ORIGINAL ARTICLE

FACTORS AFFECTING UTILIZATION OF ANTENATAL CARE SERVICES IN SANA'A CITY, YEMEN

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ABSTRACT

Antenatal care is a vital part of primary healthcare that is known to improve maternal and newborn outcomes. The aim of this study was to identify the factors affecting utilization of antenatal care services for women in reproductive age in Yemen. This cross-sectional community-based study was conducted in six districts of Sana'a City, Yemen. Data were collected from 460 mothers who gave birth in the past six months via face-to-face interviews at home between September to December 2010. Only 54% of mothers were found to have made four or more antenatal care visits. Almost two third of participants made their first visit during their first trimester due to presence of health problems and did not follow up when they became healthy during pregnancy. Reasons for not receiving antenatal care services due to absence of health problems, high cost of antenatal care services, long waiting time, and poor staff attitude. Sixty percent of participants were unaware of the danger symptoms of common health problems in pregnancy. The significant factors affecting utilization of antenatal services were mother education, residence place, age at first pregnancy, gravida, parity, occurrence of pregnancy without planning, and number of live children (P<0.05). The factors affecting the number of visits were mother education, place of residence, and husband work were (P<0.05). Future healthcare activities should focus on improving women's awareness of the importance of antenatal care even in the absence of noticeable health problems and lack of education about the common danger signs and symptoms of pregnancy.

Key words: *Factors, Utilization, Antenatal Care Services*

INTRODUCTION

Globally eight million of the estimated 210 million women who become pregnant each year experienced life-threatening complications[1]. Every minute in every part of the world a woman dies from complications in pregnancy and childbirth. That means 1400 women die every day[2, 3]. More than half a million women die each year during pregnancy and childbirth, and of these, 99% happen in developing countries like Sub-Saharan Africa and Asia[4, 5]. The risk of maternal mortality is 200 times higher in developing countries compared to developed countries[6]. In Yemen, the maternal mortality rate in 2015 was 385 per 100 000 live births due to complication in pregnancy and childbirth [7] However, the majority of these deaths are avoidable, if there had been careful planning, adequate preparation and care during pregnancy, childbirth and immediately after birth. These measures can help to improve maternal and newborn morbidity and mortality[8].

In developing countries, the cause of maternal mortality is not only because of lack of availability of service but also underutilization of existing health facilities[9].In Yemen, the maternal mortality ratio of 365 per 100,000 live births is among the highest in the world. The high maternal mortality ratio is related to high fertility and limited antenatal care whereas 31% of urban and 62% of rural pregnant women do not receive any antenatal care[10].In Aden, being one of the governorates in Yemen, a study was done to determine the maternal mortality causes and some related factors[11]. Findings of the study found most significant number of maternal deaths occurred among mothers who did not attend antenatal care[10]. Antenatal care is an intervention to improve both maternal and newborn health[12].Antenatal care is aimed at achieving a healthy mother and a healthy child [13] while antenatal care services are part of primary health care services. Moreover, it is considered as an important maternity service which is aimed to detect any pregnancy complications early and manage it timely which decreasing the maternal morbidity and mortality rate[14].

Although around 70% of women worldwide have attended at least one antenatal care visit, this percentage varies by region, **whereas in**

industrialized countries, 98% of women have at least one antenatal care visit[12]. In developing countries, the percentage has dropped to approximately 68%.South-east Asia has the lowest antenatal care attendance rate, with 54% of women attending at least one antenatal visit[12].Antenatal care can provide important opportunities for linking the health system and community by encouraging women to go for delivery with a skilled attendant[15].In addition, it presents important opportunities for reaching pregnant women with a number of interventions that may be vital to their health and wellbeing as well as for their infants[16].In developing countries, the use of antenatal care services can be influenced by socio-demographic characteristics of women, cultural context and accessibility of this service[9].Our study is considered the first study to be conducted in Sana'a city and it attempts to identify the factors affecting utilization of antenatal care services as it is a determinant of maternal mortality.

METHODOLOGY

This cross-sectional community based study was carried out on 460 mothers in Sana'a city, Yemen. Cluster random sampling method was used to select the required subjects fromadministrative division of Sana'a city to 10 districts[63].Bani Al Harith is considered as a ruralsettlement in Sana'a city. Therefore, it was chosen purposively to represent the rural areas and to make comparison between it and other districts that considerate purely urban. Five districts for other urban district were chosen by simple random sampling and were: Old Sana'a, Azal, Al Sabeen, Al Tahrir and Al Thawra.

The sample was withdrawn in two stages:

The first stage (the selection stage of the enumeration areas):- At this stage, enumeration areas were selected. The size of the selected sample from the enumeration areas were 46 areas (Total of enumeration areas = 460÷ 10 = 46). The enumeration areas in Old Sana'a were calculated as (9619÷128739**)** *46 = 3 enumeration area and others districts were also calculated in the same way. (Table 1)

Table 1: Selection stage of enumeration areas

No	District	Number of households	The size of the sample from the enumeration areas	size of the sample from the households
1	Old Sana'a	9619	3	3*10=30
2	Azal	15985	6	6*10=60
3	Al-Sabeen	43645	15	15*10=150
4	Al-Tahrir	10591	4	4*10=40
5	Al-Thawra	24744	9	9*10=90
6	Bani Al Harith	24155	9	9*10=90
	Total	**128739**	**46**	**460**

After the completion of the selection process of the sample in the first stage of the enumeration areas, the final selected sample of the families (where 10 household were withdrawn) were withdrawn in a random and systematic way. The second stage of the selection is fixed for each enumeration area that appeared in the first stage. The random, systematic drawing of the sample was the method used to withdraw the households from the selected enumeration areas in the sample (Stage II), which is commonly used in most household surveys.

The steps of withdrawing families were as follows:

1- The households in the enumeration areas were then serialized, for example, the sample of the enumeration area is 150 families; they were put in sequence from the household number (1) to the household number (150).
2- Determining the range of the systematic sample by dividing the size of families (assumed in this example 150 families) by the size of the cluster which is equal to 10 household as follows:
Range = 150 ÷ 10 = 15
3- A random number selected between (1-15)- for example (3).
4 - The first family selected in the enumeration area is the family number 3 .
5- Then the range (15) added to the number of the first family (3), the second family selected in the sample is family No. 18, 33, 48 … etc.

6- We depended on the components of the enumeration area in urban areas and villages in rural areas during field visits.

This method is used in most surveys to withdraw a sample of families from the enumeration areas because it allows equal representative of the sample.

The data was collected by face-to-face interviews using a structured questionnaire from house to house. The questionnaire used to assess the ANC utilization and its affecting factors in this study was developed based on the Yemeni family health survey[64] and survey instruments used in the Lahj and Ethiopian study [9, 36]. Pre-testing was used for validation to assess clarity, understandability, and completeness of the questions. Finally, the questionnaire was modified according to pre-test findings and was used in the data collection. The designed questionnaire has two parts; the first part was data about socio-demographic and economic characteristics (age, education level, resident place, occupation, family size, income, type of house ownership) and the obstetric characteristics (age at first pregnancy, gravida, parity, previous pregnancies associated with complications, abortion, last pregnancy occurred without planned, number of living children).The second part was information related to the antenatal care services utilization (receiving ANC services, place of ANC, frequency of visits, cost, way of transportation, distance or time taken from house to health facility, timing of visit, main reason of first visit ,waiting time, service providers, place of delivery, mother's opinion about ANC important, mothers' knowledge of danger symptoms related to pregnancy, elements of ANC services provided, mothers' satisfaction about services provided , decision taking when occurrence of complication, decision maker when mother is sick, favorite place, reasons not to return after first visit to health facility and causes for not received).

The data collection process was carried out from September to December 2010 at six targeted districts. After the data had been collected, it was then entered into the IBM computer and checked up again for data entry. Descriptive statistics were used to demonstrate the characteristics of the study population. Frequency and percentage was used for categorical variables while mean ± standard deviation for numerical variables. In bivariate analysis, t-test was used to analyze the normally distributed data while Mann Whitney U-test was used as nonparametric test for data that was not normally distributed. SPSS version 21 was used and the statistical significance level was set at P-value <0.05. The results of the analysis are presented in the form of frequency distribution tables.

Regarding to ethical consideration, the study was approved by the Department of Community Medicine in Faculty of Medicine and Health Sciences and Ethical Clearance Committee in the Faculty and it conducted according to the declaration of Helsinki principles. Participation in this study was voluntary, participant has the full right to withdraw from the study at any time without negative consequence. Before starting to collect the response of respondent were briefed on the purpose of the study and the process. Verbal consent was received from participates. At the end of interview, we provide the feedback to mothers about importance of antenatal care services and health education.

RESULTS

The mean age was 25.37 (± 5.367) years. The majority (82.1%) of the mothers were between 20-34 years old. The study results showed that 75.3% are literate and 24.7% are illiterate. Among literate mothers, 35 % of the mothers were able to read and write. Only 5.1% of mothers reached university. Regarding to the education level of their husband, the majority of husbands are literate. Among literate husbands, only 23 .0% reached the university. Around one third of sample (32.6%) were resident Al-Sabeen district. Most of the participants (95.9 %) were house wives. The majority (94 .78%) of the husbands were working as shown in table 2.

Regarding the obstetric characteristics of participants, the mean of age at first pregnancy was 18. 99 ± 3.39 years. More than half of mothers were less than 20 years old in their first pregnancy. Concerning gravida,357(77 .6%) were multi gravida while 103 (22.4%) were primigravida. 250(54.3%) of the sample have 2 to 4 children.38.3% of mothers mentioned occurrence of complication in previous pregnancies. The most common complication was vaginal bleeding. 125(27.2%) of the participants mentioned that they have abortion in the previous pregnancies. Around two third of sample mentioned that they had the last pregnancy without any planning (Table 3).

Table 2: Socio-demographic characteristics

Characteristic		N	%
Age of participants:	Less than 20	48	10.6
	20-34 years	373	82.1
	35-49years	33	7.3
	Education level of mothers:		
	Illiterate	**113**	**24.7**
	Literate	**347**	**75.3**
Education level	**Mothers Literate:**		
	Read and write	161	46
	Primary	66	19
	Secondary	89	26
	Diploma after secondary	7	2
	University and above	24	7
	Education level of husbands:		
	Illiterate	**27**	**5.9**
	Literate	**433**	**94.1**
	Husband Literate:		
	Read and write.	104	24
	Primary.	92	21.2
	Secondary.	121	28
	Diploma after secondary.	10	2. 3
	University and above.	106	24.5
Resident place:	Old Sana'a	30	6.5
	Azal	60	13.0
	Al- Sabeen.	150	32.6
	Al-Tahreir.	40	8.7
	Al-Thwora.	90	19.6
	Beni Al Harith	90	19.6
Occupationalstatus	**Working status of mother:**		
	Yes	19	4.1
	No	441	95.9
	Working status of husband:		
	Yes	433	94.1
	No	27	5.9

Most (89.3 %) of the participants mentioned that they visited the health facility to receive antenatal care services during the last pregnancy. Almost half of sample in the study area received four visits and more. Almost two thirds of the participants visited the health facility in first trimester of the pregnancy, while 22% in second trimester and only 11% in the third trimester. The main reason for the first ANC visit during last pregnancy was having health problem and about one fifth had ANC to make sure of pregnancy. Only 12.7% for follow-up. The most common services provided was ultrasonography followed by listening to fetal heart beat through fetoscope. The most common information was received about the fetus state. More than one third (38%) of the participants didn't take anti tetanus vaccine during the pregnancy (Table 4).

Table 3: Obstetric characteristics of participants

Characteristics	N	%
Age of 1st pregnancy:		
<20years	268	59.0
20 – 34 years	186	41.0
35 - 49years	--	--
Gravida:		
Primigravida	103	22.4
Multi gravid	357	77.6
Parity:		
Primipara	118	25.7
Multipara	342	74.3
Number of children:		
1	118	25.7
2 – 4	250	54.3
>=5	92	20
Ever had complication in previous pregnancies:		
No complication		
Yes complication	284	61.7
	176	38.3
Ever had abortion:		
Yes	125	27.2
No	335	72.8
Was pregnancy unplanned:		
Yes	290	63.0
No	170	37.0

Table 4: Antenatal care (ANC) services utilization

Variable	Frequency	%
Number of ANC visits		
0	49	10.7
1	51	11.1
2-3	110	23.9
4 visits & more	250	54.3
Timing of visits		
First trimester	**277**	**67**
Second trimester	**92**	**22**
Third trimester	**42**	**11**
Main reason of the first visit		
Health Problem	217	52.8
Make sure of pregnancy	80	19.5
Follow up	52	12.7
Make sure the fetus is healthy	47	11.4
Others	15	3.6
Measurements &investigation		
Ultrasonography	403	98.1
Listening to FH Beats by using fetoscope	389	94.6
Blood measuring	332	80.8
Blood Analysis	300	73.0
Urine Analysis	292	71.0
Weight measuring	190	46.2
Length measuring	16	3.9

Abdominal measurement	12	2.9
Anti tetanus vaccine:		
Taking it	256	62
Didn't taking it	155	38

Most (60%) of the samples didn't know the danger signs and symptoms that may occur during pregnancy while only 182(40%) know that signs and symptoms. Almost two-thirds of mothers (63.8%) mentioned the vaginal bleeding as danger sign. (Table 5)

Table 5: Mothers' knowledge for the danger signs and symptoms (n= 460)

Mothers' knowledge	Frequency	%
Know	182	40
Didn't know	278	60
Signs and symptoms mention by mothers:		
Vaginal bleeding	116	63.8
Hypertension	58	31.9
Sever vomiting	2	1.1
Severe abdominal pain	2	1.1
Toxemia	2	1.1
Six dangers signs	1	0.5
All danger signs	1	0.5

Eleven percent of mothers who came to the health facility only made one visit and did not return (Table 4). Absence of the health problem, poor economic state and thoughts of unnecessarily of following of pregnancy were the main reasons for not returning after the first visit of antenatal care clinic. (Table 6)

Table 6: Main reason for not returning to Health facility

Main reason for not returning to Health facility	N	%
Absence of health problem	11	21.6
poor economic state	9	17.6
Following of pregnancy not necessary	8	15.7
Busy	7	13.7
Cost of the transportation	3	5.9
Service far way	3	5.9
Mistreatment	3	5.9
Undesired to visit the health center	3	5.9
Long Waiting	2	3.9
Refuse of his husband	2	3.9

There are statistically significant difference (*P. values <0.01 and 0.05*) between mother's education level, resident place, gravida, parity , number of children, occurrence of pregnancy with planning**,** age at first pregnancy and receiving ANC (Table 7).

DISCUSSION

WHO recommendation that antenatal care for normal pregnancies should be at least four visits because there are many health problems in pregnant women that could be prevented, detected and treated during antenatal care visits by trained health workers[65].According to WHO recommendation, our findings show that overall coverage of antenatal care services (four visits or more) is 54% which is better than the national figure i.e. 14% in the FHS[64].There are many reasons to explain the difference in the percentages, the FHS was conducted in both rural and urban areas in all governorates and included large number from households in most of governorates. Our study's findings are higher than other studies' findings such as studies have conducted in Djibouti (7%) [39], Sudan (11%)[66] and North-East Ethiopia(47.2%)[36].However, our findings are **the least** findings of studies have conducted in North Ethiopia(73%)[68],Uganda(69%)[67], Syria (68.4%)[40],

and Egypt(66.0%)[69].In contrary to WHO definition, The antenatal care coverage is defined as the percentage of women aged 15-49 with a live birth in a given time period that received antenatal care provided by a skilled health personnel at least once during pregnancy[19]. This study found that 89% of mothers make at least one ANC visit. This result is for many reasons. First, the sample was taken from the city where the ANC services is much better and second reason is health problem for most of mothers who received ANC. Our finding is not consistent with other studies findings in Tuban (72%)[9], Aden (75.7%)[62]and MICS (47%)[61].This difference is due to the close period of the two studies from 2005 for Lahj and 2003 for Aden and the near distance between the two governorates too. While MICS was conducted in both rural and urban area in all governorates whereas our study was conducted only at Sana'a city. The difference in timing is also another possible factor that may reflects an increase in women awareness. The study conducted in Ethiopia found that ANC service utilization was 86.3% [70] which is approximately similar to this study.

Our ANC coverage (at least once visit) is the least findings in some Middle East countries reported by WHO like Sultanate of Oman, Tunisia and Lebanon were 99%, 96% and 96% respectively[38],[39]. It is also less than ANC coverage in many other developing countries e.g. Djibouti (92%)[3], Kenya (92%)[71], Uganda (96%)[67],Tanzani (96%)[72], Bangladesh (93%)[73], India (92.31%)[74], and Sudan(90%)[66]. Nevertheless, our coverage is some higher than the findings of others developing countries such as, Nigeria[48] and Lao people democratic[52] where the ANC was 57% and 51% respectively.

In this study, two third (67%) of the participants initiated ANC in the first trimester of pregnancy. This result is approximately similar to a study that was conducted in Sudan which found that 59.6% of women attended antenatal care in the first trimester[66]. However, it is higher than studies wereconducted in rural areas of India, Ugnada and Ethiopia which found that only 30%, 17% and 12.8%of mothers initiated ANC in the first trimester of pregnancy respectively. Our study' finding is the least finding of study conducted in Syria[40].

Table 7: Association between socio demographic factors, Obstetric characteristics and receiving ANC

Characteristics		Received ANC N (%)	No received ANC N (%)	Total N (%)	P. value
Mother education:	Illiterate	91 (80.5%)	22(19.5%)	113(100%)	< 0.01*
	Literate	320(92.2%)	27(7.8%)	347(100%)	
Resident place:	Urban	336(90.8%)	34(9.2%)	370(100%)	< 0.05**
	Rural	75(83.3%)	15(16.7%)	90(100%)	
Gravida:	Primigravida	100 (97.1%)	3(2.9%)	103(100%)	<0.01*
	Multi gravida	311(87.1%)	46(12.9%)	357(100%)	
Parity:	Primipara	114(97.4%)	3(2.6%)	118(100%)	<0.01*
	Multi para	297(86.6%)	46(13.4%)	342(100%)	
Number of children:	1	115(97.5%)	3(2.5%)	118(100%)	<0.01**
	2 – 4	215(86.0%)	35(13.9%)	250(100%)	
	>=5	81(88.0%)	11(12.2%)	92(100%)	
Was pregnancy unplanned?	Yes	250(86.2%)	40(13.8%)	290(100%)	<0.01*
	No	161(94.7%)	9(5.3%)	170(100%)	

** Fisher's Exact Test, * * Chi square test.*

According to WHO guidelines there are specific tests to be done during antenatal care visits, which includes blood pressure measurement, urine testing for bacteriuria and proteinuria, blood testing to detect syphilis, blood group,RH factor and severe anemia, weight/height measurement and other services[25].This study found that 80.8% of women reported that their blood pressure was measured, 71%had their urine specimen taken, 73% of women reported that they were given blood test, 46.2% their weight taken which shows variations in the ANC elements. These findings are

higher than the findings of the MICS conducted in Yemen 2006, that found 37% of the women samples were given a blood test, 40.4 % reported that their blood pressure was measured, 34% had their urine specimen taken and 26.8% were weighed[61].The observed difference betweenthese study findings and the MICS could be explained by the fact that MICS survey covered both rural and urban areas in all governorates whereas our study was conducted in mostly urban area. The difference in the timing could be another reason. Nevertheless, our results are the least findings from Jordan that revealed a blood pressure test was part of antenatal care for 98% of mothers, urine and blood samples were taken from 94% and 95% of women, respectively, while 97%of mothers have had their weight taken[37]. Such difference shows the quality health care in Jordan, high level of family awareness about the importance of ANC and available health service. However, our results are the highest findings from Bangladesh [47] and Uganda[78]except the body' weight in our study is the least in Bangladesh and Uganda.

The World Health Organization (WHO) recommends iron and folic acid supplementation to reduce the risk of iron deficiency anemia among pregnant women[79].Previous researches have established that folic acid supplements can lower the risk of birth defects such as neural tube defects, congenital heart disease, and oral clefts in newborns[80].This study revealed that 53% of mothers received ferrous during the last pregnancy, similar to the percentage of studies conducted in Kenya[81] and India[74] but our finding is higher than finding in Nigeria[82].However, our finding is the least a study conducted in Uganda[78]found that 63% of mothers were given iron supplementation. Our study 'finding was found that 47.4% of mothers take folic acid, this is similar to study's finding in Kenya but higher than Nigeria[82] and less than India[74].MDGs-5 is to reduce by three quarters the maternal mortality ratio, and one strategy to eliminate maternal tetanus[61].This study found that more than one third of mothers not vaccinated against tetanus in their last pregnancy. This indicates to the lowest awarenessabout importance of vaccine for their health. Which is approximately similar to the result of a study conducted in Alexandria which found that 45.3% of urban mothers had not been vaccinated during their last pregnancy[83] and the highest two study' findings in North East Ethiopia and India which found that 12.7 % and 15.8% of the women did not receive Tetanus Toxoid injection respectively[36,84].

Our study revealed that tetanus toxoid coverage was higher among women who utilized antenatal care (93.3%) compared to those who did not (17.1%) which indicates the importance of having ANC. This is similar to a study conducted in Islamabad that revealed that tetanus toxoid coverage was higher among women utilizing antenatal care (92%) comparing to those who did not (59.2%)[56].Pregnancy complications are an important cause of maternal and child morbidity and mortality, therefore informing pregnant women about the danger signs associated with pregnancy and the appropriate action that should be taken is an essential component of antenatal care [85].This study revealed that only 47.2% of mothers received information about danger signs and symptoms .This is the least the findings of a study conducted in Tanzania and Jordan that found 58% and 50% of pregnant women were informed about pregnancy danger signs respectively[86,37].Our study found that majority of mothers received health education every visit which differs from study done in North East Ethiopia where majority (73.8%) had never received health education during any visit [36].

This study found that most of the samples didn't know the danger signs and symptoms that may occur during pregnancy .This finding is the highest finding in other studies carried out in Albeheira Governorate in Egypt and Southern Ethiopia found that (39.0%) and (26.5 %) didn't know any danger signs of pregnancy respectively [88],[89].Among the mothers who knew danger signs, 63.8% of them mentioned that vaginal bleeding is a dangerous sign while 32.9% of women mentioned hypertension and other danger signs were low percentages e.g sever vomiting 1.1%,severe abdominal pain 1.1%, toxemia 1.1%. This difference from study was conducted in North East Ethiopia that was noted the most mentioned danger signs are hypertension during pregnancy (92.4%), severe anemia (59.7%), persistent vomiting (45.2%), and severe headache (45.2%), mal-position of the fetus (20%), and prolonged labor (20%), vaginal bleeding (16.6%), and others[36].Our study found that the knowledge about danger signs in pregnancy was significantly higher among women utilizing ANC. Similar to a study done in Islamabad, it was revealed that knowledge about danger signs in pregnancy was significantly higher among women utilizing ANC[3].

This study did not find an association between age of mothers and receiving ANC. This result is similar to studies that have been conducted in Indonesia [44] and Vietnam[41]. However, there is a significant association between ANC attendance and maternal age in other studies e.g: North East Ethiopia[36] and other study in Ethiopia[70].In developing countries as a whole, the likelihood of using antenatal care is associated with women's educational attainment[25].This study revealed a relationship between education of mother and receiving ANC. This is similar to findings of previous studies in

Bangladesh[53,] Thailand, Ethiopia[77], Islamabad[46]and Laos[52] and Vietnam[41].Our study found that no significant difference between working of woman and receiving to ANC. This is different from other studies conducted in North East Ethiopia and Indonesia that showed significant association between ANC attendance and occupation of the mother [36,44]. This study showed that no significant difference between women who their husbands work and mother's receiving ANC. This is similar to a study done in India found that husband's occupation played an insignificant role in determining the use of antenatal care visits[93].This study found that the income is not associated with ANC utilization. That is maybe because the mothers did not say the truth about their family's income level. Our study is similar to studies in North East Ethiopia and India, as it was found that ANC received had no significant association with income of family [36,92].However, this is different from the studies conducted in rural areas of Laos and another in Ethiopia that found the income to have an effect on utilization of ANC services[52,49.] That may be because the two studies conducted in rural areas where the mothers have poor income .This study noted that no association between family size and receiving ANC. whereas study conducted in Southern Ethiopia has found that family size was affected ANC services utilization[70].

This study found that there was highly significant difference between age of participant in the first pregnancy and receiving ANC. This is different from a study conducted in Ethiopia that found there was no significant association between age at first pregnancy and receiving ANC[36]. This study noted that there was statistically significant difference between gravida and visiting to receive ANC. This is similar to other study that found that number of previous pregnancies is an important determinant for utilization of ANC services[36]. The study's results found that there was significant variation between the parity and receiving ANC. This is similar to studies in India and Ghana that found that there was a statistically significant reduction in the proportion of women obtaining antenatal care services with increasing parity [42,54]. Other Studies conducted in Kenya and Indonesia that found that parity was associated with ANC utilization [94,95].

This study shows that only 5.3% of mothers became pregnant with planning did not receive ANC however 13.8% of mothers became pregnant without planning and also did not receive ANC. There was highly significant difference between occurrence of pregnancies with planning or without planning and receiving of ANC. This result was similar to a study in Ethiopia showed that women whose recent pregnancy were more likely to use ANC than those women who had unplanned pregnancy[77]. Another study carried out in Indonesia showed that unwanted pregnancies are associated with late start of ANC visiting or frequent visits compared to wanted pregnancies[44]. This study revealed that there was highly significant difference between the number of children and receiving ANC. Similar to study conducted in North East Ethiopia that revealed that large number of children was the primary reason for not receiving ANC in 30.3% of mothers [36]. Also, a study in rural areas of India found that there was a statistically significant reduction in the proportion of women obtaining antenatal care services with increasing number of living children[42].

Our study found that frequency of ANC visits was significantly associated with education of the mother.This is similar to study conducted in Uganda that found that frequency of antenatal visits was significantly associated with education of the mother[76].This study found that around half (49.3%) of rural mothers went to health facility were less than four visits comparing to 36.9% of urban mothers .The result of this study shows significant difference between mother's resident in urban areas and rural area and frequency of ANC visits. This is similar to study carried out in Vietnam that found that living in the rural area was significantly associated with lower adequate use of ANC comparing to living in the urban area[97].

Also, our study found that there was significant difference between husband' work and frequency of ANC visits. This similar to another study that found that the frequency of antenatal visits was significantly associated with occupation of the husband[76].

Our study found that the main reason for not returning mothers to the health facility after the first visit was the absence of the health problem and followed by poor economic state. We didn't find any previous studies shown the main reason for not returning to health facility after first visit . Our study found that the main reason for not receiving ANC was the absence of a health problem during the last pregnancy. This is similar to study conducted in North East Ethiopia found that absence of a health problem is the main reason for no ANC attending[49]. This is different from study in Laos that found that main reason for not attending ANC was no time (93.4%)[52]. While in Indonesia, and China where the main reason for not attending antenatal care was financial constrains[60,59].

CONCLUSION

The findings of this study indicated that the factors affecting significantly utilization of ANC services were mother education, residence place, age at first pregnancy, gravida, parity, occurrence of pregnancy without planning, and number of live children. The findings of the study indicate that the factors affecting significantly number of visits were mother education, residence place, and husband work. The main reason for not receiving any antenatal care and also for not returning to health facility after first visit was absence of health problems during last pregnancy. Most of mothers didn't know the danger signs and symptoms that may occur during pregnancy.

The factors affecting utilization of antenatal care services considered determinant of maternal mortality so that should enhance the quality of ANC, organize home visits for follow-up pregnant women this will detect any health problems during the pregnancy period. In addition, health promotion and prevention programs should be taken into consideration to raise an awareness of mothers on danger symptoms and importance of ANC even in absence of health problems and family planning through mass media like TVs, Radios and posters.

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