

**ORIGINAL ARTICLE****ANTENATAL CARE SERVICE UTILIZATION AND ASSOCIATED FACTORS IN METEKEL ZONE, NORTHWEST ETHIOPIA**

Gurmesa Tura, MPH

**ABSTRACTS**

**BACKGROUND:** *The safe motherhood initiative strongly emphasized ensuring the accessibility and use of prenatal services. However, the utilization of this service is very low even for women who have access to the service in Ethiopia in general and in Benishangul Gumuz Region in particular. Although socioeconomic and some obstetric factors have been stated by few studies in other areas, the factors associated with low utilization of Antenatal care in Metekel Zone are not well assessed before. Therefore, the objective of this study was to assess the status of Antenatal care service utilization and associated factors among women in the Zone.*

**METHODS:** *A community based cross sectional study was conducted from January 25 to February 10, 2007 on randomly selected samples of 1,060 women, who had at least one delivery in the past five years before the survey. Structured questionnaires were used to collect the quantitative data. Focus Group Discussions and in-depth interviews were used to supplement the quantitative data. The data were analyzed using SPSS for Windows version 12.0.1. The data from the qualitative methods were analyzed by using the thematic framework analysis. Independent variables affecting Antenatal care service utilization were determined using multiple logistic regressions.*

**RESULTS:** *Of 1060 sampled mothers, data were collected from 1,038 mothers giving a response rate of 97.9%. Five hundred seventeen (49.8%) of the respondents had at least one antenatal care visit during the pregnancy of their last delivery. For the 521 non-users, lack of awareness 268(51.4%) and absence of health problems during pregnancy 213(40.9%) were the main reasons mentioned for not attending antenatal care. Place of residence(OR=1.51, 95%CI: 1.22, 2.78), educational status(OR= 6.52, 95%CI: 1.55, 27.39), husband's educational status(OR=1.56, 95%CI: 1.11, 2.89), possessing radio(OR=2.08, 95%CI: 1.37, 3.13), monthly income(OR=1.53, 95%CI: 1.22, 3.52) and knowledge about antenatal care(OR=33.33, 95%CI: 20.00, 50.00) were found to have a statistically significant association with antenatal care service utilization.*

**CONCLUSION:** *Though better than the national value, the antenatal care service utilization in Metekel Zone was low. Lack of awareness, low educational status and socio-economic characteristics are the common factors observed affecting antenatal care service utilization in the zone. Therefore providing information, education and communication, promoting female education, improving socio-economic status of women and husband involvement are recommended.*

**KEY WORDS:** ANC, ANC utilization, Beneshangul Gumuz Region, Metekel Zone.

**INTRODUCTION**

Women play a major role in the rearing of children and the management of family affairs and their loss from maternity-related causes is a significant social and personal tragedy. As estimated by the World Health Organization (WHO), about 580,000 women die each year from complications arising from pregnancy and childbirth (1, 2).

In Ethiopia, the maternal mortality was estimated to be 673 deaths per 100,000 live births and infant mortality rate was 77 per 1,000 live births, which is among the highest in the world(3). As emphasized in the 2005 Ethiopian

Demographic and Health Survey (EDHS), one explanation for

poor health outcomes among women in Ethiopia was the non-use of modern health care services (3).

Studies that focused on maternal mortality and morbidity in developing countries have repeatedly recommended the need for antenatal care and availability of trained personnel to attend women during labor and delivery (4). The safe motherhood initiative strongly emphasized ensuring the accessibility and use of antenatal services as most of the deaths occurring from obstetric complications are preventable. However, in Ethiopia the proportion of mothers attending ANC was low even for women with access to the services. As observed in 2005 EDHS, only 28% of mothers received antenatal care from a health professional for their most recent birth (3, 4).

Though ANC service utilization is very essential for improvement of maternal and child health, the use of the service is still very limited in Benishangul Gumuz Region (5). There could be several factors that limit the utilization of ANC in the region in general, in the zone in particular which requires further study. Therefore, this study aimed to determine the status of ANC service use and influencing factors in the Zone.

## MATERIALS AND METHODS

A community based cross-sectional study was conducted in Metekel zone from January 25 to February 10, 2007, to assess the status of antenatal service utilization and associated factors among women of childbearing age, who had at least one delivery in five years prior to the survey. Metekel is one of the three Zones found in Benishangul Gumuz regional State, located 570 Kms Northwest of Addis Ababa. Administratively, the zone is structured into 6 woredas, having 7 urban and 97 rural kebeles. The total population of the zone was estimated to be 218,105 (5). The majority (89.5%) of the population live in rural area and economically dependent on farming. Gumuz is the predominant ethnic group in the zone followed by Shinasha. The Zone has 1 hospital, 4 health centers, 11 clinics, 18 health posts, and 13 private rural drug vendors. The health coverage of the Zone in the year 2004 was about 66.4%. Antenatal care service coverage was 31.3% indicating low utilization of the service in the Zone (5).

Sample size was calculated by using Epi Info version 6.04d statistical software using a single population proportion assuming; the proportions of childbearing age women using ANC service to be 28% from EDHS 2005,  $\alpha=0.05$  for the risk of rejecting the null hypothesis and desired margin of error of 4%. As the sampling procedure utilized multi-stage sampling

technique, a design effect of 2 was considered to have adequate and representative sample size and 10% was added for non-response. Thus, the final sample size calculated was 1,060.

A multi-stage sampling technique was used in selecting the study participants for the quantitative study. In the 1<sup>st</sup> stage, for logistical and cost reason two woredas (Bullen and Debate) were selected randomly by lottery method from 6 Woredas. In the 2<sup>nd</sup> stage all the kebeles in the two selected woredas, whose population has access to health institution providing ANC were identified and stratified in to urban and rural residents. In the 3<sup>rd</sup> stage, by using simple random sampling technique, one urban kebele, and two rural kebeles were selected from each woreda. For the selected six kebeles house-to-house visit was carried out to identify eligible women. Finally, simple random sampling technique was utilized to select households from each kebele to identify the study subjects. The information refers to the last pregnancy. The detail methodology part was published with other title on the Ethiopian Journal of Health Sciences, in 2008 volume-17, number 4.

To supplement the quantitative data by qualitative method, 6 focus group discussions containing a total of 60 people were held, with both men and women groups. The focus group homogeneity was assured by matching for age, marital status and educational status. Twenty key informants interview were also conducted on purposively selected local subjects.

A structured and pre-tested questionnaire which was first prepared in English and translated to Amharic language was used to collect the quantitative data. Discussion and interview guides were prepared and used for the qualitative method.

Ten 12<sup>th</sup> grade completed interviewers, and four Nurse Supervisors, who were fluent speakers of the local languages (Amharic, "Gumuzigna" and "Shinashigna") were given a through training on the interview techniques and the questionnaire for two days before data collection. The questionnaire was checked using range and consistency check methods. The data were cleaned and coded before entering into a computer and then analyzed using SPSS for Windows version 12.0.1. The significance of the differences in patterns among values of associated factors was tested using  $\chi^2$  test at a level of significance of 5% by bivariate analysis. Odds ratio with 95% CI were calculated using logistic regression model to control confounders and identify the factors affecting ANC service utilization. The data of the qualitative method were organized in narrative forms in congruent

with the respondents' own words on the same day and analyzed by thematic framework analysis.

This study was conducted after approval of the proposal by ethical review committee of Jimma University. Written consent was obtained

The following operational definitions were used;

**Access to service:** availability of health facility providing ANC service within 2 hours distance on foot.

**Knowledgeable:** mean score for knowledge questions of 0.5 and above when 1 is given for correct answer and 0 is given for incorrect answer

**ANC utilization:** having at least one visit of health institution for check up purpose during the last pregnancy.

from Metekel Zone Administrator and the Administrators of Bullen and Debate woredas. Verbal informed consent was obtained from each respondent and confidentiality was assured before conducting the data collection.

Of 1060 sampled mothers, data were collected from 1,038 mothers giving a response rate of 97.9%. Six hundred forty nine (62.5%) of the participants were from rural area, 376(36.2%) Shinasha and 310 (29.9%) Gumuze. The mean (sd) age of participants was 28.2 ( $\pm 6.3$ ) years and 575(55.4%) were in the age range of 20-29 years. Eight hundred thirty four (80.3%) were not able to read and write, 986(95%) were married, 947(91.2%) were house wives and. 348 (33.5%) of house holds possessed radio (Table1).

## RESULTS

**Table: 1.** Selected Socio-demographic characteristics of respondents (N=1038) in Metekel Zone, Benishangul Gumuz Region, North West Ethiopia, January-February 2007.

Variables	Number	Percent
Place of residence		
Urban	389	37.5
Rural	649	62.5
Age of respondents		
15-19	52	5.0
20-24	250	24.1
25-29	325	31.3
30-34	204	19.7
35-39	134	12.9
40-44	53	5.1
45-49	20	1.9
Ethnicity of respondents		
Shinasha	376	36.2
Gumuz	310	29.8
Amhara	253	24.4
Agew	64	6.2
Oromo	35	3.4
Educational Status		
Unable to read & write	834	80.3
Only read & write	65	6.3
1-6 grade	59	5.7
7-12 Grade	50	4.8
12+	30	2.9
Marital Statue of respondents		
Married	986	95.0
Divorced	29	2.8
Widowed	18	1.7
Single	5	0.5
Occupation		
House wife	947	91.2
Gov Employed	39	3.8
Student	33	3.2
Others*	19	1.9

\*Merchant, daily laborer,

The majority of the respondents 901(86.8%) were married below the age of 15 years and 778(75.0%) of the respondents had their first pregnancy below the age of 20. Their mean (sd) age at first pregnancy was 18.4  $\pm$ 2.5 years. The average gravidity and parity of the respondents were 4.3  $\pm$ 2.7 and 4.2  $\pm$ 2.6, respectively. One hundred forty two (13.7%) responded that they had at least one pregnancy related health problems during pregnancy of their last delivery. Twenty nine (2.8%) of them experienced antepartum hemorrhage, 48 (4.6%) severe headache, 73 (7%)

severe abdominal pain, 32 (3.1%) drowsiness and 28 (2.7%) encountered other problems (Table 2). Six hundred eighty one (65.6%) subjects knew at least half of the knowledge questions on ANC and so labeled as knowledgeable. Among the socio-demographic factors; being in urban residence, possessing radio and educational status of secondary school and above were more than 4 times (OR=4.53, 95% CI: 3.00, 6.90), two times (OR=2.32, 95%CI: 1.58, 3.38) three times (OR=3.68, 95%CI: 1.27, 16.66) more likely to be knowledgeable about ANC (Table 3).

**Table: 2.** Selected Obstetric characteristics of respondents (N=1038) in Metekel Zone, Benishangul Gumuz Region, North West Ethiopia, January- February, 2007.

Variables	No.	%
Age at first marriage (in years)		
<15	901	86.8
15-19	124	11.9
20-24	12	1.2
25-29	1	0.1
Age at first pregnancy (in years)		
<20	778	75.0
20-29	258	24.8
30+	2	0.2
Gravidity		
1	143	13.8
2-4	474	45.7
$\geq$ 5	421	40.6
Parity		
1	159	15.3
2-4	468	45.1
$\geq$ 5	411	39.6
Number of delivery in last 5 years		
1	455	43.8
2	470	45.3
>2	113	10.9
Abortion in life time		
Yes		
No	122	11.8
	916	88.2

Five hundred seventeen (49.8%) of the respondents had at least one ANC visit during the pregnancy of their last delivery. Out of whom 285(55.1%) started their visit during their second trimester and only 248 (48.0%) had the recommended four or more visits. Three-hundred forty-five(66.7%) attended their ANC from health center and 455(88%) of the attendants were Nurses and/or Health officers. More than half (53.8%) of mothers who attended ANC were informed about institutional delivery during their visit. Four-hundred seventy(90.9%) received tetanus toxoid (TT) vaccine and 385(81.7%) of them had received TT<sub>2</sub> and above. Of those who didn't receive TT vaccine, 34(72.3%) responded that the main reason for not receiving

was absence of the vaccine during the visit (Table: 4).

Among the 521 non users, lack of awareness was mentioned by 268(51.4%) and absence of health problems during pregnancy by 213(40.9%) as reason for not using ANC which was supplemented by the qualitative data where most of the key informants and focus group discussants responded that '*ANC is not well utilized as expected because of low awareness of the community about its importance or in the absence of health problem*'. Some informants mentioned that '*shyness and fear of health professionals were among some factors hindering ANC service utilization*'.

A forty-three years old Trained Traditional Birth Attendant (TTBA) said,  
*“Most of the women in our area do not go for ANC unless they encountered serious*

*health problems, because they do not like removing their clothes and be examined by someone else.”*

**Table 3.** Knowledge of respondents about ANC services in Metekel Zone, North West Ethiopia, January-February 2007.

Knowledge variables	Yes N (%)	No N (%)	Total N (%)
Know that ANC service is available	705(67.9)	333(32.1)	1038(100)
Know that ANC has an advantage	696(67.1)	342(32.9)	1038(100)
Know that ANC helps to detect & treat problems during pregnancy	485(46.7)	553(53.3)	1038(100)
Know that ANC helps to be informed about place of delivery	167(16.1)	871(83.9)	1038(100)
knows that ANC helps to check the condition of the fetus	348(33.5)	690(66.5)	1038(100)

**Table 4.** Information related to ANC visit of last pregnancy among respondents in Metekel Zone, Benishangul Gumuz Region, North West Ethiopia, January-February 2007.

Variables	No.	%
ANC visit for last delivery(N=1038)		
Yes	517	49.8
No	521	50.2
No. Of ANC visit (n = 517)		
1	6	1.2
2	74	14.3
3	189	36.5
4 and above	248	48.0
Time of first visit (n = 517)		
First trimester	60	11.6
Second trimester	285	55.1
Third trimester	172	33.3
Place of ANC visit (n = 517)		
Health Center	345	66.7
Clinic/ Health post	170	32.9
At home	2	0.4
ANC attendants (n = 517)		
Nurse/HO	455	88.0
H.E.W	51	9.9
TTBA	9	1.7
Relatives	2	0.4
Information to deliver in health facility (n = 517)		
Yes	278	53.8
No	239	46.2
TT vaccine (n = 517)		
Yes	470	90.9
No	47	9.1
No. of TT vaccine(n=470)		
1	87	18.3
2	211	44.7
3+	174	37.0

On Bivariate analyses, socio-demographic characteristics such as being in Urban residence, having educational status of secondary school and above, occupational status other than housewife, housing condition, possessing radio and having monthly income of  $\geq 500$  Birr were positively

associated with ANC use. Husband's occupation and educational status also had statistically significant association with ANC service utilization ( $P < 0.05$ ) (Table 5).

However, on multivariate analyses, being in urban residence (OR=1.51, 95%CI: 1.22, 2.78),

having educational status of secondary school and above (OR= 6.52, 95%CI: 1.55, 27.39), husband's educational status of secondary school and above (OR=1.56, 95%CI: 1.11, 2.89), possessing radio (OR=2.08, 95%CI: 1.37, 3.13), having monthly

family income of 500 Ethiopian Birr and above (OR=1.53, 95%CI: 1.22, 3.52) and being knowledgeable on ANC service (OR=33.33, 95%CI: 20.00, 50.00) were positively associated with antenatal care service utilization (Table 5).

**Table: 5.** Factors associated with ANC service utilization among respondents in Metekel Zone, Benishangul Gumuz Region, North West Ethiopia, January-February 2007.

Variables	ANC Visit		Crude OR (95%CI)	Adjusted OR(95%CI)
	Yes n (%)	No n (%)		
Place of residence				
Rural	232(35.7)	417(64.3)	1.00	1.00
Urban	285(73.3)	104(26.7)	4.93 (3.74, 6.49)	1.51(1.22, 2.78)
Educational status				
Below secondary school	442(46.1)	516(53.9)	1.00	1.00
Secondary and above	75(26.6)	5(73.4)	17.54(7.04, 43.48)	6.52(1.55, 27.39)
Occupation				
House wife	438(46.2)	510(53.8)	1.00	1.00
Others†	79(87.8)	11(12.2)	8.33(4.35, 16.67)	0.87(0.32, 2.42)
Husband's education				
Below secondary school	343(42.9)	456(57.1)	1.00	1.00
Secondary and above	149(79.7)	38(20.3)	5.21(3.56, 7.63)	1.56(1.11, 2.89)
Husband's occupation				
Farmer	288(39.7)	437(60.3)	1.00	1.00
Others‡	204(78.2)	57(21.8)	4.05(2.74, 9.98)	1.21(0.66, 2.23)
The floor is made up of				
Mud	489(48.8)	514(51.2)	1.00	1.00
Cement	28(80.0)	7(20.0)	4.20(1.82, 9.71)	1.02(0.34, 3.12)
The roof is made of				
Thatched	294(39.9)	442(60.1)	1.00	1.00
Corrugated sheet	223(73.8)	79(26.2)	4.12(3.13, 5.56)	0.70(0.38, 1.26)
Have radio				
No	263(38.1)	427(61.9)	1.00	1.00
Yes	254(73.0)	94(27.0)	4.39(3.31, 5.82)	2.08(1.37, 3.13)
Monthly income (Eth.Birr)				
<500	399(45.7)	474(54.3)	1.00	1.00
≥500	89(84.8)	16(15.2)	6.67(3.85, 11.11)	1.53(1.22, 3.52)
Knowledge on ANC				
Knowledgeable	500(73.4)	181(26.6)	1.00	1.00
Not-Knowledgeable	17(4.8)	340(95.2)	0.02(0.01, 0.03)	0.03(0.02, 0.05)

† Gov Employed, Merchant, Student, daily laborer

‡ Gov Employed, Merchant, Student,

## DISCUSSION

According to the WHO recommendation, every pregnant woman should receive at least four ANC visits during pregnancy (6). However, in this study only half of the mothers had at least one visit and less than one-third had the recommended four and above ANC visits. This is consistent with the report from North Gondar zone where 45.7% of mothers had ANC visit (7) but, is higher than the 2005 Ethiopian DHS finding which was 28% (3). This difference could come from the difference in access as this study considered only mothers having access to the service while the EDHS is not as well as time gap might have contributed to the difference.

In this study, place of residence was found to affect ANC service use where being from urban setting increased ANC use by about 1.5 times. Similar findings were obtained from studies in other parts of Ethiopia and other developing countries (7, 8, 9, 10) which could be explained by the fact that inaccessibility to health facility and information is better for urban dwellers.

Subjects' education and husband's education of secondary school and above increased ANC use by more than 6 and 1.5 times, respectively in this study in line with reports of other studies (7, 9, 11, 12). The possible explanation for use of ANC by educated groups could be the higher the educational status the better understanding of information and the better the knowledge about the importance of the services.

Possessing radio increased ANC use by more than two times in this study similar with the 2005 EDHS and North Gondar study (3,7) which may show the increased access to ANC information. Monthly income of 500 Birr and above increased the likelihood of ANC utilization by more than 1.5 times consistent with findings of other studies (7, 9, 11, 13, 14) This could be because of the fact that better income increases the ability to pay for health care, transportation and other costs.

Knowledge of mothers was strong predictor of ANC utilization where having knowledge about ANC increased utilization by thirty-three times which is inline with studies conducted in other parts of Ethiopia and Pakistan (3, 7, 15). It is clear that the better knowledge they have, the better the understanding and acceptance of the ANC service and more likely to be user.

In conclusion, this study revealed that there is low utilization of ANC services in the study area when compared to the recommendation by safe motherhood that every pregnancy should get at least four visits. Eventhough a minimum of four visits are recommended during pregnancy, the proportion of mothers having four and above visits were still very low. Lack of appropriate knowledge about the benefits of ANC and absence of health problems during pregnancy were the main reasons mentioned for not using ANC service. Place of residence,

educational status, possessing radio, income and knowledge of ANC were identified as factors associated with ANC service utilization in the study area.

Therefore, information, education and communication on ANC must be intensified in order to reach all segments of the population, particularly the rural mothers. In a long run, women empowerment through education and income generating activities as well as involvement of husbands during information education and communication are recommended.

## ACKNOWLEDGEMENTS

The Author would like to thank the Public Health faculty of Jimma University for providing the necessary resources to accomplish the study. My special thanks goes to The Benishangul Gumuz Regional state Health Bureau for material and technical assistance that facilitated the study process. I would also like to acknowledge all local administrators of Metekel Zone and all participants of the study without the cooperation of whom this study wouldn't have been realized.

## REFERENCES

1. World Health Organization (WHO). Estimates of maternal mortality: A new approach, WHO, Geneva, 1996.
2. World Bank. *Better health in Africa: Experience and lessons learned*, Washington, D.C. World Bank 1994a.
3. Central Statistical Authority (CSA) and ORC Macro. *Ethiopia Demographic and Health Survey 2005*, Addis Ababa, Ethiopia, and Calverton, Maryland, USA: CSA and ORC Macro, 2006.
4. Family Care International (FCI) and The Safe Motherhood Inter Agency Group (IAG). a comprehensive package of services for Safe Motherhood, New York, 1998. Accessed on August 20, 2006 at: [www.safemotherhood.org](http://www.safemotherhood.org)
5. Benishangul Gumuz Regional State, Metekel Zone Administrative Office. Three Years Strategic Plan for the year 2004-2006, Gilgel Belus, March 2004.
6. World Health Organization (WHO). Antenatal care in developing countries: promises, achievements and missed opportunities : an analysis of trends, levels and differentials, 1990-2001. WHO Library Cataloguing-in-Publication, 2003
7. Nigussie M, Haile Mariam D, & Mitike G. Assessment of safe delivery service utilization among women of childbearing age in north Gondar Zone, Northwest Ethiopia, *Ethiop. J. of Health Dev.* 2004; 18(3): 45-152.

8. Mekonnen Y. Patterns of Maternity Care Utilization in Southern Ethiopia, *Ethiop J Health Dev.* 2003; 17(1): 27-33.
9. Deki N. Utilization of Maternal Health Care Services in Sikkim, India, International Institute for Population Sciences, April, 2005.
10. Federal Democratic Republic of Ethiopia (FDRE). The 1990 National Family and Fertility Survey Report. Addis Ababa, Office of Population and Housing Census Commission, CSA, 1993.
11. Mekonnen Y. & Mekonnen A. Utilization of Maternal Health Care Services in Ethiopia, *Ethiopian Health and Nutrition Research Institute*, Addis Ababa, Ethiopia, 2002.
12. Jhon C. Routes to low mortality in poor countries. *Population Development Review* 1986, 12: 171-220.
13. Nora N, Al-Nahedh A. Factors affecting the choice of maternal and child health services in a rural area of Saudi Arabia, 1995, 1(18): 261-269.
14. Ayele B. What Factors Determine Delivery Practices Of Pregnant Women? A Prospective follow up study in Jimma town, Addis Ababa, Ethiopia, May 2005. (Unpublished MPH Thesis to be submitted to school of Community Health, AAU).
15. Nisar N, White F. Factors affecting utilization of Antenatal Care among reproductive age group Women in an urban squatter settlement of Karachi, Pakistan, *Journal Of Pakistan Medical Association* 2003; 53(2):120-127.



