ANTENATAL CARE SERVICE UTILIZATION AMONG WOMEN WHO GAVE BIRTH AMID COVID-19 PANDEMIC IN WOLLEGA ZONE, WEST ETHIOPIA: COMMUNITY BASED CROSS-SECTIONAL STUDY

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ABSTRACT

BACKGROUND: The counter effect of COVID-19 preventive measures is believed to affect the health care utilization of many vulnerable populations including pregnant mothers. Because of the newness of the disease, there is a dearth of information regarding maternal health service utilization amid the pandemic. Hence, this study was aimed to assess antenatal care service utilization and associated factors among women who gave birth amid the pandemic in West Ethiopia.

METHODS: A community-based cross-sectional study was carried out in selected districts of West Ethiopia. A systematic random sampling technique was used to select the study participants. Epi data version 3.1 and Statistical Package for the Social Sciences window (SPSS) version 25.0 were used for data entry and analysis respectively. Both bivariable and multivariable logistic regression was done.

RESULTS: A total of 827 participants were involved in the study with a response rate of 97.87 %. The prevalence of antenatal cares service utilization among mothers who gave birth during the pandemic was 450 (54.4 %) with 95% confidence interval (51.0, 57.6). Age of mother, residence, occupation of mother, educational level of the mother, fear related to spreading of COVID-19 in the community, fear of being infected, following government guidelines, using a facemask, covering face and mouth when coughing, and level of practice towards covid-19 prevention measures had a statistically significant association with antenatal cares service utilization.

CONCLUSION: The finding of this particular study revealed that there is a low antenatal care service utilization during the pandemic. Hence, health care providers should strengthen the integration of messages on COVID-19 prevention measures and health education with pregnancy risk, family planning and postnatal care. It is also advisable to start technology-based services to avert the transportation and related problems.

KEYWORDS: Antenatal care, prenatal care, service utilization, COVID-19, Ethiopia

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INTRODUCTION

Twenty first century brought hostile face to many peoples across the globe. About 135 million people needs help from which 35 million are women of reproductive age and 5 million are pregnant women. Ethiopia is also one of the sub-Saharan African countries suffering from this catastrophe and hundreds of thousands of women are in need of Sexual and reproductive health (SRH)[1].

Starting from the day it was declared as outbreak, the novel coronavirus disease (COVID-19) has been observed in almost all countries and costing the life of hundreds of thousands[2,3].

Low and middle income countries like Ethiopia in which health systems are previously over-whelmed are more likely to be further challenged in the context of COVID-19 preparedness and response, causing risk of disruptions in essential health services, perhaps leading to preventable maternal, newborn and child mortality and morbidity[5].

Lessons from previous pandemics like Ebola revealed that deaths from other preventable cause outweighs the death from pandemics of that time[6,7]. Therefore, to minimize impact of the COVID-19 outbreak on essential sexual reproductive, maternal, neonatal child health (SRMNCH) services, WHO recommends that countries must prioritize SRMNCH services for continuation during the pandemic as these serve vulnerable populations during emergency situations and it is imperative to meet their rights[5].

Although WHO and respective countries are implementing different measurements to mitigate the spread of COVID-19, the greatest worry is the counter effect of these measurements are suspected to cause drawbacks on routine health care service[8-10]. Beside to this a significant proportion of countries did not have an effective enabling function for public health risks and events during this pandemic[11].

Experts warn fragile healthcare systems in many African countries could be overwhelmed in the face of COVID-19[12]. The strain that the outbreak imposes on health systems will undoubtedly impact the SRMNCH people living in low- and middle-income countries (LMICs); however, SRH will also be affected by societal responses to the pandemic[10,13].

Emergency response to COVID-19 outbreak might cause resources for SRH services to be diverted to deal with the outbreak, contributing to a rise in maternal and newborn mortality, increased unmet need for contraception, and increased number of unsafe abortions and sexually transmitted infections[13]. Task shifting and task sharing is also disrupting equipment and staff involved in provision of SRH services to be diverted to fulfill other needs[14-16].

As of May 28, 2021, more than thirty-one thousands individuals were positive for the virus and four thousands of them died in Ethiopia[17]. The RMNCH is identified as essential health services by the government of Ethiopia and the ministry of health of Ethiopia set a guide for maintaining essential health services during the covid-19 pandemic[2].

Provision of maternal health services are central to women and girls' health, empowerment, and dignity, and may be affected by strains from COVID-19 pandemic response[18]. But there is no evidence regarding the level of antenatal care service utilization and its associated factors among mothers who gave birth amid the COVID-19 pandemic. Therefore, the result of this study will be helpful to fill the evidence gap regarding the level of antenatal care service utilization amid the pandemic. Furthermore, it is valuable for the local program managers to evaluate the potential effect of coronavirus on maternal health service utilization and suggest interventions to be designed accordingly for the improvement of antenatal care service utilization.

METHOD AND MATERIALS

Study design, Study area and period

A community based cross-sectional study was carried out in selected districts of the three zones, i.e., East, West Wollega, and Horo Guduru Wollega of Oromia, West Ethiopia.

Source and study population

All reproductive age 15-49 mothers who gave birth in three zones of Wollega during COVID-19 pandemic were a source population. All randomly sampled mothers who gave birth and living in the selected districts during the study period were study population.

Inclusion and exclusion criteria

All mothers who gave birth in the selected Zones during COVID-19 are a source population. Women who are critically ill (physically and mentally) and unable to provide informed consent to participate in the interviews and those who lived in the respective woreda for less than six months were excluded.

Sample size and sampling technique

Sample size determination

The sample size was determined using a formula for estimation of single population proportion with the assumption of 95% confidence level, margin of error of 5% and since there is no previous study regarding this title during this pandemic, 50% expected proportion of ANC follow up. By adding 10% for non-response rate and design effect of 2 up on the calculated sample size, final sample size became 845.

Sampling procedure

From a total of fifty-one woredas of three Wollega Zones, six woreda were selected using simple random sampling method. Twenty-five Kebeles were selected from selected woreda using simple random sampling. Then the calculated sample size was proportionally allocated to the selected kebeles. The final households with eligible women was selected in every fifth interval using systematic random sampling.

Data collection tools and procedures

Data was collected using interviewer administered structured questionnaire. The questionnaire prepared in English was translated in to Afan Oromo. Total of 30 nurses/midwifes were recruited to collect the data. Training was given for two days.

Ethical Considerations

Ethical clearance and permission were obtained from Wollega University Institute of Health Sciences, Ethical Review Committee and Permission letter secured from all sub cities included in this survey. Verbal informed consent was obtained from each respondent before interview. Confidentiality of individual client information were ensured.

Study Variables and Operational Definition

Dependent (outcome) Variable

Level of antenatal care service Utilization: Accordingly, if the women who gave birth during the COVID-19 pandemic received at total number of four antenatal cares, they were coded as 1; if full number of antenatal cares was not received, they were coded as 0.

Independent Variables includes socio-demographic factors like age of mother, religion, ethnicity, occupation, education, and household income; Obstetric history like Parity, gravidity, birth interval, Number of live children; Level of Practice toward COVID-19 mitigation in which an individual was considered as having good practice towards COVID-19 mitigation measures if she was able to answer 'yes' to the median and above of the composite variables[19]; Attitude towards gov't Measure : Participants who responded with a median and above scores of the attitude questions about the COVID-19 preventive measures were labeled as having a favorable attitude otherwise unfavorable attitude[19].

Data quality assurance

The structured questionnaire was pre- tested on 5% of the total sample size in Arjo town. The questionnaires then assessed for its clarity, length, and completeness. Supervisors and principal investigators closely followed the data collection process.

Data analysis

Data was entered onto a computer using Epi-

data window version 3.1 and then exported to SPSS Windows version 25.0 for further analysis. Both bivariable and multivariable logistic regression were conducted. Violations of regression model assumption were checked by inspection multicollinearity test and variance inflation factors. Model goodness-of-fit was tested by (Hosmer-Lemeshow) model goodness of fit test. P-value of <0.05 and 95% confidence level were used as a difference of statistical significance.

RESULT

Socio-demographic Characteristics

Out of the total participants (845), 827 postpartum women participated in the interview process and making response rate 97.87%. The mean age of the participants was 27.14(SD + 4.8) years. From the total respondents, more than one third 285(34.5%) of them were in the age group of 25-29. Result for educational status of the respondent showed that about one third 164 (32.4%) have reached educational level of high school and above. (Table 1)

Table1. Socio-demographic characteristics of the study participants

Variable	Categories	Frequency	Percentage
Residence	Urban	396	47.9
	Rural	431	52.1
Age	15-19	32	3.9
	20-24	190	23.0
	25-29	352	42.6
	30-34	165	20.0
	>=35	88	10.6
Religion	protestant	514	62.2
	orthodox	227	27.4
	Muslim	78	9.4
	Others*	8	1.0
Marital Status	Married	801	96.9
	Single	11	1.3
	Divorced	8	1.0
	Widowed	7	.8
Educational status	Unable to read and write	191	23.1
	Read and write	117	14.1
	Elementary	236	28.5
	high school	183	22.1
	College and above	100	12.1
Occupational Status	Housewife	597	72.2
	Private work	107	12.9
	Government employee	59	7.1
	merchant	43	5.2
	others	21	2.5
Family Size	<4	164	19.8
	4_5	356	43.0
	>=6	307	37.1

*others: Catholic, and Wakefata

Obstetric history, and reproductive characteristic of postpartum women

From the total respondents, 171(20.7 %%) were gravida one or were pregnant for the first time. The majority of participants had one or more previous pregnancies. About two-third of the study participants 545(65.9%) are para one to three. Majority of them 551(66.6%) gave birth at home. (Table 2)

Table 2. Obstetric history and reproductive characteristic of the study participants

Variable	Categories	Frequency	Percentage (%)
Gravidity	1	171	20.7
	2_4	483	58.4
	>=5	173	20.9
Parity	1_3	545	65.9
	>=4	282	34.1
History of still birth	No	730	88.3
	Yes	97	11.7
History of Spontaneous abortion	No	762	92.1
	yes	65	7.9
Induced abortion	No	805	97.3
	Yes	22	2.7
Number of children alive	1_2	383	46.3
	3_4	290	35.1
	>=5	154	18.6

COVID-19 related information, source of information, source to trust Most of study participants 817(98.8%) heard about the pandemic COVID-19. The major primary sources of information for study participants were radio 564(68.2%) and television 534(64.6%) respectively. (Figure 1)

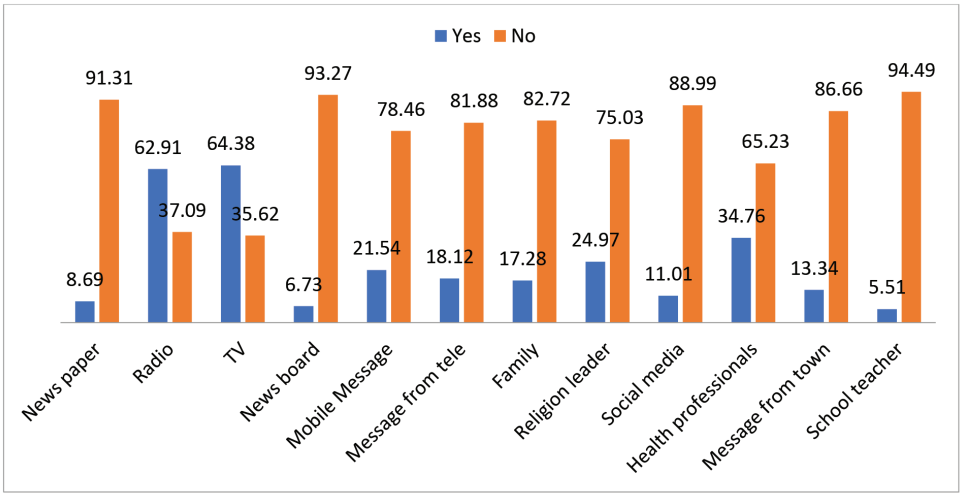

Figure 1. Source of information regarding COVID-19 pandemic

Kind of information received by study participants Majority of (70.02%) them received information regarding sign and symptoms of the COVID-19. (Figure 2)

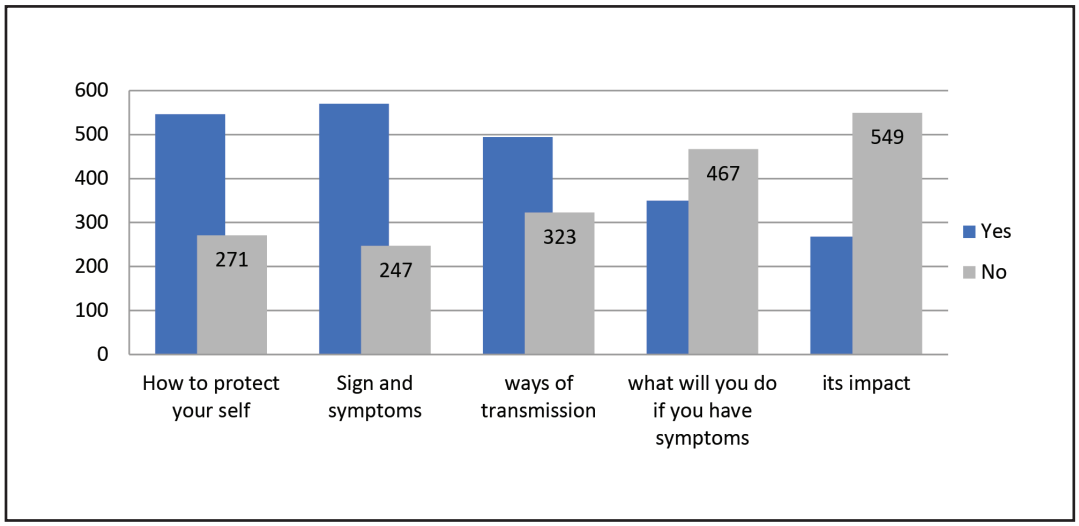

Figure 2. Kind of information received regarding the COVID -19 pandemic

Practice towards COVID-19 mitigation measures Majority of the study participants 665(80.41%) practiced washing their hands and not touching their eyes, nose, and mouth 545 (65.9%%). (Figure 3)

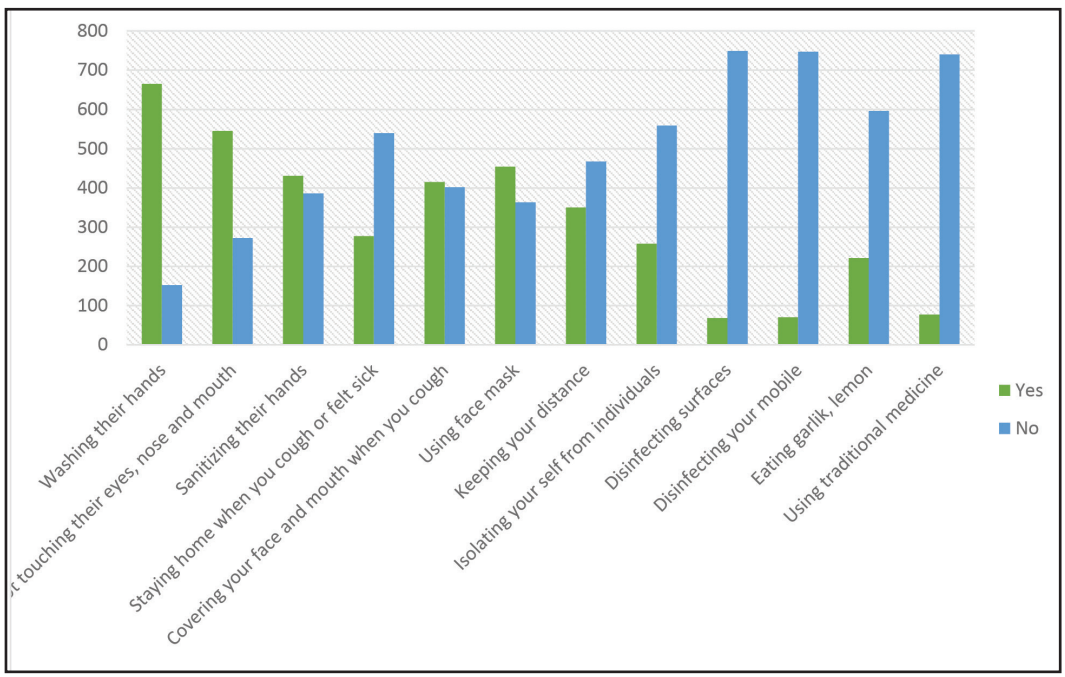

Figure 3. Practice of some mitigation measures by mothers who gave birth during the COVID-19 pandemic.

Antenatal Care services Utilization among Postpartum Mothers and Potential Impact of COVID-19.

From a total of 827 postpartum mothers who recently gave birth, more than two-fifth of them did not have ANC visit. From those who missed total ANC visit, about two third of them were due to concerns related to COVID-19 and its mitigation measures. From those who received ANC, about 46.89% of them received ANC of four and above. About three-fourth of mothers who received ANC received tetanus toxoid vaccine. (Table 3)

Table 3. Antenatal care and related service received by mothers during the pandemic.

Variable	Categories	Frequency	Percentage (%)
Received ANC visit	Yes	450	54.4
	No	377	45.6
Number of ANC visit	1	29	6.44
	2	85	18.89
	3	125	27.78
	>=4	211	46.89
ANC missed due to Covid-19	Yes	117	31.03
	No	260	68.97
TT vaccine	Yes	331	75.56
	No	119	26.44
Blood tested	Yes	398	88.44
	No	52	11.56
Weight Measured	yes	412	91.56
	No	38	8.44
Urine Tested	Yes	373	82.88
	No	77	17.12
Stool examination	Yes	164	36.44
	No	286	63.56

Factors Associated with Antenatal Care Utilization among Women Who gave birth during COVID-19 Pandemic West Ethiopia 2020.

In binary logistic regression, variables that showed a p-value of 0.25 or less were considered as the candidate for multivariable regression model. Based on this socio-demographic factors like; age of mother, residence, occupation of mother, educational level of mother, fear related to spread of COVID-19 in the community, fear of being infected, following government guidelines, using facemask, covering face and mouth when you cough, and level of practice towards Covid-19 prevention measures were included in multivariable analysis.

In the multivariable analysis age of mother, residence, occupation of mother, educational level of mother, fear related to spread of COVID-19 in the community, fear of being infected, following government guidelines, using facemask, covering face and mouth when you cough, and level of practice towards Covid-19 prevention measures had statistically significant association with utilization of ANC. (Table 4)

Table 4: Factors Associated with Antenatal Care Utilization among Women who gave birth during COVID-19

Variables	Categories	ANC visited		COR	AOR
		yes	No		
Residence	Rural	197	199	ref	ref
	urban	180	251	1.38(1.05,1.82)	1.27(1.04-1.73) *
Age	15-19	11	21	ref	ref
	20-24	108	82	2.51(1.15,5.50)	2.76(1.19,6.4) *
	25-29	193	159	2.32(1.08,4.95)	2.36(1.05,5.27) *
	30-34	48	40	2.29(1.03,5.05)	2.52(1.07,5.92) *
	>=35	90	75	2.29(0.98,5.31)	2.31(0.93, 5.71) *
Educational status	Unable to read and write	109	82	ref	ref
	Read and write	59	58	.76(0.48,1.21)	0.72(0.44,1.20)
	Elementary	137	99	1.04(0.71,1.53)	0.938(0.61,1.44)
	High school	100	83	.91(0.6,1.36)	0.72(0.46,1.15)
	College and above	45	55	.62(0.37,1.00)	0.30(0.15,1.2)
Occupation	House wife	310	287	ref	ref
	Private work	67	40	.66(0.27,1.63)	1.20(0.76,1.90)
	Gov't employee	32	27	1.03(0.39,2.7)	2.14(1.9,4.65)
	Merchant	28	15	.73(0.26,2.02)	2.07(1.00-4.34)
	Others	13	8	1.15(0.39,3.38)	1.36(0.51,3.69)
Fear spread of COVID in the community	very worried	294	287	ref	ref
	Less worried	82	43	1.86(1.24,2.78)	1.27(0.747,2.15)
	to some extent	33	35	.920(0.56,1.52)	0.711(0.34,1.47)
	not worried	33	10	3.22(1.56,6.66)	8.15(2.88,23.03)*
Fear of being infected by COVID-19	very worried	295	274	ref	ref
	Less worried	98	47	1.94(1.32,2.84)	1.78(1.08,2.94) *
	to some extent	25	24	.97(0.54,1.74)	1.32(0.59,2.96)
	not worried	24	30	.74(0.42,1.30)	0.27(0.11,0.66)
Following government guidelines	Not at all	17	27	ref	ref
	to some extent	249	188	2.1(1.11,3.97)	1.60(0.78,3.29)
	strongly follow	176	160	1.74(0.92,3.32)	1.44(0.68,3.04)
Using face mask	No	176	187	Ref	ref
	Yes	266	188	1.50(1.14,1.98)	1.35(1.07,1.87) *
Covering your face and nose when You cough	No	212	190	ref	ref
	Yes	230	185	1.11(0.85,1.46)	0.81(0.58,1.14)
Practice towards COVID-19 prevention	Poor	257	267	ref	ref
	Good	185	108	1.78(1.33,2.38)	1.64 (1.14,2.36) *

NB: ref: reference group; * significant at p value <0.05

DISCUSSION

The results of the study revealed that, from mothers who gave birth during the COVID-19, the proportion of women who utilized ANC was about 54.4% 95% CI (51.0, 57.6). The finding is lower than that of previous level of ANC visit from national demographic and health survey (64%)[20]. Similarly, the finding is lower than local studies done in West Shoa Zone, Central Ethiopia (64.8%) [21]. However, our finding is higher than that of cross-sectional survey of Jordanian in which 59.53 % of women who are currently pregnant did not receive ANC during the pandemic [22].

This difference might be attributed to sociocultural and demographic differences and study period. For instance, the national demographic and health survey was conducted before the COVID-19 pandemic period, unlike the current study. Since in the pandemic period the antenatal care service utilization was found to be low this might be due to movement restrictions, fear of infection, and economic pressure, greater disruptions to health systems due to workforce and supply chain issues and the repurposing of health workers. In the fashion, the difference between the current study and previous local studies conducted in central Ethiopia might be due to difference in measurement. i.e., the previous study included any maternal health services whereas our current study included only ANC services.

The finding from the study revealed that ANC utilization during the COVID-19 pandemic was significantly influenced by age of the participants. This is supported by findings from study done during the pandemic[23] and prior to the pandemic[24-27]. This might be because as their age increases, they are more likely to be multi-parous and their chance of contact with health facility and ability to identify the pregnancy related complication help them to utilize ANC services increases.

This study also found that there is strong relationship between being worried about COVID-19 and level of ANC service utilization. Those who are less worried about acquiring COVID-19 are more likely to use antenatal care service as compared to their counterparts. This is similar with study conducted in Northeast Ethiopia[23] This might be due to the fact that respondents who had a high risk perception of COVID-19 might have good adherence towards COVID-19 mitigation measures[19]. This might also attribute to the link between the high-risk perception of COVID-19 and anxiety, and this might in turn leads to low level of ANC service utilization.

The study finding also revealed that practice towards COVID-19 prevention measures is significantly and positively associated with antenatal care service utilization. Those who have good practice towards prevention mechanism are about two times more likely to use ANC than their counterparts. This might be due to the fact that if the population had exposure to prior information about the mitigation measures, they might develop a good attitude towards these preventive measures which in turn increase their adherence the service utilization[19].

CONCLUSION AND RECOMMENDATION

The finding of the study revealed antenatal care service utilization during the pandemic was found to be low as compared with the previous studies. Accordingly, the age of the mother, fear of being infected by COVID-19, and poor prevention practice were significant factors which contributed to the low antenatal care service utilization.

Hence, health care providers should make sure that all reproductive age women should be encouraged and advised on the service utilization amid the pandemic as part of an assessment of overall well-being. And also, health care providers should strengthen the integration of messages on COVID-19 prevention measures including self-care and health education with pregnancy risk, family planning and postnatal care. It is also advisable to start technology-based services to avert the transportation and related problems.

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Availability of data and materials

Data will be available upon request from the corresponding authors.

Competing interest

The authors declare that they have no competing interests.

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