

Research Article

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The Number of Antenatal Care Visits and Its Associated Factors Among Pregnant Mothers at Sedie and Muja Primary Health Care Unit, Ethiopia

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ABSTRACT

Introduction: Antenatal care is a means to identify high-risk pregnancies and educate women, Important for protecting healthy women and their unborn children. This study assessed the number of ANC and its associated factors among pregnant women in Sedie and Muja primary health care units.

Methods: A total of 296 pregnant women, included in the current study. A multinomial logit regression analysis was employed to identify significant associated factors with a p-value<0.05.

Result: Overall 56% of women had four or more ANC services during their pregnancy in Sedie and Muja primary health care unit. One time number of ANC service gestational age _at ANC (adjusted relative risk ratio (ARRR)=1.23,95% CI= 1.07,1.40), three-time number of ANC (ARRR=0.77,95% CI=0.68,87), and four or more times number of ANC with (ARRR=0.71,95% CI=0.63,0.80). ununioned marital relation-ship (ARRR=3.14,95% CI=1.39, 5.02) were determinants for the number of ANC services.

Conclusion: The accomplishment of four and above ANC services based on the recommended schedule remains low in Sedie and Muja health care units. Variables Gestational age and ununioned marital relationships were significant among pregnant women in this study.

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Abbreviation

ANC- Antenatal Care

SVD- Spontaneous Vaginal Delivery

MLR- Multinomial Logistic Regression

WHO- World Health Organization

SSA- Sub-Saharan Africa

Keywords: Number of Antenatal Cares, Pregnant Women, Sedie and Muja, Multinomial Logit

Introduction

Antenatal care is a means to identify high-risk pregnancies and educate women since they might experience a healthier delivery and outcome [1]. Antenatal care is a permanent preventive public health intervention designed to promote maternal and infant health worldwide [2]. It is essential for protecting the health of women

and their unborn children. It is also an opportunity to promote the usage of skilled attendance at birth and healthy behaviors such as breastfeeding, early postnatal care, and planning for optimal pregnancy [3]. Improving the life-saving potential of ANC requires health systems strengthening, which includes ensuring adequate training, supplies, and infrastructure [4].

ANC programs serve as care and information directly related to pregnancy and can reduce the possible maternal risk factors, such as existing health conditions, lifestyle, and health issues [5]. Help to reduce the occurrence of maternal morbidity and mortality by providing direction through the detection and treatment of pregnancy-related complications such as information about danger signs, health promotion, birth preparedness, and care for pregnancy complications and, indirectly through the identification of at-risk population ensuring referral to other means of appropriate care [6].

Globally 303,000 maternal deaths occur due to pregnancy and childbirth-related complications each year, with 99% of them occurring in SSA and Southern Asia [7].

According to UN inter-agency estimates, the global maternal mortality ratio declined by 38 percent from 342 deaths to 211 deaths per 100,000 live births [8].

Annually, about half a million maternal deaths occur worldwide, and most of these deaths are in developing countries. Based on WHO's a new recommendation, pregnant women should have at least eight contacts with health care providers [9].

In developing countries, the proportion of pregnant women who have ANC follow-up at least one visit has increased from 64% to 81% in (1990- 2009) respectively, regardless only 39% of pregnant women attended four times or more during the year 2000–2010 [10].

In sub-Saharan-Africa specifically in, Tanzania had a high maternal mortality rate accounts, 578 per 100,000 live births, high -coverage of ANC rate, 90%, 62% at least one ANC visit, and four or more visits were attended respectively [11].

In Ethiopia, the standard annual decline of the maternal mortality rate was 5% from 1990 to 2013; out of 289,000 estimated maternal death globally in 2013, 62% were from the Sub-Saharan Africa region alone. In the same 2013 report, Ethiopia was one among ten countries comprising 58% of the global maternal deaths with 420 deaths per 100,000 live births. Globally 83% of pregnant women received ANC at least once during 2007–2014 alone. And approximately; more than 1,500 women died from pregnancy or childbirth-related complications frequently [12].

Antenatal care service is one of the health services utilizations that combat morbidity and mortality among pregnant mothers. Appropriate and recommended ANC services support; safe maternity and delivery ultimately improves maternal and child health through standard and special care.

The purpose of ANC is to monitor and safeguard the wellbeing of the mother and fetus, detect any pregnancy complications and take necessary measures, respond to the mother's complaints, prepare the mother for birth and initiate healthy attitudes mothers towards pregnancy [13].

Studies conducted in different countries reported that maternal age, number of living children, educational status, place of residence, occupation, religion, and gestational age were factors significantly associated with the usage of antenatal care services [14, 15].

However, antenatal care follow-up is vital; information on factors-of the number of ANC follow-ups in Sedie and Muja is still very- limited. Due to different reasons. Detailed investigation of factors affecting the number of ANC follow-ups is vital. Therefore, this study was conducted to analyze the number of ANC visits and its determinants among women in Sedie and Muja primary health care units.

Materials and Methods

Study Setting and Design

An institution-based cross-sectional study was -conducted at Sedie and Muja health care units. This study; was conducted; from May-01 to June-30/ 2020. The Sample; was collected at random from the two health care units; the total sample size was

296 pregnant women.

Source Population

All women who give birth in Sedie and Muja primary health care unit were the source population. The study population was women who fulfill the criteria and were; selected in the study period.

Study Variables

Dependent Variable: The outcome variable was the number of antenatal care services.

Independent Variable: Age category, Residence, gestational age, timing at ANC, mothers' education, husband education, stillbirth, antenatal care, mode of delivery, maternal status during delivery, and the marital category; were considered as explanatory variables.

Operational Definition

Number of ANC: The number of visits to receive antenatal care among women who give During their course of pregnancy [16].

Inclusion Criteria

All women coming for delivery service in Sedie and Muja primary health care unit / aged 15–49 years, had given birth or pregnant during the year before the interview,

Exclusion Criteria

Women who have known medical illness (hypertension, DM, Cardiac Diseases Liver Diseases)/ This study excluded the mothers with any mental problem.

Sample size determination

The explanatory variables include the residence of the respondent, gestational age at ANC, Time, and Marital category. A simple random sample of 296 pregnant women were-selected from a Sedie and Muja primary health care unit. The sample size was determined using the formula for the; estimation of a single population proportion with an assumption of 95% confidence interval, 5% margin of error, and 71.33% of expected proportion of ununioned [17].

using 10% non-response rate, 296 pregnant women who were using ANC services was selected using a simple random sampling technique in both the two- primary health care units (Muja and Sedie).

Data Collection Procedure and Quality Control

Data was; gathered using face-to-face interviews. The questionnaires were first developed in English and then translated to the local language Amharic then translated back into English to check its consistency. 2 days of training were; given for data collectors. Four professional data collectors and one administrator were engaged, who are competent and trained in antenatal care service supervision.

Data Processing and Analysis

All questionnaires were checked manually for completeness and consistency. Epi-data 4.3.2; was used to extract, code, tabulate, and enter data, then exported into Stata 16MP. For analysis. Descriptive- statistics were; done to describe the socio-demographic and obstetric characteristics of the study participants.

The data contain a nominal categorical dependent variable, and the analysis was; done using multinomial logistic regression using log link function in the generalized nonlinear model. However, the iteration was long to minimize the number of iterations we

analyzed using a multinomial logit model with maximum likelihood value, and two variables were significant. To select candidate variables for categorical data, a multinomial logit model was done. Variables whose P-value <0.25 was considered as fit for the multinomial logit model. Model adequacy was checked using the maximum likelihood of a greater value considered as a well-fitted model. Finally, two side p-value less than 0.05 were used to declare statistical significance.

Result

A total of 296 pregnant women 174(58.78%) respondents were from urban areas. Of these respondents, 281(94%) SVD, 1(0.34%) SVD with vacuum, and 12(4.05%) SVD with episiotomy. Overall, 209(70.41%) respondents were late for antenatal care services. Whereas 22(7.12%) respondents were ununioned Table 1.

Table 1: Socio-demographic and Obstetric characteristics among pregnant women at Sedie and Muja primary health care unit, Ethiopia: Multi-center cross-sectional study

variable	frequency	percent
Urban	174	58.78
rural	122	41.22
gestational_age_at_ANC	296	100%
SVD	281	94.93
SVD with episiotomy	12	4.05
SVD with vacuum	1	0.34
other procedure	2	0.68
early	87	29.59
late	209	70.41
unioned	274	92.88
ununioned	22	7.12

Table 2: Mean and standard deviation of explanatory variables among pregnant women at Sedie and Muja primary health care unit; Ethiopia: Multi-center cross-sectional study

Variable	Mean	St. deviation
residence urban	0.41	0.49
gestational_age_at_ANC	19.88	5.98
mode_delivery		
SVD with	1.04	0.19
SVD with	1.00	0.06
other procedure	0.01	0.08
time_anc		
late	0.70	0.46
marital_cat		
ununioned	0.07	0.26

Table 3: Result of the estimate of marginal effect among pregnant women at Sedie and Muja primary health care unit, Ethiopia: Multi-center cross-sectional study

variable	1-time		3-times		>=4-times	
	Dy/Dx	p> z	Dy/Dx	p> z	Dy/Dx	p> z
Residence						
Urban	-0.03	0.08	-0.05	0.30	0.09	0.08
gestational_age_at_ANC	0.01	0.00	1.00	0.89	-0.03	0.00
mode_delivery						
SVD with episiotomy	0.22	0.11	-0.26	0.00	0.06	0.61
SVD with vacuum	-0.02	1.00	0.69	0.99	-0.56	0.00
other procedure	-0.06	0.09	-0.26	0.00	0.44	0.00
time_anc						
late	0.07	0.03	-0.01	0.92	0.07	0.41
marital_cat						
ununioned	0.19	0.05	-0.02	0.87	-0.11	0.31

The figure represents the percentage distribution of antenatal care services of women who attend ANC were 7.1%, 11.79%, 24.66%, and 56.76% one, two, three, and four or more ANC services user respectively figure.

Number of ANC Services During Pregnancy

The median and mode of antenatal care services among pregnant women were 2.3 and 3, respectively. Overall, 43.3% of women had three or more ANC services during their pregnancy. And only 56.76% of the woman had four or more ANC services during their pregnancy in Sedie and Muja primary health care unit.

Factors Associated with The Number of Antenatal Care Services

The percent change in variation in the final model showed about 87.2% of the total variability in the number of ANC services explained. Factors significantly associated with; the number of antenatal care services was gestational age_at_ANC and ununioned. A one-unit increase in gestational age_at_ANC for 1-time at ANC service relative to 2-time at ANC service increased by 1.23 times more likely to attain ANC service when 3-times and >=4-times coming to delivery at ANC service were held constant. A one-unit increase in gestational age_at_ANC for 3-time at ANC service relative to 2-time at ANC service decreased by 0.76 times less likely to attain ANC service when 1-times and >=4-times coming to delivery at ANC service were held constant. A one-unit increase in gestational age_at_ANC for >=4-time at ANC service relative to 2-time at ANC service decreased by 0.71 times less likely to attain ANC service when 3-times and 1-times coming to delivery at ANC service were held constant. Ununioned marital relationship relative to unioned was 3.145 times more likely to be attained; ANC service preferred to coming to 1 time ANC service compared to 2-time ANC service given all other predictor variables in the model were held constant Table 4

Table 4: Multivariate logit model among pregnant mothers at Sedie and Muja primary health care unit, Ethiopia: Multi-center cross-sectional study

Variable	1 time			3 time			>=4 time		
	RRR	P> z	[95% Conf. Interval]	RRR	P> z	[95% Conf. Interval]	RRR	P> z	[95% Conf. Interval]
residence									
urban	0.51	0.43	0.09 2.81	1.14	0.81	0.41 3.14	1.75	0.25	0.68 4.53
gestational_age_at_ANC	1.23	0.00	1.07 1.41	0.77	0.00	0.68 0.87	0.71	0.00	0.63 0.80
mode delivery									
SVD with episiotomy	21.04	0.08	0.67 6.69	2.67	0.99	-50.02 53.14	0.80	0.85	0.08 7.76
SVD with vacuum	25	1.000	90.43 91.91	3.5	1.00	-51.53 56.31	0.06	1.00	-6.24 8.61
other procedure	6.10	1.000	-24.22 28.84	0.62	1.00	-23.84 27.85	3.56	0.99	-17.01 18.79
time_anc									
late	73.5	0.99	-20.09 21.11	2.18	0.38	0.38 12.37	2.71	0.24	0.52 14.18
marital_cat									
ununioned	23.14	0.03	1.39 383.63	1.09	0.94	0.09 12.46	0.86	0.90	0.08 8.95

Discussion

In this study, Gestational age-at-ANC and ununioned marital relationship, both of these two variables were significant factors at 1-time ANC services in Sedie and Muja health care units. This study differed from others carried out in Ethiopia [18-21]. So far, that it considered obstetrics characteristic variables and used binary logistic regression with robust standard error estimates.

This analysis helps to quantify the association of demographic and obstetric characteristics on the number of antenatal care services among pregnant women to increase the number of antenatal care visits, it should be encouraging the program.

This study estimated that 56.8% of pregnant women in Sedie and Muja had received four or above ANC services during their pregnancy. It indicates that good improvement is needed; as compared to a study in Uganda (52%) of women who had four or more antenatal care follow-ups during their last pregnancy, and (40%) of women; received antenatal care services at least once during their pregnancy. In Ethiopia, 48.2% and southern Ethiopia (29.2%) of women completed four or more ANC visits among first birth order pregnancies of their last delivery [22, 23].

In our result, 43.3% of women had at least one ANC service during their pregnancy, indicates that it needs improvement as compared to studies in Rural Ethiopia which is 58.8%, Northern Ethiopia (98.1%), and Opportunities for Africa's Newborns (69%) had received at least one ANC contact. In Rural Ethiopia, 27.3% of women had at least four times ANC visits during their pregnancy which is less than our study [24-26].

In our study, gestational age at ANC was significant in (1 to >=4-times ANC) not aligned with the studies in Southern Ethiopia [27].

Our study estimates that 29.59% of pregnant women began antenatal care service early. Shows improvement needed, as compared to studies in Ethiopia, 38.96% of pregnant women; began antenatal care service early [28].

In our study, the residence was not a significant factor; unlike the study in Ethiopia, residence was one of the factors of ANC services among pregnant women [29].

The study shows most of the pregnant women were unioned (92.88%); which shows improvement as compared to studies in Addis Zemen primary hospital greater than 94% of women were married [30].

Regarding the time of visit, 67.33% attended their first visit before 22 weeks of gestational age, 18.02% attended their second visit before 24 weeks of gestation, 6.46% attended their third visit before 38-weeks of gestational age, and 0.34% attended their fourth weeks of gestational age. Different in a study in northern Ethiopia which is (80.7%, 58.4%, 42.2 and 58.0%) attended for first, second, third, and fourth weeks of gestational age respectively [31].

Conclusion and Recommendation

In this study, the proportion of women who received four or more antenatal care services was 56.78%. For women who come, the urban- area; was held at its mean, 0.41. The final multinomial logit, model gestational age-at-ANC, and ununioned marital relationship were statistically significant. In our result, ANC services implemented only at ununioned marital relationships this-indicates unioned marital; relationships were not beneficial since intervention is needed to initiate them.

Ethical Consideration

Ethical clearance and approval letters; were obtained from Debre Tabor University, the ethical-review committee, and an official letter submitted to the concerning bodies. Verbal consent was; obtained from each participant. The study participants were informed about their right to withdraw from the interview at any time. without, affecting the utilization of their services. Confidentiality; was kept throughout the study.

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Declaration Statement

Availability of data and materials

The data was available from the corresponding author at the time of the reasonable request.

Conflict of interest

No conflict of interest

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