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# Perceived quality of antenatal care service by pregnant women in public and private health facilities in Northern Ethiopia

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## To cite this article:

Girmatsion Fesseha, Mussie Alemayehu, Belachew Etana, Kiday Hailelassie, Ayalnesh Zemene. Perceived Quality of Antenatal Care Service by Pregnant Women in Public and Private Health Facilities in Northern Ethiopia. *American Journal of Health Research*.

Vol. 2, No. 4, 2014, pp. 146-151. doi: 10.11648/j.ajhr.20140204.17

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**Abstract:** Background: Quality of Antenatal care is potentially one of the most effective health intervention for preventing maternal morbidity and mortality particularly in places where the general health status of women is poor. Improving quality of health care is one of the strategies in Health sector development program IV (HSDP IV) of Ethiopia. However, there are limited studies on quality of antenatal coverage in Ethiopia including the study area. Thus, the aim of this study was to assess the perceived quality of Antenatal care of pregnant women in public and private health facilities in Tigray, Northern Ethiopia. Methods: Health institution based cross sectional study was conducted from February to May, 2013 in Tigray region among 526 pregnant women attending Antenatal care clinic. Participants were selected using multi-stage sampling technique first health facility were selected using lottery method then pregnant women from each selected facility were selected using systematic sampling method according to the flow pregnant women to the ANC clinics. Data were entered and cleaned using EPI-info version 3.5.1 and analysis was performed by SPSS version 20. Bivariate and multivariate logistic regression analysis was used to calculate odd ratio with 95% confidence level. Statistical association between the dependent and independent variables was ascertained at p-value less than 0.05. Results: The prevalence of overall perceived quality of ANC was 24.5%. Factors like women aged between 26 and 35 years [AOR=0.58(0.38-0.88)], governmental institution ANC attendance [AOR=0.52(0.33-0.83)], own income [AOR=0.61(0.40-0.92)], one to three ANC attendance [AOR=0.31(0.18-0.54)], testing for HIV [AOR=0.12(0.06-0.24)] causes less likely to perceived that getting high quality ANC service however, waiting time greater than one hour [AOR=3.42(1.61-7.28)] is positively associated with mother perception toward getting high quality ANC service. Conclusions: This study revealed that the perceived quality of ANC is very poor. Therefore, urgent action is mandatory to improve the quality ANC service by providing women centered approaches in giving care, in-service training to health care providers on quality practices.

**Keywords:** Perceived Quality of ANC, Pregnant Women, Northern Tigray, Ethiopia

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## 1. Introduction

Antenatal care is the care that a woman receives during pregnancy, which helps to ensure healthy outcomes of women and newborns (1). It is also a key entry point for pregnant women to receive a broad range of health promotion and preventive health service (2).

Evidences showed that over 70% of women worldwide have at least one antenatal visit with a skilled provider during pregnancy (3).

In the industrialized countries coverage is extremely high, with 98% of women having at least one visit (3). But in Sub-Saharan Africa, the coverage was lower than other regions with 68% of women reports at least one antenatal visit (3) in addition to this, the region has the highest

maternal mortality rate, reaching levels of 686 per 100,000 live births (4).

Almost all maternal deaths (99%) occurring in developing countries are due to complications arising during Antenatal, Intra-partum and immediate postnatal period (5). Of the deaths more than half of them occur in sub-Saharan Africa and one third occur in South Asia. Most causes of these deaths are easily preventable through antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth (5).

However, in many African countries the coverage ANC is increasing. But the coverage alone does not provide information on quality of care, and poor quality in ANC clinics, correlated with poor service utilization, is common in Africa. This is often related to an insufficient number of skilled providers (particularly in rural and remote areas), lack of standards of care and protocols, few supplies and drugs, and poor attitudes of health providers (6).

In Ethiopia, the 2011 DHS results show that only 34% of women received antenatal care from a trained health professional at least once for their last birth. And in Tigray region, 50% of the women received the care from skilled providers (7).

Despite the fact that maternal health care quality is essential for further improvement of maternal and child health, little is known about the current perceived quality of the service and factors influencing in Ethiopia including in study area. Therefore, the purpose of this study is to understand the current status of perceived quality of antenatal care services provision among pregnant women attending ANC in Tigray region, northern Ethiopia. The results will also help the policy makers' on understanding of the quality of antenatal care and it may serve as a evidence for intervention aimed at improving the quality of maternal health care provided at health settings in the country.

## 2. Methods

### 2.1. Study Population and Area

A study was conducted in Tigray Region, northern Ethiopia in public and private from February to May, 2013 among pregnant mothers attending ANC follow-up service. In the region, there were about 985,654 households with an average of 4.4 persons to a household. The region has about 16 governmental, 2 private hospitals and 211 health centers. (8).

### 2.2. Study Design and Sample

An institution based cross-sectional study was conducted among 526 pregnant women. The sample size was calculated using a single population proportion formula by taking previous prevalence from Sudan; which is 22% of pregnant women's' satisfied about the service given at ANC (9) with 95 % confidence interval and a precision of  $\pm 5\%$ , and after considering the designs effect of two we got the

final sample of 526 pregnant women.

Study participants were selected by multi-stage sampling technique first from the total 18 hospitals and 211 health centers in the region; five hospitals (two private and three public) and seven health centers were selected by the lottery method after stratified to public and private as well as health center and hospital. Then, sampling frame was developed from every selected health facilities using average last four months client flow statistics at each antenatal clinic. After that, the sample was allocated to the health facilities by proportional allocation to size, the more the facility with many attendance the higher number of pregnant mother were included in the study. Finally pregnant women at each antenatal clinic were selected using systematic random sampling.

### 2.3. Measurements

Data was collected using exit interview in the selected health facilities when pregnant women come for regular follow up. A pretested structured questionnaire was adapted from the WHO (10). The instrument was first prepared in English and then translated to the local language, Tigrigna, to make easily understandable and reduce language barriers between the data collectors and study subjects. It contained information on socio-demographic characteristics of study participants and other perception questions. To measure the perceived quality of the service provision, 25 items question was used. Which were focused on providing information on danger sign (8 items), information on birth planning (6 items), information on nutrition, whether getting vaccination, whether lab test of blood and urine, whether weight, height and blood pressure measures, and clarity on appointment time (11 items).

Respondents were interviewed at exit after they got their service by trained data collector. The overall data collection activity was controlled by the principal investigator of the study. All completed questionnaire was examined every day after data collection for completeness and consistency.

### 2.4. Data Processing and Analysis

The collected data were coded, entered and cleaned by EPI Info version 3.5.1 and was analyzed by SPSS version 20. The data were summarized by descriptive statistics like frequency distribution and mean. Perception about quality of ANC service was considered as dependent variable. To measure the perceived quality of care, the mean score of the questions which were intended to measure the perceived quality of ANC service were taken into consideration. A client who had scores above the mean was labeled as high perceived quality care; otherwise client was categorized as low perceived quality care.

Bivariate and multivariate analyses were done using logistic regression analysis. Odds Ratio with their 95% Confidence Interval was determined to see the association between the dependent and independent variables.  $P < 0.05$  was considered as statistically significant association. The

variables were included to multivariate analysis, if they show statistical significant analysis during bi-variate analysis.

### 2.5. Ethical Considerations

The study protocol was reviewed and approved by health research ethics review committee of the College of Health Sciences at Mekelle University. Official letter of cooperation was obtained from Tigray regional Health Bureau and was distributed to selected districts administrative offices, hospitals and Health centers. Moreover, an informed oral consent was obtained from each study subject. Confidentiality and privacy was maintained during data collection. Besides this, no personal identifier was taken and each questionnaire was coded.

## 3. Results

### 3.1. Socio-Demographic Characteristics of Participants

In this study, five hundred nineteen pregnant mothers were interviewed with a 98.7% response rate. The majority, 347 (66.8%) of study participants were from urban while 172 (33.2%) pregnant mothers were from rural residence. In average the study participants was 28.1 ( $\pm 6.2$  SD) years. Majority of study participants, 426 (82.1%) were Orthodox Christian, 490 (94.4%) were from the Tigray ethnic group and 221 (42.6%) of them were housewives.

One hundred forty two (27.4%) of the study participants had no formal schooling, while 152 (29.3%) had completed 1-8 grades. Similarly, 117 (22.5%) of the study participant's husbands had no formal schooling (Table 1).

**Table 1.** Socio-demographic characteristics study participants (n=519), Tigray, Northern Ethiopia

Socio-demographic variables	Frequency	%
Maternal age groups		
17-25	190	36.6
26-35	273	52.6
36-50	56	10.8
Maternal educational status		
Have no formal education	142	27.4
Completed 1-8 grades	152	29.3
Completed high school (9-12)	151	29
College/University level	74	14.3
Paternal education status		
Have no formal education	117	22.5
Completed 1-8 grades	135	26
Completed high school (9-12)	137	26.4
College/University level	130	25.1
Maternal religion		
Orthodox	426	82.1
Muslim	75	14.5
Catholic	10	1.9
Protestant	8	1.5
Residence		
Rural	172	33.1
Urban	347	66.9
Ethnicity		

Socio-demographic variables	Frequency	%
Tigray	490	94.4
Amhara	21	4
Oromo	5	1
Others	3	0.6
Maternal occupation status		
Housewives	221	42.6
Civil servants	103	19.8
Traders	93	17.9
Farmers	90	17.3
Daily laborers	12	2.3
Paternal occupation status		
Traders	152	29.3
Civil servants	151	29
Farmers	137	26.4
Daily laborers	56	10.8
Students	23	4.5
Have own income		
Yes	196	37.8
No	323	62.2

### 3.2. Reproductive and Obstetric History

Majority of the women get married from 18 to 25 years of age with mean at first marriage of 19.9 ( $\pm 3.4$ ) years. Beside this, three hundred forty five (66.5%) of the study participants had 1-3 parities and 19 (3.7%) had greater than or equal to 7 parities with a mean parity of 2.9 ( $\pm 1.8$  SD) including the current pregnancy. Moreover, three hundred forty two (65.9%) of the study participants ever gave birth. Of those who ever gave birth, majority's age at first delivery, 284 (83%) was in the age range of 18-25 years. Similarly, majority of the study participants, 275 (95.5%) had 1 to 3 number of under five children with a mean family size of 3.7 ( $\pm 1.9$  SD) people per household (Table 2).

**Table 2.** Reproductive and Obstetric history of pregnant women attending health facility in Tigray, northern Ethiopia

Reproductive and Obstetric Variables	Frequency	%
Age at first marriage		
< 18 years	128	24.7
18-25 years	355	68.4
$\geq 26$ years	36	6.9
Number of parity		
1-3	345	66.5
4-6	155	29.8
$\geq 7$	19	3.7
Ever gave birth		
Yes	342	65.9
No	177	34.1
Age at first delivery (n=342)		
<18 years	31	9.1
18-25 years	284	83
26-30 years	27	7.9
Number of children born (n=342)		
1-3	228	66.7
4-6	105	30.7
$\geq 7$	9	2.6
Number of under 5 children (n=288)		

Reproductive and Obstetric Variables	Frequency	%
1-3	275	95.5
≥ 4	13	4.5
Total family size		
≤ 3	295	56.8
4-6	169	32.6
≥ 7	55	10.6
Faced abortion		
Yes	71	13.7
No	448	86.3
Faced child death		
Yes	54	10.4
No	465	89.6

### 3.3. Perceived Quality of ANC Service

The prevalence of overall perceived ANC quality was about 24.5% among pregnant women who visited both private and public Antenatal Care Clinics. Majority of the study participants (89.8%) felt they had enough time to discuss health issues with the service providers and 4.6% felt the time was inadequate for proper client provider interactions. Perception of poor quality ANC service is higher (42.6%) among women who had visited public institution compared to private (10.2%). About 66% of pregnant women involved in decision making about the care given (Table 3).

**Table 4.** Bivariate and multiple logistic regression analysis for factors related to perceived quality of ANC service among pregnant women attended ANC in public and private health facilities, Tigray region, Northern Ethiopia

Variables	Perceived Quality of ANC		Crude OR (CI)	Adjusted OR (CI)
	Higher n (%)	Lower n (%)		
Place of ANC attend				
Government	179 (34.5)	221 (42.6)	0.65 (0.43-0.98) *	0.52 (0.33-0.83)*
Private	66 (12.7)	53 (10.2)	1	1
Age of mothers				
17-25 years	99 (19.1)	91 (17.5)	1	1
26-35 years	116 (22.4)	157 (30.2)	0.68 (0.47-0.98) *	0.58 (0.38-0.88)*
≥ 36 years	30 (5.8)	26 (5.0)	—	—
Residence of women				
Urban	152 (29.3)	195 (37.6)	1	1
Rural	93 (17.9)	79 (15.2)	1.51 (1.05-2.18) *	—
Own income				
Yes	76 (14.6)	120 (23.1)	0.58 (0.40-0.83) *	0.61 (0.40-0.92)*
No	169 (32.6)	154 (29.7)	1	1
Faced abortion				
Yes	42 (8.1)	29 (5.6)	1.75 (1.05-2.91) *	—
No	203 (39.1)	245 (47.2)	1	1
Number of ANC				
1-3	187 (36.0)	248 (47.8)	0.34 (0.21-0.56) *	0.31 (0.18-0.54)*
≥ 4	58 (11.2)	26 (5.0)	1	1
Waiting time (overall)				
10 -30 minutes	165 (31.8)	197 (38)	1	1
40-60 minutes	52 (10.0)	64 (12.3)	—	—
> 60 minutes	28 (5.4)	13 (2.5)	2.57 (1.29-5.13) *	3.42 (1.61-7.28)*
Involved in decision				
Very	136 (26.2)	207 (39.9)	0.22 (0.09-0.50) *	0.31 (0.13-0.79)*
Medium	85 (16.4)	59 (11.4)	—	—
Not	24 (4.6)	8 (1.5)	1	1
Tested for HIV				
Yes	188 (36.2)	263 (50.7)	0.14 (0.07-0.28) *	0.12 (0.06-0.24)*
No	56 (10.8)	11 (2.1)	1	1

\*Statistically significant at 95% confidence interval

**Table 3.** Perception of pregnant women about quality care during ANC visits in health facilities in Tigray, Northern Ethiopia

Perception Variables	no	%
Poor Perceived quality care		
Public institutions	221	42.6
Private institutions	53	10.2
Waiting time in minutes		
10-30	362	69.7
40-60	116	22.4
>60	41	7.9
Mother Got enough time with health provider during ANC visit		
Yes	466	89.8
No	29	5.6
Involved in decision making		
Full	343	66.1%
Moderately	144	27.7%
Not involved at all	32	6.2%

### 3.4. Factors Associated with Perceived Quality ANC Service

Multiple logistic regression analysis showed that women age, place of ANC attendance, income, number of ANC visit, testing for HIV and waiting time were independently associated with the perceived quality of ANC services that the study participants' were receiving at the respective health facilities (Table 4).

## 4. Discussion

The overall prevalence of the perceived quality ANC was 24.5% among pregnant women. This is much lower than the finding of the study conducted in Khartoum in which the prevalence of overall perceived quality care among pregnant was 38% (9). The difference may be due to poor infrastructure and skill of the provider in our set up.

In this study, we found that 69.7% of the study participants had a waiting time ranging from 10-30 with a mean waiting time of 31.8 ( $\pm 23$  SD) minutes for getting the required services. This is similar the reported waiting time from in Mushin, Lagos, which is about 69.03  $\pm$  2.64 minutes (11). This difference may be due to less provision of technical service by health professional in our setup. In addition, there is lower ANC attendance in our facilities taken from the national survey.

In our study, majority of the study participants (89.8%) felt they had enough time to discuss health issues with the service providers and 4.6% felt the time was inadequate for proper client provider interactions. This is lower than the finding of a study conducted in Lagos, Nigeria where most clients (94.6%) felt they had enough time to discuss health issues with the service providers and 4.0% felt the time was inadequate for proper client provider interactions (12). More than half of the respondents (66.1%) felt they were properly involved in the decision making process of their care. This finding is much lower than the study conducted in Lagos, Nigeria where most respondents (87.0%) felt they were properly involved in the decision making process concerning their care (12).

In this study, perception of poor quality ANC service is higher (42.5%) among pregnant women who serve at Governmental clinics compared to private facilities (10.2%) which is similar compared with other study in Nigeria and Ethiopia (13, 14). The possible reason may be due to small sample size.

In multivariate analysis; place of ANC attendance has also a significant association with the perceived quality of ANC service, i.e. those who were following their ANC at government institutions were 48% less likely to perceive high quality ANC service as compared to those who were attending at private institutions. The probable reasons could be high client flow, busy health care providers and less paid health care workers in governmental facilities as compared to the private ones. Women whose age is between 26-35 years were 42% less likely to get quality ANC service as compared to those whose age is between 17-25 years. This is because the women whose age is between 26-35 years are more aware and have a lot of expectations with regard to their ANC service.

On the other hand, women who had a waiting time of greater than 60 minutes were 3.42 times more likely to perceived quality ANC service as compared to those whose

waiting time was 10-30 minutes [AOR=3.42 (1.61, 7.28)]. This is because those who stay longer were getting more time to be investigated and had more time to discuss even among themselves.

As limitation, this study was assessed only by the report of pregnant mothers; no observation was done during the care so under reporting or over reporting can be possible result. In addition, recall bias of mother could be also affecting the findings. Therefore, any interpretation of this finding within these variables shall take into account the degree of precision. However, as strength, this study uses measurement from WHO which is enabled to make the comparison of findings with other national and international literatures to be valid. In addition, before conducting this study, pretest and training for data collectors and supervisors was done.

## 5. Conclusion

The prevalence of overall perceived quality was low among pregnant women who visited both private and public Antenatal Care Clinic. Women attend at private clinics have high perception about the quality given during ANC visits than those attend in public facilities. Inadequate time to discuss health issues with the service providers and lower involvement in the decision making process concerning their care is other problem. Women age, place of ANC attendance, income, number of ANC attendance, testing for HIV and waiting time were independently associated with the perceived quality of ANC services that the study participants' were receiving at the respective health facilities. As recommendation, giving emphasis in counseling mother by training providers; improve the waiting time; increase the involvement of mothers in the decision making process and giving much time to mother during each visits to discuss their concern freely; addressing the low level of awareness and expectations of the younger women regarding ANC services, and experience sharing between private and public facilities are important interventions.

## Acknowledgement

We would like to acknowledge Mekelle University, College of Health science for financial support. We also thanks Tigray Regional health bureau, managers of all health facilities for facilitating good conditions to carry out the study and the study participants who share their priceless time, supervisors, and the data collectors for their full commitment and technical support.

## Competing Interests

The authors declare that they have no competing interests.

## Authors' Contributions

GF<sup>1</sup>: MA<sup>1</sup>: BE<sup>2</sup>: KH<sup>1</sup>: AZ<sup>3</sup>: has taken a principal role in the conception of ideas, developing methodologies and writing the article. And they were involved in data collection, analysis, interpretation of the data and preparing in this manuscript. These authors contributed equally to this work and accepted the final manuscript.

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