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SOCIO DEMOGRAPHIC FACTORS AFFECTING ANTENATAL CARE SERVICE UTILIZATION AMONG WOMEN IN OFA WOREDA, WOLAITA ZONE

BY

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Socio Demographic Factors Affecting antenatal Care Service Utilization among Women in Ofa Woreda, Wolaita Zone, SNNPR

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ACRYNOMS & ABREVAITIONS

ANC	Antenatal Care
BoFED	Bureau of Finance and Economic Development
CSA	Central Statistical Agency
DHS	Demographic and Health Survey
EDHS	Ethiopian Demographic and Health Survey
SNNPR	Southern Nations Nationalities and People's Region
SPSS	Statistical Package for Social Science
UNICEF	United Nations Children Fund
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
WHO	World Health Organization

ABSTRACT

In Ethiopia the level of maternal mortality and morbidity are among the highest in the world. This is attributed to among other factors, non use of modern health care service by women in Ethiopia. According to the 2005 EDHS, more than seven in ten mothers didn't receive ANC at all. Therefore, the objective of this study was to examine factors influencing ANC services utilization in Ofa Woreda, Wolaita zone, SNNPR.

A community based cross-sectional survey was conducted in Ofa Woreda from January 16-February 3/2011. A multi stage sampling technique was used to select the study population one from urban and the other four from rural. The structured interview questionnaire was administered to the total of 620 study units so as to collect relevant data. Chi-square test and Logistic regression Analyses were done using SPSS.

The result of the study revealed that ANC service utilization in the study area was 33%. However, from those who attended ANC service, 58 % started ANC visit during the second & third trimester of pregnancy. Residence, Maternal education, intenseness of pregnancy, women's occupation, marital status, and household size of women usually live were major socio demographic predictors of ANC service utilization in the area.

ANC utilization is far under any acceptable standard in the study area. Among the attendants Significant proportion were not initiated the visit in first trimester. For increasing ANC service utilization; expanding contraceptive choices that enable mothers to find a suitable & more effective method, expanding intensified maternal health care programs particularly in rural areas, awareness raising campaigns and providing education to girls should be emphasize.

CHAPTER ONE

1 INTRODUCTION

1.1 Background of Study

WHO stated Antenatal care (ANC) the care that women receive during pregnancy, is a unique opportunity to provide the pregnant woman with a vaccination to prevent tetanus, an insecticide-treated bed net to prevent malaria, screenings for anemia, and enrolling woman in prevention of mother to child transmission of HIV (PMTCT), counseling for a safe delivery & all factors that help ensure that the mother remains healthy through childbirth and gives her child the best start in life. Antenatal care also increases the likelihood of a skilled attendant (a skilled attendant is a doctor, midwife, nurse, or other health care provider with equivalent skills, who can detect and manage complications at birth) being present at the birth. This can often mean the difference between life and death for mother and baby (WHO, 2004a).

Antenatal care is the monitoring of mother and fetus by trained health personal throughout the whole pregnancy with the necessary examination and recommendation by regular intervals (Over Bosch et al., 2002). According to World Health Organization (WHO) recommendation, for normal pregnancy a minimum of four antenatal visiting (at least 20 minutes duration for each) is needed to accomplish the essential level of ANC.

The impact of ANC utilization on maternal morbidity and mortality is ongoing controversy. However, the International Conference on Population and Development (ICPD), held in Cairo in 1994, gave new impetus to reducing maternal mortality by bringing the issue of reproductive health to the fore. The ICPD Program of Action called for the provision of information on reproductive health services to promote increased use of health services for antenatal and delivery care (United Nations, 1995)

In Ethiopia according to EDHS (2005) data, the maternal mortality ratio was 673/ 100,000 live birth. This is among the highest in the World. Different studies explain that one of the important causes for

the poor health outcome among women is the absence of utilization of modern maternal care service by the majority of women in the country (CSA & ORC Macro, 2006)

The MDG called for a 75% reduction in maternal mortality between 1990 and 2015. Trained birth attendant and ANC are two of the most important interventions to reduce maternal mortality. Hence, identifying the factors associated with low utilization of maternal health care utilization would have meaningful implications in a generalized highly maternal mortality country like Ethiopia.

1.2 Statement of the problem

Pregnancy and child birth are natural and continuous process in which many women are at risk for developing complication during pregnancy and child birth. Globally nearly 600,000 women die from pregnancy related causes every year. Over 90% of those deaths occur in Sub-Saharan Africa & Asia (Over Bosch, et al., 2002).

Maternal mortality is a major concern of maternal health in developing countries. Maternal mortality in Ethiopia is estimated to be 673 per 100,000 live birth (CSA & ORC MACRO, 2006), compared to 9 per 100,000 live birth in developed countries, 900 per 100,000 live birth in Sub-Saharan countries, and 400 per 100,000 live birth Worldwide (WHO, 2007). Moreover, the target reduction of 75% between 1990 and 2015, which requires a 5.5 % annual decline rate, cannot be met in SSA (MDG report, 2009).

According to estimates developed by WHO(2007) , life time risk of dying from a pregnancy-related causes of maternal death was 1 in 92 for the world(1 in 22 for SSA and 1 in 7300 for developed regions). This clearly shows a big regional gap in health care as dose maternal mortality. A major explanation for the high MMR in Africa is lack of access to adequate medical care (ECA, 2009).

Antenatal care coverage of the world is 72%, industrialized countries 98%, developing country 28% (WHO, 2003). According to the 2005 Ethiopian demographic and Health Survey (DHS), about 28% of pregnant women receive antenatal care, and about 5% deliver at health care facilities in Ethiopia. The proportion receiving antenatal care, for Ethiopia, is very low when compared with different Sub-Saharan Africa countries like Ghana (92%), Kenya (88%), Eritrea (70%), and Tanzania. Moreover, there are large differences in the use of ANC services between urban and rural women. According to

Ethiopian DHS (2005), health professionals provided ANC for 69% of mothers in urban, whereas, only 24% of rural women received the service. It is important to note that three in four mothers in rural areas received no antenatal care at all (CSA & ORC MACRO, 2006)

ANC coverage is improving across the continent. In 2005, the latest year for which data are available, seven countries reported meeting the recommended minimum number of 4 visits with a coverage rate 52%. Over 26 countries reported a coverage rate of above 80% for at least 1 ANC visit, and 10 countries had a coverage rate below 80% for one ANC visit (MDG, 2009). In Ethiopia according to (EDHS, 2000)& (EDHS,2005) there has been little improvements over the past five years in the proportion of mothers who received ANC from a health professional(doctor, nurse, midwife), increasing from 27% in 2000 to 28% in 2005 and less than 1% of mothers received ANC from a traditional birth attendant (trained or untrained). More than 7 in 10 mothers (72%) received no ANC for birth (CSA & ORC MACRO, 2001 & 2006). Moreover, slightly more than one in ten (12%) women makes four or more ANC visits during their entire pregnancy. There is marked variation between women residing in urban areas (55%) and those in rural areas (8%). With regard to stage of pregnancy at which first ANC visit starts, only 6% of women make their first ANC visit before the fourth month of pregnancy(CSA & ORC MACRO, 2006).

It is known that ANC helps to reduce the incidence of maternal morbidity and mortality by providing opportunities for health promotion and information about danger signs, birth preparedness and where to seek care for pregnancy complications. However, this maternity care utilization in Ethiopia is very low as compared to developed and most of developing countries. Little is known about determinants of ANC service utilization in Ethiopia in general and Wolaita Zone in particular. Therefore, this study will add its contribution in filling gap using primary data from the study area.

1.3. Review of Relevant Literature

1.3.1 Overview of Level and Trends of Maternal Mortality

Maternal mortality is continued to be one of the major health problem globally. Despite the issue brought in to fore before couple of decades, the improvement it has shown is not promising especially in developing world. (Merge, 2007) summarized its trend as follows:

- In 2005, an estimated 536,000 women died of complications of pregnancy, childbearing or unsafe abortion, which represents a 7% decrease since 1990 in the estimated number of maternal death globally.
- There was a 5.4% decline in the global maternal mortality ratio from 430 to 400 per 100,000 live births in the 15 years from 1990 to 2005
- The decline in the number of deaths exceeded 20% in North America, Latin America and the Caribbean, Oceania and the more developed region.
- Sub-Saharan Africa was the only region in which the number of maternal deaths increased between 1990 and 2005, driven by increasing number of births and a negligible decline in the maternal mortality ratio.

Table 1.1 Maternal mortality ratio(MMR) per 100,000 live births, number of maternal deaths and the adult life time risk of maternal death, by region,2005 (figures are rounded).

Region	Number of maternal deaths	Maternal mortality Ratio (MMR)	Range of uncertainty on MMR estimates		Adult life time risk of maternal death 1 in :
			Lower estimates	Upper estimates	
World	536000	400	220	650	92
Developed regions	960	9	8	17	7300
Commonwealth of independent states (CIS)	1800	51	28	140	1300
Developing regions	533,000	450	240	730	75
Africa	276,000	820	410	1400	26
Northern Africa	5700	160	85	290	210
Sub-Saharan Africa	270,000	900	450	1500	22
Asia	241,000	330	190	520	120
East Asia	9200	50	31	80	1200
South Asia	188,000	490	290	750	61
South east Asia	35,000	300	160	550	130
Western Asia	8,300	160	62	340	170
Latin America and Caribbean	15,000	130	81	230	290
Oceania	890	430	120	1,200	62

Source; - WHO, UNICEF and UNFPA, 2005

Complications during pregnancy and childbirth are the most frequent causes of death for women in developing countries. According to the United Nation Population Fund (UNPFA), while maternal health is number five in the list of Millennium Development Goals and should have long ago become a central development policy issue, it is the goal that remains the farthest out of reach (Dembowski, 2010).

1.3.2 Maternal Mortality and Antenatal Care

Antenatal care can play an important role in improving maternal health, not by itself but through encouraging women to use other services such as institutional delivery and advice on pregnancy or delivery complications. ANC motivate pregnant woman facing any pregnancy complication to seek advice for her problems. Level of ANC use does make a difference to the chances of delivering in an institution. A study on rural Uttar Pradesh shows the likelihood of women with high ANC use delivering in an institution three times higher than for women with no ANC use (Fausdar & Abhishek, 2005).

The World Health Organization (2005) has identified four main interventions as critical in efforts to reduce maternal mortality in developing countries. These are family planning, antenatal care, skilled birth attendance and emergency obstetrics care. It is now recognized that countries with high rates of maternal mortality have low uptake of these four essential interventions. By contrast, countries that have successfully reduced maternal mortality consistently have much higher uptake of these interventions (Okonofua, 2008).

1.3.3 Factors Affecting Antenatal care service utilization

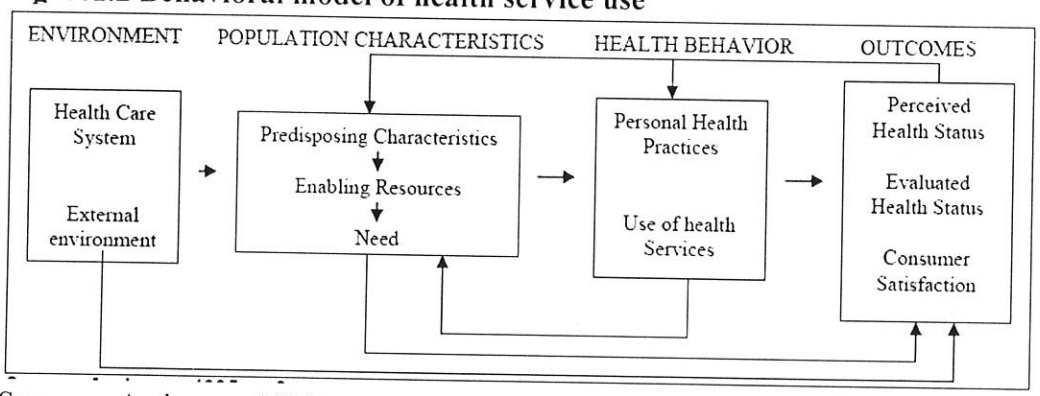
Maternal health care service utilization is believed to reduce maternal mortality and morbidity directly through detection and treatment of pregnancy related illness or indirectly through detection of woman at increased risk of complications of delivery in ensuring that they delivered in suitable equipped facilities (Guillermo et al., 1992). However maternal care utilization coverage is very low in developing countries like Ethiopia and little is known about factors that influence the use of this service in rural areas.

Different literatures and theoretical models suggested the important factors that deter women from seeking maternal health care services.

Andersen (1995), has developed a behavioral model that portrays the multiple influences on health care services' use and, subsequently, on health status.

There are two important key elements described in this model, which can effect health care behavior and finally influence the health outcomes, namely environment and population characteristics. Health care system and external environment are grouped as environment factors. Health care system refers to national health policy, resources and organization, while physical, political and economic components are part of the external environment. Both factors are important input for population characteristics.

Figure1.2 Behavioral model of health service use



Source: - Anderson, 1995

This model suggests that personal health practices and people's use of health services are functions of the following three categories:

A. Predisposing characteristics, factors that present preceding the ill health and need for care, such as demographic factors, social structures and health beliefs. Demographic factors such as age and gender represent biological urges the likelihood that people will need health services. Social structure is measured by a broad array of factors that determine the status a person in the community, his or her ability to cope with and command the resources to deal with these problems, and how healthy and unhealthy the physical environment is likely to be (education, occupation, ethnicity, etc). Health beliefs are attitudes, values and knowledge that people have about health and health care services that might influence their subsequent perceptions of need and use of these services (Andersen, 1995).

B. Enabling resources, which provide patients with the means to make use of the services (Andersen 1995). Community and personal enabling resources must be available to use in anytime needed. For

example, health personnel and facilities must be available and people must have the means and know how to get to those services and make use of them. Income, health insurance, a regular source of care, and travel and waiting times are some of the measures that can be important in this respect (Andersen 1995).

C. Need Factors, which refers to health status, perceived by the individual or evaluated by the health providers (Andersen 1995). It is how people view their own general health and functional state, as well as how they experience the symptoms of illness, pain and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional health care.

Thaddeus & Maine (1990), classified factors affecting the use of maternal health care services as follows:

1. Systematic factors (Factors related to health services (system/provider). These include access, availability, cost of services, continuity/ interpretation of care, provider attitude/ integration etc.

2. Personal characteristics (Factors related to use of services). These include the socio-demographic, social support and attitudinal factors (knowledge and experience with event or system, perceived quality of care) etc.

3. Geographic factors – urban /rural distribution, access, transportation etc.

Several studies have been carried out to identify and understand the use of maternal health care services, especially in developing countries where the services are underutilized.

Finding from Ethiopian DHS (2005) indicated that the most important reasons for not seeking health care in Ethiopia was found to be concern that there may be not a health provider (81%), concern about getting money for treatment, concern that there may not be a female health provider, concern that having to take transport, and concern that there may be not one to complete the household chores were cited by about seven in ten women. Distance to a health facility and not wanting to go alone are perceived as big problems by more than three in five women. Only one in three (35%) women perceived getting permission to go for treatment to be a big problem.80% of women in rural areas

perceived having to take transport as a big problem, compare with only 34% of women in urban areas (CSA & ORC MACRO, 2006).

A study in Hadiya Zone, SNNPRS, revealed that ANC service utilization is significantly influenced by maternal age. Mothers who are in the age group of 25-29 years were less likely to utilize ANC service than women who are 35 years and older. Positive husband attitude towards ANC was significantly related to antenatal care service utilization. Moreover, in this study the use of antenatal care was found to be related to mother's level of education. Mothers with primary educational level were more likely to attend ANC than women who are unable to read and write. It was also observed that availability of women's time is important. In developing countries, women spend more time on their multiple responsibilities for care of children, collecting water or fuel, cooking, cleaning, and trade than on their own health. Hence, family size was a strong determinant of antenatal care service utilization. Mothers who live within a household size less than three people were eight times more likely to utilize ANC than those living in a household size greater than five. Furthermore, maternal education and age, husband attitude, family size and perceived With regard to the determinants of ANC morbidity were major predictors of ANC service utilization (Zeine, et Al., 2010).

One study conducted on the role of maternal attitude and social and demographic characteristics on adequate use of prenatal care in a sample of low- income women from southern Brazil, reveals unplanned pregnancy, dissatisfaction with the pregnancy, higher parity and not living with the child's father were strongly associated with inadequate prenatal care. The study also observed a strong and significant association between income gradient and inadequate prenatal care, the odds of inadequate use of prenatal care rose sharply as income declined (Diego et al., 2009)

Low education of pregnant women and unwanted pregnancy were barriers to use of prenatal care services. Additional barriers were negative attitudes toward pregnancy and attitudes toward prenatal care. These barriers decreased frequency of use and delayed early initiation of prenatal care. The most important barrier reported by the women was being too busy at home to seek care (Erci, 2003).

Safe delivery, advice for pregnancy complications, and advice for post delivery complications are determined by standard of living, first delivery, experience of any delivery complications, and age of

the respondent significantly affect the likelihood of utilizing the above services. Community level factor play an important role in utilization of ANC & delivery services. The same study revealed a village connected by an all-weather road displays a significant positive relationship with the utilization of institutional delivery and seeking advice for pregnancy as well as post- delivery complications (Fausdar & Abhishek, 2005).

A study conducted in Beni shangul Gumuz region of Ethiopia showed that lack of awareness 268(51.4%) and absence of health problems during pregnancy 213(40.9%) were the main reasons mentioned for not attending the service. Place of residence, educational status, husband's educational status, possessing radio, monthly income, and knowledge about antenatal care were found to have a statistically significant association with antenatal care service utilization (Gurmesa, 2009).

Study made in Ghana on how economic factors affecting the demand for ANC and the probability that the number of visits falls below the recommended number of four shows that living standard, cost of consultation and in particular travel distance to the provider have significant impact on the demand and sufficiency of ANC. In addition pregnant women with more schooling have a higher propensity to seek sufficient ANC from all providers (overbosch et. al, 2002).

A Study made in rural part of china demonstrated that higher socioeconomic status is associated with greater use of maternity services. Education of a woman and her husband significantly affects the use of prenatal care and formal assistance with delivery. Compared with women with no formal education, women who have primary education are 1.9 times more likely to use prenatal care and 1.4 times more likely to use formal delivery assistance. Advancing to middle school also makes a difference. Mothers with middle school education are 3.1 times more likely to use prenatal care and 2.0 times more likely to use formal delivery assistance than those with no formal education. Husbands' educational attainment also plays an important role in determining the use of maternity services, net of the effect of wives' education. When their husbands have a middle-school education (compared with no formal education), women are 2.3 times more likely to have a prenatal check and to use formal delivery assistance (Short and Zhang, 2004).

One study conducted in Urban Sub-Saharan Africa on inequality of maternal health care demonstrates that antenatal care for the urban poor is significantly worse than for the urban non-poor, though better than for rural residents. The urban poor in sub-Saharan Africa are, on average, 1.4 times more likely

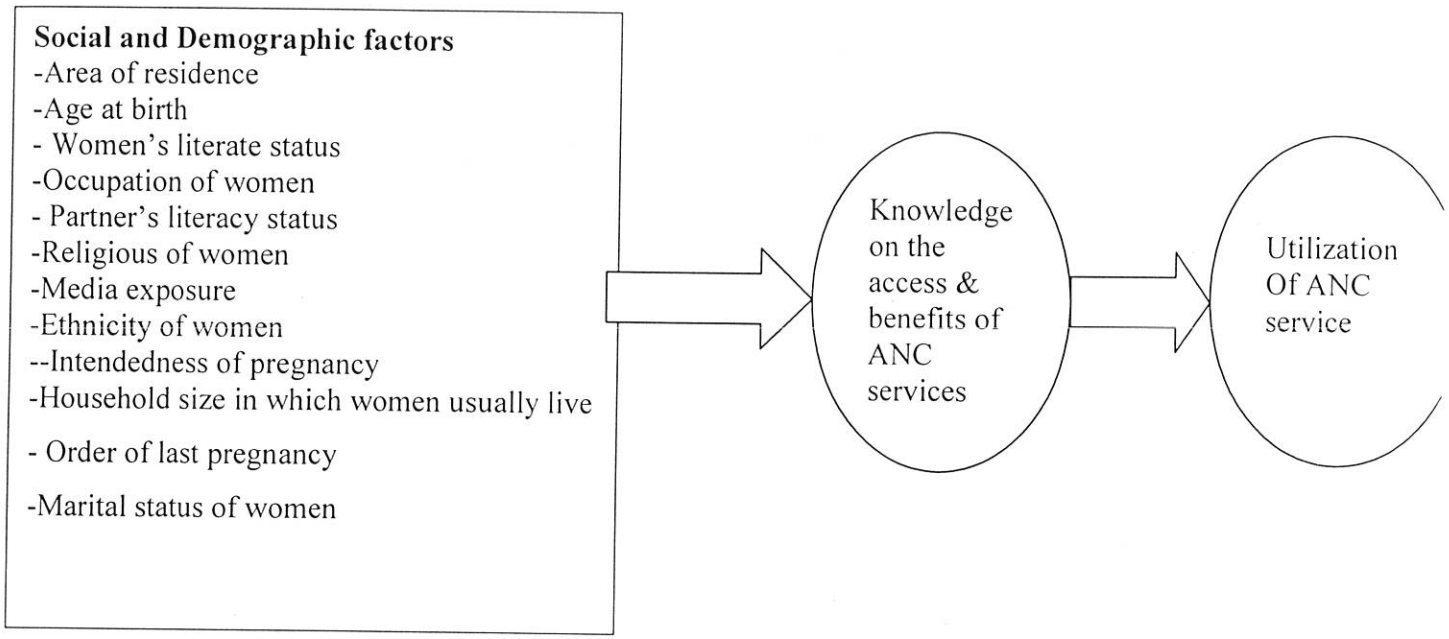
to initiate antenatal care late in pregnancy (during the second or third trimester) or to make an inadequate number of antenatal visits (three or fewer) during pregnancy than the urban non-poor. The results further conforms, significantly poorer antenatal care among teenage mothers, less educated women, and women having higher-order births, compared with their counterparts who are older, more educated, or having lower-order births. In general, the probability of home delivery declines with increasing maternal education and age, but increases with increasing parity. On average, the urban poor are more likely to have a home delivery than the urban non-poor, but less likely to do so than the rural residents. The country-level variances show that there is a significant variation in delivery care and in residential inequalities in delivery care across countries of sub-Saharan Africa (Monica, et al, 2003).

Study made in Yem special woreda, SNNPRS found that educational status of women, residence and age at first pregnancy, living less than 60 minutes walk from health facility, and planned last pregnancy are significantly associated with ANC utilization in the area(Bahilu, et al., 2009)

According to Yang et al. (2010), Education and access to public transportation to the nearest ANC service were found to be the best determinants of utilization of ANC service in Kham district, Xienghhang province, Lao PDR.AS finding showed that educated women were 6.8 times more likely to receive ANC than those who had no education, & women who had daily access to public transportation to the nearest ANC service were 4.5 times more likely to visit the ANC than women without such frequent access to public transportation.

1.4 Conceptual Framework for ANC service utilization

From literatures review some relevant socio demographic factors were identified to influence proximate determinants of utilization of ANC services.



Source: - Developed by the researcher based on literature review.

1.5. Objective of the Study

1.5.1 General objective

- To investigate status antenatal care service utilization & Socio-demographic Factors affecting utilization of the service in Ofa Woreda.

1.5.2 Specific objectives

- To identify and describe the status of ANC service utilization in Ofa Woreda.
- To find out Major socio- demographic factors affecting utilization of ANC in the study area.

1.6 Hypotheses of the study

- ANC service utilization in Ofa Woreda is low.
- Socio-demographic factors are the major determinants of ANC utilization in Ofa Woreda.
- Women's education affects attendance of ANC service.
- Urban women attend ANC more than rural counterparts.

1.7 Significance of the study

Maternal mortality is an important public health problem generally in developing countries where uptake of maternity care is very low. ANC is one of the most important interventions proposed by World Health Organization to reduce maternal mortality. Identifying the factors influencing use of ANC would have meaningful implication in high maternal mortality countries like Ethiopia. This study may help implementation of maternal health programs based on findings.

1.8 Limitation of the study

- The inherent behavior of the study may affect the results; respondents may not recall dates, number of ANC visits, and months of first visit and other attributes for they need to think some five years.

CHAPTER TWO

2 Methods and Materials of the Study

2.1. Description of the Study Area

Ofa Woreda is one among 12 Woredas and three town administrations in Wolaita Zone, found in SNNPR. Wolaita Zone is located at 383 kms south from Addis Ababa. The Woreda is comprised of two urban and 20 rural kebeles. According to statistical abstract (2009), the 1999 total population is 104,276 of which 51143 are males and 53133 are Females. 5,851 of the total population are living in urban areas while the rest majorities 98,425 are dwelling at rural. There are 4 health centers and 25 health posts are there in serving the population of the Woreda.

2.2 Study Population

According to SSNPR Regional Statistical Abstract (2007), a total of 29,440 reproductive age of women were living in 2007 in Ofa Woreda. Women in the reproductive age group (15-49) who are residents of Ofa Woreda and who have at least one live birth in the past five years preceding the survey were included in the study.

Inclusion criteria- Women in the reproductive age group (15-49) who are residents of Ofa Woreda and who have at least one live birth in the past five years preceding the survey were included in the study. Women who had more than one live birth, only care received for the most recent live birth is considered.

Exclusion criteria-Women outside the age range 15-49 years and/or who didn't give live birth in the past five years preceding the survey were not included.

2.3. Study Design

Cross sectional community based survey is conducted in the study area to collect relevant data from the target women.

2.4. Sample Size Determination

Since no study has been conducted on the area of ANC service utilization, 50% prevalence rate is taken to obtain sufficiently large sample size, and 10% is added to compensate for non response and then 1.5 is multiplied to consider design effect due to multi stage sampling. And 95% confidence interval is taken with possible error of 5%.

$$n = \frac{z^2\, p\,(1-P)}{e^2}$$

n=the sample size

P=in the absence of similar previous study and to achieve the maximum possible sample size, 50% of the women receive the existing ANC services was assumed.

Z^2= Number of standard errors units which is found from the normal probability table to correspond to be 1.96

e^2= Margin of error or limit of accuracy which will be tolerated i.e. 5%

$$n = \frac{p\,(1-p)\,Z^2}{e^2}$$

$$n = \frac{0.5\,(1-0.5)\,(1.96)^2}{(0.05)^2} + 10\% = 38416*0.5/25 = 384 + 38 = 422* 1.5 = \underline{633}$$

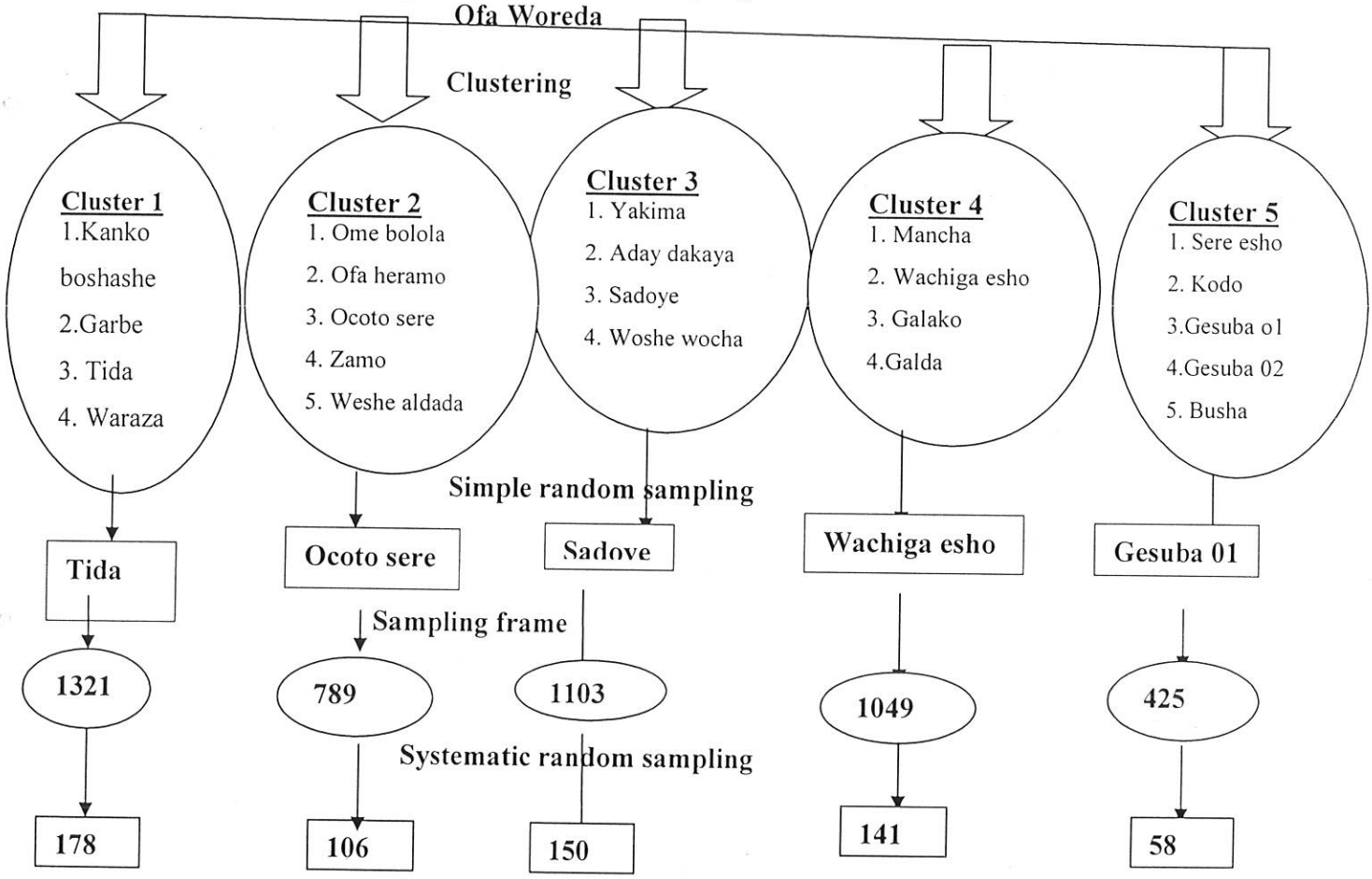
Considering 1.5 designing effect and a 10% non-response rate, the total sample size is **633.**

2.5 Sampling procedure

Ofa Woreda is classified into five clusters, two of the clusters contain 5 kebeles each and the other three containing four kebeles each based on their geographic proximity and distance from woreda town. All kebeles were included in the clusters and one kebele from each cluster was selected randomly but one town was selected purposefully from a cluster containing it to see residencial variations. The sample size for the selected kebele is determined according to the principle of proportionate probability technique. An initial house to house survey was conducted in each selected kebeles to find and register those women who are eligible according to the criteria of inclusions.

Thus, the total participants were identified and the sample women from each sampling frame were selected using systematic random sampling technique and questionnaire was administered to the total of 620 identified women.

Figure 2.1 Schematic Representation of the Sampling Procedure



Sample size selected from sampling frame of kebele is calculated according to proportionate sampling technique:

$$ni = \frac{Ni}{N} * n$$

ni = Number of women selected from each sampling frame

Ni = Sampling frame of each kebele

N= Total sampling frame

n = Total sample size

2.6 DATA COLLECTION TOOLS

Structured interview questionnaire was prepared to gather information for quantitative data.

2.7 Measurement Variables

1. Dependent variables

Antenatal care service attendance

1. Independent Variables

Socio-demographic factors include (women's education, husband's education, intendedness of pregnancy, age of women at pregnancy, religion, ethnicity, and media exposure, parity of pregnancy, household size, marital status, and occupation).

Table 2.1Operationalization of variables in the model

S/no.	Variables	Category and code
1	Women's education level has three categories	- Illiterate=1 -Grade 1-10 complete=2 -women who completed preparatory & above is coded = 3,
2	Household size in which women usually live has three categories	- 4 & below coded=1 - 5-7=2, - 8 & above=3
3	Intendedness of pregnancy does have two categories	-Wanted pregnancy =1 -Mistimed & unwanted pregnancy =2
4	Marital status of women does have four categories in the questionnaire but recoded in two in the model	-Married=1 -others(divorced, widowed, and never married)=2
5	Occupation dose have four categories in the questionnaire and recoded into two in the model	-housewife =1 -Others (student, civil servant, merchants) =2
6	Residence dose have two categories	Rural =1 Urban =2
7	Age of women has 7 categories in the questionnaire and recoded into three	Below 25 =1 25-34 = 2 35 and above =3
8	Ethnicity has 6 categories in the questionnaire but recoded into two	Wolaita =1 Other contains (Gamo, Amhara, Silti)=2
9	Religion	Protestant=1 Others(Orthodox, Muslim &Catholic)=2

2.8. Data collection process

A cross-sectional survey was conducted in the study area from January 16 to February 3/2011.House to house visit was made by interviewers. For data collection process, five interviewers, who had completed their secondary school education of grade 10 with the criteria of: being interested, known to be honest and willing to face difficulty that may arise during the process of interview, know the district well and dwellers of the district, have experience in data collection are hired to collect data. And two supervisors who are familiar with the population and social administration setting of the kebeles were hired with the responsibility of: Coordinating the activities of the interviewers, timely supply of the necessary materials for interviewers, and Check the questionnaire at field each day. However, the sole responsibility of facilitating the whole processes was carried out by the principal researcher.

2.9. Ethical Consideration

The objective of the study is explained to the identified study subjects. They were briefed that any information concerning them will never be passed to any individual or institution without their agreement. And women are kindly requested to be part of the study but also been informed that it is their right to reject completely to participate or to stop at any time in the process. The researcher at the end intends to submit a copy of research result to the Woreda health office that enables them to undertake interventions basing the identified findings to scale up utilization of the service.

2.10 Data **Quality Assurance**

The quality of data is assured by; using standard questionnaire from Ethiopian Demographic and Health Survey and translating it into Amharic and then to local language Wolaitigna. One kebele in the Woreda which is not included in the sample is selected to pre-test questionnaire. Giving proper training to the interviewers and supervisors on (data collection procedures, and proper categorization and coding of the questionnaire) are believed to enhance quality of data.

2.11 Pre- test

Pre-test of the questionnaire was conducted in one kebele which is not included in the selected sample and has similar socio-demographic characteristics with the people in the selected kebeles. 50 study subjects who fulfill the eligibility criteria were identified and questionnaire was administered. Then discussion is made on some confusion then both the interviewers and the supervisors could get clarity, understandability, and completeness of the questionnaire before the actual data collection task was commenced.

2.12 Data Processing and Methods of Analyses

After the completion of data collection, questionnaire were edited, coded, and the data are entered in to computer and processed by using SPSS version 15. Data are cleaned by using frequencies and cross-tabulations to check accuracy, consistency, and missing values. Accordingly incorrect entries are identified and re-entered. Analyses were done at three levels. The first level analysis involved description of background characteristics of study population is made, maternal care service utilization in the study area is described, and an examination of the distribution of the respondents according to socio-demographic background characteristics and extent of maternity care utilization is described as well.

The second level analysis involved the examination of the patterns of association between the dependent and independent variables using bivariate analysis and cross tabulations. This helped to check whether the observed differences between two proportions are attributed significantly to differences in proportions and they are categorized under the given independent explanatory variables. The statistics used to test the association is chi-square test and with the help of chi-square test independent variables those which could explain the dependent variable were identified for further analysis at the multivariate stage using logistic regression

Level three of the analysis involved binary logistic regression model to examine the variation of ANC service utilization in the study area and to assess the relationship between the dependent and independent variables. In order to assess the relative importance of each predictor variable by controlling of the effect of other variables on ANC utilization, a binary logistic regression analysis was carried out.

The logistic model considers the relationship between a binary dependent variable and a set of independent variables. The model for k independent variables (X_1, X_2, X_3, X_4, X_k) is given as:

$$\text{Log } P(x) = \log [p/ (p-1)] = \alpha + \sum \beta_i x_i;\ 1 \leq i \leq k$$

$$\text{Log } p(x) = \alpha + \beta_{1X1} + \beta_2 X_2 + \beta_3 X_3 + \text{---} + \beta_k X_k.$$

EXP (βi) = odds ratio for a person having characteristic i versus not having characteristic i

β = Regression coefficient

α = Constant

2.13 Operational Definition of Terms

Antenatal care (ANC) - It is health care received by mothers at the time of their pregnancy from health professionals. ANC is more beneficial in preventing adverse pregnancy outcomes when it is sought early in the pregnancy and continued through to delivery. ANC includes measuring blood pressure and weights of a woman and taking physical examination, measuring of uterus height and vaccination.

ANC attendant: – Pregnant woman who had attended antenatal clinic during the recent pregnancy at least once.

ANC non-attendant:- A pregnant woman who had not attended antenatal care clinic at all during the recent pregnancy.

Maternal Mortality/Death: -The death of a women while pregnant, during delivery or within 42 days (six weeks) of termination of pregnancy, irrespective of the duration of pregnancy. The cause of death is always related to or aggravated by the pregnancy or its management; it does not include accidental or incidental causes.

Traditional Birth Attendants (TBAs):- They are part of the birthing process through the developing world, assisting in the birth of substantial portion of the worlds new born. Usually they are self thought or informally trained. TBAs also provide advices and practical help in cleaning, cooking and caring for the households of pregnant women and new mothers.

Trained Birth Attendants: - They are health extension workers

CHAPTER THREE

3 CHARACTERISTICS OF STUDY POPULATION and ANC SERVICE UTILIZATION In The Area.

A total of 620 women who had live births in the last five years were interviewed from the selected five kebeles made the response rate 98%.

3.1 Demographic Characteristics of Respondents

According to the collected data 246 (40%) of the total respondents are below 25 years of age while 54% are in 25-34 age group. The remaining 5.9% has beyond 34 years of age.

The area is predominantly occupied by Protestants 530(85.5%), the remaining 15% comprised of Orthodox, Muslim and catholic religious adherents. Nearly 9 in 10 respondents are married while 11% contains widowed, never married, and divorced group.

Majority 386 (63%) of the respondents were pregnant for their 1 to 3 order of pregnancy and 36.6% were with their 4 or higher order of pregnancy. About 279 (45%) of the study mothers had wanted pregnancy while the remaining 55% had mistimed & unwanted pregnancy. 283 (45.6%) of the respondents were living in household size of 4 or few, where as 54.4% of the study population were living in household size of 5 or above.

Table 3.1 Percentage Distribution of Women by Demographic Characteristics, Ofa Woreda, 2011

Demographic characteristics of the respondents		Frequency	Percent
Age of the respondents	<25	246	39.8
	25-34	337	54.3
	35 & above	37	5.9
	Total	620	100.0
Order of last pregnancy	1	93	15
	2-3	296	47.7
	4 & higher	231	37.3
	Total	620	100.0
Religion	Protestant	530	85.5
	Others	90	14.5
	Total	620	100.0
Marital status of the respondents	Married	550	88.7
	Others	70	11.3
	Total	620	100.0
Household size in which the respondent live	Less than 4	283	45.6
	5-7	282	45.5
	8 & above	55	8.9
	Total	620	100.0
Intendedness of last pregnancy of the respondent	wanted then	279	45.0
	Wanted later	241	38.9
	Not at all	100	16.1
	Total	620	100.0

* Others in Religion represent (Orthodox, Muslim, and catholic)
* Others in the marital Status include (Divorced & separated, Widowed, and Never married)

3.2 Social Characteristics of Respondents

According to the survey, majority 562(90%) of the study population are rural residents while the rest one tenth are urban. About 253(40.8%) of the sample population are illiterate while about 181(29%) are completed their secondary and higher education levels. 255(43%) of the respondents were living with illiterate husbands and 210 (33.5%) has husbands with 1-8 education level. The rest 1o2 (16.5%) were living with husbands who have secondary and above education level.

The area is predominantly occupied by Wolaita 557 (89.8%) while other ethnic groups accounted only 63 (10%) of the total sample population. Over two third of the respondents do not have exposure to media at all while only 47 (7.6%) had exposure to media almost every day. Nearly half 292(47.1%) of the total respondents are housewives where as 154(24.8%) are petty trader, and nearly 13% are students.

Table 3.2 Percentage Distribution of Women by Social Characteristics, Ofa Woreda, 2011

Social characteristic of the respondents	Category	frequency	Percent
Residence	Rural	562	90.0
	Urban	58	10.0
Educational status of respondents	Illiterate	253	40.8
	1-8	186	30.0
	9 & higher	181	29.2
Respondent's exposure to Media	Not at all	417	67.3
	Less than once a week	100	16.1
	At least once a week	56	9.0
	Almost every day	47	7.6
Ethnic background of respondents	Wolaita	557	89.8
	Others	63	10.2
Occupation of the Respondents	House wife	292	47.1
	Civil servant	53	8.7
	Petty Trader	154	24.8
	Student	80	12.9
	Farmer	40	6..5
Literacy Status of women's Husband	Illiterate	255	43.4
	Elementary school(1-8)	210	33.5
	9 & higher	102	16.5
	No Husbands	41	6.6

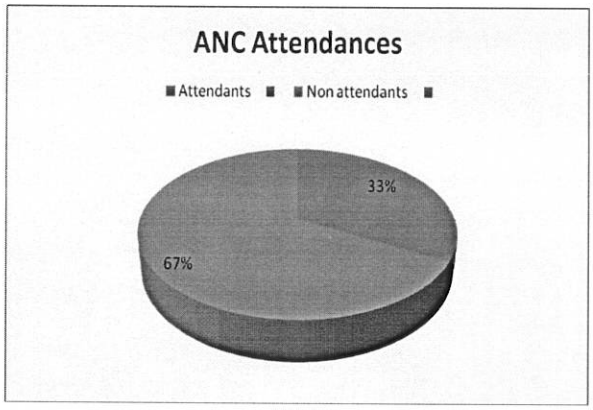
*Others in the Ethnicity include (Silti, Amhara, and Gamo).

3.3 Maternal Health Care Utilization in the Study Area

3.3.1 Antenatal Care utilization

Three fifth 419(67%) of mothers did not use ANC while 33% of the total respondents attended ANC for their last pregnancy. All mothers who attended ANC were seen by health professionals. Among mothers who attended for ANC only 84(41.8%) received the service from Government health posts while the majority 117(58.2%) attend government health center.

Figure 3.1 Attendance for ANC of respondents



Source- field data

3.3.1.1 Timing and Number of ANC Visit

Timing to start ANC Visit

Health professionals recommend that the first ANC visit is beneficial if sought early in pregnancy (within three months of pregnancy and continued until birth). However, among the total women who attended for ANC, only 83(41.3 %) started the visit in the first trimester where as the majority (58.7%) booked in the second & third trimesters (table 3.2).

Number of ANC Visit

Among women who attended for ANC 113(56.6%) of them made four or more pregnancy checkups. The remaining 43.4% made 3 or fewer visits to health service for ANC.

Table 3.3 Percentage Distribution of Respondents by Timing and Amount of ANC Visit

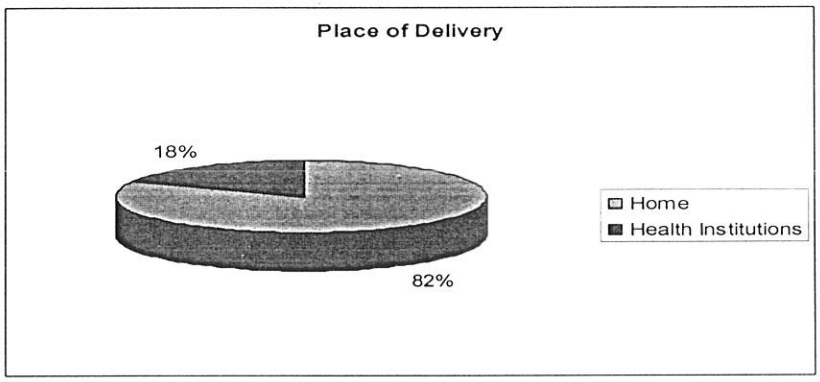
Months which first ANC visit started	Frequency	Percent
1-3	83	41.3
4-5	56	27.9
5 & above	62	30.8
Number of visits		
1	13	6.5
2-3	75	37.3
4 & higher	113	56.2

Source- Survey data, 2011

3.3.2 Delivery Care Utilization

The Pie chart below shows the majority 509(82%) of the respondents made delivery at home while the rest 111(18%) made it at health institutions.113 (18%) of the respondents attended skilled birth attendants for their delivery while majority 5o7 (82%) was attended by skilled attendants.

Figure: - Distribution of Respondents by Place of Delivery



Source- servey data, 2011

Table 3.4 Persons Providing Delivery Assistance

Person providing delivery assistance	Frequency	Percent
Health professional (nurse, doctor, and midwife)	101	16.3
Trained birth attendant(health Extension workers)	12	1.9
Untrained traditional birth attendant	105	16.9
Community health agent	29	4.7
No one	373	60.2
Total	620	100.0

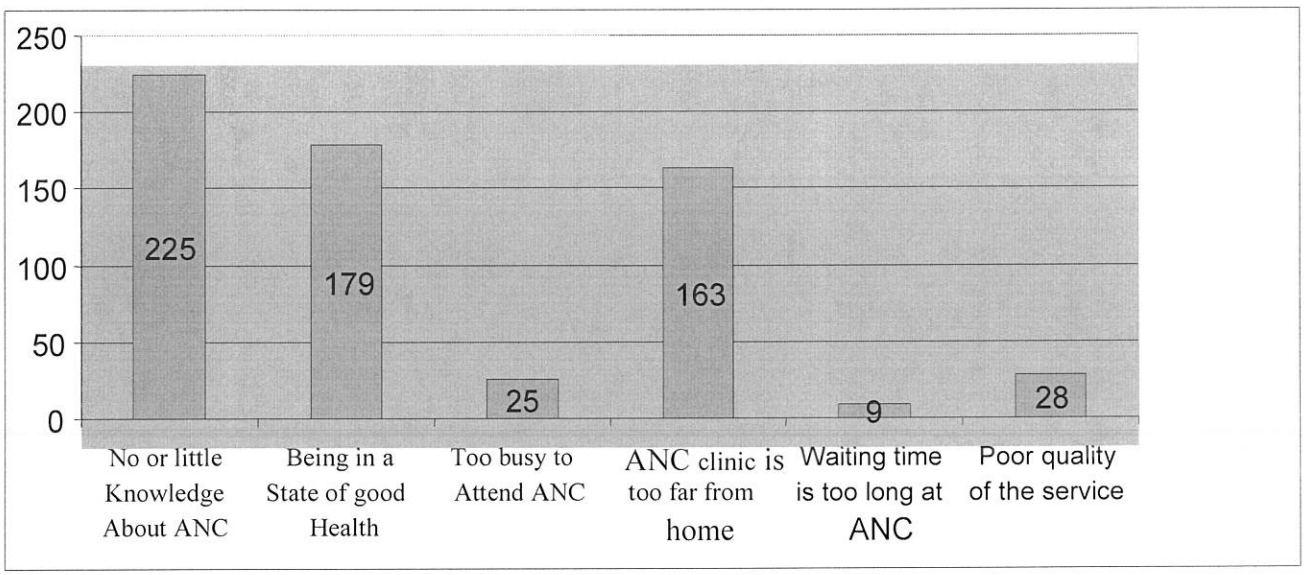
Source- field data, 2011

3.4. Main Reasons for ANC Non Attendance

Out of the total number of women who didn't use ANC, an attempt was made to know the possible reasons for the non use of the service. This question was forwarded only to the respondents who didn't use the service.

The question was designed to enable the respondents to have multiple responses. Various options were put in the questionnaire but never made the respondents to know the listed options. After data collection was completed an attempt was made to code the responses. According to the finding, out of 419 total non attendants 237 responded only single reasons While 157 two reasons & 26 three reasons for their non attendance. Most frequently responded reason was factors related to shortage of knowledge about ANC (225), times responded, followed by being in a state of good health 179 times and distance from health facility is 164 times.

Figure 3.5 Reasons not to attend ANC



Source- field d

3.5 ANC utilization of Women by Different socio demographic characteristics of the Respondents

3.5.1 ANC Utilization of Women by their Demographic Background Characteristics.

According to the survey, ANC use generally varies with Age of women in the study area. While 146 (59 %) of women among age under 25 used the service, only 4(10 %) of women who are beyond 34 years of age attended it. Protestants are generally less utilized ANC compared to other religious category. As it is indicated in the table, 160 (30 %) of protestants did attend ANC clinic while 41(45.6%) of others attended it.

With respect to marital status of the respondents, those who are married were more likely to use the service than others. According to the respondents, 198(35.7%) of married women attended ANC where as only 4.5% of (Divorced, Widowed, and Never married) category used it. When we compare utilization of ANC among their size of household, the data revealed that nearly half of women 51.6% who had household size of four or less attended the service while only 7.3% who had size of 8 & above are attended.

Intendedness of pregnancy has also some sort of association with utilization of ANC. Data from the field confirmed that those mothers who had wanted pregnancy utilized the service better than those who had mistimed or unwanted pregnancy. 51% of mothers who had wanted pregnancy attended the service while only 17% of women with mistimed and unwanted pregnancy utilized it.

Order of pregnancy increases likelihood of mothers to attend ANC is consistently decreases. Of 93 women who had first order pregnancy 64 (69%) attended the service, while only 7% of 221 women who had 4 or higher pregnancy order used it..

3.5. Percentage Distribution of Women Attendance for ANC by Demographic Background Characteristics

Demographic Characteristics of Respondents		ANC Attendance			
		No		Yes	
		Frequency	Percent	Frequency	Percent
Age of respondents	<25	100	40.7	146	59.3
	25 - 34	286	84.9	51	15.1
	35 & above	33	89.2	4	10.8
Religion of the respondent	Protestant	370	69.8	160	30.2
	Others	49	54.4	41	45.6
Marital status of the respondents	Married	356	64.3	198	35.7
	Others	63	95.5	3	4.5
Household size in which the respondent live	1-4	137	48.4	146	51.6
	5-7	231	81.9	51	18.1
	8 & above	51	92.7	4	7.3
Order of last pregnancy of the respondents	1	29	31.2	64	68.8
	2-3	174	58.8	122	41.2
	4 and higher	216	93.5	15	6.4
Intendedness of last pregnancy of the respondents	wanted then	138	49.5	141	50.5
	Mistimed and unwanted	281	82.4	60	17.6

*Others in the Religion includes (Catholic, Orthodox, and Muslim)

*Others in Marital Status represent (Divorced, widowed, and never married)

3.5.2 ANC Utilization of Women by their Social Background Characteristics

Residence of women associated with ANC utilization in the study area. Urban women are generally more utilized the service than their rural counterparts. 43(74.1 %) of women from urban utilized ANC while only 158(28.10%) of rural women used it.

According to the collected data, 49(72%) of the respondents who completed grade 9 & above did attend for ANC for their last pregnancy while 107(32.9%) of women who completed grade 1-8 attended the service, and only 45(19.8%) of illiterate women used the service. This shows that education of women is positively associated with ANC utilization in the study population.

The same pattern is seen with respect to literacy status of husbands. Generally, ANC utilization of women is higher for those women who are living with educated partner than those women who are living with illiterate husband in the study area. 186(59%) of women who were living with educated husband utilized ANC while only 12(4.5%) of women who were living with Illiterate husband attended it.

Exposure to media seems to have influence on utilization of ANC utilization. 100% of women who had exposure to radio/magazine/television almost every day did attend for the service while only 23.6% of women who had no exposure to media utilized the service.

Out of 292 housewives 65(22.3%) did use the service while 41.5% of schooling, petty trader, Civil servant, and farmers were using it

Similarly, with regard to ethnicity 167(30.0%) of Wolaita have been attended the service while 34(54%) of other ethnic group attended the service

3.6 Percentage Distribution of Women Attendance for ANC by Social Background Characteristics

Social Characteristics of Respondents		ANC Attendance			
		No		Yes	
		Frequency	Percent	Frequency	Percent
Residence	Rural	404	71.9	158	28.1
	Urban	15	25.9	43	74.1
Ethnicity	Wolaita	390	70.0	167	30.0
	Others	29	46.0	34	54.0
Educational status	Illiterate	182	80.2	45	19.8
	1-8	218	67.1	107	32.9
	9 & above	19	27.9	49	72.1
Literacy status of respondent's husband/partner	Illiterate	255	95.5	12	4.5
	Educated	126	40.4	186	59.6
Respondents exposure to media	not at all	327	76.4	101	23.6
	less than once a week or at least once a week	92	59.4	63	40.6
	almost every day	-	-	37	100.0
Respondent's occupation	house wife	227	77.7	65	22.3
	Others	192	58.5	136	41.5

* Others in the Ethnicity includes (Amhara, silti,and Gamo)
*Other in the Occupation of women includes (Civil servant, Student, Petty trader, and farmer)

CHAPTER FOUR

4 Analysis and Results

Bivariate test was conducted to see association between dependent and independent variables. However, these simple cross-tabulated chi-square results may not show the independent variable exact influence on the dependent variable, because the influences of other variables were not controlled. Thus, logistic repression analysis was applied in order to identify the influence of one independent variable by controlling the effect of the others.

4.1. Bivariate Analysis

Different factors were selected to analyze determinants of ANC utilization of pregnant women. In this study some selected socio-demographic variables were involved in the chi-square test to investigate those variables which are significantly associating with utilization of the service. This test however, doesn't say anything about the extent of individual variable exclusively contributes to explain dependent variable. But it clearly shows the significance of Association between dependent and independent variables. Therefore, this test was used as the first step to distinguish those variables which have significant association with ANC attendance for further analysis.

4.1.1. Socio demographic variables associate with ANC Attendance

Chi–square table below shows significance association between various independent variables with ANC use. The large chi-square statistics and small significance level ($p<0.05$) indicate that these variables are highly associated. All the involved socio demographic variables are significantly associated with ANC Attendance. Residence is significantly associated with ANC attendance where three fourth of urban women were using ANC while 28% of rural women attended the service($x^2=50$, $p<0.05$). ANC utilization vary significantly with Age of women ($x^2 = 135$, $p<0.05$) While Age of women increases likelihood to attend ANC is decreasing. Education level of women has significant association with ANC at ($x^2 =65$, $p<0.05$).

Exposure to media is significantly associated to ANC, only 23.0% were attend the service for the women who had no exposure to media at all and 100% of the women who had exposure almost every day utilized the service($x2= 97$, $p<0.05$).

With regards to occupation, 22.3% of the farmers attended the service while 41.2% of non housewife women attended it(x2=26, p<0.05). Similarly, husband's educational status, household size, order of pregnancy, intenseness of pregnancy, religion, marital status of women, ethnicity, and distance to the nearest health facility is significantly associated to ANC attendance of pregnant mothers.

Table 4.1 CHI-SQUARE Test for Bivariate Analysis

Socio-Demographic Factors		ANC Use			
		No	Yes	X^2-value	p-value
Residence	Rural	404(71.9%)	158(28.1%)	50.8	.000
	Urban	15(25.9%)	43(74.1%)		
Age of respondents	<25	100(40.7%)	146(59.3%)	135	.000
	25 - 35	286(84.9%)	51(15.1%)		
	>35	33(89.2%)	4(10.8%)		
Educational status	Illiterate	182(80.2%)	45(19.8%)	65	.000
	1-8	218(67.1%)	107(32.9%)		
	9 & above	19(27.9%)	49(72.1%)		
Respondents exposure to media	not at all	327(76.4%)	101(23.6%)	97	.000
	less than once a week or at least once a week	92(59.4%)	63(40.6%)		
	almost every day	-	37(100.0%)		
Respondent's occupation	house wife	227(77.7%)	65(22.3%)	26	.000
	Others	192(58.5%)	136(41.5%)		
Respondents religion	Protestant	370(69.8%)	160(30.2%)	8.2	.000
	Others(Catholic, Orthodox, and Muslim)	49(54.4%)	41(45.6%)		
Ethnic background of respondents	Wolaita	390(70.0%)	167(30.0%)	14.8	.000
	Others(Amhara, silti, Gamo)	29(46.0%)	34(54.0%)		
Marital status of the respondents	Married	356(64.3%)	198(35.7%)	26	.000
	Others (Divorced, widowed & separated)	63(95.5%)	3(4.5%)		
Literacy status of respondent's husband/partner	Illiterate	255(95.5%)	12(4.5%)	194	.000
	Educated	126(40.4%)	186(59.6%)		
Household size in which the respondent live	1-4	137(48.4%)	146(51.6%)	89	.000
	5-7	231(81.9%)	51(18.1%)		
	8 & above	51(92.7%)	4(7.3%)		

Order of last pregnancy of the respondents	1	29(31.2%)	64(68.8%)	137	.000
	2-3	174(58.8%)	122(41.2%)		
	4 and higher	216(93.5%)	15(6.4%)		
Intendedness of last pregnancy of the respondents	wanted then	138(49.5%)	141(50.5%)	76	.000
	Mistimed and unwanted	281(82.4%)	60(17.6%)		

4.2 Binary Logistic Regression

Assessing multicolinearity effect: - Before fitting regression model, the first thing to be done is to examine the existence of inter correlation among independent variables. To assess multi co linearity effect, multiple linear regression analysis was used .The existence of this effect in the model can be checked by using tolerance or Variance Inflation Factor (VIF). Tolerance is $1\text{-}R^2$ for the regression that independent variable on the other independents, ignoring the dependent. The higher the inter correlation of the independents, the more the tolerance will approach zero. As a rule of thumb, if tolerance is less than 0.2, a problem with multi co linearity is indicated. In this assessment tolerance for the model is greater than 0.20. Thus, multi co linearity effect does not influence the model. Likewise, the VIF, Which is simply the reciprocal of tolerance shows whether or not the explanatory variables are related with each other. When VIF is high, there is high multi co linearity. VIF =4 is common cut-off criterion for deciding when a given independent variable displays too much multicolinearity; a value above 4 suggests a multi co linearity problem is there (Schwarz, 2007). As presented in the table below, the value of VIF in the model are less than four. Therefore, the model is assumed to be free from multi co linearity problem.

In addition to the above test, bivariate correlation analysis was used to test correlation between two suspected variables. Those independent variables which have significant and strong correlation with each other are not entered into the model as the same time for their multicolinearity effect.

Table 4.2 Tolerance and VIF values to check Multicolinearity effects in the Model

Variables	ColinearityStatistics	
	Tolerance	VIF
Residence	.825	1.212
Age	.498	2.008
Occupation	.829	1.206
Religion	.678	1.476
Marital status	.773	1.294
Ethnicity	.729	1.373
Husband's literacy status	.364	2.746
Order of pregnancy	.587	1.704
Household size	.557	1.795
Intendedness of pregnancy	.741	1.350
Media exposure	.553	1.809
Educational level of women	.690	1.450

Goodness of Fit Test: - with respect of Goodness of fit of the model, there are various ways to assess the extent to which the model fit the data. One way of assessing how well the model fit the data is by using the Hosmer & lemeshow goodness of fit test. Hosmer & Lemshow test is used to assess whether there is significance difference between the predicted and actual models. The model fits for ANC was found to have calculated x^2 -square values of 13.693 which is less than the table value. Insignificant values of this test show the goodness of the model. Hence, we can accept the null hypothesis and conclude there is no statistically significant difference between the actual & predicted model or the model well fit the data.

Chi-square	Df	Sig.
13.693	8	.090

Test of significance: - the next table was used to filter out the variables which have significance influence on the dependent variable. The Wald statistic tests the significance of the coefficient of independent/explanatory variables. The Wald statistics is the squared ratio of the logistic coefficients to their standard error. If the Wald statistics is significant then the coefficients are significant in the model, standard errors are also used to constrict confidence interval for the exp (b) coefficients, odd ratio. If the confidence interval contains 1 then it will be concluded that the change in the independent variable does not have effects on the dependent variable. It is the predicted change in odds for a unit increase in the independent variable. If the odds ratio is less than 1 corresponds to decrease, and odds ratio is more than 1 corresponds to increase in odds.

Table 4.3- Significances of the Factors

Variables	B	S.E.	Sig.	Exp(B)
1.Residence Urban (RC)				1
Rural	-1.618	.414	.000	.198
2.Educational level Grade 9 & above (RC)			.000	1
Illiterate	-2.228	.431	.000	.108
Grade 1-8	-2.024	.405	.000	.132
3.Occupation Others (RC)				1
Housewives	-.742	.243	.002	.476
4.Household size 8& above (RC)			.000	1
4 &below	2.181	.604	.000	8.858
5-7	.468	.588	.425	1.598
5.Intendedness of pregnancy Mistimed & unwanted (RC)				1
Wanted	1.471	.262	.000	4.353
6.Marital Status Others (RC)				1
Married	1.380	.646	.033	3.973
7.Ethnicity Others (RC)				1
Wolaita	-.764	.410	.062	.466
8.Age 35 & above (RC)			.044	1
<25	.508	.671	.449	1.662
25-34	-.292	.637	.647	.747
9.Religion Others (RC)				1
Protestants	.290	.348	.405	1.336
Constant	2.67	1.3	1.00	14.535

4.2.2 Socio demographic determinants of ANC utilization

ANC attendance was cross-tabulated with residence, age, ethnicity, religion, education level, occupation, marital status, husband literacy, and order of pregnancy, intendedness of pregnancy, media exposure, and household size. The chi-square statistics showed that ANC is significantly associated with all the variables ($p< 0.05$) (Table 4.1). But this simple cross, tabulated chi-square result may not show the independent variable exact influence on the dependent variable, because the influences of other variables were not controlled thus, binary logistic regression analysis was applied to these 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 effect of all other intervening variables.

The Binary logistic regression model's appropriate to use when the response to a set of explanatory variable is in binary form. In this study for the dependent variable ANC, the binary form was ANC attendant & non- attendant. It is coded as a dummy variable (1 = ANC attendant & 0 = ANC non attendant).

The selected socio demographic variables which had significant association in the bivariate analysis with ANC were further tested by binary logistic regression, to investigate the overall net effect of these variables on ANC attendance of pregnant women. Variables entered in the model include; residence, age, education, occupation, intenseness of pregnancy, religion, marital status, ethnicity, household size.

Applying bivariate correlation analysis husband's literacy, exposure to media, and Order of pregnancy were excluded from the model for they correlate strongly and significantly with women educational status, Household size.

From the table above we can observe that residence, education level, intendedness of pregnancy, household size, occupation, and marital status were found to have significant influence on ANC utilization of mothers in the study area. Whereas, age, ethnicity, and religion were not significantly affect utilization of the service in the area.

Residence is found to be significant predictor of ANC utilization in the area. Urban women were 81% more likely to utilize the service as compared with rural counterparts.

When we look at education level, women who completed secondary or higher were 89% more likely to use ANC compared with illiterates and 87% more likely utilized than women with grade 1-8 ($p<0.05$).

With regard to household size, those women who were living in household size below 4 were 4.3 times more likely to utilize ANC than women with 8 & above and though not statistically significant those who had 5 to 7 household size were 1.4 times more likely to utilize the service compared with women with 8 & above household size.

Significant variation was seen in utilization of ANC service among women with different occupations. In the area others (civil servants, students, and petty trader) were 53% more likely to utilize the service than housewives.

Significant proportions of married women were utilized ANC service compared with those in other marital status in the area. Women who are married were 3.9 times more likely to use the service than widowed, divorced, and never married women.

The other socio demographic factor significantly influence utilization of ANC was intendedness of pregnancy. The result in the table shows that women who had wanted pregnancy were 4.3 times more likely to utilize the service compared with mothers who had mistimed & unwanted pregnancy ($p<0.05$).

CHAPTER FIVE

5 DISCUSSIONS, CONCLUSION, AND RECOMMENDATION

5.1 Discussions

Pregnant women are generally recommended to attend ANC services for reasons like screening, identification and referral with risk factors. However, this study shows that the coverage of ANC is very low in Ofa Woreda of Wolaita Zone. Only about 33% of women received ANC, in the five years preceding the survey. The level is slightly higher when compared to country level of 28% (CSA &ORC MACRO, 2006). But the difference might be attributed only to the time gap of five years between the two surveys. Nonetheless, rural urban disparity is very wide, where 74% of women at urban used the service while the rural coverage is only 28%.

Among different reasons mentioned by women that deter them from utilization of ANC services; little or lack of knowledge related to the benefits of ANC services, being in state of good health during pregnancy, distance to the health facility, and poor quality of the service were mentioned by majority of non attendant women.

Though health professionals recommend that the first ANC visit should occur within the first three months of pregnancy, this study showed that majority of women 58% didn't start their first antenatal visit during first trimester. Similarly, the 2005 EDHS reported that only 6% of women made their first ANC visit before the fourth month of pregnancy.

According to EDHS (2005), overwhelming majority of births (94 percent) was delivered at home. Home delivery is still common to the women in the study area. Every 4 of five women made recent delivery at home while only 18% of women had institutional delivery.

Despite of their number & accessibility, health posts were not visited by most of the women in the study area. Among mothers who attended ANC service, 57.6 % attended health centre, suggests the need to further study on the quality of the service at health posts.

The basic objective of this study is to explore socio-demographic determinants of ANC utilization in Ofa Woreda. According to this study, various factors were identified to influence utilization of ANC services. In the study area; residence, educational status of women, and marital status, household size, occupation, and intendedness of pregnancy were found to significantly determine utilization of the service.

This study showed that place of residence was found to affect ANC service use in the study area, where urban were 81% more likely to use ANC than rural women. This result supports the 2005 Ethiopian DHS finding that revealed a huge difference in the use of ANC services between rural & urban women. The difference might be due to the fact that urban women are more accessible to health services and have information & education about ANC than their rural counterparts.

Educational status of women was found to affect ANC utilization significantly in the study area. Having a higher educational attainment is strongly associated with high ANC uptake. The results showed significantly more attendances of women who had completed preparatory education & above than illiterate women in the study area. This finding conforms to results found in EDHS (2005), mothers with secondary level of education are 81 percent more likely to receive ANC from a health professional than women with primary education (Gurmesa, 2009; Eric, 2003; Zeine, et al., 2010). Education of mothers increases women's perceived seriousness about maternal morbidities and enhances knowledge regarding benefits of maternal health services. Education is likely to enhance females' autonomy so that women develop greater confidence and capability to make decisions about their own health.

Planned pregnancy encouraged to attend ANC services. In this study, women who had wanted pregnancy were 4.3 times more likely to utilize ANC than those who had mistimed & unwanted pregnancy. The finding is consistent with previous findings (Bahilu et al., 2009; Erci, 2003; Diago, et al., 2009; Hbibou, et al., 2011). The possible explanation is that those mothers who had planned pregnancy might be more educated and have a good awareness & access to family planning and related managements.

Household size was found to be an independent predictor of ANC use in the study area. Women who were living in household size 4 or less are 8.8 times more likely to utilize ANC service than women who had 8 or higher size. This study is similar to several previous findings. According to Ethiopian DHS (2005), no one to complete the household chores is reported by about seven in ten women as major concern not to attend (Zeine, et al., 2010; Long, et al., 2010), In developing countries, women spend more time on their multiple responsibilities for care of; children, collecting water or fuel, cooking, cleaning, trade, and others. Hence, women may prioritize house chores to their health.

Utilization of ANC is significantly varied with marital status of women in the area. Married women were 97% more likely to utilize the service than other categories. This finding is similar to several studies that have been conducted in developing countries (Yalem, 2010). This could be due to fear of stigma because a pregnancy without marriage is not accepted by the community in the study area. Therefore, it appears rational to see that most of single, divorced, widowed mothers might be faced unwanted pregnancies. Moreover, these mothers wanted to hide their pregnancy from their parents and the community instead of receiving ANC.

Occupation is an important predictor of ANC use in the study area. Housewives were 53% less likely to utilize the service than others (civil servants, students, merchants). Others category might increase women's autonomy and in turn positively associated with ANC attendance. Interactions with others may influence a woman's decision to seek ANC by exposing her to different ideas and imparting information about the process. In this case civil servants and students clearly have better educational status than housewives exerting its own implication to better awareness than housewives.

5.2 CONCLUSION

This study revealed that there is low utilization of ANC services in the study area when compared to the recommendation by WHO that every pregnancy should get at least four visits. Significant proportion even among ANC attendants were not initiated ANC visit within first trimester. Residential variation is very high, 74% of urban women utilized the service while 72% of rural women did not attend the service at all.

Lack of appropriate knowledge about the benefits of ANC, absence of health problems during pregnancy, & distance from health facility were the main reasons mentioned for not using ANC service.

Residence, educational levels, household size, occupation, marital status, and intenseness of pregnancy were identified as factors significantly affect ANC service utilization in the study area.

Therefore, Strategies to increase the accessibility and knowledge of health care service are important particularly in rural area.

5.3 RECOMMENDATION

Based on the findings the following recommendations are proposed to increase the utilization of antenatal care service utilization in the study area:

- The rural women were less likely to use the service means that maternal health care programs should be expanded & intensified in rural areas along with culturally appropriate education campaigns.

- Women's education status is an important factor for utilization of ANC service in the study area suggesting that educating girls will have a great impact on improving future utilization of ANC in the area. This is however, a long- term investment. As an alternative, in the short term, local governmental and non governmental organizations should pay due attention for the implementation of health extension package program that focus on raising awareness of women with little or no education, accordingly.

- Improving awareness of mothers about the benefit of ANC and seriousness of pregnancy complication should be emphasized particularly among mothers with higher parity. Putting in place intensified IEC and BCC programs on reproductive health issues particularly safe pregnancy is requiring urgent attention to improve the health and life of both mothers and the new baby.

- Planned pregnancy encouraged pregnant mothers to attend ANC services. Hence, key action should be taken in expanding contraceptive choices that enable mothers to find a suitable & more effective method to reduce unplanned pregnancy.

REFERENCES

Bahilu Tewodros, Abebe G/mariam, & Yohannes Dibaba 2009,' Factors affecting Antenatal care Utilization in Yem Special Woreda, southwestern Ethiopia': *Ethiopian Journal of health science*, vol.19, No.1, March, 2009, Pp 45-51.

BoFED, Data collection – dissemination main process 2007, 'Regional Statistical Abstract /2006-07/', SNNPRS. Awassa, June 2007.

Central Statistical Agency and ORC macro 2006, 'Demographic and health survey, 2005, Addis Ababa, Ethiopia and Calverton, Maryland, USA': Central statistical Agency and ORC Macro. 2006.

Central Statistical Agency 2010, Statistical abstract (2009), Federal Democratic Republic of Ethiopia, Addis Ababa.

Collier, P. Dercon, S and Mackinnon 2002, 'Density Versus Quality in Health care Provision: Using Household data to make budgetary choice in Ethiopia', *The World Bank Economic Review*, 116(13).

Dembowski 2010, 'Serving health: D+C: Development and Cooperation': *International Journal*, volume 37, Nov, 2010 No.11.

Diego G.Bassani,pamela J surkan and mariaTeresa A. Olinto 2009, 'Inadequate use of prenatal services among Brazilian women: The Role of Maternal Characteristics', By International Perspectives on Sexual and Reproductive Health; Volume 35, Number 1, March 2009.

ECA 2009, 'Mainstreaming Health Equality in the development Agenda of African countries', Addis Ababa: ECA

Eric, B 2003, 'Barriers to Utilization of Prenatal Care Services in Turkey', *Journal of Nursing Scholarship*, V.35: 269–273. doi: 10.1111/j.1547-5069.2003.00269.x

FAUSDAR RAM AND ABHISHEK Singh 2006, 'Is ANC effective in improving maternal health in rural Uttar Pradesh? Evidence from district level household survey', *international Institute for population science*, Deemed University, mumba, India.Journals J. biosoc. Sci, (2006) 38,433-448, P 68

Friday E. Okonofua 2008, 'Maternal Mortality Prevention in Africa — Need to Focus on Access and Quality of Care Source': *African Journal of Reproductive Health*/, Vol. 12, No. 3 (Dec., 2008), pp. 9-16.

G. B. Over bosch, , N.N.N. Nsowah, G.J.M, Van den Boom and L. Damnyag 2002, 'Determinants of Antenatal care use in Ghana', *Oxford Journal of African economies*, Volume 13,Issue2, pp277-301.

Guillermo L., Clean R. and Jose V 1992, 'How effective antenatal care in preventing maternal mortality and morbidity'? *Bulletin of World Health Organization*,

Gurmesa Tura 2009, 'Antenatal care service utilization and associated factors in Metekel Zone, Northwest Ethiopia', *Ethiopia Journal health science*: vol. 19, No. 2, July, 2009. Pp 45-48

Hafez MA, Ullah MA, Begurn HA 1998, Extent of utilization and factors influencing antenatal care in rural Rajshahi: JOPSOM, 1999; 18: 1-6.

Macro International inc. 2007, Trends in Demographic and Reproductive Health Indicators in Ethiopia: Calverton, Mary Land, USA: Macro International Inc.

MDG Report 2009, Assessing progress in Africa toward the Millennium Development Goals: Economic Commission of Africa, Africa Union Group, and Africa Development Bank Group.

Marge Berer 2007, 'Global trend in maternal mortality', maternal mortality and morbidity: Is pregnancy getting safer for women: *Journal of Reproductive health matters*. Vol. 15, no. 30, Nov. 2007.

Monica Akinyi Magadi, Eliya Msiyaphazi Zulu, Martin Brockerhoff 2003, The Inequality of Maternal Health Care in Urban Sub-Saharan Africa in the1990s: Population Studies, Vol. 57, No. 3 (Nov., 2003), pp. 347-366.:

National Population Commission [Nigeria] 2003, World Summit for Children indicators: Nigeria Demographic and Health Survey 2003. Calverton, Maryland: National Population Commission and ORC/Macro, 2003, page 333.

Qian Long, Touchong Zhang, Elina Hemminki, Xiaojun Tang, Kun Huang, Shengbin Xiao, and Rachel Tolhurst 2010, Utilizations, contents and costs of prenatal care under a rural health insurance(New co-oprative medical system) in rural china: lesson from implementation. BMC health service research 2010.10:301. << **http://.biomedcentral.com/1472-6963/10/301**.Accessed: 3/3/2011.

Ronald M. Anderson 1995, 'Revisiting behavioral model and Access to medical care: Does it matter'? *Journal of health and social behavior*, Vol.30, No.1 (March, 1995), pp.1-10, published by American Sociological Association. StableURL/**www.jstor,org/stable/2137284**. Accessed: 10/03/2011 18:58

Susan E. Short and Fengyu Zhang 2004, 'Use of Maternal Health Services in Rural China': Population Studies, Vol. 58, No. 1 (Mar., 2004), pp. 3-19.

Thaddeus s. and D. Maine 1990, too far to walk: maternal mortality in context. New York: Columbia University, centre for population and Family Health, Faculty of Medicine prevention of maternal mortality program.

United Nations 1995, Report of the International Conference on Population and Development: Cairo, 5-13 September 1994. United Nations, New York.

WHO 2003, Adolescent health and development in the Africa region: WHO Regional Office for Africa, Brazzaville.

World Health Organization 2004a, maternal mortality in 2000: Estimates developed by WHO, UNICEF and UNFPA, Geneva, Switzerland.

WHO 2005, Road Map for accelerating the attainment of the MDGs: related to maternal and newborn health in Africa. Available: **http://www.afro.who.int/whd2005/mdg_roadmap_-eng.pdf** .Accessed: 23/12/2010.

World Health Organization 2007, maternal mortality in 2005: Estimates developed by WHO, UNICEF, UNFPA, and the World Bank. Geneva, Switzerland.

Yalem Tesgaye 2010, 'Determinants of antenatal care, institutional and skilled birth attendant utilization in samre Saharti district, Tigray, Ethiopia', Umea international school of public health department & clinical medicine Epidemiology and global health. Umea University Sweden. **<<http://www.phmed.umu.se/digital assets/50/50462-yalem-tsegaye revised.pdf>>**.Accessed: 12/3/2011.

Yared mekonnen and Asnakech Mekonnen 2002, Utilization of maternal health care service in Ethiopia, Ethiopian Health & nutrition research Institute and Calverton, Maryland, USA: ORC Macro.

Yang Ye, Yoshitoku Yoshida, MD. Harun-or-Rashid and Junichi Sakamoto 2010, 'Factors affecting the utilization of Antenatal care services', Among women in Kham district, Xienghohang province, Lao PDR; Nagoya Journal of medical science 72.PP 23-33.

Zeine Abosse, BSc, MP1, Mirkuzie Woldie, MD, MPH2*, Shimeles Ololo 2010, Factors influencing antenatal care service utilization in Hadiya Zone: *Ethiop J Health Sic*. Vol. 21, No. 2, July 2010.

Annex--1

Questionnaire for assessing determinants of ANC utilization

Hello, my name is_____. I am working for master student who is now collecting data on Antenatal care utilization for his master thesis research. I would very much appreciate your participation in this survey. I would like to ask you about your Antenatal care utilization during pregnancy. The survey usually takes about 30 minutes to complete, whatever information you provide will be kept strictly confidential and will not be shown to other persons.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Name kebele; ----------

Date and time of interview----------

Section 1: Socio-economic and Demographic Characteristics of Respondents.

No	Questions and filters	Coding category	skip
101	How long have you been living continuously in this kebele If less than one year record "00" years	Years…….. → Always……2	 103
102	Just before you moved here, did you live in a town, or in the countryside?	Town--------1 Country side---2	
103	In what month and year were you born?	Month----------1 Don't know month---------- 2 Year---------- Don't know year---------- 3	
104	How old were you at your last pregnancy?	Age in completed year----------	
105	Have you ever attended school?	Yes----------1 No ----------2	
106	What is the highest grade you completed?	The highest grade completed--------	
107	Do you have exposure to the radio/television/magazine almost every day, at least once a week, less than once a week or not at all?	Not at all----------1 Less than once a week------2 At least once a week--------3 Almost every day----------4	

108	What is your occupation?	House wife----------1 Civil servant-------2 Merchant----------3 Student----------4 Farmer----------5 Other Specify ----------6	
109	What is your religion	Protestant ---------1 Orthodox ---------2 Catholic----------3 Muslim----------4 Traditional--------5 Other specify ----------6	
110	What is your ethnicity	Wolaita----------1 Silte----------2 Amhara---------3 Gamo----------4 Oromo----------5 Tigre----------6 Other specify ----------7	
111	What is your marital status? If married	Married----------1 Divorced & separated-----2 Widowed----------3 Never married---------4	
112	What is the highest level of schooling your husband/partner ever attended?	Illiterate----------1 The highest level attended -----	
113	How many persons usually live in your household?	----------number of persons living in the household	
114	Parity (what is the order of your last pregnancy?	----------	

Section 2: Pregnancy & ANC

	Questions and filters	Coding category	skip
201	At the time you became pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?	Then----------1 Later----------2 Not at all-------3	
202	Did you see any one for ANC for this pregnancy?	Yes----------1 No----------2 →	207
203	If yes, whom did you see? Anyone else?	Health professional----------1 Trained birth attendant---2 Untrained traditional birth attendant-3 Community health agent------4 Other Specify----------5	
204	Where did you receive ANC for the pregnancy?	Government health post----1 Government health center---2 Government hospital/clinic-----3 Home----------4 Other public specify --------- 5	
205	How many months pregnant were you when you first received ANC for the pregnancy?	Months---------- Don't know----2	
206	How many times did you receive ANC during the pregnancy	Number of Times --------- Don't know --------2	
207	If you did not attend ANC? Why not? (multiple responses are possible)(don't read the choice)	No or little knowledge about ANC-1 Being in a state of good health---2 Too busy to attend ANC----------3 Expenses for ANC are unaffordable-4 ANC clinic is too far from home-5 Waiting time is too long at ANC-6 Husband disapproval----------7 Poor quality of the service------8 Because of religion or cultural reason-9 Others specify----------11	
208	Where did you born your baby?	Home----------1 Health post----------2 Health center ----------3 Hospital----------4 Other public place specify-------5	
209	Who did assist your birth?	Health professional----------1 Trained birth attendant---------2 Untrained traditional birth attendant-----3 Community health agent------4 Other Specify----------5	

DECLARATION

This thesis is my original work, has not been presented for a degree in any other university and the all source of materials used for the thesis have been duly acknowledged.

Name: Zenebe Molla

Signature----------

Date----27/05/2011----------

This thesis has been submitted for examination with my approval as a university advisor.

Name----Yohannes Diboba----------

Signature----------

Date----27/05/2011----------