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Antenatal Care Utilization in Debre Tabor, North West Ethiopia

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Abstract

Background: Globally, millions of women and newborns suffer from illness related to pregnancy and childbirth each year as result of low maternity care services utilization with higher share being from poor countries.

Methods: A community based cross-sectional study was conducted in Debre Tabor town from February 20 to March 21, 2013. Three hundred and seventeen women who gave birth one year prior to the study period participated in the study. The sample size was determined by single population proportion formula with assumption of 95% confidence interval, 5% margin of error. We used a pretested structured questionnaire for data collection. Five diploma-graduated trained data collectors and one BSC graduate supervisor collected the data. We entered data in to computer by Epidata version 3.1 and analyzed using SPSS 20 for window. The associations between variables were analyzed by simple and multiple logistic regressions.

Results: The Antenatal Care (ANC) utilization level in the study area was 55.7%. Only 2.6% of the respondents had adequate ANC services. 20.8% of the participants had early ANC visit while 10.1% of them had sufficient contents of care. 14.3% had adequate number of ANC visits. The main predictors of ANC utilization were educational status of mothers, plan of pregnancy, decision-making power of mother on ANC utilization, prior experience of abortion and stillbirth.

Conclusion: In conclusion, the overall ANC utilization level was low. Educational status, decision-making power and monthly income were found to affect ANC utilization. Hence, it was recommended that the responsible bodies should strive improve the decision-making power of women by increasing opportunities for women education.

Keywords: Antenatal care utilization; Debre tabor; Ethiopia

Abbreviations: ANC: Antenatal Care; EDHS: Ethiopian Demographic and Health Survey; MDG: Millennium Development Goal; MMR: Maternal Mortality Rate; WHO: World Health Organization

Introduction

Antenatal care (ANC) is a care given for pregnant woman before delivery in order to promote health of mother and fetus. It helps to cope with problems by making early detection and providing appropriate care and treatment. Antenatal care is one of the pillars of the Safe Motherhood Strategies that increases the chance of using a skilled attendant at birth; which in turn can reduce maternal morbidity and maternal mortality [1-4].

Globally millions of women and newborns suffer from illness related to pregnancy and childbirth each year with 800 women die every day. In 2010 alone, there were an estimated of 287000 maternal deaths, of which 99% occurred in developing regions, 56% of maternal deaths were occurred in Sub-Saharan Africa. Worldwide, adult lifetime risk of maternal mortality rate was 1 in 180. The intended objective of achieving the Millennium Development Goal (MDG) [5] was not met; especially in sub-Saharan Africa. Most of maternal deaths which are occurred in sub Saharan Africa could have been prevented by increasing the utilization of maternity care [6-8]. Unexpected high maternal mortality in developing countries is due to both the non-availability of services and poor utilization the available services [9].

According to Ethiopian Demography and Health Survey (EDHS) 2011 results, the maternal mortality ratio (MMR) for Ethiopia was 676 deaths per 100,000 live births, which is nearly the same with EDHS 2005. In 2010, the maternal death was estimated to be 350 per 100,000 live births and the lifetime risk of maternal mortality was 1 in 67. The percentage change in MMR between 1990 and 2010 was 64 [7,10].

The ANC coverage of Ethiopia was 34%, out of which 11% of the users got it during first trimester and 19% received the recommended four or more ANC visits [8]. In Amhara region, only 33.6% women were receiving antenatal care from a skilled provider, 7% from health extension worker, while 59.1% did not receive it at all [10].

Even though several studies have conducted on the utilization and its associated factors in developing countries, the results differ with context [11-13]. There were also inconsistencies between results of studies conducted in Ethiopia on ANC utilization and its determinants [2,14-16].

The information about current ANC utilization and factors affecting its utilization is crucial for planning, organizing and evaluation of the services. However, little was known about ANC utilization and factors affecting it in Amhara region in general and in Debre tabor town in particular. Therefore, this study aimed to provide appropriate information for managerial decision-making.

Methods

A Community based cross sectional study design that used quantitative data collection method was conducted in Debre Tabor

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town, North West Ethiopia from February 20 to March 21/2013. There were four public health institutions comprising three health centers and one hospital for 42227 people residing in the area. The study participants were sampled women of childbearing age (15-49) who lived one year in the area and had a birth in the past one year. We employed Simple random sampling technique to select the study units from name lists in their respective kebeles (villages).

The sample size was determined by using single population proportion formula with assumptions of prevalence of ANC services utilization of Amhara region (42%) [10], 95% confidence interval, 5% margin of error plus 10% non-response rate which gave a total calculated sample of 317. The dependent variable of measurement was ANC utilization and the independent variables were predisposing factors (maternal education, maternal age, husband education, marital status and family size), enabling factors (employment of women, economics status) and need factors (perceived benefit of ANC, perceived complications of pregnancy).

We collected data using a structured interview questionnaire adapted from previous similar studies [10,17,18]. Five female interviewers who have completed grade 12 and one supervisor who was health officer by profession collected the data by face-to-face interview. We gave one day training for data collectors and the supervisor on the purpose and procedures of the data collection. The questionnaire was pretested on 10% of the sample size in the neighboring (Woreta) town and modification was made.

We entered the data into computer using Epi- data version 3.1 and exported to SPSS version 20 for window software for analysis. Descriptive statistics (mean, standard deviation, percentage, and range) were carried out and the findings were presented in tables. Simple logistic regression analysis was carried out to assess statistical association between dependent and independent variables and then multiple logistic regressions was performed to control potential confounders. Variables with a P-value below 0.25 in simple logistic regression analysis were candidates for multiple logistic regressions.

We obtained Ethical clearance from Institutional Review Board (IRB), Jimma University, College of public and medical sciences ethical review board. In order to minimize the recall bias, we included only one year information for our study.

Results

Socio demographic characteristics of respondents

From the total of 317, three hundred seven participants responded to the interview with response rate of 96.8%. The none response is due to the fact that closed home of the potential participants during three visits for interview and none voluntary participants. One hundred and ninety two (62.5%) of the participants were in the middle (21-34 years) age group with standard deviation of 32.32 ± 7. Three hundred six (99.7%) were married out of which 130 (42.3%) got married before age of 18 years. Majority of respondents (97.1%) were Amhara by ethnicity, 294 (95.8) were orthodox by religion. One hundred eighty two (59.3%) had an educational status of primary school and above (Table 1).

Obstetric history and experience

From the respondents about 223 (72.6%) had more than one parity. The average number of family size was 4.6 ± 1.6. With regard to decision on the use of ANC utilization, 120 (39.1%) decided with their husband while 114 (37.1%) decided by themselves. Among the respondents 285 (92.8%) had not experienced stillbirth) (Table 2).

Proportion of ANC service utilization

One hundred and seventy one (55.7%) of the respondents had at least one antenatal care visit out of which only eight (2.6%) had adequate ANC (fulfill all sufficient contents of ANC services, early visit for ANC, and at least 4 ANC visits), sixty-four (20.8%), of participants had early time antenatal care visit. Thirty one (10.1%) of them had sufficient contents of antenatal care interventions (all basic services which includes measured blood pressure, blood/urine examinations, health education on pregnancy related complications, tetanus toxoid vaccinations during ANC visits, take iron tablet and take antihelminthic drug), forty-four (25.7%) had adequate number of antenatal care visits(at least 4 ANC visits) (Table 3).

Non-ANC attendants gave different reasons for not attending ANC utilization. Ninety two (64%) of them said because of being in a good health state, 27 (19.0%) said because of too busy to attend ANC, 18 (12.7%) said because of no/little knowledge about the ANC services while 5 (3.5%) of them said ANC services is unaffordable.

Factors that affect ANC utilization

We assessed the association of dependent and independent variable by using simple regression model followed by multiple regression models. Our simple logistic analysis showed that educational status, occupation, planned pregnancy, perceived importance of antenatal

Characteristics	Number	Percentage
Age at last pregnancy		
15-20	10	3.3
21-34	192	62.5
35 and above	105	34.2
Age at marriage		
<18	130	42.3
18 and above	177	57.7
Marital status		
Single	1	0.3
married	306	99.7
Religion		
Orthodox	294	95.8
Muslim	13	4.2
Ethnicity		
Amhara	298	97.1
Tigre	9	2.9
Educational status of mother		
Unable to read and write	74	24.1
No formal education, but Can read and write	51	16.6
Primary school	58	18.9
Secondary school	66	21.5
College and above	58	18.9
Occupation of mother		
Employed/wage	48	15.6
Housewife	157	51.1
Merchant	57	18.6
Student	30	9.8
Other	15	4.9
Husband's education		
Unable to read and write	20	6.5
No formal education, but can read and write	36	11.7
Primary school	48	15.6
Secondary school	81	26.4
College and above	122	39.7
Husband occupation		
Employed/wedge	118	38.4
Maid servant	83	27.0
Merchant	76	24.8
Student	3	1.0
Other	27	8.8

Table 1: Socio demographic characteristics of respondents, Debre Tabor town, South Gondar Zone, Northwest Ethiopia, March 2013.

Characteristics	Number	Percentage
Parity		
One	84	27.4
More than one	223	72.6
Decision on ANC		
Mother	114	37.1
Husband	73	23.8
Both	120	39.1
Decision on household purchase		
Mother	12	3.9
Husband	128	41.7
Both	167	54.4
Still birth		
Yes	22	7.2
No	285	92.8
Abortion		
Yes	35	11.4
No	272	88.6
Knowledge about complication related to pregnancy		
Yes	271	88.3
No	35	11.4
missing	1	0.3
Family size		
1-2	1	0.3
3-4	166	54.1
≥5	139	45.3
missing	1	0.3
Total	307	100

Table 2: Obstetric history and experience respondents, Debre Tabor town, South Gondar zone, North West Ethiopia 2013.

care, monthly family expenditure, women's decision-making power, experience of abortion and stillbirth and knowledge of mother on pregnancy related health problems showed significance association. Then we put variables those showed p-value of <0.25 into multiple logistic regression model to rule out confounder/s. The result of multiple analysis showed that educational status of the mother, her occupation, household's monthly income, mother's perception, planning of pregnancy, mother's empowerment and prior experience of stillbirth had significant association with ANC utilization.

Accordingly, participants who attended secondary school and above were almost three times and Women who attended primary school were two times more likely to utilize ANC as compared to those who do not read and write. Employed women were six times, students were four times and merchants were two times more likely utilized ANC than housewives respectively. In addition, household monthly income had statistically associated with antenatal care utilization where women whose household expenditure was above 2000 Birr were three times more likely to utilize ANC than those had expenditure of 100-1000 Birr/month.

Regarding to women's perception on the important of antenatal care, mothers those who said very important and somewhat important were four times more likely to utilize antenatal care than those said it is less important. Moreover, participants who had a planned pregnancy were six times more likely to utilize antenatal care than those women who had unplanned pregnancy.

With regard to women's decision making power on antenatal care utilization and household purchase, those women who decided their ANC utilization and household purchase with their husband/spouse were four and six times more likely to utilize antenatal care than those women such decisions was made by their husbands alone.

Moreover, mothers who experienced stillbirth before recent pregnancy were three times more likely to utilize antenatal care than those not experienced and mothers who experienced abortion before recent pregnancy were two times more likely to utilize antenatal care services than those not experienced (Table 4).

Discussions

In this study, the overall antenatal care utilization was 55.7%. The proportion is lower than previous study in Hadiya zone (86.3%) and Maichew town (80%) [14,17,19] but higher than a study in Yem special woreda (28.6%) [20]. The difference may be due to difference in strength of data collection in the former two and due to time difference in the later case. The finding of this study is also higher than EDHS 2011 result of Amhara ANC utilization (42%) [10]. The difference could be due to the scope of the study where EDHS 2001 covered rural and urban sites while ours is limited in urban setting.

According to the national standard, all pregnant women should receive four visits starting the first visit during first trimester and sufficient contents of ANC care throughout [3,7]. However, in this study, although the proportion of women who attended at least one ANC visit was 55.7%, the proportion of women who had attended the recommended four and above ANC visits was very low (14.3%). Moreover, only two in ten started the visit during the recommended time.

Our study's result that showed that women who attended secondary

Variable	Number	Percentage
Place of services delivery		
Home	21	1.2
Health center	16	67.8
Hospital	53	31
Total	171	100
Services provider		
Health professional	143	83.6
Urban Health extension workers	28	16.4
Total	171	100
Timing of first ANC visit		
first trimester	64	37.4
second trimester	59	34.5
third trimester	48	28.1
Total	171	100
Number of ANC visits		
One	41	24
Two	56	32.7
Three	30	17.5
Four and above	44	25.7
Total	171	100
Contents of ANC interventions(basic)		
Measured blood pressure		
Yes	167	97.7
No	4	2.3
Blood/Urine examination		
Yes	151	88.3
No	20	11.7
Awareness to pregnancy related complications		
Yes	126	73.7
No	45	26.3
Take intestinal parasite		
Yes	35	20.5
No	136	79.5
Take iron tablet		
Yes	53	31
No	118	69
TT vaccination		
Yes	153	89.5
No	18	10.5

Table 3: Proportion of women attended ANC, type of services provider, timing of ANC visit, number of visits and contents of ANC service in Debre Tabor town, South Gondar zone, North West Ethiopia 2013.

Variable	B	S.E	P- value	AOR	95%CI
Educational status of mother					
Unable to read and write[Rec]					
Can read and write	0.184	0.379	0.628	1.202	571-2.528
Primary school	0.818	0.375	0.01	2.266	1.265- 5.498
Secondary school	0.97	0.359	0.023	2.637	1.121- 4.582
College and above	1.154	0.389	0.003	3.171	1.480- 6.792
Occupation of mother					
House wife[Rec]					
Employed/wage	1.848	0.433	0	6.345	2.718-14.811
Merchant	0.877	0.338	0.009	2.403	1.240- 4.657
Student	1.54	0.463	0.001	4.666	1.883-11.561
Others	1.255	0.582	0.031	3.507	1.120-10.980
Family monthly income					
100-1000[Rec]					
1001-2000	-0.455	0.28	0.104	0.635	0.367- 1.098
≥2001	1.209	0.47	0.01	3.35	1.334-8.413
Perceived important of ANC for mother					
Very important	1.462	0.585	0.012	4.314	1.371- 13.577
Somewhat important	1.433	0.66	0.03	4.19	1.149-15.280
Less important[Rec]					
Plan of last pregnancy					
Yes	1.846	0.484	0.001	6.333	2.454- 16.340
No[Rec]					
Who decide on ANC services utilization					
Husband only[Rec]					
Mother only	-0.635	0.351	0.07	0.53	0.267-1.054
Both	1.255	0.33	0	3.507	1.837-6.694
Who decide on household purchase					
Husband[Rec]					
Mother	0.292	0.662	0.659	1.339	0.366-4.904
Both	1.79	0.29	0	5.989	3.395- 10.563
Experience of still birth					
Yes	1.136	0.535	0.034	3.116	1.092- 8.890
No **[Rec]**					
Experience of abortion					
Yes	0.898	0.417	0.031	2.454	1.085-5.554
No **[Rec]**					
Knowledge about pregnancy related complications					
Yes	0.476	0.385	0.216	1.61	0.757 -3.427
No **[Rec]**					

Table 4: Multivariate analysis results of participants' ANC utilization in Debre Tabor town, South Gondar zone, North West Ethiopia, 2013.

school and above were more likely to utilize antenatal care than those who do not read and write is similar with finding in other studies [14,20]. This could be due to the notion that education leads to increase awareness about the benefit of antenatal care utilization and pregnancy related health problems. Similarly, employed women were found more likely to utilize the services than housewives. This is consistent with a study conducted in Maichew town and EDHS 2011 [10,17].

The study also revealed that monthly family income was positively associated with antenatal care services utilization. Women whose monthly incomes were above 2000 were more likely to utilize the services than women whose monthly income is less than 1001(OR=3.35, 95% CI: 1.334-8.413). This is agreed with the result of others studies in Metekel zone and EDHS 2011 [10,16]. This might be because rich can better afford the indirect cost and might have better information about the importance and women with low monthly income might give more concern to production activities than health care. Planned pregnancy is another strong predictor of antenatal care services utilization in this study (OR=6.333, 95% CI: 2.454- 16.34). Women whose pregnancy planned were six times more likely to utilize the services than those whose pregnancy not planned. This is in line with the other studies in Haydiya zone and in Maichew town [14,17]. This could be because women give more concern for their fetus health when the pregnancy planned.

Women's decision-making power on antenatal care services utilization and household purchase was strong predictor of antenatal care services utilization (OR=3.507, 95% CI: 1.837-6.694). Women who decide antenatal care services utilization together with their husband were four times more likely to utilize antenatal care services than those who did not deicide at all on antenatal care services utilization. Similarly, women who decided on household purchase together with their husband were six times more likely to utilize ANC services than those who did not decide on household purchase. The finding agrees with EDHS 2011 [10]. This could be because their husbands support to utilize ANC services, besides to their decision. Another possible reason might be due to mother could be able to get money for their health care including ANC if decided with their husband.

Mother's experience of abortion and stillbirth also significantly associated antenatal care services utilization in this study. Mothers who experienced abortion and stillbirth were two and three times more likely to utilize than those who did not experienced abortion respectively. This might be because the experienced women know the risk of stillbirth and abortion. They might be utilize in order to, prevent abortion and stillbirth, make good pregnancy outcome.

Conclusions

In summary, the study revealed that, ANC care service utilization was inadequate in accordance with the WHO recommendation but better than the antenatal care services utilization of Amhara region of Ethiopia (EDHS 2011) that governs the study area. Low educational status of mother, poor decision-making power of mother, unemployment, unplanned pregnancy, low economic status of mother, poor perception of the women affected antenatal care service utilization. On the other hand, mother's experience of abortion and stillbirth were increase the likelihood of antenatal care services utilization.

Thus, it was recommended that the management bodies at different levels should focus on providing support to improve ANC services related to the timing of ANC visit, number of ANC visits and the contents of ANC along with improving the coverage. Moreover, it requires working in collaboration with relevant stakeholders on improving the decision making power of women and improve opportunity of women for education. In addition, a wider scope further research warranted in order to identify more policy related factors for consideration at higher level.

Limitation of the Study

Since data collection method was face-to-face interview, there might be possibility of social desirability bias. There might also be a recall bias as the information was obtained about the past one year experience.

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Competing Interests

There is no competing interest with the presented data as external data collectors collected it. There was not financial interest b/n the funder and the research area community and us. We, the researchers, have no any form of competing financial and non-financial interest between ourselves.

Authors' Contributions

We, the three, have equal contribution in proposal development, defending for fund obtaining, data collection and data analysis and manuscript preparation process of this work.

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