



Factors Associated with the Utilization of Focused Antenatal Care Among Women in Chiro Town of Oromia Region; Eastern Ethiopia

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Abstract

Background: Focused antenatal care (FANC) is one of the important factors in dropping maternal morbidity and mortality; meanwhile, it is a prevailing challenge in Ethiopia as many women do not access such care. However, little is known about the determinants factor of FANC service utilization in Ethiopia and particularly in Chiro town. Hence, this study was conducted to determine focused antenatal care status and associated factors among mothers who gave birth within 6 months preceding the study in Chiro town.

Method: A community-based cross-sectional study was conducted using quantitative methods from May 1-15, 2016 in Chiro town, on 361 women who gave birth 6 months preceding the study. A simple random sampling technique was used. Data were entered into Epidata 3.1 and analyzed using SPSS version 20.

Result: In this study, the overall coverage for Antenatal care utilization was 307 (85.6%). Among 359 interviewed mothers 143 (40.2%) attended followed four and above antenatal care visits during their last pregnancy and 164 (45.4%) mothers followed less than four times while 52(14.4%) did not follow focused antenatal care. Mother's educational status, number of parity, family size, and autonomy to decide ANC, birth space, knowledge of danger signs, plan for last pregnancy, and knowledge on starting ANC were found to be predictors of focused antenatal care utilization.

Conclusion: Focused antenatal care utilization was low in the study area. Women's education status, knowledge of danger signs, number of parity, birth space, family size, autonomy to decide ANC were an important factor for the utilization of FANC service in the study area. Empowering mother on the decision of ANC is crucial in reducing pregnancy-related complications by enhancing women to follow FANC.

Keywords: Focused Antenatal Care; Chiro Town; West Harerghe Zone; Determinants

Abbreviations

ANC: Antenatal Care; EDHS: Ethiopia Demographic and Health Survey; FANC: Focused Antenatal Care; FMOH: Federal Ministry of

Health; MDG: Millennium Development Goal; WHO: World Health Organization.

Background

Globally, an estimated 211 million pregnancies and 136 million births occur every year [1]. In the world, pregnancy and childbirth is a perilous journey [2] and more than 40% of women may experience sudden and unpredictable acute obstetric problems during pregnancy, childbirth and postpartum period or 800 women around the world die unnecessarily during pregnancy or childbirth each day [3-5]. Maternal and newborn mortality cost the world economy an estimated \$15 Billion in lost productivity each year [5].

Antenatal care (ANC) is one of the important factors in dropping maternal morbidity and mortality; meanwhile, many women in developing countries do not receive such care [6]. Antenatal care is more beneficial in preventing adverse pregnancy outcomes when received early in the pregnancy and continued through delivery [7,8].

World Health Organization (WHO) recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester [8]. Focused antenatal care (FANC) is personalized care provided to a pregnant woman which emphasizes the women's overall health, her preparation for childbirth, and readiness for complications (emergency preparedness) or FANC is a timely, friendly, simple, and safe service to pregnant women [8,9].

One of the strategies aimed at addressing maternal mortality in developing countries is the implementation of focused antenatal care (FANC), which is the care a woman receives throughout her pregnancy. Trials conducted in Argentina, Cuba, Saudi Arabia, and Thailand proved that FANC was safe and was a more sustainable, comprehensive, and effective antenatal care (ANC) model [10].

Early detection of problems in pregnancy leads to more timely referrals for women in high-risk categories or with complications; this is particularly true in Ethiopia, where three-quarters of the population live in rural areas and where physical barriers pose a challenge to providing health care [7].

Globally, in 2010 World Health Organization (WHO) estimates that 287,000 maternal deaths occurred as a result of pregnancy

and childbirth-related complications each year, with 99% of these deaths occurring in developing countries and sub-Saharan Africa, the estimated maternal mortality ratio is 500 per 100,000 live births [11]. More than 60% of all maternal deaths were contributed by ten countries; Ethiopia being among them [11].

In Ethiopia, according to the Ethiopian demographic health survey (EDHS), 2016 report maternal mortality ratio is estimated to be 412 deaths per 100,000 live births which is higher than sub-Saharan Africa and maternal deaths represent 30% of all deaths to women age 15-49 years [7]. Globally antenatal care coverage is 72%, in developing countries 68%, and industrialized countries 98% [12]. According to the 2016 EDHS, 62% of mothers who have had a live birth in the five years preceding the survey received prenatal care from skilled providers [7]. This showed that is an increasing trend in utilizing antenatal care [7,13]. Thirty-two percent of women with a live birth in the five years before the survey made four or more ANC visits during the length of their pregnancy, a marked improvement from 19 percent reported in the 2016 EDHS [7,13].

Ethiopia is committed to achieving MDG five to reduce the maternal mortality ratio by three quarters between 1990 and 2015; following the commitment with the goal Ethiopia is expected to reduce maternal mortality in 2015 to 267 maternal deaths per 100,000 live births. Nevertheless, the maternal mortality ratio remained high at 412 per 100,000 [7,14].

Similarly, according to EDHS 2016 Ethiopian urban women are more likely than rural women to have made four or more visits (90 percent versus 58 percent) [7]. Shreds of evidence proved that ANC helps to reduce the occurrence of maternal morbidity and mortality by providing chances for health promotion and information about danger signs, birth preparedness, and where to seek care for pregnancy complications [8]. However, this maternity care utilization in Ethiopia is very low as compared to developed and most developing countries. Little is known about the determinants factor of FANC service utilization in Ethiopia and particularly in Chiro town. Therefore, this study was intended to assess factors affecting FANC utilization among women who gave birth in Chiro Town, Eastern Ethiopia.

Method and Material

Study area and period

The study was conducted in Chiro town, the capital of West Harerghe Zone, in Oromia Region, Eastern Ethiopia, 378 km from the capital city, Addis Ababa and it composed of four Kebeles. According to Oromia Region statistical office, the projected population was 150,254; of which 76,179 (50.7%) were females. Women in the reproductive age group were 33, 056 with 1589 deliveries annually. The town has one public hospital and one health center, five private clinics, and 2 health posts. The study was conducted from May 1-15, 2016.

Study design

Community-based cross-sectional study.

Population

Source population

All mothers who gave birth in the last 6 months before the study in Chiro town.

Study population

Sampled mothers who gave birth in the last 6 months before the study.

Inclusion and exclusion criteria

Mothers who gave live and still birth during the last 6 months. Mothers who were mentally and physically incapable for interview were excluded.

Sample size determination

Sample size

Sample size was determined by using single population proportion formula [13].

$$n = (Z\alpha/2)^2 P (1- P)/d^2$$

According to 2014 EDHS report proportion of mothers who visited ANC four and more times was 31% [13]. Then after, based on the following assumption the sample size was calculated:

Where: $Z \alpha/2$ = critical value = 1.96 for 95% CI, p = proportion of mother visited ANC four and more times = 31%, d = degree of precision (margin of error) = 0.05 or 5%

$$n = \frac{(1.96)^2 * (0.31(1-0.31))}{(0.05)^2} = 328$$

By considering a non-response rate of 10%:

$$N = 328 * 0.1 = 26.1 = 32.8$$

$nf = 328 + 32.8 = 360.8$, therefore the final sample size was = 361.

Sampling procedure

The study participants were selected by simple random sampling method Four Kebeles of Chiro town were included in the study. All women who gave birth in the last 6 months before the study were registered by their identification number from a family folder of Chiro town urban health post then sample was allocated to each Kebeles by proportional allocation to their population size. Finally, from the sampling frame.

Proportional allocation

Sample size selected from a sampling frame of Kebeles was calculated according to proportional to population size: $n_i = N_i * n/N$; where; n_i = Number of women selected from each sampling frame.

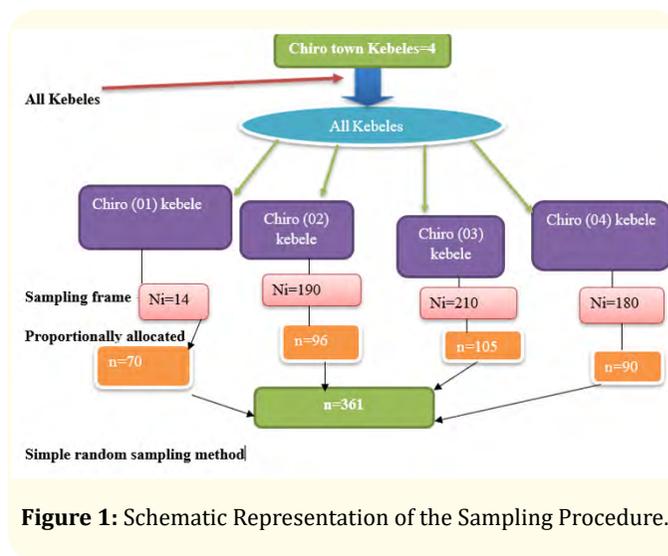


Figure 1: Schematic Representation of the Sampling Procedure.

Data collection tools and procedure

Data collection tools

A structured questionnaire was adapted from different previous similar studies [15-18]. First, it was prepared in English and then translated into Afaan Oromo (regional language), and finally retranslated back to the English version.

Data collection procedure

Two diploma graduates and one professional nurse who can speak both Afaan Oromo and Amharic languages were recruited as data collectors, and supervisors respectively. Data was collected by face to face interview after informed consent was obtained from respondents. The collected data was checked by the supervisor daily for completeness and finally, the principal investigator monitored the overall quality of data collection procedures.

Data quality control

The questionnaire was pre-tested on 5% of the sample size; 2 days before the actual data collection in Tulo Woreda, Hirna town in Kebele (01) which is out of Chiro town to check wording, logic, and skip the order of the questionnaire. Findings and experiences from the pre-test were utilized to modify the tools and not included in the final result. Moreover, during data collection supervisor checked in the field how the data collectors do their task. The principal investigators also closely supervised the field activity on daily basis, and carefully entered and thoroughly cleaned the data before the commencement of the analysis.

Study variables

Dependent variables

- Focused antenatal care(FANC) utilization

Independent variables

- **Socio-demographic:** Age, Occupation of women, Decision maker, Husband age, Husband occupation, Husband Education, family size, Ethnicity, Marital status, Religion, and income.

- **Reproductive characteristics of mothers:** Knowledge of FANC, Birth space, Parity, Plan for the pregnancy, Knowledge of obstetric danger signs

Operational definitions

- **Focused antenatal care:** In this study; FANC was considered as if a mother received at least four antenatal care visits and more during the pregnancy period by a health professional.
- **Knowledge of obstetric danger sign:** Women considered as well knowledgeable about obstetric danger signs related to pregnancy and childbirth if they scored equal and above the mean (above 3) from 5 knowledge questions and if less than mean considered as poor knowledgeable [19].
- **Knowledge of FANC:** Refers to the level of understanding of mothers' about FANC. If the mother answers four and above; women are considered as knowledgeable or not [19].

Data analysis procedure

Data was entered into Epidata version 3.1 and cleaned and analyzed using SPSS version 20. Description of data was made using tables, percentages, and graphs. Binary logistic regression analysis was used to assess the association between dependent and independent variables. The strength of statistical association was assessed by adjusted odds ratios and 95% confidence intervals and statistical significance was considered at $p < 0.05$.

Ethical clearance

Ethical clearance was obtained from Jimma University Ethical Review Board. Written permission letter was requested from Chiro town Administration, Chiro Town health office. Clients were provided with an information sheet about the objective of the study, privacy, and confidentiality then verbal informed consent was obtained from each participant.

Result

Socio-demographic characteristics of mothers

Out of the sample of 361 mothers; 359 of them were participated in the study, with a response rate of 99.4%. The majority 198 (54.8%) were between 25-34 age group. More than half (52.6%) of mothers were housewives, a quarter (25.2%) of them did not attend formal education, 169 (47.9%) attended primary, 67 (18.0%) attended secondary, 32 (8.9%) diploma and above. About one-fourth (26.0%) of the respondents had a family size greater than five people (Table 1).

Table 1: Socio demographic characteristics of mothers/caretakers Chiro town, Eastern Ethiopia, May, 2016.

Variables	Category	Number(N)	Percent-age (%)	Cumulative frequency
The age group of mothers	15-24 years	90	25.2	25.2
	25-34 years	198	54.8	80.0
	≥35 years	71	19.9	
	Total	359	100.0	100.0
Marital status of mothers	Married	331	91.7	91.7
	Widowed	3	0.8	
	Divorced	25	7.5	92.5
	Total	359	100.0	100.0
Religion of mothers	Muslim	271	75.1	75.1
	Orthodox	41	11.4	86.5
	Catholic	15	4.7	91.1
	Protestant	32	8.9	100.0
	Total	359	100.0	
Ethnicity of mothers	Oromo	319	88.4	88.4
	Amhara	26	7.2	
	Somali	10	2.8	95.6
	Others	4	1.7	98.4
	Total	359	100.0	100.0
Occupation of mothers	Housewife	190	52.6	52.6
	Civil Servants	28	7.8	
	Merchants	74	20.5	60.4
	Students	64	18.3	
	Others	3	0.8	80.9
	Total	359	100	100.0

Educational status of mothers	No formal	91	25.2	25.2
	Primary	169	47.9	73.1
	Secondary	67	18.0	
	Diploma and above	32	8.9	91.1
	Total	359	100.0	100.0
Husband age	≤30 years	243	67.3	67.3
	31-45 years	77	21.3	88.6
	>45 years	39	11.1	
	Total	359	100.0	100.0
Occupation of husband	Daily laborer	97	25.5	25.5
	Farmer	92	26.9	
	Civil Servants	80	22.2	52.4
	Merchant	60	16.6	74.6
	Students	30	8.9	91.2
	Total	359	100	100.0
Educational status of husband	No formal	128	35.5	35.5
	Primary	141	39.6	
	Secondary	53	14.7	75.1
	Diploma and above	37	10.2	89.8
	Total	359	100.0	100.0
Family size	≤5 members	265	74	74.0
	>5 members	94	26	
	Total	359	100.0	100.0
Income	≤ 6000ETB per annual	162	45.2	45.2
	>6000ETB per annual	197	54.8	
	Total	359	100.0	100.0

Note: ETB-Ethiopian Birrs.

Reproductive characteristics of mothers

With regards to number of pregnancy or parity, 96(26.6%), 106 (29.9%), 83 (23.0%), and 74 (20.5%) had 1, 2-3, 4-5, and >5 times pregnancies respectively. Concerning birth spacing 214(59.8%) of mothers delivered within two and fewer years of the birth interval between previous and last child pregnancy. More than half 195 (54.6%) of mothers planned their last child’s pregnancy. Regarding the decision making for ANC visit, 151 (42.4%), 87 (24.1%), and 121(33.5%), of mothers decided by themselves, herself and her husband together and husband only respectively (Table 2).

Table 2: Reproductive characteristics of mothers in Chiro town, Eastern Ethiopia, May 2016.

Variables	Category	N (%)	Cumulative frequency
Parity	1	96(26.6)	26.6
	2-3	106(29.9)	56.5
	4-5	83(23.0)	79.5
	>5	74(20.5)	100.0
	Total	359(100)	
Birth space	≤2	214(59.8)	59.8
	>2	145(40.2)	100.0
	Total	359(100)	
intended pregnancy	Yes	195(54.6)	54.6
	No	164(45.4)	100.0
	Total	359(100)	
Decision making for ANC visit	Mine only	151(42.4)	42.4
	Mine and my husband	87(24.1)	66.5
	My husband only	121(33.5)	100.0
	Total	359(100)	
Reason for ANC visit	Vaccination	167(46.5)	46.5
	Medical check up	138(38.2)	84.7
	Other reasons	54(15.2)	100.0
	Total	359(100)	

Knowledge on obstetric danger signs, number and starting month of antenatal care visits

This study revealed that; 170 (47.1%) of the mothers were not knowledgeable about danger signs that occur during pregnancy. More than half 206 (57.3%) of mother were knowledgeable on number of visits for ANC with no problem, whereas 153 (42.7%) of mother were not knowledgeable on number of visits for ANC with no problem. Regarding to Knowledge of month or weeks on starting ANC; 124 (34.6%) of mother were not knowledgeable and more than half 235 (65.2%) were knowledgeable on time at initiation of FANC (Table 3).

Table 3: Knowledge of mother’s on danger signs and month and number of ante natal care visits Chiro town, Eastern Ethiopia, May, 2016.

Variables	Not knowledgeable N (%)	Knowledgeable N (%)
Knowledge of danger signs during pregnancy	88(24.7%)	271(75.3%)
Persistent vomiting	237(65.9%)	122(34.1%)
Vaginal bleeding	148(40.3%)	211(58.7%)
Severe headache	100(28%)	259(72%)
Hypertension	128(35.7%)	231(64.3%)
Face, hand and feet swelling		
Over all knowledge on danger signs during pregnancy	133(37.1%)	226(62.9%)
Knowledge on numbers of visits for ANC with no problem	153(42.7%)	206(57.3%)
Knowledge on numbers of visits for ANC with problem	162(45.2%)	197(54.8%)
Knowledge of month/weeks on starting ANC	138(38.2%)	221(61.8%)

Proportion of FANC

This study showed that, 307 (85.6%) attended antenatal visits, out of this 27(7.5%), 71 (19.7%), 66 (18.3%), 112(31.6%), 26(7.2%) and 5(1.4%) attended one, two, three, four, five and six times antenatal care visits respectively. Fifty two (14.4%) mothers

were not attended antenatal care visits. One hundred forty three, 143 (40.2%) mothers followed FANC four and above times during their last pregnancy (Figure 2).

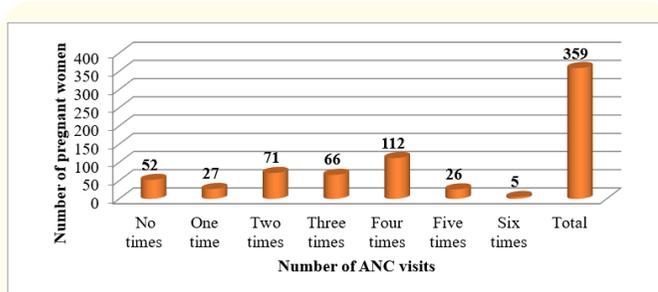


Figure 2: Antenatal care visits in Chiro town, Eastern Ethiopia, May, 2016.

Factors associated with focused antenatal care visits of mothers

Bivariate and multivariate logistic regression analysis was done using inter method to analyze factors associated with FANC utilization. Bivariate analysis was conducted to select candidate variables for multivariate analysis and variables with $P < 0.2$ were selected for the final model. On the bivariate analysis; variables like education of the mothers, husband education and occupation, parity, birth space, family income, family size, knowledge of danger sign during pregnancy, knowledge of starting month for ANC visits, the decision to attend anti natal care, intend the pregnancy are significant and selected for multivariate analysis.

In multivariate logistic regression analysis; mothers educational status was found statistically significant; mothers whose educational status was primary, secondary and diploma and higher were 5, 10 and 16 times more likely to follow FANC than no formal educational level of mothers [AOR=4.6(1.72-12.4), 9.79 (3.68-26.08) and 15.89(5.79-23.6)] at 95% CI of $p < 0.05$ respectively. Similarly mothers who planned their last pregnancy were four times more likely to follow FANC than those who didn't planned their last pregnancy [AOR=4.56 (2.20 -9.50) at 95% CI of $p < 0.05$. Mother whose birth space greater than two years were five times more likely to follow FANC than those birth space less than two years [AOR=4.56

(2.19 -9.49) at 95% CI of $p < 0.05$. Knowledge of mothers about month's starting ANC visits was found statistically significant on following focused ante natal care; mothers who know the appropriate time for initiating ANC visits were 8.6 times more likely to follow FANC than mothers who didn't know the appropriate time for starting ANC visits [AOR= 8.59 (3.89 -18.94)] at 95% CI of $p \text{ value} < 0.05$. Knowledge of danger signs during pregnancy was found statistically significant; mothers who were knowledge about danger signs during pregnancy were 4 times more likely follow FANC than mothers poor knowledge about danger signs during pregnancy [AOR=4.23 (1.99-8.97)] at 95% CI of $p \text{ value} < 0.05$ (Table 4).

Discussion

This community based cross-sectional study tried to assess FANC utilization among child bearing mothers in Western Harerghe zone, Chiro town. Among 359 interviewed mothers 143 (40.2%) followed ANC visits four and above times during their last pregnancy and 162 (46.4%) mothers did not follow FANC. This result was higher than EDHS conducted in 2016 [7]. This difference might be due to time difference and EDHS encompasses remote areas of the region. Similarly this study was also higher than the study conducted in Yem special Woreda, south western Ethiopia [20]. But, it was lower than a study conducted in Ayder Kebele, Mekelle city, Northern Ethiopia and West Sumatra, Indonesia [21,22]. The possible explanation for this discrepancy might be due to variation in study period, educational status and study design as well as residential variation of the participants.. In this study, mothers whose educational status were primary, secondary, diploma and higher were more likely to follow FANC than no formal educational. This study was similar with other study findings [7,17,22,23]. This might be due to education is likely to enhance females' autonomy so that women develop greater confidence and capability to make decisions about their own health.

Family size, Birth space and number of parity were factors that showed a statistically significant association with ANC utilization. The possible explanation could be mothers whose family size and number of parity less than five and birth space greater than two years might be more educated and it was believed that small parity and family size as well spacing birth between children can increase antenatal care utilization.

In this study; mothers who planned their last pregnancy were four times more likely to follow FANC than those who didn't planned their last pregnancy. This Study is consistent with other study findings [20,24]. The possible explanation could be those mothers who had planned pregnancy might be more educated and as the pregnancy is intended, mother expectancy increases.

In this study, mothers who know the appropriate time for initiating ANC visits were 8.5 times more likely to follow FANC than mothers who didn't know the appropriate time for starting ANC visits. This finding was in line with other study findings [20,24]. This may be due to mothers who had knowledge on danger signs may be aware of the possible adverse event happened during pregnancy period that leads mothers to follow FANC than mothers with poor knowledge of danger signs.

Conclusion

There was relatively high ANC utilization among the study participants but this study confirmed that FANC utilization was low in the study area. This study also identified that educational level, time to initiate ANC visit, knowledge of danger signs during pregnancy, intended pregnancy, decision to attend ANC, number of parity, birth space, and family size were the significant predictors of FANC utilization.

Recommendation

Based on this study finding, the following recommendations were suggested:-

- Educational sector has to plan adult learning program; for those who do not attend formal education.
- Healthcare workers in Chiro town recommended to give due attention to increase awareness of mothers on the danger signs of pregnancy and early initiation and follow up of ANC visit.
- Healthcare workers in Chiro town should advice mother to have planned pregnancy and increase birth space where by reducing number of parity and family size.
- Healthcare workers in Chiro town should advice couples to make joint decision.

Declarations

Ethics Approval and Consent to Participate

Ethical clearance was obtained from Jimma University Ethical Review Board. Written permission letter was requested from Chiro town Administration, Chiro Urban health office. Clients were provided with information sheet about the objective of the study, privacy and confidentiality then verbal informed consent was obtained from each participant.

Availability of Data and Materials

The finding of this study is generated from the data collected and analyzed based on stated methods and materials. The original data supporting this finding are available from the corresponding author on reasonable request.

Competing Interests

"The authors declare that they have no competing interests".

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