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Antenatal Care and Health Facility Delivery Practice among Mothers in Afar Region, Northeast Ethiopia

Yohannes Bacha[1]* and Nejimu Biza[2]

[1]*Department of Nursing, College of Medicine and Health Sciences, Ambo University, Ambo, Ethiopia*
[2]*Department of Nursing, College of Health Sciences, Samara University, Samara, Ethiopia*

Abstract

Background: Antenatal Care (ANC) and the attendance of a skilled health worker at birth are fundamental aspects of reproductive health care that all pregnant mothers should have access to. However, the proportion of mothers attending antenatal care services and levels of facility-based delivery service utilization were low in developing countries.

Methods: We performed a cross-sectional study to assess ANC and health facility delivery practice among 208 women who had at least one birth one year prior to the study in Dupti woreda (district), Afar region, Northeast Ethiopia. The data were collected using interviewer-administered questionnaires. The collected data were analyzed using SPSS Version 20.0. Chi-Square test of independence was used to determine the association between ANC use and each of the predictor variables. Binary logistic regression analyses were also used to estimate the associations between independent variables and the place of delivery.

Results: The proportion of mothers attending antenatal care services at least once were 71.6% (95% confidence intervals (CI): 65.0%-78.0%) while only 51.0% of these mothers had made the WHO recommendation of at least four ANC visits. However, 65.4% [95% CI: 59.0%-72.0%] of mothers gave birth at health facilities. The study also showed that the recommended ANC visits were associated with facility-based delivery service utilization in the study area. ANC service utilization, woman's autonomy in choice of place of delivery and the presence of pregnancy related problem during pregnancy were most significant predictors of health facility delivery service utilization by mothers (P <0.05).

Conclusion: The percentage of at least once and fourth ANC visits were 71.6% and 51.0% respectively in the study area. The utilization of facility-based delivery service was lower among women who had at least one birth one year prior to the study compared to those women who attended antenatal care services at least once. Promoting information, education and communication regarding ANC and health facility delivery service utilization, expansion and improving quality of ANC and facility delivery care services and empowerment of women are needed for optimization of the condition of the mother and the fetus.

Keywords: Antenatal care • Health facility delivery • Mothers • Northeast Ethiopia

Introduction

Background

Out of the estimated total number of 289,000 maternal deaths worldwide, 62% (179 000) occurred in sub-Saharan Africa followed by 24% (69 000) in Southern Asia [1]. In spite of considerable efforts towards attaining the fifth Millennium Development Goal (MDG 5) which established as a global goal of reducing the maternal mortality ratio by 75% between 1990 and 2015, maternal mortality has remained obstinately high throughout much of sub-Saharan Africa [2].

In Ethiopia, the number of maternal deaths annually remains unacceptably high, with over 13,000 Ethiopian women were dying in childbirth in 2013 alone [1]. High quality ANC and skilled attendance during delivery are known to play a significant role in reducing maternal deaths [3-4] and it is critically important that pregnant women utilize both of these services. An American study found that women who had received no antenatal care had a higher risk of death from preeclampsia or eclampsia than women who had received any level of prenatal care [3]. Institutional delivery was took place in only 16% of births while only 13% of women received postnatal care within the first two days of delivery [5]. In Afar national regional state of Ethiopia, the percentage of receiving antenatal care from skilled provider is 31.0% while the percentages of births delivered in a health facility is 10.0% [5].

The findings from different studies that investigated utilization of antenatal care services and institutional delivery in Ethiopia indicated that women are more likely to attend ANC than they are to deliver in health facilities [5-8]. For instance, a longitudinal study done in Tigray region Ethiopia found that despite a relatively high proportion of mothers attending antenatal care services at least once (76%), institutional delivery service utilization was low (27%) [6].

Factors associated with antenatal care and health facility delivery service utilization have been identified in a variety of studies. The different factors identified include: Age of the mother [6,9-11]. parity [6,12,13], education level of the mother [6-9,12-16] educational status of mother's partner[17-18] woman's autonomy in deciding place of delivery [7,15], residence [6, 13,15-17] economic status [9,17] and presence of pregnancy related problem [15]. A study conducted by Wilunda, et al also found that insecurity, poverty, socio-cultural factors, long distances to health facilities, lack of food at home and at health facilities, lack of supplies, drugs and basic infrastructure at health facilities, poor quality of care at health facilities and lack of participation in planning for health services were the main barriers to utilization of maternal health services [19].

***Address for Correspondence:** Yohannes Bacha, Department of Nursing, College of Medicine and Health Sciences, Ambo University, Ambo, Ethiopia, Email: yohannesbacha@yahoo.com*

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The above included studies aimed at assessing the magnitude and predictors of ANC and place of delivery as well as the relationship between the two in low and middle-income countries. However, few researches have been conducted in Afar region in Northeast Ethiopia regarding antenatal care and health facility delivery practice, as well as the relationship between them. To the best of our knowledge, there was no similar study conducted in Dupti Woreda (district) of Afar region in Northeast Ethiopia.

The objective of this study was therefore to assess ANC and health facility based delivery practice among women who had at least one birth one year prior to the study in Dupti district of Afar region in Northeast Ethiopia. Besides, the current study has tried to assess the association of antenatal care visits with facility-based delivery service utilization in the study area.

Methods

Study setting and subjects

The study was conducted in Dupti Woreda (district), in zone one of the Afar regional state in Northeast Ethiopia. A cross-sectional design was used, and interviewer administered questionnaire data were collected from mothers who had at least one birth in one year prior to the survey. We limited to the time span of one year preceding this survey in order to minimize the possible bias that may occur due to the data collection with long recall periods. The study was conducted during the period from November 2, 2015 to November 8, 2015. Women who had at least one birth in the last one year and volunteered to participate in the study were included. Those women who were severely ill and who have lived in the study area for less than 6 months were excluded.

Sample size and sampling

Sample size was estimated using a single population proportion formula and it was calculated with the following assumptions: 95% confidence level, 6.7% expected prevalence of institutional delivery among mothers in health institutions of Afar National regional state (as a proxy to health facility delivery practices), 5% margin of error, a design effect of 2 for complex sampling, and a 10% anticipated non-response rate. Based upon the above assumptions, the proposed sample size for this study was 211. The study included a total 6 randomly selected villages (kebeles), of which 4 were rural and the remaining 2 were urban kebeles. The first phase of the data collection included assessment of houses and household members to identify women who had delivered at least one child one year preceding the survey. The study team then interviewed all eligible, consented women in the area until the final sample was reached.

Data collection instruments and procedures

Our data collection tool was a structured interviewer-administered questionnaire. The questionnaire was initially prepared in English and then translated into Amharic. Part of the questionnaire was adapted from a previous study [13] and reviewing relevant literature to the problem under study to include all the possible variables that address the objective of the study. Besides, some questions for the questionnaire were also adapted from the Ethiopian Demographic and Health Survey 2011 questionnaire [20] during the training session; a few questions were paraphrased to make them more understandable. During the actual data collection, the investigators supervised data collectors. Data collection sessions were arranged by communicating with concerned bodies at all kebeles. Mothers were oriented about the objective of the study, why and how they were selected, about confidentiality of the information they provide and voluntary participation, and how to respond to the questionnaire. The data collectors translated the Amharic version of the questionnaire to Afar language (the local language) for those mothers who reported difficulty in understanding Amharic. In each study area, the data collection was facilitated by data collectors and the investigators.

Study variables

The dependent (outcome) variables for this study were "antenatal care and health facility delivery practices" which we defined "Antenatal care practice" as at least four antenatal visits among mothers with uncomplicated pregnancies by adopting the WHO recommendations [21] while "Health facility delivery practice" was defined as delivery attended by skilled birth attendants in health institutions. Both of the outcome variables were computed based on two questions regarding frequency of antenatal visits for the last pregnancy till delivery and place where the mothers delivered their last baby within the past one year prior to the survey.

Regarding the independent variables, mother's residential area referred to where the mothers were living while attending antenatal visits and delivery care. It consisted of two possible options: rural and urban. Having problem during pregnancy referred to whether the mothers had health problems while they were pregnant. Here response categories were "yes" or "no". Attitude towards danger signs related to pregnancy and childbirth which we defined as women were considered as having favourable attitude if they scored above the mean score of 9 attitude questions and unfavourable if otherwise. The other independent variables included were women autonomy regarding choice of the place of delivery, listening radio and monthly family income.

Statistical analysis

The data were entered using the software Epi Info Version 7.1.4.0 (CDC, 2014). Data were then exported to SPSS Version 20.0 (IBM, Armonk, NY, USA) for further processing. All required variable recoding and transformation were done before the final data analysis. Frequency distributions, cross-tabulations and graphs were used to describe the variables of the study. Findings were presented in text, tables and graphs. Chi-Square (χ^2) test of independence was used to determine the association between ANC use and each of the predictor variables in the study.

The association between the outcome variable (place of delivery) and several predictor variables including maternal socio-demographic characteristics was first analysed in the bivariate logistic regression model with each independent variable separately. Predictor variables with p-value 0.05 in the bivariate analysis and those variables deemed important based on literature were retained in the final multivariate logistic regression model. In the multivariate analysis, p-value < 0.05 was considered as a cut-off point for a variable to be considered as an independent predictor of the outcome variable. Association between outcome and predictor variables was calculated using odds ratio at p-value <0.05 and 95% confidence interval.

Ethical Considerations

The purpose and nature of the study was described to the study participants. Personal identification of the study participants was not undertaken and hence the data remained anonymous. Participation in the study was only on voluntary basis. In order to ensure the anonymity of responses, respondents took part in the study after verbal informed consent was secured.

Results

Socio-demographic characteristics

In total, 208 of the target 211 questionnaires were collected. Less than half of the respondents (28.4%) were in the age group 35 and above years and the average age of the study participants was 28.95 years (± standard deviation=7.3 years). More than ninety eight percent (98.1%) of the respondents were married. Regarding educational status of the respondents, 77 (37.1%) of the respondents had attended formal school of which 21 (10.1%) and 17 (8.2%) of the respondents had a medium level (grade 5-8) and secondary school and higher (grade 9 and above) level of education respectively. Muslims comprised 74.5%, Orthodox Christians 20.7%, and Protestants 4.3%. Details of the background characteristics of the study participants.

Regarding respondents past obstetrics history

Of total 208 mothers, 129 (62.0%) were first pregnant before the age of 20 years while 45 (21.6%) were pregnant at age of 20 and above years. However, 34 (16.3%) of women didn't know age at which they were first get pregnant. The mean age at first pregnancy of those mothers was 18.37 years (SD ±

3.38 years). The mean gravidity of the respondents was 3.78 pregnancies (SD 2.60 pregnancies). Age at last pregnancy of mothers was also investigated. The majority (60 (28.8%)) of the mothers were in the age group of 25-29 years during their last pregnancy. Fifty four (26.0%) of women had five and more children. One hundred eighty (86.5%) of women reported that their last pregnancy was planned.

ANC and institutional delivery service utilization

More than three-quarters, 71.6% (95% CI: 65.0%–78.0%) (n=149) of respondents had attended ANC clinic at least once during their last childbirth. However, only 51.0% (n=106) of these mothers had made four or more ANC visits while 20.7% (n=43) of them had 1-3 ANC visits. Besides, among those mothers who had made ANC visit during their last child birth, 132 (88.6%) of them reported that they were seen by skilled health professionals while 17 (11.4%) of the mothers were seen by health extension workers. The Pearson's chi square test is used to test whether there is a significant difference in the use ANC by the various explanatory variables. The use of ANC as per WHO recommendation (at least 4 visits) improves with the educational level of the woman. Utilization of at least 4 ANC visits was significantly higher among woman in rural areas and mothers with medium monthly income. The results also showed mothers who have higher educational qualification recorded the maximum number of the recommended ANC visits (85.7%) compared to mothers who had primary and secondary level of education with 65.0% and 60.0% respectively. Mothers with no education however recorded lowest number of recommended ANC visits (42.0%).

The prevalence of health facility delivery of last baby in the past one year preceding the survey was 65.4% (95% confidence interval [CI]: 59.0%-72.0%). Of all births, 65.8% were attended by a skilled birth attendant. Regarding the mode of delivery, the majority 117 (56.3%) of the deliveries were instrumental deliveries. Spontaneous vaginal deliveries were conducted in about 80 (38.5%) of mothers while 8 (3.8%) of mothers were delivered by caesarean section. The proportions of mothers who had no ANC visit, had 1-3 and at least 4 ANC visits and who had an institutional delivery were 2 (1.5%), 40 (29.4%) and 94 (69.1%) respectively (Figure 1).

Reasons for health facility delivery: Various reasons were reported for health facility delivery by those who did. The three prominent reasons were: Need better service (56.62%), "I was told to deliver at health facilities" (22.06%), and bad outcome with previous home delivery (10.29%).

Factors associated with place of delivery

Using bivariate and multivariate logistic regression, we identified different variables that were associated with place of delivery. These included ANC utilization, overall attitude of mothers' about safe delivery service utilization, religion, problems during pregnancy, and women's autonomy in choice of place of delivery. Compared to mothers who had attended ANC, those mothers who didn't attend ANC had lesser odds of delivery in health facilities (adjusted odds ratio [AOR] [95% CI]=0.002 [0.0-0.05]). Mothers who had problems during pregnancy had about 0.045 times lesser odds of institutional delivery relative to those who have a problem during pregnancy (AOR [95% CI]=0.045 [0.003-0.673). Husband only decision making power regarding place for childbirth was a powerful influence since those mothers who made decision about place for childbirth had lesser odds of institutional delivery relative to those husbands (AOR [95% CI] =0.013 [0.000-0.053).

Discussion

In this study, we assessed women's use of antenatal services and health facility delivery in Dupti Woreda in Afar region in Northeast Ethiopia. Antenatal care in pregnancy plays an important role for optimization of the condition of the mother and the fetus. Key components of ANC include the communication of health-related information, screening for risk factors, the prevention and management of complications, and preparation for delivery in a safe place by skilled attendants [22,23]. Both antenatal care and the attendance of a skilled health worker at birth are fundamental aspects of reproductive health care that all pregnant mothers should have access to. Hence this study is deemed important from clinical and sexual and reproductive health perspectives as it has attempted to identify the magnitude and factors associated with ANC and institutional delivery services utilization.

The proportion of mothers that had made the recommended visit by WHO (at least four ANC visit) is nearly 51.0%. This figure is somewhat lower than study finding in Munisa Woreda, Southeast Ethiopia [24], Democratic Republic of Congo [25] and Indonesia (78%) [26]. This figure suggest that the proportion of mothers attending the recommended antenatal care services is still low in developing countries. However, the figure is higher than that reported in other studies conducted in Ethiopia [20,27-30]. These differences could be due to socio-demographic, economic and cultural variations between the population groups under investigation in these studies. In order to achieve adequate ANC, health workers should counsel and encourage all pregnant women during their first ANC visit, to ensure that they continue their pregnancy follow up at least four times as per WHO recommendation.

In the present study we observed that increasing in the recommended ANC visits was associated relatively with increased facility delivery practice in the study area. The proportions of mothers at least 4 ANC visits were delivered in the health facilities in (69.1%) of the cases. This finding is consistent with a study findings reported in Bangladesh in which utilization of ANC was associated with increased facility delivery practice [4]. However, our study finding showed that the proportion of mothers that had made the recommended visit by WHO (51.0%) is lower than the use health facility delivery service utilization (65.4%). Despite a relatively high proportion of mothers attending antenatal care services at least once, we found low levels of institutional delivery service utilization. This alarms the health care providers and policy makes to give more attention to the ANC and health facility-based delivery service utilizations.

Improving the education of the mother in the study area as well as other parts of the country, will contribute greatly to the use of maternal and ANC services by women and thus help in reducing maternal and child mortality in Ethiopia. Specifically, women should be encouraged to pursue education beyond the primary level as the study has found that women with higher levels of education tend to make recommended ANC visits. Therefore, the need to strengthening and promoting education to delivering mothers and women in general on a daily basis on the use of maternal health services and to increase awareness in the communities should be given emphasis. This finding is consistent with a study finding reported from Ghana [31].

Our finding that mothers who had no problems during pregnancy had about 0.045 times lesser odds of health facility delivery relative to those who have a problem during pregnancy (AOR [95% CI] =0.045 [0.003–0.673) is consistent with a study finding reported in DodotaWoreda, Oromia region in Ethiopia [15] which reported odds of institutional delivery was significantly higher among those mother who had problems during pregnancy. This points the broad areas of intervention, namely the need to increase access to maternal health services and promoting proper counseling that mothers are not only expected to visit health facility when they have problems.

The limitations of this study could include the following. Firstly, there might be recall bias which may cause the mothers who took part in this study to respond wrongly during interview although the subjects included in this study were mothers who have at least one child in the past one year prior to this study. Secondly, as this study is confined to mothers dwelling in Dupti woreda in Afar Region, the findings may not be generalizable to mothers living out of Dupti woreda, Northeastern, Ethiopia. The other limitation of the study could be the small sample size which may make estimates unstable and associations between dependent and independent variables undetectable.

Conclusion

The percentage of at least once and fourth ANC visits were 71.6% and the proportion of mothers who made the WHO recommendation of at least four ANC visits was 51.0%. Women with primary, secondary and higher levels of education are more likely to use the recommended ANC visits (at least 4 visits)

compared to those without education. The utilization of facility-based delivery service was lower among women who had at least one birth one year prior to the study compared to those women who attended antenatal care services at least once. Despite the discrepancy between high proportion of mothers attending antenatal care services at least once and/or fourth visit and levels of institutional delivery service utilization, the study showed that ANC visits are associated with increased uptake of facility-based delivery. Based on the findings of this study, promoting information, education and communication regarding ANC and health facility delivery service utilization, expansion and improving quality of ANC and facility delivery care services and empowerment of women are needed for optimization of the condition of the mother and the fetus.

Declaration

Ethics approval and consent to participate

Information on the study was explained to the participants, including the procedures, potential risks, and benefits of the study. Informed voluntary oral consent was obtained from all respondents prior to the study because in our country especially in rural areas consent from guardian or parents were not experienced. In our country, Ethiopia communities in rural areas are not well familiar with different researches. The researcher who participated in the study was responsible for the privacy of the respondents. The authors confirm that all methods were performed in accordance with the relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Competing interests

The authors declare that they have no competing interests.

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Authors' Contributions

All authors (NB and YB) contributed to the design of the study and the interpretation of data. YB performed the data analysis and drafted the manuscript. All other authors (NB and YB) critically revised the draft manuscript. All authors read and approved the final manuscript. YB is the guarantor of the paper.

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