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Research Article

Determinants for Non-Use of Antenatal Care Service during Last Pregnancy among Mothers in Abobo District, Gambella Region, Ethiopia: Case-Control Study

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Abstract

Introduction: In developing countries where maternal mortality is fourteen times higher than developed countries, only 52% of women received the recommended number of antenatal care visits in 2014. Antenatal care (ANC) service utilization in Ethiopia is still by far below any acceptable standard. Hence, the problem still remains a challenge in the country.

Objective: The aim of the study was to identify determinants of ANC service non-utilization during last pregnancy among mothers in Abobo district, Gambella Region, Southwest Ethiopia, 2019.

Methods: A community based unmatched case-control study was conducted on 82 cases and 164 controls from March 12 to April 12, 2019. Mothers who did not utilize ANC service during their last pregnancy were considered as cases, while mothers who utilized ANC service during their last pregnancy were controls. Data entry was done using EpiData version 3.1, and analysis was made using SPSS version 20. A binary logistic regression was employed to identify significant predictors of ANC service non-utilization. Adjusted odds ratio (AOR) with 95% confidence interval (CI) was calculated to determine the strength of association and P-value < 0.05 was used to establish significant association.

Results: A total of 246 participants were interviewed in this study. The multivariable analysis showed that poor knowledge on obstetric complication [AOR: 3.17, 95%CI: (1.74 - 5.79)], negative attitude towards ANC service [AOR: 2.07, 95%CI: (1.15 - 3.76)], no media exposure [AOR: 2.32, 95%CI: (1.27 - 4.23)] and distance from ANC providing health facilities [AOR: 5.27, 95%CI: (1.02 - 27.23)] were significant predictors of ANC non-utilization.

Conclusion: The findings do support that poor knowledge about obstetric complications, negative attitude towards ANC service, no media exposure and distance from health facility showed a significant association with ANC non-utilization. It is recommended that providing awareness and health education about the ANC service is crucial for pregnant women.

Keywords: *Antenatal Care Service; Pregnancy; Mothers*

Abbreviations

ANC: Antenatal Care; AOR: Adjusted Odds Ratio; CI: Confidence Interval; COR: Crude Odds Ratio; DHS: Demographic Health Survey; EDHS: Ethiopia Demographic Health Survey; HC: Health Center; HF: Health Facility; HP Health Post; Km: Kilometer; MM: Maternal Mortality; MMR: Maternal Mortality Ratio; PCA: Principal Component Analysis; SPSS: Statistical Package for Social Sciences; SSA: Sub-Saharan Africa; VIF: Variance Inflation Factor; WHO: World Health Organization

Introduction

Antenatal care (ANC) is an important determinant of maternal and perinatal mortality and ANC attendance is crucial component of maternal health care services on which the health of mother and newborn depends [1]. Good care during pregnancy is important for the health of the mother and development of the unborn baby. Moreover, provision of good ANC links the woman and her family with the formal health system, increasing the chance of using skilled attendant at birth and contributes to good health through the life cycle. Whereas inadequate care during this time breaks a crucial link in the continuum of care and affects both mother and babies [2].

Globally, the Maternal Mortality Ratio (MMR) fell by 37% during 2000 - 2015. Despite that in 2015; 303,000 maternal deaths occurred more than one women died for every 500 births. These MMR is highest in African region where one woman dies for every 185 children born [3]. In 2015, developing regions account for approximately 99% of the global maternal deaths with Sub-Saharan African (SSA) alone accounting for rough 66%, followed by Southern Asia (66,000) [4]. Ethiopia is one of the SSA countries where 19,000 maternal deaths are annually registered [5].

Regardless of the efforts made by the government to improve maternal health using various strategies, Ethiopia is one of the countries with highest maternal mortality ratio in the world [6]. These various strategies have been implemented with a key intervention to bring women who were not able to reach to the health facilities for maternity care services and to encourage providers to delivery services. However, these strategies have been implemented, improvement in maternal and perinatal mortality in the country is minimal over time. Similarly, the Ethiopian MMR per 100,000 live births were 676 in 2011 [7] and 412 in 2016 [8] which is far from targeted reduction to 199/100,000 live births [6].

Although World Health Organization (WHO) recommends a minimum of four ANC visits for every pregnant woman, only about 50% of women in developing countries received adequate ANC [9]. In developing countries where maternal mortality is fourteen times higher than developed countries, only 52% of women received the recommended number of antenatal care visits in 2014 [10]. In Ethiopia, only about 32% of the women had four or more ANC and 64% of the women had at least one ANC visits while about 36% women did not received any ANC, during their pregnancy [7]. These figures indicate that ANC service utilization in Ethiopia is still by far below any acceptable standard. Hence, the problem still remains a challenge in the country.

A countrywide report of Ethiopian Demographic and Health Survey (EDHS) 2016 also depicted that the proportion of women age 15 - 49 in country who received antenatal care (ANC) has increased from 27% in 2000 to 34% in 2011 and 62% in 2016. The survey also indicated that utilization of ANC services among regional states of Ethiopia was uneven. The EDHS data reported that 96.8%, 90%, 87.2%, 75.9%, 72.3% and 43.6% were proportion of women who utilized ANC services in Addis Ababa, Tigray, Dire Dawa, Harari, Gambella and Somali, respectively [8]. Utilization of ANC services in Gambella region was low as compared to other parts of Ethiopia mentioned above.

Different cross-sectional studies conducted previously in Ethiopia shows that receiving a high quality of ANC care, mother educational status, husband's educational and occupational status, living with a short distance from the health facility, lower wealth status, women who had planned pregnancy and autonomy on health care decision making, have exposure to media, and low parity were the contributing factors for adequate ANC service [5,11-15].

In order to improve utilization of ANC services in Gambella region it is necessary to conduct researches to identify the determinants for non-use of ANC utilization that provides local evidences in the setting.

Aim of the Study

This study aimed to identify determinants for non-use of ANC service utilization during last pregnancy among mothers in Abobo district, Gambella region, Ethiopia.

Methods and Materials

Study setting, design and population

The study was conducted at Abobo woreda which is one of the administrative woredas found in the Anguwa Zone, Gambella region, Southwest Ethiopia. It is about 808 Km away from Addis Ababa and 42 Km from the capital city of the region, Gambella town. The woreda consists of 19 kebeles (the smallest administrative unit in Ethiopia). The total population of the woreda was an estimate 31,209; out of which 51% was female. From the total population, 8,146 women were in the reproductive age group. The number of mothers who gave birth in the woreda in the last one year (from March 2018 to February 2019) was 936. In the woreda there are four health centers and fifteen functional health posts.

A community based unmatched case-control study was conducted from March 12 to April 12, 2019. The study populations were mothers who gave birth in the last one year preceding the current study. Cases were mothers who did not utilize ANC service at all during their last pregnancy irrespective of the birth place. Controls were mothers who did utilize ANC service at least once during their last pregnancy irrespective of the birth place. Women with birth outcomes of abortion or stillbirths were excluded from this study.

Sample size determination

The sample size was determined using the Epi Info version 7 software program by considering 80% power, 95% confidence level, 10% non-response rate, a1: 2 case to control ratio, and taking exposure factors of ANC from different studies [14]. The sample size was 246 (82 cases and 164 controls).

Sampling procedure

Stratified random sampling technique was used to select the study participants. All the 19 kebeles (two urban and 17 rural) found in Abobo Woreda were taken. Then, sampling frame was prepared for cases and controls separately for each kebele with their corresponding household identification numbers by making house-to-house survey. Sample size was allocated by proportional to the size allocation of each kebele. Finally, 82 cases and 164 controls were selected by simple random sampling technique within each strata using computer-generated random number by Excel sheet.

Data collection tools and procedures

The data were collected by using structured questionnaire which was adapted from different previous literatures and Ethiopian DHS. The adapted questionnaires were contextualized and translated into Amharic and the local language (Anguwa) and translated back into English by the third person to check for its consistency. The data were collected through face to face interview technique by seven trained diploma nurses. The training for data collectors was given on how they ask and fill the questions, sampling procedure of the mothers and on how to approach the mothers. Before actual data collection the questionnaire was pre-tested for appropriateness and internal consistency on 5% of the calculated sample size (four cases and nine controls) in the nearest woreda (Gog woreda).

Operational definitions

- Predisposing factors: This implies the proclivity to utilize health care services. An individual is more or less likely to use health services based on demographics, position within the social structure, and beliefs of health services benefits.

- Enabling factors: Implies the resources found within the family and community.
- Need-based factors: This includes the perception of the need for health services, whether individual, social, or clinically evaluated perceptions of need.
- Household wealth index: Includes household ownership of selected assets, such as television, bicycles, housing constructions, type of water access, and sanitation facilities.

Data processing and analysis

Data were cleaned, coded, and entered into Epidata version 3.1then exported to Statistical Package for Social Sciences (SPSS) version 20 for further analysis. A descriptive analysis was carried out to see the distribution of independent variables. Bivariate analysis was performed to see the association between dependent variable and each independent variable. A P-value of less than 0.25 was used as cutoff point to select candidate variables for multivariable analysis. Multivariable logistic regression analysis was employed to determine significant association between outcome and independent variables. Multicollinearity diagnostic was done by checking variance inflation factor (VIF), and no problems were identified. A P-value of < 0.05 was taken to determine significant predictors and the strength of the association was seen by using Adjusted Odds Ratio (AOR). The model fitness was checked by Hosmer-Lemeshow goodness of fit test and the model was declared as fit since P value was greater than 0.05.

Ethical clearance

Ethical clearance was obtained from Jimma University Institute of Health Ethical Review Committee. Permission letters were also obtained from Gambella regional health bureau and Abobo woreda health office. The study purpose, procedure, duration, possible risks and benefits of the study were clearly explained for the study participants. Informed verbal consent was obtained from each study participants before data collection. Confidentiality was assured by excluding the name of study participants.

Results

Socio demographic characteristics of cases and controls

In the current study, a total of 82 cases and 164 controls were included with a response rate of 100% in both groups. Of total respondents, 37 (45.1%) cases and 57 (34.8%) controls were above age of 30 years. The median ± IQR (Inter quartile range) age of cases and controls were 30.00 ± 10 and 28.00 ± 6 years respectively. Concerning residency status, 60 (73.2%) cases and 103 (62.8%) controls were rural residents. About 29 (35.4%) cases and 64 (39.0%) controls had secondary and above educational status. Regarding ethnicity, majority of study participants 55 (67.0%) cases and 102 (62.2%) controls were Anyuak (Table 1).

Table 1: *Bivariate analysis of sociodemographic factors among cases and controls in Abobo woreda, Gambella region, Southwest Ethiopia, 2019.*

Variables	Category	Cases (82) No.%	Controls (164) No.%	COR (95%CI)	P value
Age of mothers (In Years)	15-24 Year	22 (26.8)	44 (26.8)	1	
	25-29 Year	23 (28.0)	63 (38.4)	0.73 (0.36-1.47)	0.379
	≥30 Year	37 (45.1)	57 (34.8)	1.29 (0.67-2.50)	0.437
Residence	Rural	60 (73.2)	103 (62.8)	1.62 (0.90-2.89)	0.106*
	Urban	22 (26.8)	61 (37.2)	1	
Educational Status of mothers	No formal education	28 (34.1)	38 (23.2)	1.63 (0.84-3.14)	0.147*
	Primary (1 - 8)	25 (30.5)	62 (37.8)	0.89 (0.47-1.69)	0.720
	Secondary and above	29 (35.4)	64 (39.0)	1	
Educational Status of husbands	No formal education	16 (19.5)	27 (16.5)	1.47 (0.70-3.08)	0.305
	Primary (1-8)	33 (40.2)	55 (33.5)	1.49 (0.82-2.69)	0.185*
	Secondary and above	33 (40.2)	82 (50.0)	1	
Occupational status of mothers	Housewives/Farmer	63 (76.8)	117 (71.3)	2.42 (0.79-7.47)	0.123*
	Students	9 (11.0)	20 (12.2)	2.02 (0.53-7.72)	0.302
	Merchants	6 (7.3)	9 (5.5)	3.00 (0.67-13.40)	0.150*
	Government employee	4 (4.9)	18 (11.0)	1	

Occupational status of husbands	Farmer	50 (61.0)	79 (48.2)	2.27 (1.09-4.71)	0.028*
	Students	10 (12.2)	13 (7.9)	2.76 (0.97-7.83)	0.057*
	Daily Laborer	5 (6.1)	14 (8.5)	1.28 (0.38-4.27)	0.688
	Merchants	5 (6.1)	15 (9.1)	1.19 (0.36-3.96)	0.771
	Government Employee	12 (14.6)	43 (26.2)	1	
Family size	< 5	33 (40.2)	69 (42.1)	1	
	≥5	49 (59.8)	95 (57.9)	1.08 (0.63-1.85)	0.784
Parity	One birth	18 (22.0)	33 (20.1)	1	
	Two birth	18 (22.0)	36 (22.0)	0.92 (0.40-2.05)	0.832
	Three birth	13 (15.9)	36 (22.0)	0.66 (0.28-1.56)	0.34
	Four birth	16 (19.5)	30 (18.3)	0.98 (0.42-2.26)	0.958
	Fifth and above birth	17 (20.7)	29 (17.7)	1.08 (0.47-2.46)	0.865

*Note: * Significant at p < 0.25*

Abbreviations: COR=Crude Odds Ratio, CI=Confidence Interval.

Knowledge, attitude and decision towards ANC service use

Thirty-eight (46.3%) cases and eighty-seven (53.0%) controls had good knowledge about danger signs of pregnancy. Regarding knowledge about obstetric complications, 28 (34.1%) cases and 102 (62.2%) controls had good knowledge.

Regarding about attitude towards ANC services, six questions related to benefits related to ANC service use, health professionals' skill, health services staffing, and availability of supplies were asked. Accordingly, 36 (43.9%) cases and 114 (69.5%) controls had positive attitude towards ANC services (Table 2).

Table 2: *Bivariate analysis of knowledge, attitude and decision on ANC service among cases and controls in Abobo woreda, Gambella region, Southwest Ethiopia, 2019.*

Variables	Category	Cases (82) No.%	Controls (164) No.%	COR (95%CI)	P value
Knowledge on danger sign of pregnancy	Poor	44 (53.7)	77 (47.0)	1.31 (0.77-2.23)	0.322
	Good	38 (46.3)	87 (53.0)	1	
Knowledge on obstetric complications	Poor	54 (65.9)	62 (37.8)	3.17 (1.82-5.53)	<0.001*
	Good	28 (34.1)	102 (62.2)	1	
Attitude towards ANC services	Negative	46 (56.1)	50 (30.5)	2.91 (1.68-5.04)	<0.001*
	Positive	36 (43.9)	114 (69.5)	1	
Decision to use ANC service	Self	28 (34.1)	41 (25.0)	1.14 (0.37-3.49)	0.821
	With husband	30 (36.6)	75 (45.7)	0.67 (0.22-1.99)	0.469
	Husband alone	18 (22.0)	38 (23.2)	0.79 (0.25-2.51)	0.689
	Others*	6 (7.3)	10 (6.1)	1	

*Note: *Significant at p < 0.25; others* (other family members like mothers).*

Abbreviations: COR=Crude Odds Ratio, CI=Confidence Interval.

Socio economic and health service related factors

Concerning the household wealth index, 25 (30.5%) cases and 63 (38.4%) controls were in the rich wealth tertile (category). Regarding to health service-related characteristics, almost all of the cases and controls mentioned that there was health facility in their residence (Table 3).

Table 3: *Bivariate analysis of Socioeconomic and health service related factors of cases and controls in Abobo woreda, Gambella region, Southwest Ethiopia, 2019.*

Variables	Category	Cases (82) No.%	Controls (164) No.%	COR (95%CI)	P value
Media exposure	No	52 (63.4)	72 (43.9)	2.22 (1.28-3.82)	0.004*
	Yes	30 (36.6)	92 (56.1)	1	
Wealth index	Poor	29 (35.4)	53 (32.3)	1.37 (0.72-2.64)	0.331
	Medium	28 (34.1)	48 (29.3)	1.47 (0.76-2.84)	0.251
	Rich	25 (30.5)	63 (38.4)	1	
Accessibility of HF (Distance in KM)	≤ 5 KM	73 (89.0)	162 (98.8)	1	
	> 5 KM	9 (11.0)	2 (1.2)	9.98 (2.10-47.38)	0.004*
Means of Transportation	No	25 (30.5)	56 (34.1)	0.85 (0.48-1.49)	0.565
	Yes	57 (69.5)	108 (65.9)	1	

*Note: * Significant at p < 0.25.*

Abbreviations: COR=Crude Odds Ratio, CI=Confidence Interval.

Need based factors of cases and controls

Of total respondents, 37 (45.1%) cases and 102 (62.2%) controls had history of obstetric complications specifically increased blood pressure during her last pregnancy. Regarding to plan for last pregnancy, 36 (43.9%) cases and 92 (56.1%) controls reported that they had plan for their last pregnancy (Table 4).

Table 4: *Bivariate analysis of need based factors of cases and controls in Abobo woreda, Gambella region, Southwest Ethiopia, 2019.*

Variable	Category	Cases (82) No.%	Controls (164) No.%	COR (95%CI)	P value
History of obstetric complication (Raised BP)	No	45 (54.9)	62 (37.8)	2.00 (1.17-3.42)	0.011*
	Yes	37 (45.1)	102 (62.2)	1	
Plan for last Pregnancy	No	46 (56.1)	72 (43.9)	1.63 (0.95-2.78)	0.072*
	Yes	36 (43.9)	92 (56.1)	1	

*Note: * Significant at p < 0.25.*

Abbreviations: COR=Crude Odds Ratio, CI=Confidence Interval.

Determinants for non-use of antenatal care service among mothers

We found four variables significantly associated with non-use of ANC service. Mothers who had poor knowledge on obstetric complication [AOR: 3.17, 95%CI: (1.74 - 5.79)], mothers who had negative attitude towards ANC service [AOR: 2.07, 95%CI: (1.15 - 3.76)], mothers who had no media exposure [AOR: 2.32, 95%CI: (1.27 - 4.23)] and mothers who were residing greater than five kilometers from ANC providing health facilities [AOR: 5.27, 95%CI: (1.02 - 27.23)] (Table 5).

Table 5: *Multivariable analysis of determinants for non-use of antenatal care Service among mothers in Abobo woreda, Gambella region, Southwest Ethiopia, 2019.*

Variable	Category	Cases No.%	Controls No.%	AOR (95%CI)	P value
Knowledge on obstetric complications	Poor	54 (65.9)	62 (37.8)	3.17 (1.74-5.79)	<0.001*
	Good	28 (34.1)	102 (62.2)	1	
Attitude towards ANC services	Negative	46 (56.1)	50 (30.5)	2.07 (1.15-3.76)	0.016*
	Positive	36 (43.9)	114 (69.5)	1	
Media exposure	No	52 (63.4)	72 (43.9)	2.32 (1.27-4.23)	0.006*
	Yes	30 (36.6)	92 (56.1)	1	
Distance in KM	≤ 5 KM	73 (89.0)	162 (98.8)	1	
	> 5 KM	9 (11.0)	2 (1.2)	5.27 (1.02-27.23)	0.047*

*Note: *Statically significant at p value < 0.05.*

Abbreviations: AOR: Adjusted Odds Ratio; COR: Crude Odds Ratio; CI: Confidence Interval and KM: Kilometer.

Discussion

The finding of this study showed that mothers who had poor knowledge about obstetric complications are more likely to not utilize antenatal care service than those who had good knowledge about obstetric complications during pregnancy. This finding was consistent with previous studies done in Ethiopia [16-18]. Similarly, a study conducted in Indonesia based on DHS shows that mothers who had no knowledge about obstetric complications during pregnancy was significantly association with antenatal care service utilization [19]. The possible explanation for this association could be that mothers who were knowledgeable about obstetric complications might have practical experience of history of danger sign and life treating conditions than those did not. This experience could motivate mothers to attend antenatal care services during her pregnancy.

Mothers who had negative attitude towards ANC service are more likely to not utilize ANC services when compared with their counterparts. The current finding is in line with other previous studies in Holeta town and Southwest Shoa Zone in Ethiopia [20,21]. In line with this finding from a review of literatures on determinants of ANC utilization in Sub-Saharan countries reported similar result [22]. This could be explained as mothers who had negative attitude towards ANC service might not get information about the importance of the service utilization.

The current study revealed that mothers' who had no media exposure had a significant association with not utilization of antenatal care service. According, the odds of not utilizing ANC service is about 2.3 times higher for mothers who had no media exposure when compared to their counterparts. This finding is comparable with results of other previous studies [13,20,23-25]. Furthermore, a result of DHS from Indonesia also reported that mothers with less exposure to mass media were more likely to underutilize ANC services [19]. The

possible explanation for this finding might be due to the fact that accessing information about the benefits of ANC utilization and danger signs of pregnancy could assist mothers in making decision for utilization of service. This finding provides support to the conceptual premises that information on availability of ANC service, its benefits and danger signs of the pregnancy made them to utilize the service. It also indicates that disseminating information through different mass media in terms of language they can listen is essential to made them to utilize the ANC services.

Moreover, the current study revealed that distance to health facility is a significant determinant of ANC service utilization. According, mothers who reside in greater than five Kms to the health facilities are more likely to not utilize ANC service compared to their counterparts. This finding was supported by the findings from previous studies conducted in Tigray region, Yem, Dejen and Andeddistric, Ethiopia and Nigeria which reported that proximity to health facility as significant factor for ANC utilization [5,26-28]. Moreover, previous study in Indonesia also revealed similar finding that proximity to health facility was a significant predictor of the ANC service utilization [19]. This could be explained as mothers who reside far to health facilities might be burdened to travel and cost of transportation.

Limitation of the Study

The limitation of this research might be prone to recall bias since the mothers were asked about past exposure which may leads to false result. Since the data collectors were health workers, social desirability bias was other limitation of the current study and it could affect the result of the study. However, helping mothers to remember their past event, provision of training for data collectors and supervision of their activities on daily basis was done to minimize the possible effects of these biases.

Conclusion

This study identified the determinants of the non-utilization of ANC services in Abobo district. Accordingly; poor knowledge about obstetric complications, negative attitude towards ANC service, no exposure to mass media and the distance of health facility were significant predictors of non-utilization of ANC service utilization in Abobo district. Therefore, the regional and district health offices and other stakeholder need to work together to provide health education on obstetric complications and using different mass media as source of information dissemination.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author based on reasonable request.

Consent

“Not applicable” in this section.

Conflicts of Interest

The authors declare that they have no conflict of interests.

Authors’ Contributions

Both authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting and reviewing the manuscript for important intellectual content; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

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