DOI: http://dx.doi.org/10.4314/star.v3i1.17
ISSN: 2226-7522(Print) and 2305-3327 (Online)
Science, Technology and Arts Research Journal
Sci. Technol. Arts Res. J., Jan-April 2014, 3(2): 108-115
Journal Homepage: http://www.starjournal.org/

Original Research

Factors Associated with Late Initiation of Antenatal Care among Pregnant Women Attending Antenatal Clinic at Public Health Centers in Kembata Tembaro Zone, Southern Ethiopia

Tesfalidet Tekelab[1]*, Balcha Berhanu[2]

[1]College of Medical and Health Sciences, Wollega University, P.O. Box 395, Nekemte, Ethiopia

[2]School of Nursing and Midwifery, Faculty of Medicine, Addis Ababa University, Addis Ababa, Ethiopia

Abstract

The purpose of this study was to identify those factors associated with late initiation of antenatal care among pregnant women attending antenatal clinics in public health centers in Kembata Tembaro Zone, Ethiopia. A facility based cross-sectional study with supplement of qualitative data was carried out to collect data from 401 pregnant women who were attending antenatal care service at five randomly selected governmental health centres in Kembata Tembaro Zone from March 10 to May 8, 2012 . Pretested and structured questionnaire was used to collect the data and data were entered onto a computer using Epi-info 3.5.1 statistical program then exported to SPSS Windows version 16.0 for further analysis. Binary descriptive statistics and multiple variable regressions were done.This study showed that prevalence of late entry to antenatal care was 68.6%. The mean timing was 5.5±1.8 months. Multivariate analysis revealed that age, maternal education, family income, parity, previous utilization of antenatal care and type of pregnancy remained significant factors influencing late booking. The findings of this study showed that most women book antenatal care late. This seems to be because antenatal care is viewed primarily as curative rather than preventive in the study population. Public enlightenment, health education coupled with women empowerment would be helpful in reducing the problem. In addition to that incorporation of the benefits of early booking in the routine antenatal care education.

Article Information

Article History:
Received : 09-02-2014
Revised : 27-03-2014
Accepted : 28-03-2014

Keywords:
Antenatal care
Late initiation
Early initiation
Kembata Tembaro
Maternal education

***Corresponding Author:**
Tesfalidet Tekelab

E-mail:
ttesfalove@gmail.com
tesfeshtekelab@yahoo.com

INTRODUCTION

For all women of reproductive age, especially for pregnant women, utilization of health care services is a key proximate determinant of maternal and infant outcomes, including maternal and infant mortality. The benefits of health care seeking are tremendous particularly in settings and subgroups where the socio-economic and public health resources are constrained. It is evident that timely antenatal care (ANC) is an opportunity to prevent the direct causes of maternal mortalities and reduction of fetal and neonatal deaths related to obstetric complications. Thus, antenatal care is one of the recommended cares to be provided for pregnant women (Reynolds *et al.,* 2006).

It is estimated that each year approximately one third of a million women worldwide die due to pregnancy related conditions. 99% of these deaths occur in developing countries and approximately three-quarters of them are considered avoidable (WHO, 2010).In Ethiopia, the levels of maternal and infant mortality and morbidity are among the highest in the world. There are 676 maternal deaths for every 100,000 live births and the infant mortality rate was 59 per 1,000 live births (CSA, 2011).

Many maternal and prenatal deaths occur in women who have received no ANC. A study done on antenatal care estimated that worldwide only 70% of women ever receive any ANC, whereas in industrialized countries more than 95% of pregnant women receive ANC (Abou-Zahr and Wardlaw, 2003).

Despite progress in antenatal care coverage, many countries, particularly in sub-Saharan Africa and South/Southeast Asia, still have unsatisfactory levels of the recommended four or more antenatal care visits. Additionally, many women, particularly in sub-Saharan Africa, tend to wait to start antenatal care until the second or third trimester (Wang *et al.*, 2011).

According to 2011 Ethiopia Demographic and Health Survey (EDHS) results show that 34 percent of women who gave birth received antenatal care from a trained health professional at least once for their last birth.Eleven percent of women made their first ANC visit before the fourth month of pregnancy. Antenatal care from a trained health professional has increased by 6 percent since the 2005 EDHS estimate 28 % (CSA, 2011).

It is very likely that a good number of women will not initiate ANC early enough in pregnancy to follow the full

basic component of the Focused ANC in Ethiopia (FMoH, 2010). Late ANC initiation may increase the total cost of caring for a pregnant woman. A cost which arises from missed opportunities to prevent or treat problems early in pregnancy (King *et al*., 2006).

A study conducted on factors influencing antenatal care service utilization in Hadiya Zone of Southern Ethiopia showed that 68.2% started antenatal care visit during the second trimester of pregnancy (Zeine *et al*., 2010). Similar study done in Yem special woreda revealed that 49.2% women made the first antenatal care visit during their second trimester (Bahilu *et al*., 2009). Various studies have reported factors associated with late entry to ANC, these include demographic and some socioeconomic factors such as maternal age, parity, maternal educational attainment, place of residence, ethnicity and institutional delivery as well as early antenatal care use (Magadi *et al*., 2000; Overbosch *et al*., 2004; Magadi *et al*., 2003; Magadi *et al*., 2004; Ram*et al*., 2006; Trinh *et al*., 2007).

MATERIALS AND METHODS

Study Area and Period

The study was conducted in Kembata Tembaro zone in SNNPR. Kembata Tembaro zone administratively existed with seven woredas and one town administration. The population of the zone is estimated to be about 757,029 out of which 85.99% of the population is rural and 14.01% of the population is urban residents. 29,524 (3.99%) of the population are pregnant mothers (Kembata Tembaro Zone, 2011). The study was conducted from March 10 to May 8, 2012.

Study Design and Sample Size

A facility based cross-sectional study supplemented by qualitative data was used to assess factors associated with late initiation of antenatal care among pregnant women attending antenatal clinic. A sample of 401 pregnant women attending antenatal clinic was participated in the study. The sample size was determined using a formula for estimation of single population proportion with the assumption of 95% confidence level, margin of error of 5%, a design effect of two and expected proportion of women attending ANC is 86.3% (Zeine *et al*., 2010). To compensate the non-response rate, 10% of the determined sample was added.

Sampling Procedure

In order to select a fairly representative sample of pregnant women, the selection of health centers were by simple random sampling from each randomly selected four woredas and one administrative town. The sample size was allocated for study facilities using population proportion to sample for each selected health centers. At each health center, the study subjects were recruited when they come for initial or follow-up of ANC service. Every pregnant woman attending ANC clinic who was willing to participate in the study were taken until the required sample size was obtained in respective health centres.

Data Collection Techniques and Procedures

Interviewer administered questionnaires was employed to collect the data. The questionnaires adopted and modified from EDHS and related thesis works after reviewing relevant literature (CSA, 2011; Tariku *et al*., 2010). The English version of the questionnaire was translated into Amharic language for better understanding by the data collectors and respondents. The questionnaire then retranslated back to English to check for its consistency. The questionnaires contain socio-demographic factors, obstetric history, health service barrier, knowledge on ANC and pregnancy related complication and other factors related to ANC utilization.

For qualitative, the data were collected from pregnant women and health service provider by using open-ended and responsive questioning technique (in-depth interviews) by principal investigator and the information was obtained through interview recorded on notebook and tape recorder.

Data Quality Control

Before conducting the main study, pre-test was carried out on 5 % of antenatal care seekers who were not included in the study. Based on the finding of pre-test, data collectors were reoriented and the questionnaire was modified as necessary.

Data Processing and Analysis

Each completed questionnaire was coded on pre-arranged coding sheet by the principal investigator to minimize errors. Data were entered onto a computer using Epi-info window version 3.5.1 statistical programs, 10 % of the responses were randomly selected and checked for consistency of the data entry. Then printed frequencies were used to check for outlier and clean data. The data were cleaned accordingly and then exported to SPSS Windows version 16.0 for analysis. Analysis of data was done using two step logistic regression [bivariate and multivariate] to see the effect of the independent variables on the dependent variable by controlling confounders. Statistical significance was evaluated at 95% levels of significance. Tables, pie chart and bar graphs were used to present the data.

The qualitative data from women and service providers were collected using semi structured interview guide and transcribed immediately after the data collection. The collected data was summarized under the main thematic areas based on the questions that emerged from the data.

Ethical Considerations

Ethical approval was obtained from the Research and Publications committee of Department of Nursing and Midwifery, College of Medicine and Health Sciences, Addis Ababa University (Ref. No: NMW-89/2004). A formal letter for permission and support was written to the Kembata Tembaro zone Health Bureau and then the Zone was written a letter to respective health center. Informed consent was obtained from each study participant.

RESULTS

Socio-demographic Characteristics of Respondents

The response rate for the study was 392 (97.8%). The mean age of the study participants were 28.3±5.5 and their age ranging from 16 to 40 years. The majorities of the respondents were Kembata ethnic group (54.6%), Protestant (70.9%), married or in union (94.1%), illiterate (34.7%), their husbands' have no formal education (39%), most (54.3%) were house wives. (32.5%) of the subjects had monthly house hold income less than 400ETB and the median monthly income of the participants was 500 ETB ranging from 50 to 6000 ETB (Table 1).

The proportion of respondents who made their first ANC within the recommended time (before or at 16 weeks of gestation) is 123 (31.4 %) while those who booked late (after 16 weeks of gestation) were 269 (68.6%). The timing of first ANC booking ranges from 1st to 9th months of gestation. The mean timing was 5.5±1.8 (Figure1).

Of the total respondents 19.6% were primigravida while 80.4% were multigravida. 24.2% of respondents were parity zero, while the rest 75.8% were parity one and above. 17.6% of respondents had history of at least one abortion and the rest 82.4% had no a history of abortion (Table 2).

The reasons for the specific timing of first ANC was reported 29.3% as perceived correct time, 16.8% previous experience of timing, 69.1% due to illness, 28.3% to confirm pregnancy, 23.2% busy by other works,1%due to economic factor, 5.6% unplanned pregnancy, and 8.7% others (Figure 2)

Table 1: Socio-Demographic characteristics of respondents by time of booking, Kembata Tembaro Zone, 2012.

Variables	Booking within time (16 weeks of gestation and before)	Booking late (After 16 weeks of gestation)	Total
	Number (%)	Number (%)	Number (%)
Age in years N=392			
15-19	6(1.5%)	8(2.0%)	14(3.6%)
20-24	59(15.1%)	30(7.7%)	89(22.7%)
25-29	39(9.9%)	77(19.6%)	116(29.6%)
30-34	16(4.1%)	83(21.2%)	99(25.3%)
35-39	3(0.8%)	65(16.6%)	68(17.3%)
40-44	0(0%)	6(1.5%)	6(1.5%)
Ethnicity N=392			
Kembata	70(17.9%)	144(36.7%)	214(54.6%)
Tembaro	19(4.8%)	59(15.1%)	78(19.9%)
Hadiya	23(5.9%)	41(10.5%)	64(16.3%)
Wolyita	4(1.0%)	19(4.8%)	23(5.9%)
Others*	7(1.8%)	6(1.5%)	13(3.3%)
Religion N=392			
Protestant	95(24.2%)	183(46.7%)	278(70.9%)
Orthodox	16(4.1%)	44(11.2%)	60(15.3%)
Catholic	8(2.0%)	31(7.9%)	39(9.9%)
Muslims	4(1.0%)	8(2.0%)	12(3.1%)
Others**	0(0%)	3(0.8%)	3(0.8%)
Marital status N=392			
Single	1(0.3%)	14(3.6%)	15(3.8%)
Married	121(30.9%)	248(63.3%)	369(94.1%)
Divorced	1(0.3%)	3(0.8%)	4(1.0%)
Widowed	0(0%)	4(1.0%)	4(1.0%)
Educational level(Wife) N=392			
Illiterate (can't read and write)	12(3.1%)	124(31.6%)	136(34.7%)
Literate (able to read and write)	11(2.8%)	60(15.3%)	71(18.1%)
Primary school	10(2.6%)	50(12.8%)	60(15.3%)
Secondary school	53(13.5%)	28(10.4%)	81(20.7%)
College diploma and above	37(9.4%)	7(1.8%)	44(11.2%)
Educational level (Husband) N=377			
Illiterate (can't read and write)	4(1.1%)	67(17.8%)	71(18.8%)
Literate (able to read and write)	9(2.4%)	67(17.8%)	76(20.2%)
Primary school	14(3.7%)	57(15.1%)	71(18.8%)
Secondary school	28(7.4%)	31(8.2%)	59(15.6%)
College diploma and above	67(17.8%)	33(8.8%)	100(26.5%)
Occupation N=392			
Government Employed	46(11.7%)	15(3.8%)	61(15.6%)
Employed self	12(3.1%)	51(13.0%)	63(16.1%)
House wife	39(9.9%)	174(44.4%)	213(54.3%)
Student	23(5.9%)	9(2.3%)	32(8.2%)
Others***	3(0.8%)	20(5.1%)	23(5.9%)
Residence N=392			
Rural	27(6.9%)	192(49.0%)	219(55.9%)
Urban	96(24.5%)	77(19.6%)	173(44.1%)
Family income N=388			
<400 ETB	9(2.3%)	117(30.2%)	126(32.5%)
400-1000 ETB	30(7.7%)	112(28.9%)	142(36.6%)
>1000ETB	84(21.6%)	36(9.3%)	120(30.9%)

*Amhara, Gurage and Tigrae. **Apostle. ***Merchant, Carpenter and waiter.

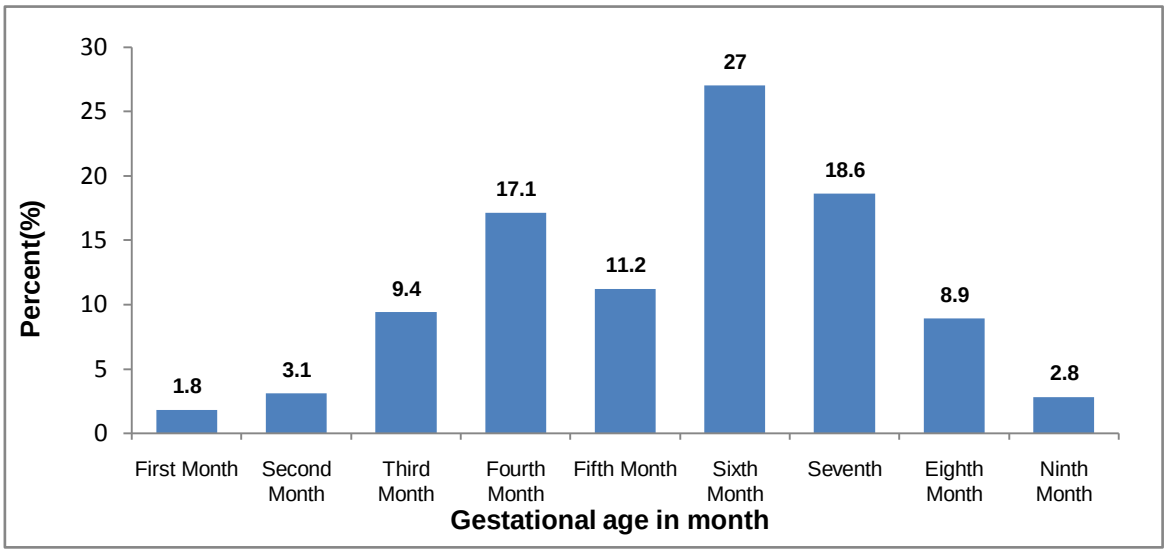
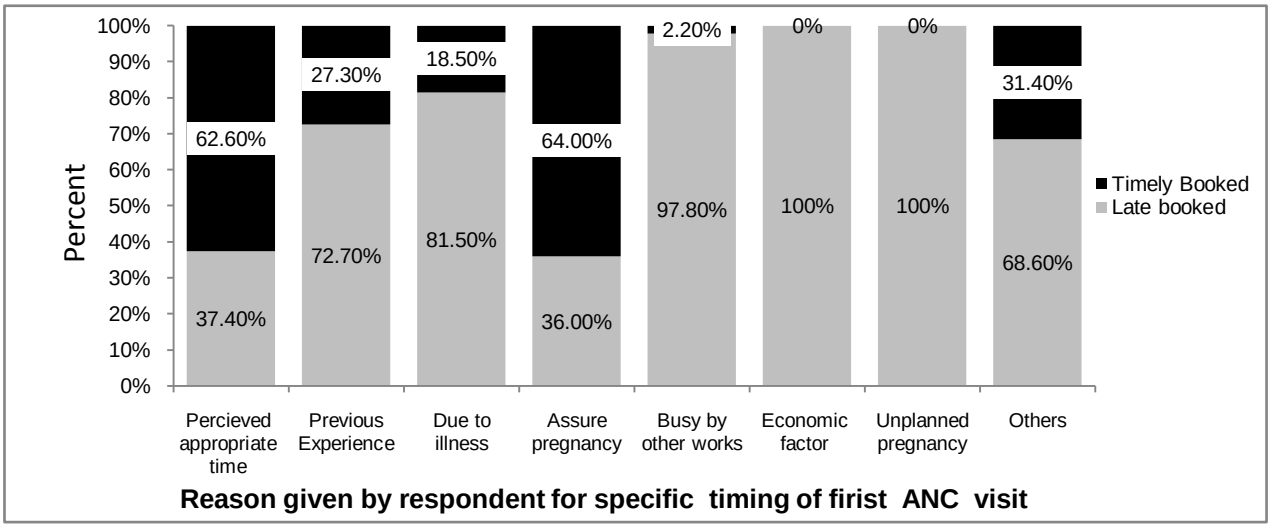


Figure 1: Percentage of respondents by months of gestation booked first ANC, Kembata Tembaro Zone, SNNPR, Ethiopia, 2012.

Table 2: Number of respondents by obstetric history and timing of first ANC, Kembata Tembaro Zone, SNNPR, 2012.

Variables	Booking within time (16 weeks of gestation and before)	Booking late (After 16 weeks of gestation)	Total
	Number (%)	Number (%)	Number (%)
Gravidity n=392			
One	43(11.0%)	34 (8.7%)	77(19.6%)
2-4	75(19.1%)	129(32.9%)	204(52.0%)
>=5	5 (1.3%)	106 (27.0%)	111 (28.3%)
Parity n=392			
No parity	59 (15.1%)	36 (9.2%)	95 (24.2 %)
One or more Parity	64 (16.3%)	233 (59.4%)	297 (75.8%)
History of abortion n=392			
Yes	35(8.9%)	34(8.7%)	69(17.6%)
No	88(22.4%)	235(59.9%)	323(82.4%)
Type of abortion n=69			
Spontaneous abortion	34(49.3%)	25(36.2%)	59(85.5%)
Induced abortion	2(2.9%)	8(11.6%)	10(14.5%)
Birth interval n= 316			
1-2 years	5(1.6%)	195 (61.7%)	200 (63.3%)
>2years	75 (23.7%)	41 (13.0%)	116 (36.7%)
Previous utilization of ANC preceding the current n=315			
Yes	77 (24.4%)	126 (40.0%)	203 (64.4%)
No	3 (1.0%)	109(34.6%)	112(35.6%)
Time of ANC booking for pervious pregnancy n=189			
Booked before 16 or at weeks of gestation	50(26.5%)	16(8.5%)	66(34.9%)
Booked after 16 weeks of gestation	27(14.3%)	96(50.8%)	123(65.1%)
Number of visits for ANC n=205			
One Visits	1(0.5%)	7 (3.4%)	8(3.9%)
Two Visits	9 (4.4%)	36(17.6%)	45(22.0%)
Three Visits	20 (9.8%)	39(19.0%)	59(28.8%)
Four and more	42 (20.5%)	28(13.7%)	70(34.1%)
Do not remember	7 (3.4%)	16(7.8%)	23(11.2%)
Illness experienced for the recent pregnancy n=392			
Yes	83(21.2%)	33 (8.4%)	116(29.6%)
No	36 (9.2%)	209 (53.3%)	245 (62.5%)
Do not remember	**4 (1.0%)**	**27 (6.9%)**	**31(7.9%)**



Others=to know the health of the fetus, to know the position of the fetus, to take drugs, for vaccine, advise from health extension workers.
# More than one response is possible.

Figure 2: Reasons given by respondents for specific timing of first ANC booking, Kembata Tembaro Zone, Ethiopia, 2012**.**

A multivariate analysis involving all associated variables was performed to identify independent predictors of late initiation of ANC. Consequently, age, women's education, family income, parity, previous utilization of ANC preceding the current pregnancy and type of pregnancy showed significant association with late initiation of ANC even after controlling for confounding factors(Table 3).

Table 3: Association of selected socio- demographic, Obstetrics and other associated factors with timely booking of first ANC, Kembata Tembaro Zone, 2012.

Variables	Time at first visit		Crude OR	Adjusted OR
	Booked Timely (Early)	Booked late	OR(CI)	OR(CI)
Age				
<25	65 (16.6%)	38(9.7%)	1	1
>=25	58(14.8%)	231(58.9%)	6.81(4.16 - 11.15)*	3.04(1.05 - 8.81)*
Women's education				
Primary and Below	33 (8.4%)	234 (59.7%)	18.23(10.69 - 31.11)*	4.62(1.5 - 14.24)*
Secondary and above	90 (23.0%)	35(8.9%)	1	1
Husband education				
Primary and Below	27(7.2%)	191 (50.7%)	10.50(6.27- 17.53)*	0.95(0.34 -2.65)
Secondary and above	95(25.2%)	64 (17.0%)	1	1
Residence				
Rural	27(6.9%)	192(49.0%)	8.87(5.37 - 14.65)*	0.64(0.18 - 2.31)
Urban	96(24.5%)	77(19.6%)	1	1
Occupation				
Employed	58(14.8%)	66(16.8%)	1	1
Unemployed	65(16.6%)	203(51.8%)	2.75(1.75 - 4.30)*	1.01 (0.44 - 2.35)
Family income				
<400 ETB	9(2.3%)	117(30.2%)	30.33(13.87 - 66.33)*	7.01 (1.85 -26.56)*
400-1000 ETB	30(7.7%)	112(28.9%)	8.71(4.97 - 15.23)*	3.29(1.31 - 8.28)*
>1000ETB	84(21.6%)	36(9.3%)	1	1
Parity				
No Parity	59 (15.1%)	36 (9.2%)	1	1
Parity one and above	64 (16.3%)	233 (59.4%)	5.97(3.63 - 9.82)*	161.67(4.35 –601)*
History of abortion				
Yes	35(8.9%)	34(8.7%)	1	1
No	88(22.4%)	235(59.9%)	2.75(1.62 - 4.68)*	2.23(0.84 - 5.93)
Previous utilization of ANC				
Yes	77 (24.4%)	126 (40.0%)	1	1
No	3 (1.0%)	109(34.6%)	22.20(6.81 - 72.37)*	15.64(1.99 - 122.95)*
Distance from home to health institution				
<60	103(26.3%)	98(25.0%)	1	1
>=60	20(5.1%)	171(43.6%)	8.99(5.24 - 15.41)*	1.78(0.52 - 6.17)
Type of pregnancy				
Planned	111(28.3%)	199(50.8%)	1	1
Unplanned	12(3.1%)	70(17.9%)	3.25(1.69 - 6.26)*	3.80(1.19 - 12.15)*

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

Pregnant women included in the qualitative data reported several reasons for coming early to the health institutions. These reasons included seeking confirmation of early pregnancy, fear of miscarriage, seeking diagnosis and treatment for illness associated with pregnancy, and previous utilization of ANC.

"……. *I started at this month of gestation because the health extension workers advised me to take care, as it is important for the health of the mother and the child in addition to that I want to check the health of my baby and confirm pregnancy. In the pregnancy preceded the current, I started ANC check-up at three months of gestation. ANC services are very important for the health of the mother and baby*" (A 25 years old, married, parity one, history of one Induced abortion,who booked her first visit at one month of gestation).

Respondents who were booked late for ANC visit stated that they delay to seek care for different reasons such as lack of awareness regarding the importance of early attendance, unplanned or pregnancy out of marriage and no identified illness or health problem during their pregnancy (absence of problem during pregnancy). A 30 years respondent said that

"...I did not know the right time to start antenatal care. I was not aware that it was important to start early. I started the service at seven months of gestation because of illness. I had not experience of previous utilization of ANC for the pregnancy preceding the current. I told to pay for laboratory examination and ultrasound." [Married, parity three, who booked her first visit at seven months of gestation].Another woman stated *"I am student. I became pregnant unintentionally. I did not accept the pregnancy. I concealed the pregnancy for five months from my parents and friends. I am late because I was afraid since I heard that the health professional do not treat single pregnant women well. I paid 3 ETB for examination card*" (An 18 years old, never married, parity zero, booked ANC at eight months of her pregnancy).

Almost all health care providers responded that women delay to seek antenatal care if they did not experience discomfort or illness related to their pregnancy. Another reason woman comes late to get labor inducing drugs because they consider iron as labor initiating drugs. Health care provider stated that

*"…….. I have been worked for nine years in antenatal and delivery units. Pregnant women booked late since previously there was a trend that women perceived that catholic clinic in the surrounding gives labor drugs (iron). Since they consider iron tablet as labor inducing drug. So pregnant women particular from rural area come to take just a labor inducing drug at late pregnancy thus, they booked lately. In addition to that they come for ANC when they encountered health problem." (*A midwife who have been working at health center for the past ten years)

DISCUSSION

The results of this study showed that 31.4 % initiated ANC before 16 weeks of gestation while two third 68.4 % initiated after 16 weeks of gestation. The mean timing was 5.5±1.8 months. The finding of this study is higher when compared with study done in Australia on late entry to antenatal care (Trinh *et al*., 2006). This is probably due to socio-demographic differences between Ethiopia and Australia. But the proportion of women who came for their first ANC visit after 16 weeks of gestation is significantly lower than that of 2011 EDHS result (CSA, 2011). This is because the wide distribution of health posts in each kebeles and promotion of maternal health care utilization by health extension workers.

The proportion of respondent who visited ANC after 16 weeks of gestation is consistent compared to study done in Hadiya Zone (Zeine *et al*, 2010). This might be due to socio- demographic similarity between Hadiya Zone and Kembata Tembaro Zone.

Women who were aged 25 years and above were three times more likely to register late compared to those who were less than 25 years (AOR= 3.04, 95%CI =1.05-8.81). This finding is inconsistent with studies done in developing countries and Nigeria (Simkhada *et al*., 2008; Ebeiqbe and Gharoro, 2007). The reason might be young women may have more information about the importance of early antenatal care booking than older women in this study area. Another reason may be young women more careful about their pregnancy and therefore require seeking institutional care than older women. In addition to that younger women is more likely to accept modern health care as they are likely to have greater experience to modern medicine and young women may also be likely to be educated than older women.

Women's educational status is highly correlated with timing of antenatal care. In this study, women that had lower education or none booked later than those with higher education (AOR= 4.62, 95%CI =1. -14.24)., this agrees with studies in developing countries (Trinh *et al*., 2007; Rhoune *et al*., 2011; Navaneetham, Dharmalingam 2002). The possible explanation for why education is a key determinant could be that better educated women would likely appreciate the importance of early booking more than the less educated ones. This emphasizes the importance of education on antenatal care.

Consistent with different studies monthly income also was found to be a strong predictor for the late utilization of ANC, respondents income below and 1000ETB were more likely attend ANC lately than monthly income above 1000 ETB. These could be economic status of mother is able to make wise decision about her own than their counterparts (Magadi *et al*., 2000; Rhoune *et al*., 2011; Adekanle and Isawumi, 2008; Sharma, 2004).

Higher parity was generally a barrier to adequate use of ANC (Magadi *et al*., 2000; Overbosch *et al*., 2004; Paredes *et al*., 2005; Erci, 2003). This study revealed that women with one parity and above were more likely to register lately compared to those who have no parity. This is in line with studies conducted in Kenya and Addis Ababa which revealed that parity increases the experience of timely booking decreases (Rhoune *et al*., 2011; Tariku *et al*., 2010). This is probably due to the fact that women's already developed confidence and may receive that modern health care is not as necessary due to the experience, knowledge accumulated from previous pregnancies and births and consider antenatal care less important.

History of abortion did not showed statistically significant relation with early booking in this study which was found inconsistent with the study done in Turkey (Cicekliogl *et al*., 2005). This might be due to small proportion of women who had history of abortion that may not reveal differences.

Pregnant women who had no experience of previous utilization of ANC for the pregnancy preceding the current nearly sixteen times more likely to book lately than those who had previous experience of ANC (AOR= 15.64, 95%CI = 1.99-122.95). This finding is inconsistent with the previous study done in Addis Ababa (Tariku *et al*., 2010). This might be due to information received from health care provider about the appropriate time of booking of ANC in present study area.

Distance from home to health institution is not seen as a statistically significant factor for late initiation of ANC in this study (AOR=1.78, 95%CI =0.52-6.17) contrast to other study done in Kenya and Ethiopia (Bahilu*et al*., 2009, Magadi *et al*., 2000). This could be due to sampled women being taken from those accessible to health centers and health posts.

The finding of this study revealed that women with unplanned pregnancy were almost four times booked later compared to respondents with planned pregnancy (AOR= 3.80, 95%CI = 1.19-12.15) .This finding is similar with studies done in Kenya, Egypt, Turkey as well as Ethiopia (Jira and Belachew, 2005; Erci, 2003; Youssef *et al*., 2002; Belay T. Biratu and David P. Lindstrom, 2006; Fekede and Gebremariam, 2007). The reason could be women with unplanned pregnancy or unanticipated pregnancies may initially attempt to deny their pregnancies to themselves and to conceal them from others. As the result women become less motivated to seek ANC early compared to women with their planned pregnancy.

The results of this study showed that pregnant mothers with reasons of perceived correct time, previous experience of ANC and assure or confirming pregnancy were more seen to be booked early than reasons reported as due to illness in current pregnancy, busy by other works, economic factor and unplanned pregnancy which was found as reasons for the late initiation of ANC. This finding is also similar with other studies (Overbosch *et al*., 2004; Erci, 2003; Tariku *et al*., 2010; Adamu and Salihu, 2002, Saliku, 2007).

The qualitative part of this study showed that lack of awareness regarding the importance of early attendance, unplanned or pregnancy out of marriage, healthy pregnancy (absence of problem during pregnancy) and not booking when pregnant women come too early for ANC by health care provider were contributing factors for late initiation of antenatal care.

CONCLUSIONS

In conclusion, the finding of this study showed that 68.6% women book ANC late indicating that early booking is low. This seems to be because antenatal care is viewed primarily as curative rather than preventive in the study population. The socio-demographic characteristics of respondents such as age, educational status of the women and family income were independent factors for late initiation of ANC. Parity was found as the most predictor for late utilization of ANC while pervious ANC utilization is a positive predictor for timely booking. Women who had no experience of previous utilization of ANC for the pregnancy preceding the current and unplanned pregnancy are positive predictor for late initiation of ANC. The reasons for late booking were reported as busy by other works, economic factors, unplanned pregnancy, illness and not booking when pregnant women come too early by health care provider.

ACKNOWLEDGEMENTS

We would like to thank Addis Ababa University, College of medicine and Health Sciences for funding this research. We would like also to thank Dr. Amy Bender (University of Toronto) for her constructive comment and valuable suggestion throughout the work process. Our gratitude goes to supervisors, data collectors, respondent who participated on this study and Kembata Tembaro Zoneadministrative.

REFERENCES

Abou-Zahr, C., Wardlaw T. (2003). Antenatal care in developing countries: promises, achievements and missed opportunities: an analysis of trends, levels and differentials, 1990-2001. Geneva: WHO and UNICEF.

Adamu, Y.M. and Salihu H.M. (2002). Barriers to the use of antenatal and obstetric care services in rural Kano, Nigeria. *Journal of Obstetrics and Gynaecology* 22(6): 600-603.

Adekanle, D.A. and Isawumi, A.I. (2008). Late antenatal care booking and its predictors among pregnant women in South Western Nigeria. *Online Journal of Health and Allied Sciences* 7(1): 4-7.

Bahilu, T., Abebe, G. and Yohannes, D.(2009). Factors affecting antenatal care utilization in Yem Special Woreda, South Western Ethiopia. *Ethiopian Journal of Health Science* 19(1).

Belay T. Biratu., David P. Lindstrom. (2006). The influence of husband's approval on women use of prenatal care: Results from Yirgalem and Jimma towns, south west Ethiopia. *Ethiopian Journal of Health Development* 20(2):85-92.

Ciceklioglu, M., Soyer M.T. and Ocek Z.A. (2005). Factors associated with the utilization and content of prenatal care in a western urban district of Turkey. *International Journal for Quality in Health Care*; 17(6): 533–539.

CSA, ORC Macro. (2012). Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA.

Ebeiqbe, P.N. and Gharoro, E.P. (2007). Obstetric complication, intervention rates and maternofetal outcomes in teenage nullipara in Benin City, Nigeria. *Tropical Doctor* 37(2): 79-83.

Erci, B. (2003). Barriers to utilization of prenatal care services in Turkey. *Journal of Nursing Scholarship* 35(3): 269–273.

Federal Democratic Republic of Ethiopia Ministry of Health. (2010). Management protocol on Selected Obstetrics Topics. Pp 9.

Fekede, B., Gebremariam A. (2007). Antenatal care service utilization and factors associated in Jimma town (Southwest Ethiopia). *Ethiopian Medical Journal* 45(2): 123-133.

Jira, C., Belachew T. (2005). Determinants of Antenatal care utilization in Jimma Town, *Ethiopian Journal of Health Sciences* 15(1): 49-61.

Kembata Tembaro Zone. (2011). Health Department Indicative Annual Core Plan. Durame.

King, M., Mhlanga, R., De Pinho H. (2006). The context of maternal and child health. *South African Health Review*

Health Systems Trust, Durban, South Africa. Pp.107-126 (ISBN: 1-919839-55-0).

Magadi, M., Diamond, I., Madise, N., Smith, P. (2004). Pathways of the determinants of unfavourable birth outcomes in Kenya. *Journal of Biosocial Science* 36(2):153-176.

Magadi, M.A., Zulu E.M., Brockerhoff, M. (2003). The inequality of maternal health care in urban sub-Saharan Africa in the 1990s. *Population Studies* 57(3): 347-366.

Magadi, M.A., Madise N.J. and Rodrigues R.N. (2000). Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. *Social Science and Medicine* 51(4):551-561.

Navaneetham, K., Dharmalingam, A. (2002). Utilization of maternal health care services in southern India. *Social Science and Medicine* 55(10):1849-69.

Overbosch, G., Nsowah-Nuamah, N., Van den Boom, G. and Damnyag L. (2004). Determinants of antenatal care use in Ghana. *Journal of African Economies* 13(2): 277-301.

Paredes, I., Hidalgo, L., Chedraui, P., Palma, J. and Eugenio J. (2005). Factors associated with inadequate prenatal care in Ecuadorianwomen. *International Journal of Gynecology and Obstetrics* 88(2): 168-172.

Ram Faujdar and Abhishek Singh. (2006). Is antenatal care effective in improving maternal health in rural Uttar Pradesh? Evidence from a district level household survey. *Journal of Biosocial Science* 38: 433-448.

Reynolds, H.W., Wong, E.L., Tucker, H. (2006). Adolescents' use of Maternal and Child Health Services in Developing Countries. *International Family Planning Perspectives* 23(1):6-16.

Ochako, R., Fotso, J., Ikamari, L., Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya: Insights from the Kenya Demographic and Health Survey, 2003. *BMC Pregnancy and Childbirth* 11(1): 1-9.

Saliku, T. (2007). Differences in health seeking behaviour among urban poor women in Nairobi who experienced intended or unintended pregnancies. *African Population and Health Research Center*; Available at: http://portfolio.du.edu/port/getportfoliofile?fluid=32208.

Sharma, B. (2004). Utilization of antenatal care services in Nepal. *Nepal Population Journal* 11(10): 79-97.

Simkhada, B., Teijlingen E.R., Porter, M. and Simkhada, P. (2008). Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. *Journal of Advanced Nursing* 61(3): 244-260.

Tariku, A., Melkamu, Y., Kebede, Z. (2010). Previous utilization of service does not improve timely booking in antenatal care: Cross sectional study on timing of antenatal care booking at public health facilities in Addis Ababa. *Ethiopian Journal of Health Development;* 24(3): 226-233.

Trinh, L.T.T., Dibley, M.J., Byles, J. (2007). Determinants of antenatal care utilization in three rural areas of Vietnam. *Public Health Nursing* 24(4): 300–310.

Trinh, L.T.T., Rubin, G. (2006). Late entry to antenatal care in New South Wales, Australia. *Reproductive Health* 3(8). 1-8.

Wang Wenjuan., Soumya Alva., Shanxiao Wang and Alfredo Fort. (2011). Levels and Trends in the Use of Maternal Health Services in Developing Countries. DHS Comparative Reports No. 26. Calverton, Maryland, USA: ICF Macro.

World Health Organization. (2010). Trends in maternal mortality: 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA and the World Bank Geneva: WHO.

Youssef , R.M., Moubarak, I.I., Gaffar, Y.A.., Atta, H.Y. (2002). Correlates of unintended pregnancy in Behura governorate, Egypt. *Eastern Mediterranean Health Journal* 8(4-5): 521-536.

Zeine, A., Mirkuzie, W., Shimeles, O. (2010). Factors influencing antenatal care service utilization in Hadiyazone. *Ethiopian Journal of Health* Science 20(2): 75-82.