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Community Based New Born Care Service Utilization and Factors Associated With it among Women of Reproductive Age Group Who Gave Birth in the Past One Year in Malga Woreda, Sidama Regional State, Ethiopia, 2020

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Abstract

Background: According to Ethiopian demographic health survey 2016 on Community based new born care service utilization indicators revealed that 32% of mothers had four or more ANC visits, 26% Health facility delivery, 17% PNC care within 2 days.

The main purpose of this article was to assess community based new born care service utilization and factors associated with it among women of reproductive age group who gave birth in the past one year in Malga Woreda, Sidama Regional State, Ethiopia, 2020.

Methods: Community-based cross-sectional survey design was used in Malga woredas, Sidama Regional state, Ethiopia from July to August 2020. Simple random sampling techniques were used to select women who gave bath in last one year. Complementary log log regression model was used to identify the factors associated with CBNC service utilization.

Results: 40.5% (n=243) have Community based new-born care service utilization. Women, who had ANC visits (ARR=5.3, 95%, CI: 1.9, 14.7), women in urban areas (ARR 4.8; 95% CI: 3.4, 6.7), women who gave birth at Health institution (ARR=9.0, 95% CI: 1.8, 45.9) and women who were not heard about CBNC service (ARR 0.1; 95% CI: 0.01, 0.6) were found to be major contributing factors with CBNC service utilization.

Conclusion: Factors associated with Community based new-born care service utilization include: ANC visit place of residence, heard about CBNC service and place of delivery.

Keywords: Community based new born care service utilization; Ethiopia; Malga woreda

Abbreviations: ANC: Antenatal care; AOR: Adjusted Odds Ratio; ARR: Adjusted Relative Risk; CBNC: Community Based New Born Care; COR: Crude Odds Ratio; CI: Confidence Interval; CSA: Central Statics Agency; EBF: Exclusive breastfeeding; EDHS: Ethiopia Demographic Health survey; EPI: Expanded Program of Immunization; FMOH: Federal Ministry of Health; FP: Family Planning ; Four C (4C): Contact, Capture, Care and Completion; HSTP: Health Sector Transformation Plan; IMR: Infant Mortality Rate MGD: Millennium Development Goal; MMR: Maternal Mortality ratio; NMR: Neonatal Mortality Rate; OR: Odd Ratio; PNC: Post Natal Care; SBCC: Social Behavioral Change Communication; SPSS: Statistical Package for Social Sciences; SNNPR: South Nation Nationality People Region SPSS: Statistical Package for Social Sciences U5MR:Under Five Mortality Ratio; UNIGME: United Inter-Agency Group for Child Mortality Estimation; WHO: World Health Organization.

Introduction

New born care is the care that newborn and mothers received starting from pregnancy, during labor time, following delivery till to 2 months of young infancy age [1].

Worldwide, developing region contribute majority of maternal death due to the problem related to pregnancy and child birth. Among sub Saharan Africa region alone contributed 62% (17900) of worldwide death which followed by southern Asia at 24% (69000). The rate declined by 45% from global MMR of 1990 (380/100000 live birth) in 2013(210/100000). Sub Saharan Africa region has higher MMR (510/100000) live birth among developing region. Ethiopia is one of highest maternal mortality ratio country in the world. The World Health Organization (WHO) report in 2012 indicated that 9000 death occurred in 2010 [1].

Ethiopia has high maternal and neonatal mortality ratio with estimated 676 maternal mortality per 100,000 live births and neonatal death rate 37 deaths per 1000 live births in 2011 [2] Neonatal death is the cause for 62% of all infant deaths [1,2].

Ethiopia has high rates of maternal and child mortality. However, the ability to deliver essential services in rural settings was less successful [3,4].

Though health service coverage is 86.7% in Ethiopia suggest that there are about 0.25 visits per person per year. This is very far from the 3 visits of World Health Organization Goals [5].

Ethiopia has been implementing cost-effective health interventions to decrease maternal and neonatal mortality. These interventions include contraception, increase midwives, referral system and routine immunization and yet maternal and neonatal mortality rates remain high.

In Ethiopia, the neonatal death rate was 29 deaths per 1,000 live births. The risk of death is highest in the first 24 hours of life [5].

A lot have been tried to assess the health service utilization rate of individual services and to identify determinants of health care use for the individual services. There were small number of communities based studio conducted in Ethiopia which stated the magnitude of CBNC service utilization and factors associated with it. This study asses the magnitude and factors with CBNC service utilization among women of reproductive age group who gave birth in the past one year in Malga Woreda, Sidama Regional State, Ethiopia, 2020.

Materials and Methods

Study design

Community-based cross-sectional survey design was used.

Source and study population

Source population: All mothers who have given birth in the previous one year in Malga Woreda.

Study population: Mothers who have given birth in the last one year.

Inclusion and exclusion criteria

Inclusion criteria: Residence of Malga Woreda Kebeles for last 6 months. Women over the age of 18 and had at least one child less than 1 years old.

Exclusion criteria: Very seriously ill patient because of the difficulty of interviewed such cases (getting the consent, lack of tolerance the pain or illness).

Sample size determination and sampling procedures

Sample size determination: The sample size was determined by calculated using a prevalence of 26.8% of Health facility delivery and 73.2% where home delivery among Women of Child Bearing Age in Sidama Zone, Sout.

$$n1 = n2 = \frac{\left(Z_{(1-\alpha/2)}\sqrt{2pq} + Z_{(1-\beta)}\sqrt{p_1q_1 + p_2q_2}\right)^2}{(p_1 - p_2)^2}$$

$$p = \frac{p_1 + p_2}{2}$$

Sampling technique: Complete enumeration of the Kebeles was done to know the total number of mothers who have given birth in the previous one year and list of women who gave bath in the last one year was prepared

Simple random sampling techniques were used to select women who gave bath in last one year.

$$N = \frac{\left(\left(1.96\sqrt{0.268 * 0.732}\right) + 0.84\sqrt{(0.732 * 0.268) + (0.732 * 0.268)}\right)^2}{(0.268 - 0.732)^2}$$

$$n1 = \frac{6.01}{0.022} = 273$$

$$n2 = \frac{6.01}{0.022} = 273$$

$$N = 273 + 273 = 546 + 54 = 600$$

Considering 10% possible non response rate, a 600 women who have given birth in the previous one year was included.

In case of households with more than one mothers why fulfill the inclusion criteria one mother was selected r using lottery method.

Study variables

Independent variables: Scio-demographic characteristics Age, sex, income, education level, marital status and occupation, health seeking behavior, illness status, Travel time to the nearest health institution, perceived transport cost, distance from the health institution.

Dependent variable: Community Based New Born Care Service Utilization.

Data collection tools: A structured questionnaire was used to interview women. The questionnaire was prepared by using relevant literature.

The questionnaire was prepared in English and translated into Amharic and translated back to English.

The data was collected by eight trained persons who have exposure on data collection and at least completed secondary school or above Eight Data collectors, 2 supervisors was participated in data collection process.

Data quality control: Pretesting was done on 5% of women who gave bath in last one year in similar Woreda.

Training and demonstration to equip data collectors with the knowledge and skills for data collection and other related procedures was carried out for 3 days by research investigators. The trainees were made familiar with the instruments for data

collection.

A supervisor was recruited for the data collection.

Data processing and analysis: The data was entered into Epi info software and export to SPPSS for analysis. Descriptive statistics like table graphs were used (**Table 1**).

Hosmer and Lemeshow Test			
Step	**Chi-square**	**Df**	**Sig.**
1	166.153	6	0

Table 1: Hosmer and Lemeshow Test.

The diagnostic tests were done for logistic regression model, particularly goodness of fit test by the Hosmer and Lemeshow test failed ; (where p-value of <0.05 was found).

The Nagelkerke R Square indicated that 52% of the variation in CBNC service utilization is explained by the logistic model.

The overall accuracy of the logistic model to predict subjects having CBNC service utilization (with a predicted probability of 0.5 or greater) is 79.3%.

In this study the reliability analysis shows that Cronbach's alpha value of the variables is 0.800 this indicate the questionnaire appeared to have good internal consistency.

An independent sample, t-test was used to compare the differences in mean of CBNC service utilization according to residence, Place of delivery and Antenatal care visit.

Complementary log log regression model was used to identify the factors associated with CBNC service utilization because the diagnostic test of logistic regression model that is goodness of fit of the model by the Hosmer and Lemeshow test failed; (where p-value of <0.05 was found) and CBNC service utilization, is assumed to be constant over 12 months period as well as probability of an event is small.

Operational definitions: Community Based New Born Care Service Utilization is present if mother scored >"2" score (50%) and absent if mother scored <2 score from WHO standard care practices listed as: If baby washing done after 24 hrs, scored "1", If baby had feed only breast milk within the first six months, scored "1", If clostrum used by baby, scored "1", If nothing applied on the umbilical cord, scored "1".

Ethical consideration: Ethical review was done by Pharma Health college Department of Public Health Permission letters were obtained from Sidama Regional Health Bureau. The purpose of the study was explained to study participants. Identification code was given to ensure confidentiality of individual client information.

Written informed consent was obtained from all participants.

Dissemination of the study: The findings of the study was disseminated to responsible administrators: Sidama Regional health department, Melega Hospital and Health centers, Melega woreda health office and Pharma health science college department of public health, of newborn care practice from health care providers CBNC service utilization among women who gave birth at Health.

Results

All 600 women responded to the questionnaires and a response rate of 100%.

Of the total sample of 600 women 40.5% (n=243) have CBNC service utilization (**Figure 1**). A predominant percentage of women lived in rural areas (64.5%)), 66.3%of women reported unemployed and 24.0% no formal education.

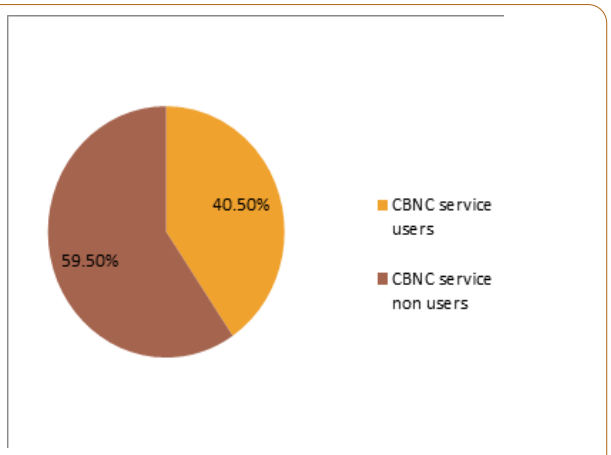

Figure 1: The magnitude of CBNC service Utilization among mother in Sidama Regional State, malga woreda, Ethiopia, 2020.

Majorities 66.5%of the respondents were Protestant 26.0 were orthodox, 5.7 were Muslim and 1.8 were catholic.

In terms of age, overall 35.2%) of women between 30 and 34 years of age Most women (53.2%)) reported as currently married at the time of the survey. Of the total, only 7.2%were <300 Monthly income and 16.8%) were >1001 Monthly income as summarized in **Table 2**.

Socio-demographic factors	N (%)
Educational status	
no formal education	144 (24.0%)
Primary education (1-6th)	351 (58.5%)
Junior Secondary education (7th-8th)	105 (17.5%)
Residence	
Urban	213 (35.5%)
Rural	387 (64.5%)
Age category	
20-24	44 (7.3%)
25-29	180 (30.0%)
30-34	211 (35.2%)
35-39	165 (27.5%)
Religion	
Orthodox	156 (26.0%)
Muslim	34(5.7%)
Protestant	399 (66.5%)
Catholic	11 (1.8%)
Marital status	
Single	177 (29.5%)
Married	319 (53.2%)

Divorce	104 (17.3%)
Occupation	
unemployed	397 (66.3%)
employed	202 (33.7%)
Husband Educational status	
unable to read and write	134 (22.3%)
Primary education (1-6th)	361 (60.2%)
Junior Secondary education (7th-8th)	105 (17.5%)
Husband occupation	
unemployed	109 (18.2%)
employed	491 (81.8%)
Monthly income	
<300	43 (7.2%)
301-600	231 (38.5%)
601-1000	225 (37.5%)
>1001	101 (16.8%)
N	600

Table 2: Sociodemographic characteristic among mother and new born with place of delivery status in Sidama Regional State, Malga Woreda, Ethiopia, 2020.

29.3% of women reported to have one child and 26.5% had more than 5 during survey.

Regarding Source of information about community based newborn care, health professionals 29.2% friends/relatives, 10.8%, HEWs, 45.2%and 14.8% radio/television.

Obstetrics and maternal health service

458 (81.8%) gave birth at a health institution. Four, hundred ninety-one (81.8%) had made ANC visit at least once for their recent infant, and 202 (33.7%) reported that, they had made PNC visit for the recent birth. Considering Health education given during last antenatal visit, 32.2% of the participants have got Health education on Care of baby, and, 24.2%, on, Importance of, breastfeeding and 29.5% of them were ≥ 4 ANC visits. Regarding on the post natal, services 45.5% were made post-natal services, within 24 hours-48 hours after birth, for their, recent pregnancy.

Among the respondents 116, (20.7% heard information about community based newborn care one hundred eighty-two (30.3%) lactating, mothers have practiced exclusive breastfeeding and three hundred sixteen (52.7%) mothers gave colostrum for their newborn. Concerning newborn bathing, ninety-one (15.2%) of the babies had a bath within the, first 24 hrs of delivery (**Table 3**).

Variables	Category	Frequency	Percentage
Antenatal care visit	Yes	491	81.8
	No	109	18.2
Number of antenatal care visits	<4 visits	423	70.5
	≥4 visits	177	29.5
Place of delivery	Home	102	18.2
	Health facilities	458	81.8
No. of pregnancy	0-1	154	25.7
	02-04	341	56.8
	>5	105	17.5
No. of birth	0-1	162	27
	02-04	341	56.8
	>5	97	16.2
PNC visit	Yes	202	33.7
	No	398	66.3
Heard about community based newborn care	Yes	116	20.7
	No	444	79.3
Source of information about community based newborn care	health professionals, friends/ relatives from HEWs radio/ television	175	29.2
		65	10.8
		271	45.2
		89	14.8
Where do you get community based newborn care	health, facility	218	36.3
	home	382	63.7
Type of community based newborn care service offered	Treatment services	291	48.5
	Counseling services	309	51.5
Community based newborn care service treatments	Sepsis management (Gentamycin+ Amoxcacilin) for 7 days	28	9.6
	Local bacterial treatment (Amoxcacilin only) for 5 days	137	47.1
	Diarrheal management(ORS)	59	20.3
	Counseling on breast feeding, when to return immediately and stated follow up date	67	23
Decision making power for utilization of community based	Husband only	141	23.5
	Self	300	50
New born care service utilization in the family?	Both the wife and the husband	159	26.5
Health education given during your last antenatal visit?	Importance of ANC and PNC	50	8.3
	Importance of health facility delivery	112	18.7
	Care of baby	193	32.2
	Importance of breastfeeding	145	24.2
	Importance of immunization	33	5.5
	Personal hygiene	32	5.3
	Not given	35	5.8
Could you specify some services of community based new born care that already you utilize?	Baby bathing should be taken after 24 hrs of delivery	91	15.2
	Baby should feed only breast milk within the first six months	182	30.3
	Mothers' first breast milk is suggested to be given to newborn	316	52.7
	Nothing advised to be applied to an umbilical cord,	11	1.8

What was your age during your last pregnancy?	20-24	47	7.8
	25-29	171	28.5
	30-34	217	36.2
	35-39	165	27.5
What were the reasons for not offered or visited for home based community new born care?	Did not to see any need to attend	10	1.7
	my child felt well	293	48.8
	Shortage of money	237	39.5
	Lack of awareness	35	5.8
	Transportation	25	4.2
Time of PNC	Within the 1st 24 hrs	4	2
	24 hours-48 hours after birth	92	45.5
	48 hours-72 hours (3 days)	76	37.6
	72 hours-7 days	4	2
	After one week to 42 days of delivery for the subsequent visit	26	12.9
How many times you had the subsequent postnatal visit excluding your 1st contact?	Not attended	398	66.3
	One time only	83	13.8
	twice	30	5
	three times	61	10.2
	four time and above	28	4.7
CBNC service utilization	Yes	243	40.5
	No	357	59.5
How many children do you have currently?	0-1	176	29.3
	01-04	265	44.2
	>5	159	26.5

Table 3: Obstetrics and maternal health service among mother and new born with place of delivery status in Sidama Regional State, Malga Woreda, Ethiopia, 2020.

Factors associated with community based, newborn care service utilization

Complementary log log regression analysis: Ante natal care visit, delivery place, place of residence, and heard information about community based newborn care service were associated factors of community based, newborn care service utilization.

Women living in urban areas having 4.8, increased community based, newborn care, service, utilization (ARR 4.8; 95% CI: 3.4, 6.7, P value=0.000) compared to women rural areas.

Women who had ANC visits were 5.3 times higher CBNC service utilization compared to women who did not have ANC visit (ARR=5.3, 95%, CI: 1.9, 14.7 P value=0.001).

CBNC service utilization among women who gave birth at Health institution were 9.0, times, more likely utilizing CBNC service than those who gave birth at Home, (ARR=9.0, 95% CI: 1.8, 45.9 P value=0.008).

Similarly, women who were, not, heard about CBNC were decreased CBNC service utilization by 90% (ARR 0.1; 95% CI: 0.01, 0.6 P value=0.015) compared to women who, heard about CBNC service (**Table 4**).

Variable	Bivariate analysis COR 95% CI Unadjusted		Complementary log log regression Adjusted	
	COR	p-value	ARR	p-value
Have you ever had a postnatal service for?				
Yes	12.123, (8.080, 18.19)	0	not Retained in model	
No	1			
Husband's education				
No education	1.170,(0.662, 2.068)	0.588	not Retained in model	
Primary edu	2.587, (1.602, 4.178)	0	not Retained in model	
Secondary edu	1			
Where do you get about community new born care service?				
health, facility	8.532, (5.839, 12.465)	0	not Retained in model	
Home	1			
Marital status				
Single	1.392, (0.816, 2.373)	0.224		
Married	2.565, (1.578, 4.170)	0		
Divorce	1			
Mother education				
No education	1.463, (0.842, 2.541)	0.177		
Primary edu	2.440, (1.509, 3.945)	0		
Secondary edu	1			
Number of pregnancy				
0-1	1.755 (1.023, 3.013)	0.041	not Retained in model	
2-4	2.292, (1.415, 3.712)	0.001	not Retained in model	
>5	1		not Retained in model	
Number of live births				
0-1	1.450 (0.842, 2.494	0.18	not Retained in model	
2-4	2.054, (1.260, 3.346)	0.004	not Retained in model	
>5	1			

What is your current occupation?				
Unemployed	0.083 (0.055, 0.124)	0	not Retained in model	
Employed	1			
Where is your current Place of residence?				
Urban	9.437 (6.415, 13.883)	0	4.763(3.363, 6.744)	0
Rural	1			
Where have you delivered your last child				
Health institution	2.479 (1.539, 3.993)	0	9.039(1.779, 45.922)	0.008
Home	1			
Have you heard about CBNC				
NO	1.678 (1.094, 2.575)	0.018	0.112(0.019, 0.650)	0.015
YES	1	0		
Have you attended antenatal care during the last child pregnancy?				
yes	6.508 (3.551, 11.926)	0	5.331(1.932, 14.711)	0.001
No	1			

Table 4: Community based newborn care service utilization and Factors Associated with it among mother in Sidama Regional State, malga woreda, Ethiopia, 2020.

An independent sample t-test which compared the differences in CBNC service utilization according to Residence, Place of delivery and Antenatal care visit indicated that urban, women (M=1.7324, SD=0.44375) had more CBNC service, utilization than, rural counterpart (M=1.2248, SD=0.41800) [t (598)=13.923, p=0.000].

Women delivered in health facility (M=1.4716, SD=0.49974)) had more CBNC, service utilization than women delivered at home (M=1.2647, SD=0.44336)) [t (558)=3.857, p=0.000].

Women attend ANC (M=1.4684 SD=0.49951)) had more CBNC service utilization than women who did not attend ANC (M=1.1193, SD=0.32560)) [t (598)=6.974, p=0.000] (**Table 5**).

Variables	Mean (SD)	Test values	p-value
Residence		13.923	0
Urban	1.7324(.44375)		
Rural	1.2248(.41800)		
Place of delivery		3.857	0
Health facilities	1.4716(.49974)		
Home	1.2647(.44336)		
Antenatal care visit		6.974	0
Yes	1.4684(.49951)		
no	1.1193(.32560)		

Table 5: An independent sample-t test which compared Differences in CBNC service utilization by residence, place of delivery and Antenatal care visit.

Discussion

The prevalence of CBNC service utilization among mother and new born, with place of delivery status in Sidama Regional State, Malga Woreda, Ethiopia, 2012 was 40.5%.

The finding is higher compared to previous studies [6-11]. This finding, discrepancy might be due to the, differences in socioeconomic, status of mothers, study participants, and scoring, parameters used to level good newborn practices.

Women, who had ANC visits, for the recent pregnancy were 5.3 times more likely utilized, CBNC, service than those who, did not have ANC follow-up (ARR=5.3, 95%, CI: 1.9, 14.7).

This study result corresponds with previously conducted studies in Ethiopia, Northern Ghana and Nepal [6,12,13].

This finding was also consistent with study done in Nepal, Tanzania, and Jimma [14-16].

This might be due to women who attended ANC may get information about the components and the importance institution were 9.0, times, more likely utilizing CBNC service than those who gave birth at Home (ARR=9.0, 95% CI: 1.8, 45.9).

This finding is comparable with previous study in Tigray [17].

This could be explained by mothers who gave birth at health facilities may have the chance for counseling about the danger of inappropriate child care practices. Mothers who gave birth at home were found, less likely to utilize CBNC service this might be, because these mothers did not get appropriate information, about CBNC service.

Similarly women who were not heard about CBNC were decreased CBNC service and utilization by 90% (ARR 0.1; 95% CI: 0.01, 0.6) compared to women who, heard about CBNC service.

This might be related to the fact that women who heard about CBNC service may have better understanding about CBNC service and they had the chance of utilizing CBNC service.

Residence they live had significant association with women living in urban areas having 4.8 times increased of having community based newborn care service utilization (ARR 4.8; 95% CI: 3.4, 6.7) compared to women who had live in rural areas.

This is explained by Rural women are less likely to enjoy the healthcare and counseling facilities compared to their urban counterparts and remain somewhat isolated from the service network [18], However, rural women are often abandoned, neglected, and deprived of better health care facilities [19].

Previous research explained that location of residence is a form of imbalance, especially in accessing information or health services that impacts the level of one's knowledge [19].

Therefore, it is necessary to empower rural communities, especially in terms of increasing women's knowledge and capacity.

Conclusion

In this study the overall CBNC service utilization was higher than most similar studies of the region.

There is Significant differences in CBNC service utilization between home and institutional delivery.

Factors associated with CBNC service utilization include: ANC visit, Residence, heard about CBNC service and place of delivery.

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The data is available in SPSS file and will be presented, on request with legitimate reasons.

Authors' Contributions

HB, KTT, AAA, ETT, and MKT were involved in formatting the research question. All performed the analysis. All authors prepared the initial draft of the manuscript. All critically revised the manuscript for intellectual content. All authors approved the final version of the manuscript.

Ethics Approval and Consent to Participate

Ethical review was done by Pharma Health college Department of Public Health Permission letters were obtained from Sidama Regional Health Bureau. The purpose of the study was explained to study participants. Identification codes were given to ensure confidentiality of individual client information.

Written informed consent was obtained from all participants.

Consent for Publication

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

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