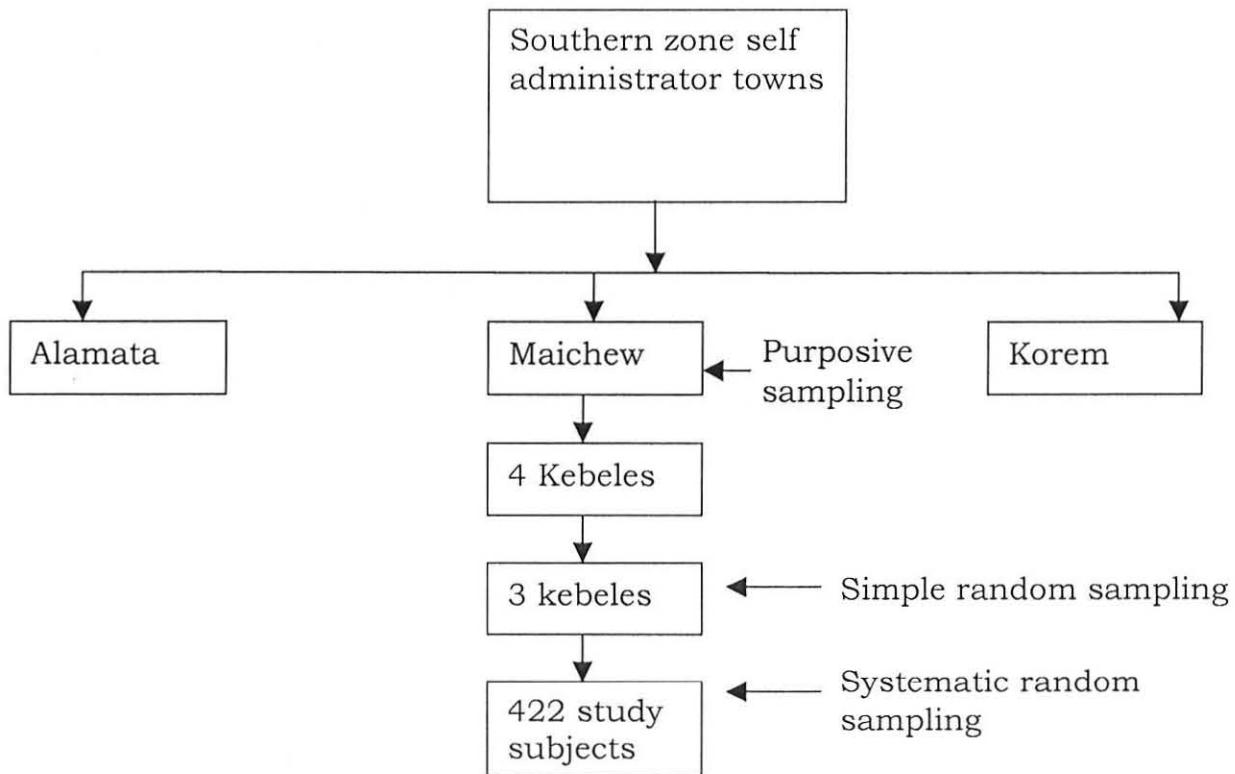
For non-response errors, 10% (384) of contingency added to the sample size= 38, then, total sample size= 422.

### 3.6 Sampling Procedures

Maichew is purposefully selected to represent utilization of ANC at health service in southern zone self-administrator towns of Tigray Region. From a total of four kebeles in the town, since each kebele has around five km access to the nearest health facility, three kebeles were selected based on simple random sampling. Then to obtain 422 study subjects, an initial house to house survey was conducted in each of the three kebeles to find and register pregnant women in the third trimester i.e. seven months of gestation or above and those with in 12 months of post delivery, irrespective of the outcome of pregnancy. Then after, 429

eligible women were identified. Questionnaire was administered to the identified women at the next visit.

Fig 1. Diagrammatic scheme of sampling procedure



### 3.7 Measuring Instruments

#### 3.7.1 Interview

A face-to-face interview was conducted by using structure questionnaire especially developed for this purpose having the information on socio-demographic characteristics, family income, and antenatal care utilization by door-to-door interviewing the respondents.

#### 3.7.2 Questionnaire Development

After reviewing of relevant literatures, many that could address the objectives of the study were gathered from previous similar studies and other materials. The questions were grouped and arranged according to

the particular that they can address. After extensive revision, the final version of the English questionnaire was developed. An individual who has a very good ability of both English and Amharic languages translated the final or the agreed Amharic version of the questionnaire back to English to check with the first for any inconsistencies or distortion in the meaning of word in the content of the instrument.

### **3.8 Data Collection Processes**

#### **3.8.1 Hiring of Data Collectors**

Ten interviewers who completed grade 12 were hired with the following criteria.

1. Being female
2. Known to be honest and willing to face difficulties that may arise during the process of interview
3. Know the district well, and dwellers of the district

Two supervisors (diploma nurses) who are familiar with the population and social administration settings of the kebeles were also hired. Their responsibilities were: -

1. Co-ordinate the activities of interviewers
2. Timely supply the necessary materials for the interviewers
3. Check the questionnaire filled each day, and
4. Rechecked answer by conducting interviews 5% of these interviewed.

#### **3.8.2 Training of Interviewers and Supervisors**

Three-day training was conducted by the investigator for the interviewers and supervisors on the following points: -

- Aims of the survey
- Procedures for the survey
- Problems that might arise during the survey

- Going through the questionnaire question by question
- Calculation of gestational age of pregnancy and time of post delivery
- Art of interviewing: - polite approach, stating questions clearly, not giving any leading opinion and recording with out expressing ones opinions were emphasized.
- Practicing administering the questionnaire among interviewers and supervisors with feedbacks and comments was given to each interviewer.

Before the study started, the aim of the research and its possible utility in health improvement was discussed with the wereda administration office and wereda health team members. Their contributions for running the study smoothly were mentioned and positive attitudes and promises to help whenever necessary was secured. Letters for collaborations in the study stating that it is useful and acknowledged were issued to all kebele offices and to whom it may concern by the wereda administration office and given to interviewers and supervisors.

**Pre-test:** - The pre-test of the questionnaire was carried out in one kebele outside of the selected kebeles that has similar socio-demographic characteristics with the people in the selected kebeles. After house-to-house survey was conducted from 1-2 February 2008, to identify women those who met the inclusion criteria, 30(thirty) - study subjects were identified and the questionnaire were administered on February 3, 2008. Then after, both the interviewers and supervisors assessed clarity, understandability, completeness of questions and others. The interviewers, supervisors and the principal investigator then discussed the results. The feedback that was obtained from the pretest contributed much to the improvements of the measurement questionnaire.

### **3.8.3 Survey Procedures**

An initial house-to-house survey was conducted in each of the selected kebeles of the town, from 5-10 February 2008, to find and register those women who met the inclusion criteria. Thus, a total of 429 participants were identified and based on systematic random sampling the seven surplus identified participants were rejected. Questionnaires were then administered to the identified women from February 12-30, 2008. If the identified woman was not available, appointment dates and hours was taken by discussion with family members or neighbors. A maximum of two more visits were paid if an identified woman was not found at home. In order to ensure maximum availability of respondents at home, supervisors and interviewers worked on all days of a week including Saturdays and Sundays and rested on Fridays. Working hours were 9:00 am to 6:30 pm with rest for lunch between 1:00-2:00 pm.

Calculation of months of pregnancy was done using the last menstrual period (LMP). All pregnant women who would be seven months of pregnant or above were registered for the study. Clinical practice in the country has show that many Ethiopian mothers do not exactly know their LMP. Most of them however tell more or less correctly what month of pregnancy they are. Since the purpose of the study has little to do with exact dates of gestational age, women who claimed to be seven months pregnant were also included although they didn't know the LMP. Therefore, it is possible that a small percentage of women in the second trimester were included in the study. This number was minimized by the fact that interviewers would go back for administering the questionnaire 10-15 days after registration. There was also a remote possibility of missing some women who were in the third trimesters.

Study subjects who were not permanent dwellers of the town were excluded from the study, as this may not reflect the antenatal care

attendance rate and the factors associated with antenatal care attendance in the area.

#### **3.8.4 Monitoring of Data Collection**

During the actual data collection, data collectors were assigned for each supervisor. The supervisors checked these activities of each data collectors by walking with them in each kebele and sometimes crosschecked 5% of the response to ensure reliability of the data collected. Each night the supervisors had checked all the filled questionnaires for compilation, clarity, and proper identification of the respondents and offered the necessary feedback to data collector in the next morning before the actual procedure. Every morning the supervisors met with the principal investigator and reported the results of the previous day. Every four days at the evening there was a meeting of the principal investigator with the supervisors and the interviewers where progress and any problems that arose during the survey were discussed. Visits were also made by the investigator to all of the interviewers when they were conducting interviews to the identified women. The principal investigator also randomly checked at least 5 % of the supervisors work each day for completeness and relevancies and gave feed back if necessary.

#### **3.9 Ethical Consideration**

The objectives of the study were explained to the identified study subjects. They were assured that any information concerning them would never be passed to any individual or institution with out their agreement. Their names were not recorded. Women were kindly requested to be included in the study but were told that it was their right to participate or not. All women who were not attending antenatal care were briefed about the advantages of it and were advised to go antenatal check up for the present (next) pregnancy.

### 3.10 Data Processing and Analysis

After fieldwork was completed and questionnaires were edited and coded, the data entered in to computer and processed by using SPSS version 15 soft ware. Data cleaning was executed by using frequencies and cross tabulations to check accuracy, outliers, consistencies, and missing values. Accordingly, incorrect entries were identified and re-entered. With the help of this program descriptive analysis like means, standard deviations, percentages, etc ... were used to describe the study population in relation to socio-demographic and other relevant variables. Bivariat analysis would be used to assess the relationship of several independent variables with the dependent variable by using chi-square test and calculating p-value. The chi-square test was used to identify independent variables, which explain the dependent variable that would be retained for further analysis at the multivariate stage.

Further, multivariate analysis was carried out to explore the net effect (relative risk) of all independent variables on the dependent variable by controlling possible intervening variables. To do multivariate analysis, the logistic regression model was used. The logistic regression is used when the dependent variable is dichotomous and the independent variables are of any type. Since the dependent variable for this study was antenatal care attendance, which is dichotomous (with two outcomes), the writer used logistic regression model. And it is also suitable for multivariate analysis. It predicts the log of odds of the dependent variable as a linear function of the independent variables. The logistic model for K independent variables ( $x_1, x_2, x_3, \dots, x_k$ ) is given as (Julie, 2004);

$$\text{Logit } P(x) = \alpha + \sum \beta_i x_i$$

Exp ( $\beta_i$ ) = odds ratio for a person having characteristic i versus not having characteristic i

B = Regression coefficient

$\alpha$  = constant

## CHAPTER FOUR

### 4. DATA ANALYSIS AND INTERPRETATION OF RESULTS

In this study respondents in their third trimesters of pregnancy and women within 12 months of post delivery were interviewed from three kebeles of Maichew town. There were three missing respondents who fulfilled the selection criteria due to their unwillingness to participate.

#### 4.1 Socio-Demographic Characteristics of Respondents

The largest study group was in the age group 20-34 (45.1%) years, with a mean age of  $25.96 \pm (6.5)$  years. The major ethnic groups among respondents were Tigreway (91.2%) and others (Amara and Agew) account 8.8%. Out of the total respondents 372(88.8%) were orthodox Christian followers and 47(11.2%) were others (muslim and protustants). The mean number of people living in a household was  $4.4 \pm (1.9)$ . Almost half (48.7%) of the respondents had educational level of junior and above. About 26.3% were illiterate. Regarding respondents' occupation, most women were housewives (51.3%) followed by civil servant (31%), and others (17.7%). Concerning marital status of respondents', the majorities (70.6%) were married and 11.9% were never married. About 30.5% of the respondents had monthly income of  $\leq 100$  Birr while 34.4% earned more than 500 birr. Nearly 21% of the respondents were parity of four and above, while nulliparae constituted 7.2% of the total respondents (table 1).

**Table 1. General characteristics of respondents in Maichew town, Southern Tigray, February 1-30, 2008**

	ANC attendance		Total number	Percent
	Yes	No		
<b>Age</b>				
15-19	83	25	108	25.8
20-34	169	20	189	45.1
35+	83	39	122	29.1
Total	335	84	419	100
<b>Marital status</b>				
Married	257	39	296	70.6
Never married	28	22	50	11.9
Other (widowed, divorced, & separated)	50	23	73	17.4
Total	335	84	419	100
<b>Parity</b>				
0	21	9	30	7.2
1-3	258	44	302	72.1
4+	56	31	87	20.8
Total	335	84	419	100
<b>Educational status</b>				
No schooling	74	36	110	26.3
Primary (1-6)	80	25	105	25.1
Junior and above	181	23	204	48.7
Total	335	84	419	100
<b>Occupation</b>				
House wife	172	43	215	51.3
civil servant	116	14	130	31
Others	47	27	74	17.7
Total	335	84	419	100
<b>Family monthly income</b>				
0-100	79	49	128	30.5
101-300	84	19	103	24.6
301-500	36	8	44	10.5

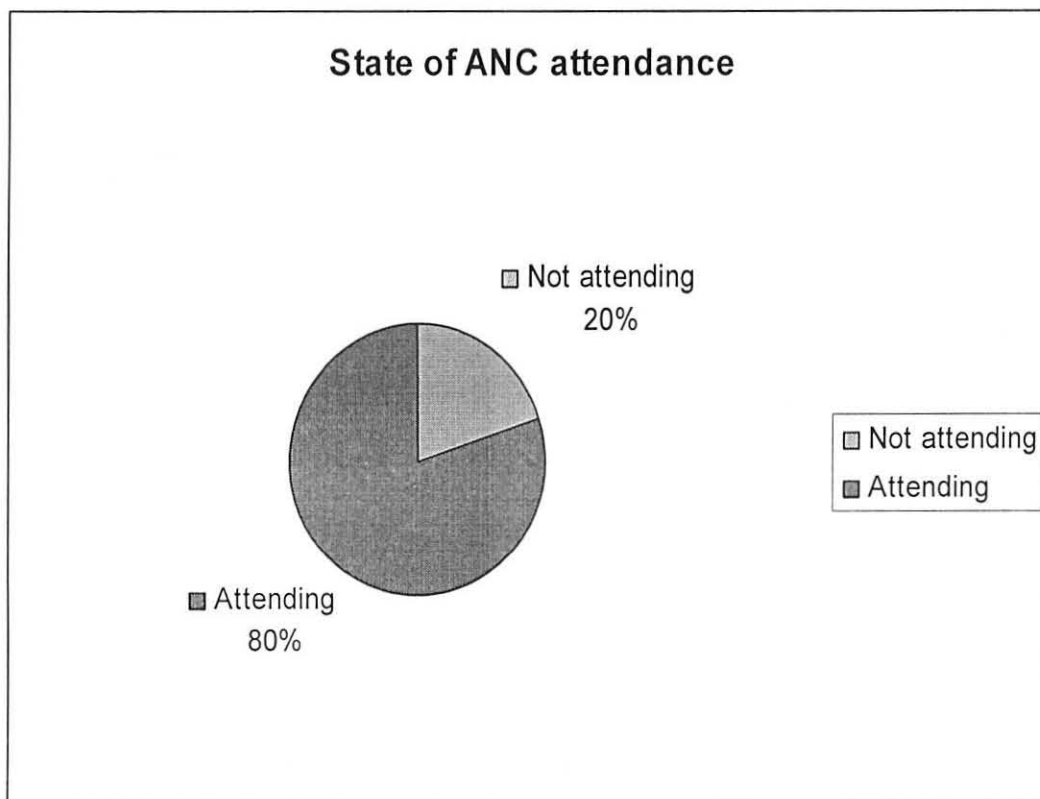
501+	136	8	144	34.4
Total	335	84	419	100
<b>Feeling of distance home to health facility</b>				
Very close	99	30	129	30.8
Average	199	36	232	55.4
Too far	40	18	58	13.8
Total	335	84	419	100
<b>Husband's or partner's attitude to ANC</b>				
Positive	276	33	309	73.7
Negative	59	51	110	26.3
Total	335	84	419	100
<b>Knowledge of unhealthy pregnancy</b>				
Better knowledge	115	10	125	29.8
Poor knowledge	220	74	294	70.2
Total	335	84	419	100
<b>Planned current pregnancy</b>				
Yes	277	45	322	76.8
No	58	39	97	23.2
Total	335	84	419	100

**N.B** Age was classified as 15-19, 20-34, and 35+. This was mainly to see the ANC attendance of teenagers (15-19) and the old age (35+). Since these age groups are affected by high pregnancy related complications.

## 4.2 Antenatal Care Utilization Patterns

Out of the total women (419) included in the study, 335 (80%) had at least one antenatal visit, while 84(20%) had none.

**Fig 2. ANC attendance of respondents in Maichew town, Southern Tigray, February 1-30, 2008**



Trimester of pregnancy at which attendants have first contact with ANC was found to vary. Most of the attendees (49.9%) made their first visit in their second trimesters, 18.2% in their third trimester of pregnancy and only 32.3% of women attended antenatal care in their first trimester of pregnancy.

Among the antenatal user 6.3% had only one or two antenatal contacts and 15.8% had three antenatal visits. Majority of the attendees 77.9% reported to have four or more antenatal visits at the time of the interview (table 2).

Attendants gave different reasons why they attend ANC. The main reasons given “to start regular check up” (84.8%) and “sick and need of treatment” because of health problems (15.2%). It indicated that the majority attended the clinics for preventive purpose, i.e. to start regular check-ups. It could be assumed then, that women are certainly aware of the preventive aspect, and that it is the major reason for them to attend the clinics.

It cannot be ignored, however, that quite a large number also attended the services because they were, in fact, not feeling well and felt that they were in need of treatment. Whether or not these problems were linked to their pregnancy is difficult to establish, as the survey questionnaire didn't include this.

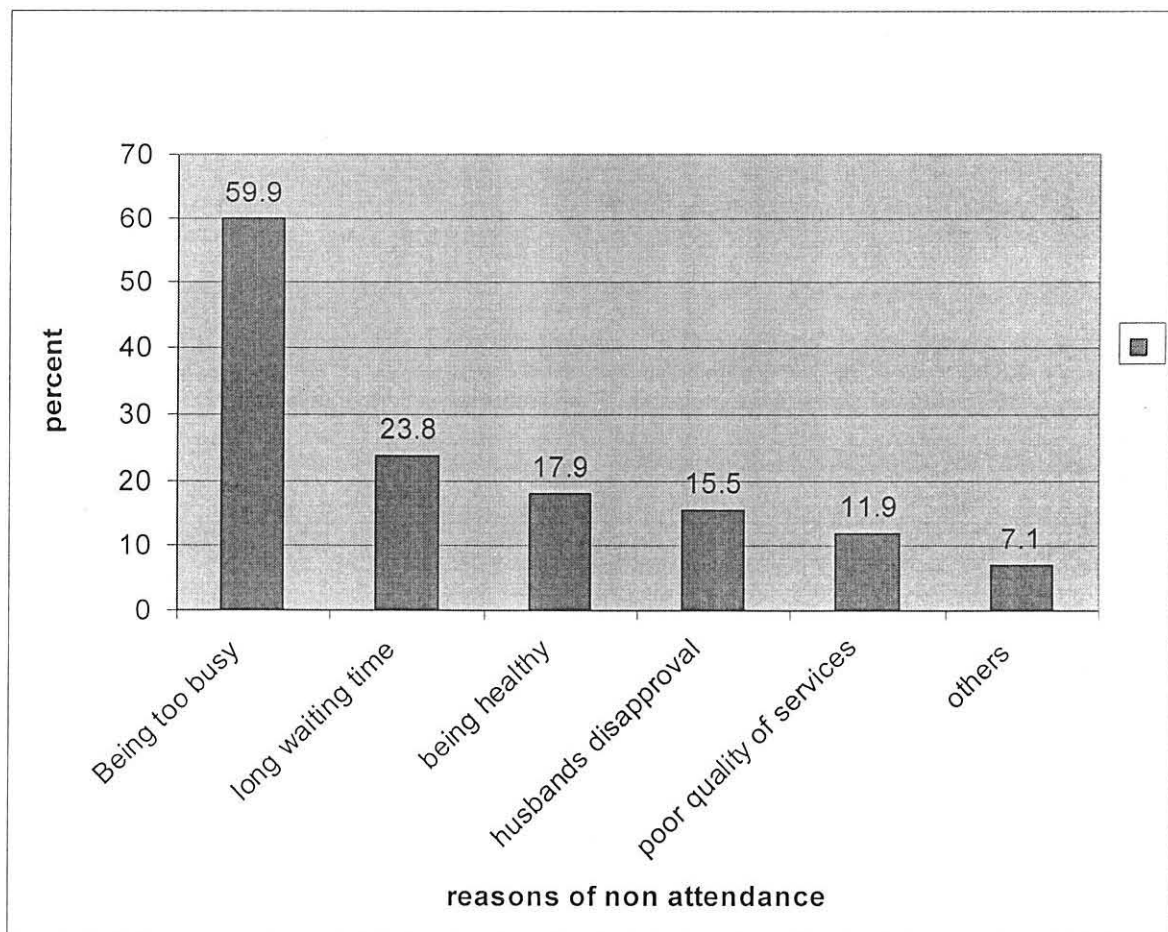
**Table 2. Starting date of antenatal care attendance, reasons for attendance and total number of visits by respondents, in Maichew town, 1-30 February, 2008**

<b>Variable</b>	<b>Number of women</b>	<b>Percent</b>
<b>Trimester of started antenatal care</b>		
<b>First</b>	108	<b>32.2</b>
Second	166	49.6
Third	61	18.2
Total	335	100
<b>Total number of visits</b>		
Once	5	1.5
Two times	16	4.8
Three times	53	15.8
<b>Four &amp; over</b>	261	<b>77.9</b>
Total	335	100

<b>Reasons for ANC attendance</b>		
Sick & need of treatment	51	15.2
To start regular check-up	284	<b>84.8</b>
Total	335	100

Non-attendees were also asked the reasons for not having had any antenatal visit during their pregnancy. The main reasons for non-attendance were found to be that absence of illness 15(17.9%), being too busy 50(59.9%), long waiting time 20(23.8%), husbands disapproval 13(15.5%), poor quality of services 10(11.9%), and others 6 (7.1%)(fig. 3).

**Fig 3. Reasons for not attending ANC by respondents, in Maichew town, February 1-30, 2008**



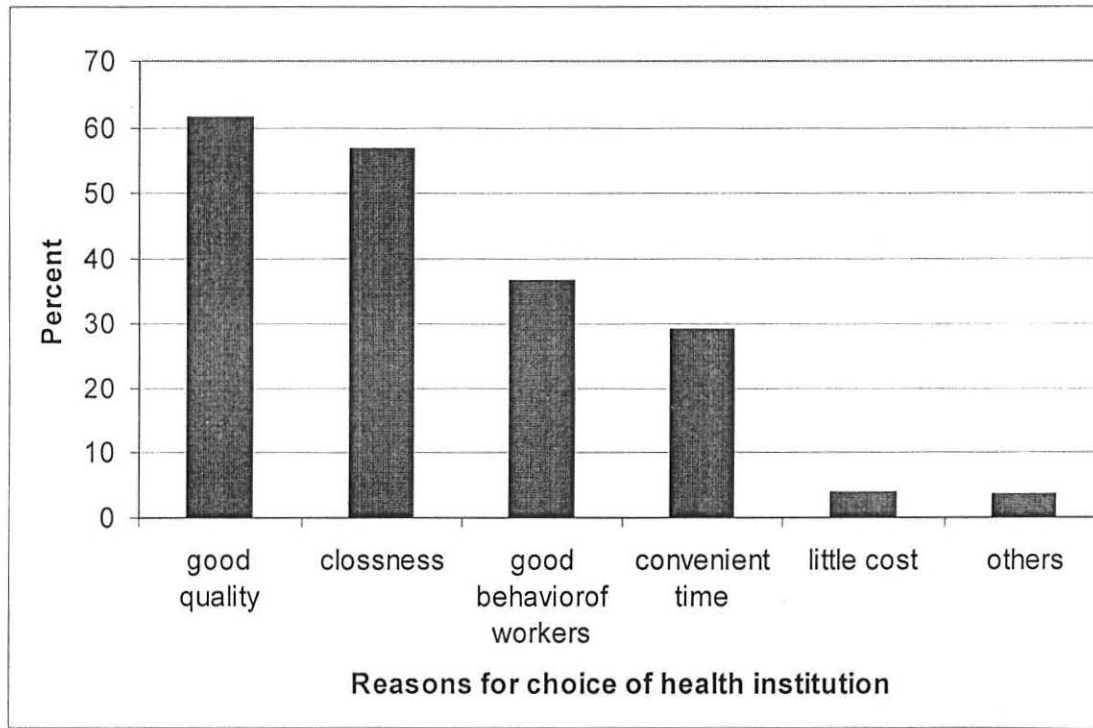
**Table 3. Respondents' choice of health institutions for ANC attendance, in Maichew town, February 1-30, 2008**

<b>Type of health institution</b>	<b>number</b>	<b>Percent</b>
Hospital	208	62.1
Health center	112	33.4
Clinic	8	2.4
Private clinics	7	2.1
Total	335	100

#### **4.2.1 Reasons for Choice of Health Institutions for Antenatal Care Attendance**

Those women who attend antenatal care clinics were asked the reasons for choice of health institution for antenatal care attendance. The most frequent reason was good quality of services (206 responses), closeness of health institution to which the respondent lives (190 responses), and good behavior of health workers (123 responses). Convenient time of services (97 responses), little or no cost for antenatal care attendance (13 responses), and because of other reasons (12 responses)(figure 4).

**Fig 4. Reasons for choice of health institution for ANC attendance, in Maichew town, February 1-30, 2008**



\*\* Percents were calculated based on multiple responses.

#### **4.2.2 Responses of Women about Questions on Some Contents of Antenatal Care**

Women were asked whether specific data were collected such as taking of weight and height, measurement of blood pressure, and taking blood or urine samples. They provided some interesting pointers to what actually happens during the antenatal care visits. The most common elements were measurement of weight and blood pressure, and the least common elements were blood and urine test. At least more than 85% of all women had their weight and blood pressure taken. Laboratory examinations (urine and/or blood) samples were taken from 66.5% of women. Around 33.5% of women hadn't a blood or urine sample taken during the antenatal periods. This indicates that more efforts need to put in to blood

and urine testing to identify conditions such as pre-eclampsia, severe anemia and STIs.

In addition women attending antenatal care clinics were asked whether health education was given or not during the attendance. 71.9% answered health education was given but the rest 28.1% claimed that health education was not given at health institutions where they attend antenatal care. This indicated that there is miss opportunity of addressing the importance of ANC (or MCH) and awareness creation on the danger signs of pregnancy even to the attending women. They were also asked whether or not TT immunizations were given during the ANC attendance and out of 335 ANC attenders, 269(80.3%) of the attendees received TT injections. At least two injections of tetanus toxoid were reported by more than half 175(64.8%) of these respondents who received TT injection (table 4).

**Table 4. Some contents of ANC services that were given to pregnant women in Maichew town, February 1-30, 2008**

<b>Some contents of ANC given</b>	<b>Number (N= 335)</b>	<b>Percent</b>
<b>Have you had TT injection</b>		
Yes	270	80.3
No	65	19.7
<b>Number of TT injections</b>		
Once	95	35.2
Two or more	175	64.8
Total	270	100
<b>Have you vaccination card/paper</b>		
Yes	118	43.7
No	152	56.3
Total	270	100

<b>Was health education given at ANC</b>		
Yes	241	71.9
No	94	28.1
<b>Measured blood pressure</b>		
Yes	288	86
No	47	14
<b>Measured weight</b>		
Yes	329	98.2
No	6	1.8
<b>Laboratory examinations (blood or urine)</b>		
Yes	223	66.5
No	112	33.5
<b>Physical examination</b>		
Yes	289	86.2
No	46	13.8

#### 4.3 Respondents' knowledge of danger signs of pregnancy

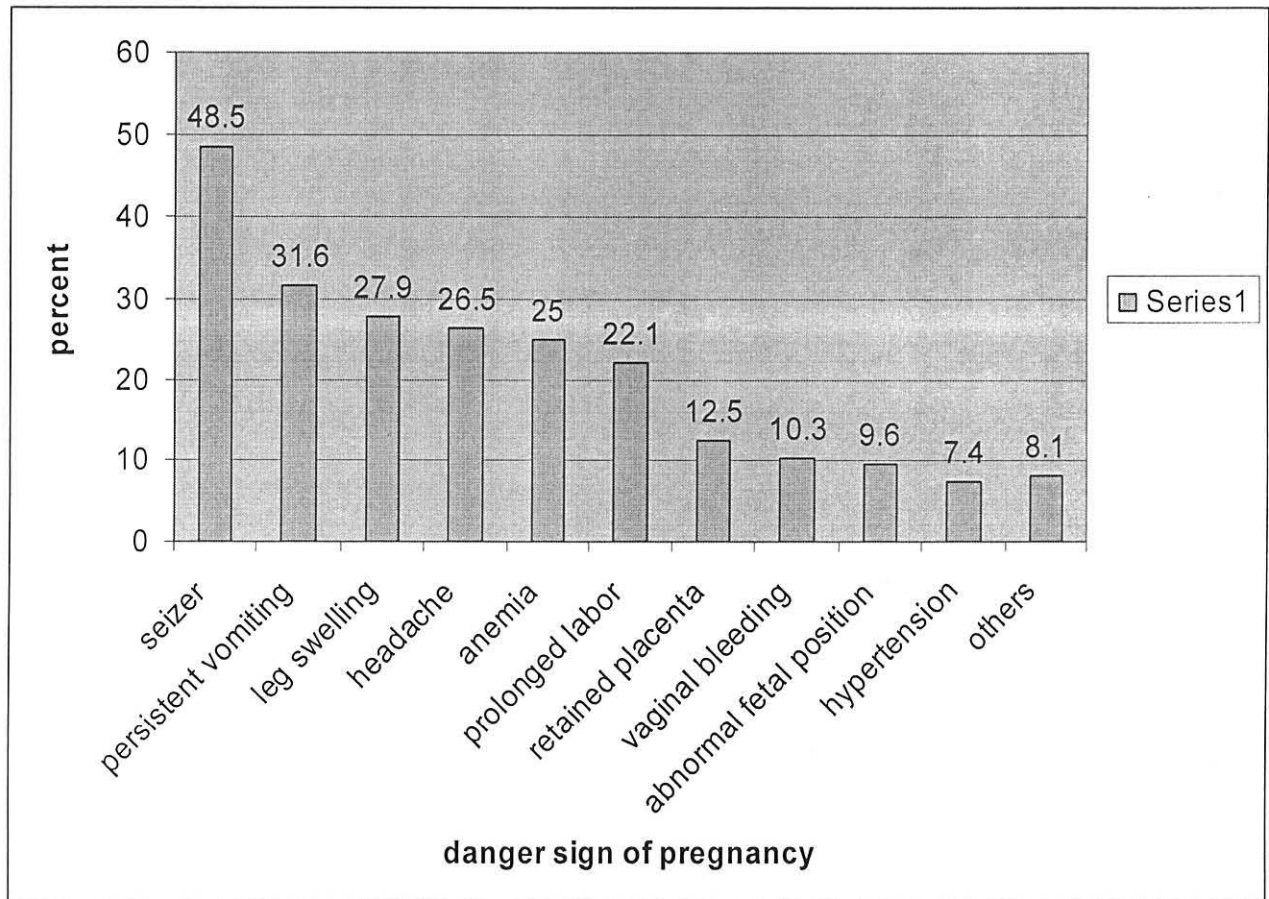
Concerning the recent pregnancy more than half of the respondents 266(63.5%) did not have any illness while 153(36.5%) had experienced some health problems. Among the respondents 252(60.1%) didn't perceive susceptibility to dangerous health problems during pregnancy and while only 158(37.7%) had such perception (table 5).

**Table 5. Respondents' knowledge on danger signs of pregnancy and perceived susceptibility to these health problems, in Maichew town, February 1-30, 2008**

Variable	Number (N=419)	Percent
Knowledge of unhealthy pregnancy		
Yes	137	32.7
No	282	67.3
Illness experienced for the recent pregnancy		
Yes	153	36.5
No	266	63.5
Perceived susceptibility to dangers health problems of pregnancy		
Yes	158	37.7
No	252	60.1
Don't know	9	2.1
Information source of ANC		
Health institution	155	37.3
Radio/TV	78	18.8
TBA	37	8.8
CHA	48	11.6
Relatives	68	16.4
Women's group	20	4.8
Others	13	3.1

Out of the total women who said, "Yes" regarding the knowledge of danger signs of pregnancy related health problems, most of the respondents were able to name most of the accepted danger signs; Seizer during pregnancy 66(48.5%), persistent vomiting 43(31.6%), leg swelling 38(27.9%), headache 36(26.5%), anemia 34(25%), prolonged labor 30(22.1%), retained placenta 17(12.5%), vaginal bleeding 14(10.3%), abnormal fetal position 13(9.6%), hypertension 10(7.4%), and others 11(8.1%)(figure 5).

**Fig 5. Percentage distribution of respondents' knowledge on danger signs of pregnancy, in Maichew town, February 1-30, 2008**



#### **4.4 Respondents' Perception on the Quality of the ANC Services**

Out of the ANC users asked about waiting time for ANC services 113(28.7%) said short time, 207(52.8%) said fair time and 73(18.5%) reported long time. Women were also asked about the situation of privacy at ANC unit 368(93.6%) believe that there was not a problem of privacy and 25(6.4%) said there was a problem privacy.

Two hundred sixty seven (67.9%) of women said there was good quality of services, 95(24.2%) satisfactory, and 31(7.9%) said poor. As to confidence on the services provided is concerned, only 40(10.2%) of the respondents had no confidence on the services (table 6).

**Table 6. Perception of respondents on the quality of antenatal care services in Maichew town, February 1-30, 2008**

<b>Health service factors</b>	<b>Number of respondents</b>	<b>Percent</b>
Length of waiting time		
Short	113	28.7
Fair	207	52.8
Long	73	18.5
Total	393	100
Lack of privacy		
Not problem	368	93.6
Problem	25	6.4
Total	393	100
Quality of ANC		
Good	267	67.9
Satisfactory	95	24.2
Poor	31	7.9
Total	393	100
Confidence on the services provided		
Yes	353	89.8
No	40	10.2
Total	393	100

#### **4.5 Association of Some Selected Health Service Factors with ANC Attendance**

As can be seen from table 7, the chi-square test result indicated that there is an association between ANC non-attendance and some selected health service barriers.

Some of these health service barriers were measured based on respondents' view of present attendees and those of non-attendants but ever attended ANC clinics in the previous pregnancies.

Length of waiting time, quality of ANC and confidence on the services provided is associated with women's antenatal care attendance.

Length of waiting time at ANC clinics has a significance association with ANC attendance ( $X^2=100.395$ ,  $P<0.01$ ). The pattern of the relationship demonstrates that the proportions of non-attendants increase as length of waiting time increase. Quality of ANC given to pregnant women at ANC clinics has a significant association with ANC attendance ( $x^2=130.721$ ,  $P<0.001$ ). Among women who reported the quality was poor, 80.6% were non-attenders. The proportion of respondents who were non-attenders and those who said the quality was good, satisfactory and poor were 4.9%, 21.1%, and 80.6% respectively.

Similarly, confidence on the services given at ANC clinics was significantly associated with ANC attendance ( $X^2=118.024$ ,  $P<0.05$ ). Among respondents those who said no confidence on the service given, 72.5% were non-attendants. Where as lack of privacy was not significantly associated with ANC attendance (table 7).

**Table 7. Association of some selected health service factors with non-attendance of antenatal care by pregnant women, in Maichew town, Feb., 2008**

Variable	ANC attendance		P-value	Chi-square (X <sup>2</sup> )
	Yes	No		
<b>Length of waiting time</b>				
Short	102(90.3%)	11(9.7%)		
Fair	197(86.5%)	28(13.5%)		
Long	54(74%)	19(26%)		
Total	335	58	P<0.01	100.395
<b>Lack of privacy</b>				
Not problem	322(87.5%)	46(12.5%)		
Problem	13(52%)	12(48%)		
Total	335	58	P>0.05	23.451
<b>Quality of ANC</b>				
Good	254(95.1%)	13(4.9%)		
Satisfactory	75(78.9%)	20(21.1%)		
Poor	6(19.4%)	25(80.6%)		
Total	335	58	P< 0.001	130.721
<b>Confidence on service provided</b>				
Yes	324(91.8%)	29(8.2%)		
No	11(27.5%)	29(72.5%)		
Total	335	58	P< 0.05	118.024

#### **4.6 Factors Associated with Antenatal Care Attendance**

Antenatal care attendance was cross tabulated with age, ethnicity, religion, marital status, parity, educational status, occupation, family monthly income, distance, husband's attitude, knowledge of unhealthy pregnancy, and planned current pregnancy. Chi-square statistic showed that antenatal care attendance is significantly associated with these variables ( $P < .05$ ) except ethnicity and religion of respondents.

However, this simple cross-tabulated chi-square result may not show the independent variables exact influence on the dependent variable, because the influences of other variables were not controlled.

Thus, binary logistic regression analyses were applied to those variables that had significant association in the bivariate analysis, to examine the net effect of each independent variable on ANC attendance of pregnant women by controlling for the effects of all other intervening variables.

As it has been mentioned earlier, the binary logistic regression model is appropriate to use when the response to a set of explanatory variables is in a binary form that in this case is ANC attendant and non-attendant. It is coded as a dummy variable (1= ANC attendant and 0=ANC non-attendant).

Logistic regression calculates changes in the log odds of the dependent (not changes in the dependent it self). For the dichotomies case, if the logit for a given independent variable is B, then a unit increase in the independent variable is associated with a B change in the log odds of the dependent variable.

A relative risk, EXP (B), estimates greater than one signifies an increased likelihood for the given outcome, while a value less than one indicates a decreased likelihood for the given outcome. In addition, the sign of B (logistic coefficient) indicate the direction of the change.

Socio-economic, demographic and individual related factors, which had significant association in the bivariate analysis, were further tested by binary logistic regression, to investigate the overall net effects of these variables on antenatal care attendance of pregnant women.

Variables entered into the model include age, parity, occupation, educational status, marital status, distance, income, husband's attitude, knowledge of unhealthy pregnancy and planned pregnancy.

Among the variables included in the binary logistic model, as depicted in table 8, distance had no significant effect on ANC attendance of pregnant women in the study area (table 8).

**Table 8. Multivariate analysis results of respondents in antenatal care attendance, in Maichew town, February1-30, 2008**

<i>Variable</i>	<i>B</i>	<i>S.E</i>	<i>Stg</i>	<i>Exp (B)</i>
<b>Age</b>				
15-19	.074	.435	.865	1.077
20-34	.861	.402	.032	2.366
35+(Rc)				
<b>Parity</b>				
0	.037	.648	.954	1.038
1-3	.867	.381	.023	2.379
4+(Rc)				
<b>Occupation</b>				
Housewife	.726	.334	.075	2.068
Civil servant	1.288	.473	.006	3.626
Others (Rc)				

<b>Educational status</b>				
No schooling	-.839	.405	.038	.432
Primary (1-6)	-.464	.381	.224	.629
Junior and above <sup>(RC)</sup>				
<b>Marital status</b>				
Married <sup>(RC)</sup>				
Never married	-1.644	.333	.001	.193
Others	-1.109	.305	.000	.333
<b>Family monthly income</b>				
0-100 <sup>(RC)</sup>				
101-300	.543	.492	.270	1.721
301-500	.727	.347	.036	2.069
501+	1.905	.435	.000	6.716
<b>Feeling of distance home to health facility</b>				
Very close	.101	.406	.804	1.106
Average	.541	.380	.155	1.717
Too far <sup>(RC)</sup>				
<b>Husband's or partner's attitude to ANC</b>				
Positive	1.626	.295	.000	5.082
Negative <sup>(RC)</sup>				
<b>Knowledge of unhealthy pregnancy</b>				
Better knowledge	0.895	.375	.017	2.447
Poor knowledge <sup>(RC)</sup>				
<b>Planned pregnancy</b>				
Yes	.533	.335	.012	1.704
No <sup>(RC)</sup>				

-2LL = 331.087  
 HLT = 0.107  
 N = 419

-2LL = -2 Log Likelihood  
 HLT = Hosmer and Lemeshow Test  
 S.E = Standard Error  
 RC = Reference Category  
 B = Beta coefficient  
 EXP (B) = Odds ratio  
 Sig = Significance value (p < . 05)

The multivariate analysis result revealed that respondents whose age 20-34 years were two times more likely to attend ANC as compared with those whose age were 35 years and above. Thus, pregnant women 20-34 years of age were more likely to attend ANC as compared with those whose ages were greater than 35 years.

Parity of respondents also had influence on ANC utilization. As the respondents' parity increased, the likelihood to attend ANC was reduced. According to the result of table 8, the attending of ANC for those respondents with parity 1-3 were two times more likely as compared with those of parity four and above.

Occupation, educational level and marital status also had significantly associated with pregnant women antenatal care utilization. As respondent's education progressed, the likely hood of attending antenatal care increased. According to table 8, respondents who had no schooling (formal education) were 56.8% less likely to utilize antenatal care services as compared with those respondents whose level of education were junior and above. Regarding occupation variation of respondents, government employees were three times more likely to utilize ANC services as compared with others (students, merchants and daily laborers). The result analysis also revealed that the likely hood of being attend ANC for those unmarried and others (divorced, separated and widowed) declined by 80.7% and 66.7%, respectively, as compared with married women.

Pertaining to family monthly income, the multivariate analysis result showed that the likelihood of utilizing ANC increased, as household income rose. The result of table 8 showed that respondents who earned Birr >500 and between 301-500 per month were 6 times and 2 times

more likely to utilize ANC services, respectively, as compared with those who earned below or equal to Birr 100 per month.

Husband's/partner's attitude towards ANC, knowledge of unhealthy pregnancy and planned/unplanned pregnancy of the respondents had also an association with ANC utilization. According to table 8, respondents belonging to positive husband's or partner's attitude towards ANC utilization were 5 time more likely to attend ANC than those who had negative attitude towards ANC utilization. The odds of utilizing ANC were 2 times more likely for those respondents who had knowledge of unhealthy pregnancy as compared with those hadn't the knowledge. The probability of non-use was higher if the pregnancy was unplanned as compared with those who had planned pregnancy.

#### **4.7 Discussion on the Key Findings**

This community based cross-sectional study tried to assess factors affecting utilization of antenatal care services in accessible kebeles of Maichew town, southern Tigray.

In this study the over all coverage for ANC was 80% for women in their third trimesters of pregnancy and with in 12 months of delivery. The figure is higher to that found in a previous study in Addis Ababa, which is 67.3% (Fantahun, 1992), and lower to that found in Jimma town, 90% (Challi and Tefera, 2005). The increment from Addis Ababa might be due to the fact that increased literacy level of respondents (almost 74% of the respondents were literate as compared to 41.3% that of Addis Ababa). The other possible reason could be at this time the government gives priority for the health sector that may help respondents to have more information on antenatal care services, which is more than 75% of the respondents reported that their source of information was government institutions.

ANC, an intervention aimed at reducing maternal, prenatal, and neonatal mortality, has to reach all pregnant women in order to have a measurable impact (WHO, 2001). Coverage in this areas fall to fulfilled this goal. In addition to the problem of low coverage, the pattern of use was inadequate. About 67.8% of women made their first visit during their second or third trimester of pregnancy, and 22.1% of women had three or fewer contacts.

Taking the current recommended patterns of utilization, pregnant women should initiate their care as early as possible, before 12 week of pregnancy (WHO, 2004) in order to have base line data on health status of the mother and the pregnancy. WHO recommends at least four visits of ANC during pregnancy (WHO, 2006). In this study it was found that the time of the first visit for ANC, if it is occurred at all, was late, and the number of visits was inadequate.

In this study socio-demographic factors were found to be related to ANC attendance. It was found that women in the age group (20-34) were more likely to use the service than the old age (35+). The impact of age on ANC utilization was also found in other studies (Fantahun, 1992; Mesfin, 1993). This might be due to women in the older age group are more likely to have many children to care fore. As well as many of the older pregnant women might have ingrained cultural biases against formal health care.

Being unmarried and widowed/divorced women were found to be more likely to be non-attenders as compared with married women. Several studies on ANC in relation to psychosocial factors indicated that women who were single were less likely to use ANC than those who were married (Rahman, 1981; Melkamu, 2005). While those who were unmarried and widowed/divorced may have a fear of coming to the service due to possible stigma if the pregnancy is out of wedlock. In common with other

studies (Pattison, 1990; Fantahun, 1992) analysis of parity has shown an inverse relation to ANC utilization. The higher proportion of non-attenders (43.7%) were parity four and above. Women with high parity were found to attend ANC less, particularly when past pregnancies were uncomplicated (William, 1989; UNICEF, 2000). In addition, it could be also due to time and resource constraints faced by those with large families.

A significant difference between the two groups was found in relation to their level of education. In common with other studies (Mekonen, 1997; Kwast and Liff, 1988) women who had no formal schooling were less likely to attend ANC services. Education might lead to more decision making power for the mother with in the household. It might also increase her knowledge of modern health care and its effectiveness and how to apply it. Regarding occupational variation of respondents, government employees were three times more likely to utilize ANC services as compared with others (students, merchants and daily laborers). This showed that government employees were more likely to use the service than others. This might be due to the fact that government employees were more likely to have better education and information access than the other groups (students, merchants and daily laborers). The other possible reason for the merchants and daily laborers not attend ANC may be these women feel forced to give priority to productive activities and to neglect their own health needs and those of their children during pregnancy.

Family income is significantly associated with antenatal care attendance. This is similar to what has been reported by other studies (Hamilton, 1987; Abbas, 1986; Perez-wood, 1990; Mesfin 1993). This could be respondents with low income (< 300) might give priority for production activities than their own & the unborn child health and/or there may be service charges though it is free service. Distance was not significantly

associated with ANC utilization. Since this study was carried out in an accessible population (<5 km), the relevance of the variable as a barrier to utilization was expected to be minimal.

Positive husband's or partner's attitude was most significantly related to antenatal care attendance. This was also reported to be true for modern contraceptive use (Taddle, 1991). The result agreed with an earlier study in Addis Ababa and Dire Dawa town (Yaekob, 2003; Fantahun, 1992). It is expected that having a husband who approves antenatal care significantly increase the likely hood that a woman used antenatal care, irrespective of the husband's background characteristics. Therefore, efforts to improve husband's or partner's attitude would probably increase utilization of health services by women. Psychological factors that include women's attitude towards their current pregnancy, i.e. whether or not the pregnancy was planned, were found to affect ANC here and elsewhere. Women who wanted to get pregnant or planned a pregnancy tend to be more highly motivated to seek antenatal care in order to ensure a healthy birth, than women who didn't want the pregnancy (Yaekob, 2003). The result of the present study is found to be similar with previous studies in Ethiopia and other developing countries. The uses of ANC were significantly more among women with planned pregnancies (Fantahun, 1992; Talia, 2004; Mekonen, 1997). Unplanned pregnancy is highly suggestive of lack of access to appropriate family planning opportunities. ANC might be an appropriate point of contact for promotion of family planning.

Respondent's knowledge of potential danger signs of pregnancy is an important predictor of ANC utilization (Mesfin, 1993; Melkamu, 2005). Women who experienced concern about any health problems (whether or not the health problem mentioned were indeed a risk to the mother) were more likely to be ANC user. In this study most of the respondents could

able to name the acceptable danger signs of pregnancy such as persistent vomiting, seizer, sever headache, hypertension, prolonged labor, mal-position of the fetus, retained placenta, and others. Women's knowledge of any of the risk was found to be an important factor in their attendance of ANC services, and attendees were more likely to know of the danger signs of pregnancy related health problems.

On the other hand contact with health care, particularly respondents' current and past attendance in ANC might have given them an opportunity to gain more knowledge on dangerous signs of pregnancy related health problems. The positive impact of better health knowledge on ANC has been shown in other studies (Kloos, 1987; William, 1989). Increasing awareness of women regarding the potential hazards of pregnancy might improve their ANC use. Health education related to the potential danger signs of the major causes of mortality in women could have an important input in improving their utilization of care during pregnancy.

Quality of ANC services has been demonstrated to be an important barrier to ANC, particularly in developing countries (WHO, 2001). The bivariate result of this study revealed that women who perceived the quality was poor had a significance association with ANC non-attendance. Long waiting time prior to the ANC visit was a problem for 18.5% of the attendant population. Women who felt this to be a problem were involved to be non-users of the services. Several studies have also reported this fact (Stock, 1983; Addai, 1998; Mesfin, 1993; Melkamu, 2005). Women's consideration of time during visit might be an important point, as it may influence their return for continuous follow up.

## CHAPTER FIVE

### 5. CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

- In conclusion, even if there was relatively high antenatal care utilization among the study participants, the pattern of follow up was found to be inappropriate in most cases. Two-third of mothers (67.8%) started utilizing antenatal care services in their second and third trimester of pregnancy. Considering the late initiation of ANC visit of respondents, the effectiveness of the visit in reducing maternal morbidity and mortality could be hindered.
- The most important factors influencing utilization of antenatal care services were demographic and socio-cultural in nature.
- The reasons given by the individual women for not attending ANC were found to be absence of illness (being healthy), being too busy, long waiting time, husband's disapproval, poor quality of services, and others.
- The study result revealed that non-attendance was highest for those women whose monthly income is low, are of high parity, whose husband's or partner's attitude to ANC attendance is negative, illiterate, never married, whose current pregnancy was unplanned, and those who perceived the quality was poor and long waiting time.
- Low knowledge of respondents' on the danger signs of pregnancy was correlated with less attendance of antenatal care clinics.
- One of the reasons for not attending antenatal clinics was being too busy. Non-attenders were high parity, thus might have to care for many children in addition to other works and responsibilities that make them too busy.

## 5.2 Recommendations

Based on the above findings of the study the following recommendations were suggested: -

- Increasing awareness of mothers on the danger signs of pregnancy and the importance of ANC utilization in addressing the problem, emphasis on advantage of early attendance of ANC (together with her husband or partner) may lead to better antenatal care attendance and is probably the most feasible intervention for antenatal care utilization.
- Increase women's autonomy within the family, enhancing their ability to earn and control income and decided on their own health.
- Education was found to have an impact on the use of antenatal care services suggests that improving educational opportunity for women may have a large impact on improving utilization of ANC services. This is, however, along term investment. As an alternative in short term, health promotion programs that centered on women with little or no education should be given. Second, women at higher parity, at old age, and women who are not married and whose current pregnancy are unplanned were less likely to utilize the services. Therefore, it is important targeting these groups in educational campaigns to promote sufficient antenatal care, family planning and safe mother hood programs. In addition, improving the working condition of women, especially for parity of four and above, is one of the solutions to increase ANC utilization.
- Another major focus on intervention should be increasing the quality of health services delivered. This would involve improving the quality of curative care, as well as reducing waiting time. Hence, the government should design effective ANC service delivery, monitoring and evaluation methods (with full involvement of beneficiaries) to improve the quality of health service delivered which in turn improves the utilization of antenatal care services.

- Improvement in family income should be addressed in the long term. Thus, the government and other development partners should design medium and long term plans to increase the income of poor households.

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## Annex I

### Questionnaire for community-based survey on factors influencing utilization of antenatal care services in Maichen town

#### Verbal consent

##### Greetings

Hello! My name is \_\_\_\_\_, I am data collector in this study.

We are conducting a study of mothers antenatal care attendances during pregnancy. You are kindly requested to be included in the study, which will have importance in improving maternal and child health services. The interview will take about 40 minutes. No information concerning you, as an individual will be passed to another individual or institution with out your agreement. Your participation is voluntary and you have the right to not participate fully or partially. If you agree to be included in the study, I will start my questions by asking general identification points. Only honest answers would contribute the improvement of health planning.

The study has approved from Addis Ababa University. May I continue? If yes continue interviewing. If no, thank and stop interviewing.

Name of the interviewer \_\_\_\_\_ Sign, \_\_\_\_\_

Date of interview \_\_\_\_\_

Name of supervisor \_\_\_\_\_ Sign, \_\_\_\_\_ Date \_\_\_\_\_

#### 1. Households identification

001. Questionnaire code \_\_\_\_\_

002. Residence: - kebele \_\_\_\_\_

003. House number \_\_\_\_\_

**N.B** please fills on each answer sheet as follows;

- Time of start of interview \_\_\_\_\_

- Time of end of interviewed \_\_\_\_\_

**Part-I. Questionnaire on socio-demographic characteristics**

It has been found that it is necessary to understand the socio-demographic history as to their contribution to attending ANC during pregnancy. Therefore, I would like to ask you some questions in this respect.

101. Present maternal age:\_\_\_\_\_ years
102. What is the highest of schooling you have ever attended?
1. Illiterate
  2. Only read and write
  3. Elementary school (1-6)
  4. Junior and secondary school (7-12)
  5. 12+
  6. Other specify\_\_\_\_\_
103. What ethnic group do you belong?
1. Tigraway
  2. Amhara
  3. Other specify\_\_\_\_\_
104. What is your occupation?
1. House wife
  2. Maid servant
  3. Civil servant
  4. Merchant
  5. Student
  6. Daily laborer
  7. Other specify\_\_\_\_\_
105. What is your religion?
1. Muslim
  2. Orthodox
  3. Protestant
  4. Other specify\_\_\_\_\_
106. What is your marital status?
1. Married
  2. Divorced
  3. Widowed

4. Never married

5. Separated

107. What is the average family income per month? \_\_\_\_\_ Birr

108. Reproductive history:-

Parity \_\_\_\_\_

Number of live births \_\_\_\_\_

**Part- two: questionnaire on ANC**

201. What is the number of people who live usually in this household?

Total \_\_\_\_\_

202. Did you plan your current pregnancy?

1. Yes                      2. No

203. From where do you think a pregnant woman could get ANC?

1. Health institution

2. TBA

3. Relatives/ Friends

4. CHA

5. Other specify \_\_\_\_\_

204. Where do you here about the source of ANC services?

1. Heath institution

2. Radio/TV

3. TBA

4. CHA

5. Relatives

6. Women's group

7. Others specify \_\_\_\_\_

205. What for do you think would be the benefit of ANC?

1. Maternal health

2. Child health

3. Both

4. Don't know

5. Other specify \_\_\_\_\_

206 Did you go to health institution for ANC check up while you were pregnant?

1. Yes

2. No \_\_\_\_\_ skip to Q, 222.

207. If yes, at what gestational age did you go?

1. 1-3 months
2. 4-6 months
3. 7-9 months
4. Don't know

208. If yes, what was the total number of visits?

1. Once
2. Two
3. Three
4. Four and over

209. If you went for ANC check ups to which health institution did you go?

1. Hospital
2. Health center
3. Clinics
4. Others specify \_\_\_\_\_

210. Why did you go to that particular health institution?  
(Multiple responses are possible)

	Yes	No
1. Close to where I live	1	2
2. Little or no expense	1	2
3. Behavior of health workers is best	1	2
4. Convenient time of services	1	2
5. High quality of services	1	2
6. Others specify _____	1	2

211. If you went for ANC check-ups have you ever an injection on the arm to prevent against Tetanus?

1. Yes
2. No \_\_\_\_\_ skip to Q. 214

212. If yes, how many times have you received such injections?

1. Once
2. Two or more

213. Did you have a vaccination card/ paper where TT injections have been recorded? If yes, may I see it please?

1. Yes seen
2. Not seen

214. What is the main reason you initiated for ANC follow up?

1. Sick and need of treatment
2. To start regular check up
3. Other specify \_\_\_\_\_

215. If you attended ANC, was health education given during each visit?

1. Yes
2. Not
3. Don't know.

216. If healthy education was given, on what topic?

	Yes	No
1. ANC-----	1	2
2. F/P-----	1	2
3. Baby care -----	1	2
4. Breast feeding-----	1	2
5. Don't remember -----	1	2
6. Others specify-----	1	2

217. Was blood pressure measured when you went for ANC?

1. Yes
2. Not
3. Don't know

218. If you attended ANC, have you been weighed during each visit?

1. Yes
2. Not
3. Don't know

219. Was laboratory examination done in the ANC clinic?

(Blood and/or urine)

1. Yes
- 2.No
3. Don't know

220. Was physical examination done in the ANC clinic during each visit?

1. Yes
2. No
3. Don't know

221. Was your height measured at the ANC?

1. Yes
2. No
3. Don't know

222. If you did not attend ANC? Why not? (Multiple response)

(Don't read the choices)

	Yes	No
1. Being in a state of good health	1	2
2. Too busy to attend ANC clinics	1	2
3. Expenses for ANC clinics are unaffordable	1	2

4. ANC clinic too far from my home	1	2
5. Waiting time is too long at ANC	1	2
6. Husband disapproval	1	2
7. Poor quality of the services	1	2
8. Because of religion	1	2
9. ANC attendance is useless	1	2
10. Others specify _____	1	2

**Part. III. Respondents' knowledge of unhealthy pregnancy and perceived susceptibility to those pregnancy related health problems.**

301. Do you know dangerous health problems related to pregnancy?

1. Yes

2. No \_\_\_\_\_ skip to Q, 303

302. If yes, can you mention some of them? (More than one answer is possible)

	Yes	No
1. Persistent vomiting	1	2
2. Anemia	1	2
3. Leg swelling	1	2
4. Head ache	1	2
5. Vaginal bleeding	1	2
6. Hypertension	1	2
7. Seizure	1	2
8. Abnormal fetal position	1	2
9. Obstructed/prolonged labor/	1	2
10. Retained placenta	1	2
11. Others specify _____	1	2

303. Did you experience a healthy problem during the current or past pregnancy?

1. Yes
2. No
3. Don't remember

304. Did you think of developing dangerous health problems that occur during pregnancy?

1. Yes
2. No
3. Don't know

305. What was your husband or partner's attitude towards ANC attendance?

1. Positive
2. Negative
3. Don't know

**Part IV. Questions about respondents view on the Quality of Antenatal care received**

401. Have ever been to ANC? (Ask this question for non-attenders).

- A. Yes, if yes (Ask the following questions).
- B. No, if no (Ask only the last two questions).

402. How long was the time you spent in waiting to get ANC services?

1. Short
2. Fair
3. Long

403. On average how long did you wait for ANC clinic? \_\_\_\_\_ hours.

404. Did you think that lack of privacy was a problem at ANC?

1. Yes
2. No
3. Don't know

405. What is your feeling about the quality of ANC given?

1. Good
2. Satisfactory

406. Do you have confidence on the service provided at ANC clinics?

1. Yes
2. No
3. Don't know

407. How do you feel about the distance from your home to the nearest health institution? (Health center, Clinic, etc)

1. Very close
2. Average
3. Too far

408. How long does it take to travel from your home to the nearest health initiation?

\_\_\_\_\_ hours

## Declaration

The thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Hayelom Kassou  
Student

Hayelom  
Signature

11/07/2008  
Date

I confirm that this thesis has been submitted with my approval as the supervisor of the same.

SATHIYA SVSUMAN  
Advisor

Sathiya  
Signature

11/07/2008  
Date