

Original article

Determinants of antenatal care utilization in Arsi Zone, Central Ethiopia

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Abstract: A community based cross sectional study was carried out in Arsi Zone to document the pattern of utilization of antenatal care (ANC) and to investigate factors that affect women's use of it. Included as study subjects were 1204 women in their 3rd trimester of pregnancy and 801 in the three months post-delivery state, from four towns with access to ANC services. A pretested questionnaire was administered to collect data on study variables. The study found that about 52.2% of women had not attended antenatal clinics at all, and only 32.5% of women attenders had their first visit in the first trimester of pregnancy. About 45.2% of attenders had one or two prenatal visits while few (10.6%) had the recommended five visits. Analysis showed that the chance of non-attendance was higher for those women in the older age group, widows and divorced women, and those with no formal schooling, low monthly income, high parity and many living children. The main reasons for non-attendance at ANC Clinic were related to lack of knowledge of the need for ANC, and lack of time. The probability of non-attendance was higher for those with unplanned pregnancies and those who had negative attitudes to the current pregnancy. In this study, those who had perceived any illness as dangerous were more likely to be attenders of the service. Women who thought that they might develop dangerous health problems during pregnancy were also more likely to use the service. Recommendations concerning the improvement of ANC service and use are proposed. [Ethiop. J. Health Dev. 1996; 10(3): 171-178]

Background

Antenatal care (ANC) is an integral component of maternal and child health care. While increasing evidence suggests that certain components of ANC, such as risk screening, have limited impact on reducing maternal morbidity and mortality, there are a number of components of ANC interventions that have been found to be effective: detection and treatment of anaemia; detection, investigation and referral of hypertension; and detection and treatment of infections, especially STDs. In addition, ANC use has been shown to influence women's use of delivery services, probably the most effective intervention in reducing maternal mortality in the developed world (1). As well, neonatal and infant health have been shown to be significantly affected by women's use of ANC. UNICEF estimates that about 13% of Ethiopian children are born with low birth weight, that 63% of neonatal deaths are due to tetanus and that 60% of infant deaths occur during the first month of life (2,3). Much of this morbidity and mortality could be prevented by maternal immunization, ANC and safe delivery services.

Recent studies indicate that fewer than one-third of women in developing countries receive ANC (4). Much of this is due to limited access to health facilities, but even in those areas with adequate services, utilization of those services is generally low. In Ethiopia, coverage with ANC ranges from around 10% in some rural areas, to around 60% in urban areas (5). Even in Addis Ababa, where virtually 100% of the population has access to modern health services, a recent community-based study showed that only 61% of women in their third trimester had ever had a prenatal

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visit at the time of interview (5). These studies clearly show that ANC services are being underutilized.

A recent review of ANC (6) classified the factors affecting the use of services as follows:

Systemic factors (factors related to health service): These include access, availability (schedules/waiting time), cost of service, continuity and integration of care, provider attitude/interaction, etc.

Personal characteristics (factors related to users of the service): These include socio-demographic, social support and attitudinal factors; knowledge of, and experience with, pregnancy, delivery and the health system; perceived need for care; perceived quality of care.

Geographic factors: Urban/rural distribution, access, transport.

While several studies have examined ANC use in both developed and developing countries, little information is available from Ethiopia. Kwast et al, in their study on maternal mortality, found that women who did not have prenatal care were often those of high risk, i.e. illiterate, unmarried, with low level of awareness of problems of child bearing, and of low income (7). This community based study carried out in Addis Ababa also showed that the risk of non-attendance was high for the pregnant women who was first pregnant at the age of 10 to 10 years, and whose husband's attitude was alternative or unknown. In Ethiopia, even though under-utilization of the existing health services is a major problem, studies that address the barriers to use of these services are few. Mesganaw et al (5) found the following reasons for ANC non-attendance: too busy (49.2%), absence of illness (21.5%), cost (12.7%) lack of awareness about ANC (9.4%) and other reasons (7.2%). In their study, socio-demographic factors such as income were not shown to affect ANC utilization. The main aim of this research, was to further investigate the barriers to use ANC in this country. The objectives were, in general, to assess prenatal care utilization patterns, and more specifically, to identify reasons for use or non-use of ANC, and to identify barriers to use with a view to improving the accessibility of ANC services to the population.

Methods

This cross sectional community-based study was conducted in four towns in Arsi Zonal administration: Assella, Huruta, Etheya and Borijawe. The estimated population in the study area is about 150,000, with 90,000 being in Assella, and a total of 60,000 in the remaining three towns. The population of Assella obtains health service from five health stations, one health centre and one referral hospital, while the populations of each of the other three towns have access to a health station only.

Prior to the study, a census was conducted in the area. Permanent residents of the study area who were living within five km of a health facility and who were in their third trimester of pregnancy, or within the first three months following delivery were registered. Women who had had one or more visits to an ANC clinic prior to interview were considered as users of ANC, while women who had had no visit were considered as non-users.

A pretest of the questionnaire on 20 non-residents of the study area was carried out and the questionnaire modified. The questionnaire was translated into Amharic and then back to English to verify the translation. Information regarding the variables listed below was gathered using open and closed ended questions. The actual interviews of registered women in each kebele were carried out from December 1, 1993 to March 30, 1994.

Women's attendance/non-attendance health facilities was taken to be the dependant variable, with the following factors being considered the determinant variables:

- Socio-demographic factors (age, education monthly income, marital status, parity and number of children);
- Individual/psychosocial factors (attitude to current pregnancy, whether or not to pregnancy was planned, time available for prenatal care, family responsibilities
- Knowledge of dangerous health problems related to pregnancy, perceived susceptibility to these problems, and current illness experience;
- Health service barriers (cost of health service, distance, transport cost, women's opinion about quality of ANC).

The raw data were entered and analyzed using EPI-INFO 5.1. ANC users and non-users were compared in terms of the above mentioned variables. The degree of association with determinant factors was assessed by calculating risk ratios, confidence intervals and p-values for trend.

Results

In this study, 1204 respondents in their trimester of pregnancy, and 80 women in their first three months post delivery, were included. There were no missing respondents who fulfilled the inclusion criteria. The largest study group was in the age group 20-24 (31.8%). The majority of the ethnic groups among respondents were Oromo (36.3%) and Amara (37.7%). Eighty-seven percent of women were married. About 43% of respondents had no formal schooling. Regarding respondents' occupation, most were housewives (81.2%) followed by self-employed (8%) and government employees (6.9%). About 39% of women had a monthly family income of less than 100 Birr, while 18.8% earned more than 300 Birr. The majority (63.2%) had parity of two and above, while nulliparae constituted 15% of the total respondents. Of the total women (2005) included in the study, 958 (47.8%) had at least one prenatal visit, while 1047 (52.2%) had none. The attendance rate was somewhat higher for Assella town (49.9%) than for the other small towns (45.2%).

Trimester of pregnancy during which attendants have first contact with ANC was found to vary. Most of the attendants (40.4%) made their first prenatal visits in their second trimester, 27.1% in their third trimester of pregnancy and only 32.5% of women attended prenatal care in their first trimester of pregnancy.

Table 1: Primary Reasons for Non Attendance, Arsi

	Frequency	%
Lack of Awareness/knowledge		
No illness during pregnancy	378	36.1
Too early to start	67	6.4
Never heard about ANC	39	3.7
Illness during pregnancy	34	3.2
Personal barriers		
Lack of time	116	11.1
Procrastination	70	6.7
Many children to care for	70	6.7
Fear of manipulation	56	5.4
Economic Problem 42	4.0	
Tension during pregnancy	39	3.7
Structural/Health service		
“Bad experience”		
With service	106	10.1
Distance	28	2.7
Transport Problem	2	0.2
Total	1047	100.0

Among the prenatal users, 45.2% had only one or two prenatal contacts. Few t>f the at tenders (10.6%) had had 5 or more prenatal visits at the time of interview.

Attenders gave various reasons for the use of ANC. Among the several reasons given, "for medical checkup" (34.9%), and "for curative service" (16.9%), constitute more than half of the reasons. Other reasons given were related to expectations of good outcome with ANC use (11.4%), "to avoid problems during labour" (16.5%) or desire for specific information such as to know the position of the fetus (11.4%).

Non-attenders were asked the primary reason for not having had any prenatal visit during their pregnancy (Table 1). The main reason for non-attendance was found to be that " no illness had occurred during this pregnancy" (36.1%). About 11% of women attributed non-attendance to lack of time, while the third commonest reason (10. 1 %) was bad experience with the health system.

Table 2: Socio-demographic variables by use/non-use of ANC, Aral Zone, 1994

Variable n(%)*	ANC-nonuser n(%)	ANC-user RR(95%CI)		
Age				
<20-	120(51)	115(49)	1.00**	
20-24*	254(40)	384(60)0.78(0.7,0.9)	0.78(0.7, 0.9)	

25-29	271(50)	267(50)	0.99(0.8, 1.2)	
30+	402(68)	192(32)	1.33(1.2, 1.5)	<0.001
Marital status				
Married	882(51)	863(49)	1.00**	
Widowed	30(73)	11(27)	1.45(1.2, 1.8)	
Divorced	45(82)	10(18)	1.62(1.4, 1.9)	
Separated	23(47)	26(53)	0.93(0.7, 1.3)	
Single	87(58)	48(42)	1.15(0.9, 1.4)	
Education				
No schooling	627(73)	277(27)	1.00**	
Elementary	222(47)	253(53)	0.64(0.6, 0.7)	
Secondary	184(29)	444(71)	0.40(0.4, 0.5)	
post Sec	14(29)	34(71)	0.40(0.3, 0.6)	
Occupation				
Housewife	352(52)	777(48)	1.00**	
House maid	13(76)	4(0.4)	1.5(1.12, 1.9)	
Student	30(50)	30(50)	0.96(0.7, 1.2)	
Government	56(40)	83(60)	0.77(0.6, 0.9)	
self				
income				
<100Birr	479(62)	294(38)	1.00**	
100-300	453(53)	402(47)	0.86(0.8, 0.9)	
300+	115(31)	262(69)	0.49(0.4, 0.6)	<0.001
Parly				
0	142(159(53)	1.00*		
1	195(45)	243(55)	0.90(0.8, 1.1)	
2	179(47)	201(53)	1.00(0.9, 1.2)	
3-5	335(56)	259(44)	1.2(1.04, 0.6)	
6+	196(67)	96(33)	1.40(1.2, 1.6)	<0.001
number of lliving c hlldren				
0	158(48)	171(52)	1.00**	
1	195(45)	243(55)	0.09(0.8, 1.1)	
2	179(47)	201(53)	1.00(0.9, 1.2)	
3-5	335(56)	259(44)	1.2(1.04, 0.6)	
6+	196(67)	96(33)	1.40(1.2(1.2, 1.6)	
Number of lliving c hlldren				
0	158(48)	171(52)	1.00**	
1	205(44)	266(52)	0.90(0.8, 1.1)	
2-3	324(52)	305(48)1. 10(0.9, 1.2)	1. 10(0.9, 1.2)	

4-5	191(57)	142(4.3)	1.20(1.1, 1.4)	<0.001
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*Row Percentage.

*Reference category.***Mantel hental henzle chi-squar

Crude analysis of socio-demographic factors showed an influence on ANC use (Table 2). Use of ANC was less likely in Women older than 30 years of age, in widows and divorced women, and in those of higher parity , and lower levels of education and of monthly income.

As seen in Table 3, the probability of non- use was higher if the pregnancy was unplanned and if the woman was unhappy or ambivalent about it. In addition, those who perceived family care as a moderate or major problem were found to use ANC less, as were those who reported time to be a problem.

Unhappy/ambivalent respondents were asked why they had a negative attitude towards their

Table 3: Personal/psychosocial Factors, Arsi Zone, 1994

Variable	ANC-nonusers	ANC -users	
	n(%)*	n(%)	RR(95% CI)
plan pregnancy	(n=1047)	(n=958)	
Yes	624(47)	712(53)	1.00**
No	423(63)	246(37)	1.3(1.2, 1.4)
Feelof Pregnancy			
Happy	638(47)	714(53)	1.00**
Ambivalent	113(66)	57(34)	1.4(1.3, 1.6)
Unhappy	296(61)	187(39)	1.3(1.2, 1.4)
Family care			
Problem	(N=810)***	(N=958)	
No	504(42)	694(58)	1.00**
Moderate	217(42)	230((51)	1.2(1.03, 1.3)
Major	89(72)	34(28)	1.7(1.5, 1.95)
Time Problem			
No	503(40)	759(1.00**
Moderate	203(53)	182(47)	1.3(1.2, 1.5)
Major	104(86)	17(14)	2.2(1.9, 2.4)

* Row Percentage

** Reference Category

*** Only those no -users who had previous exposure to health service

current pregnancy. The major reasons given were, economic problem (46%), unplanned pregnancy (16%), enough children (12%), and need for birth spacing (10%).

Both users and non-users were questioned about their knowledge of dangerous health problems related to pregnancy. Women who expressed concern about any health problem (whether or not the health problem mentioned was indeed a risk to the mother) were more likely to be ANC users. It is interesting to note that only 34.3% of all women mentioned any of the accepted danger signs of pregnancy (eg. vaginal bleeding, seizure etc.).

Respondents who thought that they might develop life-threatening health problems during pregnancy were more likely to use the service (RR 1.2), while illness experienced during the current pregnancy did not affect utilization. Health service cost, travel cost and distance to the health facility, while major problems for fewer than 8% of respondents, proved to be significant barriers for these people (Table 4). Perceived quality of care (which includes Perceptions related to waiting time, quality of ANC and of curative care, as well as "confidence in the service") was also important in determining the use of ANC (Table 5).

Discussion

In this study, the overall coverage for ANC was 47.8% for women in their third trimester of pregnancy and in the first three months post-partum. The figure is lower than the 61 % found in a previous study in Addis Ababa, but still much higher than the 10% coverage in rural Ethiopia. ANC coverage in the three small towns was lower (45.2%) than Assella (49.9%). The small towns had only health stations while the population of Assella had access to a variety of health facilities.

That coverage is higher in Addis than in Assella, and higher in Assella than in the three smaller towns, might be attributed to the fact that the concentration of higher level health facilities is greatest in Addis, less in Assella and least in the smaller towns. Utilization of ANC has been found in other studies to increase with increased access to a higher level of health facility (8).

Coverage here is intermediate between that found in rural areas and that of Addis; further research into the barriers to ANC is needed in more rural areas.

ANC, and intervention aimed at reducing maternal, perinatal, and neonatal mortality, has to reach all pregnant women in order to have a measurable impact (9). Coverage in this area falls far short of this goal. In addition to the problem of low coverage, the pattern of use was inadequate WHO recommends at least five visits for women in developing countries starting early in the first trimester (10). In this study it was found that 90% of women had four or fewer contacts; indeed, almost half had it occurred at all, were late; about two thirds of women made their first visit during their second or third trimester of pregnancy.

The main reasons given for attendance ("for curative care", "to know the position of the 'fetus'", "for medical check-up") and for non-attendance ("have not been ill", "too early to start") suggest a lack of understanding of the nature and importance of ANC. That the main reasons for inappropriate use and non-use also appear to be related to lack of knowledge/ awareness suggests the need for appropriate health education programs regarding-ANC.

Also, respondents' knowledge of potential dangers of pregnancy were significantly different between the two groups. In this study most respondents could not identify any single risk, while a small number of them mentioned minor and unrelated illnesses as dangerous problems occurring

during pregnancy. Only about one third of the total group mentioned any of the actual danger signs of pregnancy. Women's knowledge of any risk was found to be an important factor in their attendance of ANC clinic, and at tenders were more likely to know the danger signs of pregnancy-related health problems. Increasing awareness of women regarding the potential hazards of child birth might improve their ANC use. Health education related to the potential danger signs of the major causes of mortality in women could have an important input in improving their utilization of care during pregnancy.

It was found that women in the older age group (30±) were less likely to use ANC services. This may be related to parity; both parity and number of living children show an inverse relation to ANC utilization. Possible reasons include lack of time due to the work of caring for children (the primary reason for not seeking care in 6.7% of non-users), or that these women had had uneventful previous pregnancies and were therefore unconcerned about the current pregnancy. This bears further investigation.

A highly significant difference between the two groups was found in relation to their level of education. In common with other studies (12,13), women who had no formal schooling were less likely to attend. Government employees were more likely than housewives to use the service (RR 0.77). This might be due to the fact that government employees are more likely to have better education than house-wives. Also, as seen elsewhere (5), use was related to monthly income.

While widowed/divorced women were found to be more likely to be non-attenders when compared to married women, the impact of union status during pregnancy on ANC utilization is hard to assess from this study, since the vast majority of the study subjects (87%) were married and sample size in the

Table 4: Health Services factors by use/non-use of ANC, Arsi Zone, 1994

Variables	Total n(%)	ANC-non users n(%)	ANC-users n(%)	RR95%cl
Health services cost				
Not Problem	1278(72.3)	575(45.01)	703(55.0)	1.00*
Moderate Problem	358(20.3)	152(42.0)	206(58.0)	0.94(0.82, 1.1)
Major problem	132(7.5)	83(53.0)	49(37.0)	1.40(1.2, 1.6)
Travel cost				
Not Problem	1248(70.6)	571(46.0)	677(54.0)	1.00*
Major Problem	102(5.8)	64(63.0)	38(37.0)	1.37(1.29, 1.6)
Distance from health facili ty				
Not Problem	1140(64.4)	514(45.0)	625(55.0)	1.00*
Moderate Problem	505(28.6)	221(44.0)	284(56.0)	0.97(0.86, 1.1)
Major problem Problem	123(7.0)	75(61.0)	48(39.0)	1.35(1.20, 1.6)
Total	1768(100%)	810(100%)	958(100%)	

* Reference category

other categories is small. However, several studies on ANC in relation to psycho-social factors, indicated that women who were single were less likely to use ANC than those who were married (11). Other psychosocial factors, as in previous studies (15-18) were also found to be important; there was a higher probability of non-attendance among those who were unhappy/indifferent about their pregnancy (economic problems, wanted no more children) or whose pregnancy was unplanned. This is highly suggestive of lack of access to appropriate family planning opportunities.

ANC might be an appropriate point of contact for promotion of family planning. Health service barriers to ANC use have been well documented both in developing and developed countries (6,8, 12, 18). In this survey, health services cost associated with attendance was a problem to 7.5% of the study population, despite the fact that the service is free of charge. In addition, a number of women complained that travel cost, and distance were problems. All three factors (cost, travel cost and distance) showed a statistically significant influence on the use of ANC. Since this study was carried out in an accessible population (< 5km), the relevance of these variables as barriers to utilization was expected to be minimal. That this was not the case is perhaps due to the time involved in seeking care (as mentioned above), or perhaps due to the fact that they did not know that services were free of charge. In any case, since it was found that these factors were barriers in this population, their importance in less accessible populations would be undoubtedly much greater.

The client's view of the quality of prenatal care has been demonstrated to be an important barrier to ANC, particularly in developed countries (20). Here, women who perceived the quality to be poor were more likely to be non-attenders. Lack of confidence in the service provider, though not a problem to the majority of respondents, was significantly related to non-attendance. Lack of confidence might have resulted from previous experiences with health care services, previous "bad exercise" with health services being one of the main reasons for non-attendance. Another issue concerned with quality relates to long waiting time during prenatal visits; this was found to be related to non-attendance in this study. Several studies have also reported this fact (16,21,22). Women's concerns about time during the ANC visit may influence their return for continuous follow-up.

It should be noted that, in this study, selected variables that determine prenatal care utilization have been studied, and their importance was determined by comparing attenders and non-attenders at a specific point in time. Thus, both the dependent and independent variables were determined at the same time. For instance, knowledge of pregnancy-related diseases may have been acquired during antenatal care. Further research will be needed to determine whether or not this was a factor. As well, the possibility of confounding variables regarding knowledge of respondents by past prenatal care was considered. However, an approximately equal distribution of past ANC users was found in the two groups.

The barriers to attendance at ANC have been found in this study to be similar to those found elsewhere. Almost all appear to be amenable to improvement through relatively few interventions. Improved health education would go a long way to increasing women's understanding of the process of pregnancy, the knowledge of the danger signs of pregnancy, and of the importance of ANC.

A second major focus of intervention should be increasing the quality of health services delivered. This would involve improving the quality of curative care, as well as reducing waiting time.

Table 5: Respondents view of quality of care, Arsi Zone, 1994

	ANC-nonusers	ANC-users	Total
Characteristics n(%)		n(%)	RR 95 % CI
Quality of ANC			
Good	200(40)	299(60)	1.00*
Fair	464(46)	548(54)	1.14(1.1, 1.3)
Poor	146(57)	111(43)	1.42(1.2, 1.7)
Personnel respectful			
Yes	706(45)	845(55)	1.00*
No	662(57)	113(43)	1.3(1.13(0.9, 1.4)
Waiting time			
Short	359(42)	486(57)	1.00*
Fair	286(45)	344(55)	1.13(0.9, 1.4)
Long	165(56)	128(44)	1.3(1.2, 1.5)
Lack of Privacy			
Problem	369(44)	485(52)	1.00*
Not Problem	441(48))q 473(56)	1.1(0.8, 1.02)	
Consultation time			
Satisfactory	687(45)	845(55)	1.00*
Not satisfactory	123(52)	113(48)	1.16(0.98, 1.2)
Curative service			
Satisfactory	583(44)	738(56)	1.00*
Not satisfactory	227(51)	220(49)	1.2(1.03, 1.3)
Total	810(100) 958(100)	1768(100)	

*Reference category

Also, it was apparent that a significant number of women were unhappy about their pregnancy. Family planning services need to be strengthened in the area. Socio-demographic factors, many of which appear to affect the use of ANC, should be addressed in the long term.

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