ORIGINAL ARTICLE

DETERMINANTS OF ANTENATAL CARE UTILIZATION IN JIMMA TOWN, SOUTHWEST ETHIOPIA

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ABSTRACT

BACKGROUND: ***There is a very huge risk differential among pregnant women in developing countries and in industrialized countries. Antenatal care is potentially one of the most effective health intervention for preventing maternal morbidity and mortality particularly in places where the general health status of women is poor. As a component of primary health care Ethiopian government has availed the service free of charge. However, different reports of the Ministry of Health and studies done in the country indicate that antenatal care utilization is low. This study assessed antenatal care service utilization and factors associated with antenatal care non-attendance.***

METHODS: ***A community-based cross-sectional study was conducted from February 1-20, 2004 in Jimma town, Jimma Zonal administration southwest Ethiopia among pregnant women. All pregnant women whose last menstrual period was 6 months and above found in the 10 kebeles of Jimma town during the study period were included in the study. Structured interviewer administered questionnaire was used for data collection. The data were cleaned, edited and entered into a computer and analyzed using SPSS for windows version 11.0. and EPI info 2000. Crude and adjusted odds ratios were calculated using logistic regression model to control confounders. Statistical tests were done at a level of significance of 5%.***

RESULTS: ***A total of 307 pregnant women whose last menstrual period were six months and above were enrolled in the study. Antenatal care utilization rate was 90.6%. There was a significant association (P<0.05) between antenatal care service utilization socio-demographic variables like low literacy status (OR= 7.6, 95%CI: 1.4, 42.2) and being a student (OR=5.3, 95%CI: 1.1, 25.5). Antenatal care service non-users were likely to be pregnant women who were illiterate and those who were student by occupation. It was also observed that pregnant women who did not use ANC services were likely to be those who think that the service is not important (OR=18.1, 95%CI: 1.8, 177.5), those who consider that ANC service has low effect (OR= 32.5, 95%CI: 5.2, 198.9), has no effect***

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(OR=7.1, 95%CI, 1.1, 44.3) in reducing death and illness in the mother and baby and those pregnant women who intended to deliver at home (OR= 8.5, 95%CI: 2.9, 25.4) and those who intended use other places of delivery (OR= 12.8, 95%CI: 1.3, 130.1)(Table2). The majority (72.2%) of non-attendant women mentioned more than one reason related to the structure of health delivery units, which prevented them from attending antenatal care service. About 48.9% of the non-attendant women indicated more than one personal factor as a reason for not attending the services.

CONCLUSION: ***In conclusion, even if there was high antenatal care utilization among the study participants, the pattern of follow up was found to be in appropriate in most cases as the majority of pregnant women started using the service around 3-4 months with decreasing number of mothers who attended the first antenatal care up to 9 months. Non-users of ANC service were likely to be illiterate, students, those who had poor understanding about the benefits and effectiveness of ANC and those who intended to deliver outside the health institutions. Based on the above findings, effective behavior change communication is recommended to bring about proper antenatal care services utilization by the study community. Improving the quality of the service delivery and effective monitoring and evaluation is critically important for improving the utilization of antenatal care services. (Ethiop. J Health Sci. 2005; 15(1): 49-61)***

KEY WORDS: *Antenatal care, Utilization, Pregnant women*

INTRODUCTION

Antenatal care (ANC) is an integral component of maternal and child health care (MCH) as part of global strategies for achieving health for all (1).

Globally, one woman dies each minute as the result of pregnancy. An estimated 500,000 maternal deaths occur every year and over 99% of the deaths take place in developing countries (2). Every year more than 200 million women become pregnant. For an estimated 585,000 women each year the complications of pregnancy are fatal (3-5). The causes of these deaths are essentially the same around the world. They are the result of pregnancy, obstructed labor and abortion. Pregnant women in Africa and South East Asia face a risk of death in pregnancy and childbirth that may be up to 200 times that of women living in an industrialized country (6,7). World Health Organization defines antenatal care as a dichotomous variable having had one or more visit with a trained person during pregnancy, or none. It may be taken to mean only that care which is routinely provided for all pregnant women at primary care level, or every aspect of care from screening to intensive life support provided to any women while pregnant and up to delivery (8). It is potentially, one of the most effective health interventions for preventing maternal morbidity and mortality particularly in places where the general health status of women is poor (9,10). The purpose of antenatal care is to screen for sign of illness or other complications that may occur during pregnancy, it is also an opportunity to treat existing diseases, which may be aggravated by pregnancy, such as sexually transmitted diseases or anemia (11). It also provides an opportunity to be immunized against tetanus toxoid. Antenatal care use has been shown to influence women's use of delivery services, as well; neonatal and infant health has been shown to be significantly affected by women's use of antenatal care (1).

There are regional variations in antenatal care utilization rate basically due to differences in the availability of health care facilities, among the regions during 1985-90; antenatal coverage rate for the whole of Africa was 60% compared to 99% for developed countries (12).

Despite clearly demonstrated need for maternal health services, women often lack relevant information on essentials of antenatal care due to different reasons. To mention some: Health facilities are inaccessible, cost of transport is high, lack of time, shortage of human resources and content and quality is much lower in countries with high mortality as indicated by Fillipe et al 1981, in epidemiological study on association between availability and use of antennal services (8). In Ethiopia, even though underutilization of the existing health services is a major problem studies that address barrier to the use of these services are few (2, 13). The coverage of antenatal care attendance is generally low in Ethiopia. According to the Ministry of Health of Ethiopia, 1990, it ranges from less than 10% in some rural areas to 60% in some urban areas (14). Generally the need for available quality care is very high. The need to determine antenatal care utilization and seek solution through studies is also required.

Therefore this study was conducted to determine antenatal care utilization rate and associated factors to come up with relevant information that will help in the improvement of the services.

MATERIALS AND METHODS

Community based cross-sectional survey was conducted among pregnant women whose last menstrual period was sixth month and above in Jimma town, south-western Ethiopia. Jimma is a capital town of Jimma Zonal administration. It is located 335kms south west of Addis Ababa. According to the 1994 national housing and population census, the population of Jimma town was found to be 88,867, out of which 50.6% are females. Thus, the projected population of the town for the year 2003 was estimated to be 112,861. The town is divided administratively into three 'kefetegnas' and twenty-one 'kebeles'. All houses have been numbered by the 'kebeles' for administrative activities. The town has one hospital, one health center and one MCH clinic. These health institutions are distributed in each 'kefetegna'.

Any pregnant women whose last menstrual period was more than six months prior to interview or reported to have a pregnancy of six-month and resided in Jimma town during the study period was eligible for enrollment into the study. To identify pregnant women in their third trimester a stratified random sampling technique was employed. The strata were 'kefetegna' composed of kebeles. Fifty percent of the kebeles from each stratum were randomly selected with probability proportional to size. All pregnant women in the third trimester residing in the selected Kebeles were included in the study. This was done to spread the study subjects over more kebeles and have a representative sample, which has also taken care of the distance factor. Additionally, pregnant women who were in the third trimester were very few in number according to the pilot result done prior to the main study and therefore fifty percent of the kebeles were randomly included from each stratum to fulfill the planned sample size.

From February 1-20, 2004, a total of 6,408 households were visited form which 307 women in their third trimester were identified. After thorough explanation of the purpose of the study to the women, consent was obtained to complete questionnaire. Permission of kebele leaders was secured through official letter from

Jimma University. An interviewer administered pre-tested Amharic version questionnaire was used to assess socio-demographic characteristics and other factors affecting utilization of antenatal care services. The data were collected by female interviewers who had completed 12 grades and had experience in conducting interviews. They were given training by the investigators on the objective of the study, on the questionnaires, on the procedure of identification of subjects and technique of interviewing.

To keep the data as accurate as possible, supervision of interviewers on the spot and checking of each questionnaire for completeness and errors was done by the investigators.

The data on socio-demographic factors, behavior of mothers and health service related and personal barriers were cleaned, edited and entered into a computer and analyzed using SPSS for windows version 11.0. and Epi info 2000. Crude and adjusted odds ratio was calculated using logistic regression model to control confounders. Statistical tests were done at a level of significance of 5%.

RESULTS

A total of 307 women who were pregnant for 6 months and above found during the study period were all enrolled giving a response rate of 100%. The mean age of the study subjects was 25.9 years with the maximum and minimum ages being 40 and 15 years, respectively. Two hundred and seventy one (88.3%) of the women were married and the rest 36(11.7%) single. The majority, 204(66.6%) of the women had attended school from junior secondary to tertiary education and 102(33.4%) include those who attended grade 1-6, who can read and write and illiterate. The predominant ethnicities were Oromo 99(32.2%) followed by Amhara, Dawero and Gurage accounting for 64 (20.8%), 53(17.3%), 48(15.6%), respectively. Over half 167(54.4%) of the subjects were Muslim followed by Orthodox Christians 95(30.9%). Two hundred and twelve (69.1%) of the subjects were housewives followed by government employees and merchants accounting for 40(13.0%) and 19(6.2%), respectively.

From 307 pregnant women studied 278 (90.6%) were attending antenatal care service and the rest 29(9.4%) were not attending. The reasons for attending ANC included: being told by their family member 119(38.8%) followed by those who took the initiative themselves accounting for 102(32.2%). Only 30(9.8%) reported that they were told by health professionals to attend the service. Two hundred and fifty seven (83.7%) of the pregnancies were intended and 45(14.7%) were unplanned.

There was a significant association ($P<0.05$) between antenatal care service utilization socio-demographic variables like low literacy status (OR= 7.6, 95%CI: 1.4, 42.2) and being a student (OR=5.3, 95%CI: 1.1, 25.5). Antenatal care service non-users were likely to be pregnant women who were illiterate and those who were student by occupation *(Table 1)*.

Table 1. Distribution of antenatal care attendance of the study population by their socio-demographic and economic factors, Jimma town, February 2004

Characteristics	ANC attendance (n=307)		Crude OR (95% CI)	Adjusted (95% CI)
	Yes	No		
	No(%)	No(%)		
Maternal age				
15-19	31(83.8)	6(16.2)	0.58(0.04, 17.2)	1.36(0.33, 5.55)
20-24	92(92.0)	8(8.0)	0.26(0.02, 5.7)	0. 72 (0.21, 2.49)
25-29	78(94.0)	5(6.0)	0.19(0.01, 5. 7)	**
30-34	49(89.1)	6(10.9)	0.37(0.02, 10.7)	0.95(0.25, 3.55)
35-39	25(89.3)	3(10.7)	0.36(0.02, 12.1)	0.87(0.17, 4.47)
40-44*	3(75.0)	1(25.0)		
Marital Status				
Married *	246(90.8)	25(9.2)		
Single	32(88.9)	4(11.1)	1.2(0.34, 4.1)	0.94(0.21, 4.14)
Educational Status				
Illiterate	16(76.2)	5(23.8)	4.44(1.06, 20.18)	7.61(1.38, 42.15)***
Read and write	28(82.4)	6(17.6)	3.18(0.82, 12.34)	3.55(0.79, 15.90)
Grade 1-6	40(85.1)	7(14.9)	2.6(0.72, 9.44)	3.68(0.081, 16.69)
Gradae 7-8	63(92.6)	5(7.4)	1.18(0.30, 4.61)	1.33(0.32, 5.62)
Grade 9-12*	89(93.7	6(6.3)		
Grade 12+	42(100)	0	0.00(0.00.`2.10)	0.00(0.00, 8.25)
Occupation				
House wife*	192(90.6)	20(9.4)		
Housemaid	5(71.4)	2(28.6)	3.84(0.48, 24.7)	1.97(0.30, 12.91)
Student	17(77.3)	5(22.7)	2.82(0.81, 9.35)	5.34(1.12, 25.46)***
Government employee	40(100)	0	0.00(0.00, 1.25)	0.00(0.00, 2.07)
Merchant	17(89.5)	2(10.5)	1.13(0.00, 5.68)	1.89(0.34, 10.64)
Daily Laborer	7(100)	0	0.00(0.00, 8.22)	0.00(0.00, 2.69)
Religion				
Muslim *	150(89.8)	17(10.2)		
Orthodox	86(90.5)	9(9.5)	0.92(0.36, 2.31)	2.68(0.96, 7.46)
Catholic	19(90.5)	2(9.5)	0.93(0.00, 4.7)	2.38(0.39, 14.60)
Protestant	23(95.8)	1(4.2)	0.38(0.02, 2.97)	0.50(0.04, 6.05)
Monthly income (Birr)				
0-100	44(80.0	11(20.0)	10.50(1.3, 226.9)	0.91(0.19, 4.26)
101-200	56(87.5)	8(12.5)	6.00(0.71, 132.81)	0.64(0.14, 2.96)
201-300	71(91.0)	7(9.0)	4.14(0.48, 92.7)	0.63(0.13, 3.10)
301-400	40(100)	0	0.00(0.00, 18.98)	0.00(0.00, 1.51)
401-500	27(100)	0	0.00(0.00, 28.4)	0.00(0.00, 1.87)
>500 *	42(97.7)	1(23)		

Other behavioral variables which showed a statistically significant association ($P<0.05$) with ANC service utilization include: woman's understanding of the importance of ANC services, effectiveness of ANC in reducing maternal and child morbidity and mortality and intended place of delivery. It was observed that pregnant women who did not use ANC services were likely to be: those who think that the service is not important (OR=18.1, 95%CI: 1.8, 177.5), those who consider that ANC service has low effect (OR= 32.5, 95%CI: 5.2, 198.9), has no effect (OR=7.1, 95%CI, 1.1, 44.3) in reducing death and illness in the mother and baby and those pregnant women who intended to deliver at home (OR= 8.5, 95%CI: 2.9, 25.4) and those who intended to use other places of delivery (OR= 12.8, 95%CI: 1.3, 130.1)(*Table2).*

Table 2. Association of different behavioral variables with ANC utilization Jimma Town, February 2004

Behavioral Variables	ANC ATTENDANCE (N= 307)		Crude OR (95% CI	Adjusted OR (95%CI)
	Yes No (%)	No No (%)		
Was The Pregnancy Intended				
Yes*	242(94.2)	15(5.8)		
No	39(78.0)	11(22.0)	4.55(1.8, 11.47)	0.85(0.22, 3.27)
Total	281(92.1)	26(7.9)		
Husbands Attitude Towards ANC				
Positive *	244(94.7)	14(5.3)		
Negative	8(64.3)	5(35.7)	10.00(2.67, 43.80)	4.77(0.96, 23.75
Total	252(93.2)	19(6.8)		
Woman's understanding about the importance of ANC				
Very Important*	225(94.5)	12(5.1)	3.38(1.23, 9.18)	1.65(0.54, 5.03)
Important	50(84.7)	9(15.3)	37.19(8.21, 180.6)	18.10(1.85, 177.49)***
Not Important	4(36.4)	7(63.6)		
Effectiveness of ANC in reducing maternal morbidity & Mortality				
High*	267(94.7)	15(5.3)		
Low	6(50.0)	6(50.0)	17.80(4.40, 73.08)	32.25(5.23, 198.85)***
Nothing	8(61.5)	5(38.5)	11.13(2.75, 44.21)	7.08(1.13, 44.29)***

Continued ....

Belief of Women About the Effectiveness of ANC In Reducing Maternal Morbidity & Mortality	262(94.9)	14(5.1)		
High*	4(40.0)	6(60.0)	28.07(6.06, 137.69)	
Low	13(62.0)	8(38.0)	11.52(3.62, 36.33)	**0.69(0.09, 5.14)
Nothing	279(91.4)	28(8.6)		
Total				
Intended Place Of Delivery				
Health Facility*	245(97.2)	7(2.8)	20.00(6.97, 59.37)	8.53(2.86, 25.45)***
Home	28(63.6)	16(36.4)	29.70(5.91, 149.61)	12.84(1.27, 130.15)***
God Knows & depends on the situation	6(54.5)	5(45.50)		
Parity				
No Children*	89(85.6)	15(14.4)	0.38(0.16, 0.93)	**
1-3 Children	171(94.0)	11(6.0)	1.19(0.24, 5.17)	0.92(0.18, 4.77)
4-5 Children	15(83.3)	3(16.7)	0.00(0.00, 14.92)	0.89(0.08, 9.57)
Six And Above Children	3(100)	0		

*Referent category, ** removed from analysis since it is constant for all selected cases, *** statistically significant at a level of significance of 0.05.*

Different reasons associated with the structure of the health service delivery unit and personal factors that prohibited mothers from attending ANC service were also assessed.

Most (72.2%) of the women mentioned more than one reason related to the structure of health delivery units followed by lack of confidence in the providers capacity, poor approach of the provider, long waiting time, lack of confidentiality, transportation problem, distance of the health service unit, unhappiness with the previous service received, no benefits observed from previous visits and losing a card were mentioned for not attending antenatal care service (*Table 3).*

Table 3. Health service related reasons given by pregnant mothers for not attending antenatal care service Jimma Town, February 2004

Structural / Health Service Factors	**Frequency (N=18)**	**Percent**
More than one factor	13	72
lack of confidence on the providers capacity	10	55.5
Poor approach of the health provider	7	38.9
Long waiting time	5	27.8
Lack of confidentiality	3	16.7
Transportation problem	3	16.7
Distance of the health service unit	3	16.7
Unhappiness from previous service delivery	2	11.1
No benefit as observed from the women's or from her friends prior experience	1	5.6
Card lost	1	5.6

More than one response is possible

Among the personal reasons mentioned for not attending ANC service, the majority (78.8%) of pregnant women mentioned procrastinating the time of initiation of ANC visits followed by those who pointed out more than one reason accounting for 48.9%. Other personal reasons include: No problem faced during prior pregnancies, lack of time and fear of manipulation of the gravid uterus during examination and lack of money (*Table 4).*

Table 4. Personal factors mentioned by pregnant women for failure of ANC utilization Jimma town, February 2004

Personal Factors	Frequency (N= 33)	Percent
Procrastinating the time of starting the visit	26	78.8
More than one reason	16	48.9
No problem faced during prior pregnancies	8	24.2
Lack of time	6	18.2
Fear of manipulation during examination	4	12.1
Lack of money	2	6.1

 # More than one response is possible

With regard to the time of initiation of antenatal care visit, it was observed that the peak gestational age of pregnancy when most mothers' sought medical attention was from 3-4 months and it is low both before and after that time (*Figure 1*).

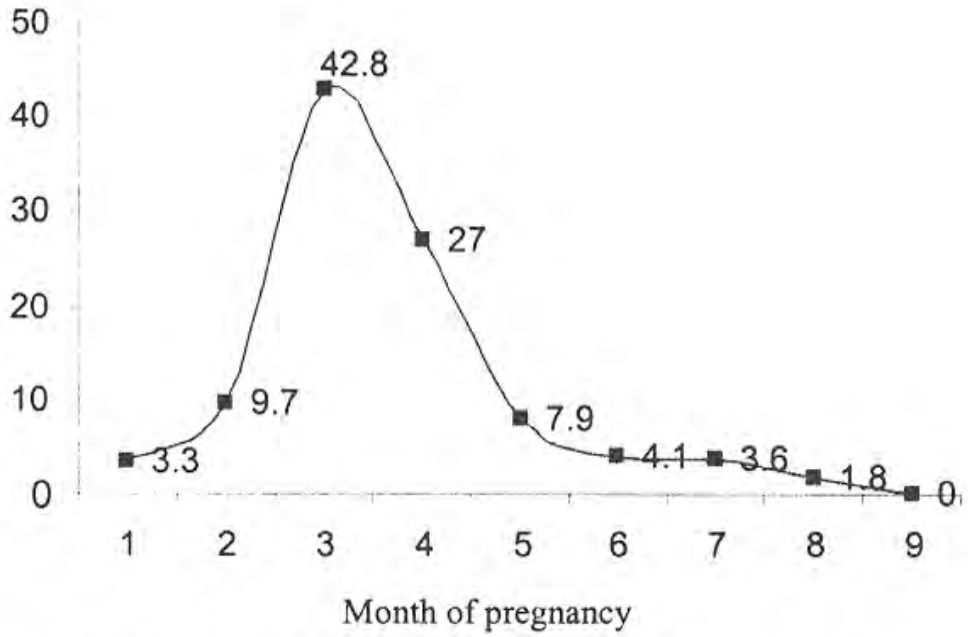

Fig 1. Time of initiation of ANC Visit, Jimma town, February 2004

Antenatal care utilization by the different strata of the town showed that 92.2% pregnant women in the third trimester had commenced attending antenatal care in kefitegna 1 which was 89.0% and 90.5%, for Kefitegna 2 and Kefitegna 3, respectively. This difference was not statistically significant (P = 0.59), (Fig. 2).

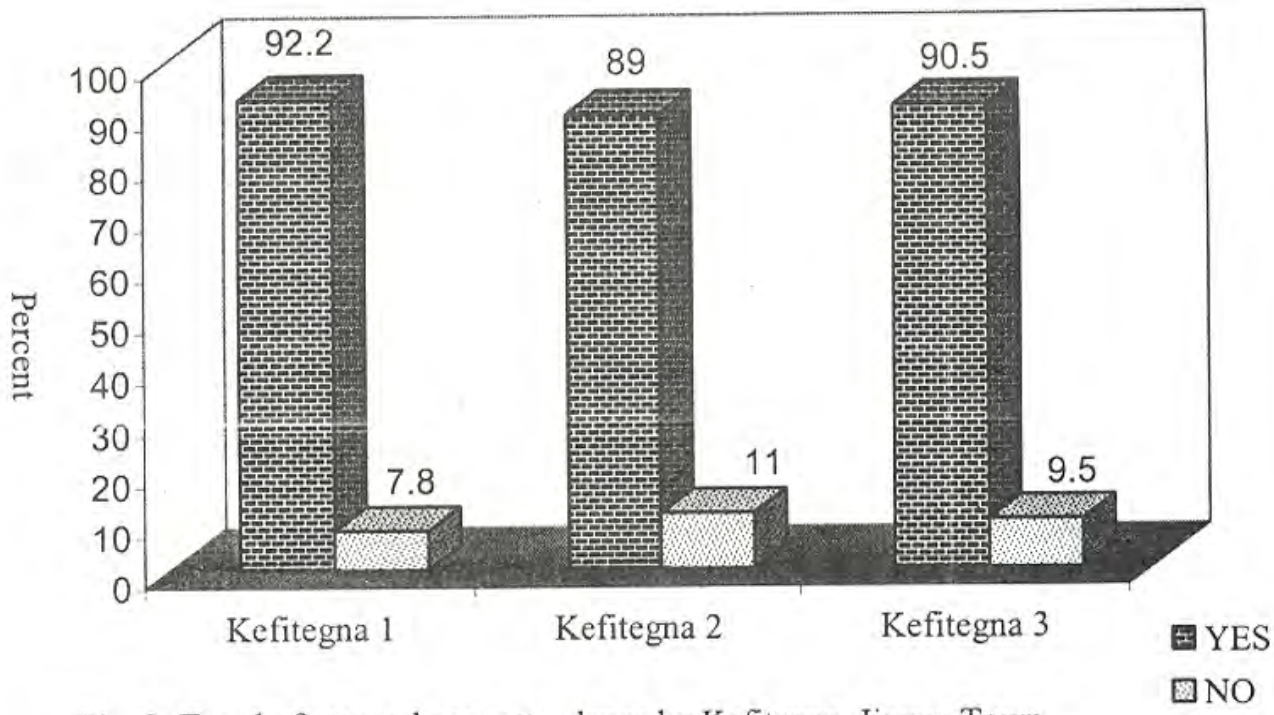

Fig. 2. Trend of atenatal care attendance by Kefitegna, Jimma Town, February 2004
(= 0.75, P = 0.59)

DICUSSION

Almost all the estimated 500,000 maternal deaths that occur every year happen in developing countries where antenatal care service delivery is poor due to various reasons. The number of pregnancies associated with serious complication in developing countries are massive. Considering a very huge risk differential that exists among pregnant women in developing countries and in industrialized countries, antenatal care is potentially one of the most effective health intervention for preventing maternal morbidity and mortality particularly in places where the general health status of women is poor (2,3,4,6,9).

According to this study it was found out that antenatal care service utilization in the study population was 90.6%. This is very high as compared to the findings of other studies in Ethiopia and other African regions (2, 12, 13, 14). The possible reason for this might be that the study was conducted in Jimma town where there is good access to the health service facilities. Jimma town community my be better aware of various health issues due to repeated awareness creation sessions by students of Jimma University over the years through Community Based Education programmes. However, despite a very high ANC attendance rate observed in study community, the peak gestational age of pregnancy when most mothers started attending ANC service was from 3-4 months with tapering proportion of mothers continuing to start their first visit until the 9th month of pregnancy (*Figure1*). The

purpose of antenatal care is to screen for sign of illness or other complications that may occur during pregnancy and to treat existing diseases which may be aggravated by pregnancy. Besides it also provides an opportunity to be immunized against tetanus toxoid. Considering the late initiation of ANC visit certain proportion of pregnant women, the effectiveness of the visit in reducing maternal morbidity and mortality sounds to be hampered (11).

There was a significant association between antenatal care non-attendance and socio-demographic variable like low literacy status and being a student. The possible reason why non-users were illiterate women and those who were students was that illiterate women do not know the benefits of ANC while those who were students may have a fear of coming to the service due to possible stigma if the pregnancy is out of the wedlock. Lack of information as a factor affecting utilization of ANC services was documented in another study (13).

Besides, this study demonstrated that behavioral factors like poor understanding of pregnant women about the importance and effectiveness of ANC in reducing death and illness of the mother and the baby and the intension not to use health facilities for delivery significantly were significantly associated with ANC service non-users. The fact that non-users were illiterate heralds the need for intervention in creating proper awareness about the benefits of using the service.

Different reasons for non-attendance related to with the structure of the health service delivery unit and personal factors were also explored. About 48.9% of the women mentioned more than one personal factor as a reason for not attending ANC services. Procrastinating the time for starting ANC visit was one of the reasons given by most non-attendant women. A similar finding was reported by other researchers (2, 13). In spite of the reason that some of the personal factors that prevented the mothers from attending ANC services were related to their prior experience of the poor quality of the service delivery, some of the reasons are associated with lack of awareness about the importance ANC visit. This study has also showed that those who were aware about the benefits of ANC utilized the services more than their counter parts that were not aware. Proper awareness creation particularly for illiterate mothers and pregnant students and behavior change communication need to be in place to improve proper ANC service utilization.

The structural factors that prohibited mothers from attending ANC service were also assessed. The majority (72.2%) of non-attendant women mentioned more than one reason related to the structure of health delivery units, which prevented them from attending antenatal care service. While some of the reasons like distance of health delivery unit from their residence and lack of transportation have to do with long term overall socioeconomic development, others including: lack of confidence on providers capacity, long waiting time during the visit, lack of confidentiality and unhappiness with the previous service received are issues that can easily be circumvented by rectifying the management of health service delivery unit. Improving the quality of the service delivery and effective monitoring and evaluation of the service through various means is critically important for improving the utilization of antenatal care services.

In conclusion even if there was high antenatal care utilization among the study participants, the pattern of follow up was found to be in appropriate in most cases. The majority of mothers started utilizing antenatal acre service around 3-4 months with decreasing number of mothers who attended the first antenatal care up to 9

months. Pregnant women who were non-users of ANC service were likely to be illiterate, students, those who had poor understanding about the benefits and effectiveness of ANC and those who intended to deliver outside the health institutions. Based on the above findings, effective behavior change communication is recommended to bring about proper antenatal care services utilization by the study community. Improving the quality of the service delivery and effective monitoring and evaluation is critically important for improving the utilization of antenatal care services.

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