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Newborn Care Practice and Associated Factors Among Mothers of a Child Less Than Six Month in Bonke District, Gamo Zone, Southern Ethiopia. A Community-Based Cross-sectional Study

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Abstract

Information is limited about practice of mothers on newborn care at home level. Appropriate newborn care during birth is imperative for the survival, growth, and development of a newborn. In Ethiopia, neonatal mortality remains high and accounts for about half of the under-five mortality. Therefore, the purpose of this study was to assess the status of home-based newborn care practices and its associated factors among mothers of children whose age is less than six months in Bonke District, Southern Ethiopia. A community-based cross-sectional study was conducted among 613 mothers having an infant whose age is six months and less in Bonke district from March 15 to April 15, 2018. A structured interviewer-administered questionnaire was used. Bivariable and multivariable analyses were carried out using binary logistic regression to assess the association between explanatory variables and newborn care practice. Statistical significance was declared at p-value < 0.05. The status of newborn care practice was 391 (65.6%) with 95% CI (0.61, 0.69) among the respondents, the level of education, monthly income, a home visit by health extension workers, counseling on the hand and breast washing, counseling on keeping baby warm, and the knowledge of mothers were significantly associated with newborn care practice.

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The proportion of newborn care practice was not satisfactory as per the recommendation of WHO. Hence, much work is needed to improve newborn care practice among women. Empowering women, increasing, and providing continuous support about appropriate newborn care practice throughout the maternal continuum care is mandatory to come up with a significant increase in newborn care practice.

Key word: newborn; care; practice; Arba Minch; Ethiopia.

1. Background

Neonatal period is immediately after birth to 28 days of life. This is a transition period from intrauterine life to extra uterine life (1). With the share of under-five deaths during the neonatal period rising in every region and almost all countries, accelerated change for child survival needs more focus on a healthy start to life. In 2013, 2.8 million newborns died within 28 days of birth, accounting for 44 percent of global under-five deaths. Neonatal health will need to be addressed more effectively to continue the rapid progress on overall child mortality [2]. Newborn baby are very susceptible to infection and are at risk ‘for various health problems, even though they born with average birth weight. The morbidity and mortality rates in newborn infants are high and need optimal care for improved survival [3] The care given to the newborn immediately after birth and in both early and late neonatal period is critical in determining its survival. Simple cost effective interventions such as hygienic cord care and early and exclusive breastfeeding helps in prevention of infection and promote child growth respectively [5]. As EDHS of 2000, 2005, and 2011 showed Infant and under-five mortality rates continuously declined, Under-five mortality decreased from 166 deaths per 1,000 live births in the 2000 to 88 in 2011, 67 deaths per 1,000 live births in 2016 survey. While infant mortality decreased from 97 deaths per 1,000 live births in the 2000 survey to 59 in the 2011, and to 48 deaths per 1,000 live births in 2016 survey. On the other hand, even though neonatal mortality rate decreased from 49 deaths per 1,000 live births in 2000 to 39 deaths per 1,000 live births in 2005, it has since remained stable at 37 deaths per 1,000, as reported in the 2011, and 29 deaths per 1,000 births in 2016 EDHS. So Under-5 mortality declined by 60%, Infant mortality also declined by 50% and Neonatal mortality declined by 41% ,a reduction of over the past 16 years [11]. The third sustainable development goal (SDG3) of the United Nation globally aim to end the preventable deaths of newborns and children under five years of age, with the targets of under-five mortality (25 deaths per 1000 live births from 33 deaths per 1000 live births) and neonatal mortality (12 deaths per 1000 live births from 22 deaths per 1000 live births) but still most of the low income resource countries are far from the target [12] .Therefore, further intervention is needed to sustain the improvement in the maternal and neonatal mortality [13]. Newborn care is strongly influenced by women’s social status and home care practice for mother and newborn care service [14].With most neonatal deaths in developing countries occurring at home and unattended by skilled professionals, it is necessary to understand the care given to the newborns in a home setting as most home environments lack the basic sanitation required for survival of neonates. In addition, slow decline in neonatal mortality in developing country calls for action to address factors contributing to high neonatal death. Provision of simple and cost effective newborn care interventions at home where majority of the newborns are delivered is therefore necessary in bringing down number of newborn deaths [15, 16]. The factors like Educational status of the mothers, knowledge of the mothers, residence, ANC visit of the mothers, marital status of the mothers, Home visit, birth attendant, counseling on newborn care practice, and age group of the mothers influence

newborn care practice [19-25]. For these reasons many SSA countries are beginning to introduce neonatal interventions in to their National program [4]. Community-Based Newborn Care (CBNC) in Ethiopia is a national package that aims to improve newborn survival through the Health Extension Program. This will involve implementing a newborn care package along the continuum of care from pregnancy to post birth through frontline community workers, including improving sepsis management (care for and treatment of a newborn with a potentially deadly bacterial blood infection). A set of practices that reduces newborn morbidity and mortality has been identified as essential and these include clean cord care (cutting and tying of the umbilical cord with a sterilized instrument and thread), thermal care (drying and wrapping the newborn immediately after delivery and delaying the newborn's first bath for at least six hours or several days to the reduce hypothermia risk), and initiating breastfeeding within the first hour of birth [26]. Additionally, understanding routine newborn care practices in the home environment will inform the designing, modifying, and prioritizing of interventions for newborn survival. There are also few studies on practices of newborn care in Ethiopia as well as SNNPR Region [19-25]). The present study aims to assess the practices and associated factors on newborn care and fill the existing information gap. The findings of the study may help in developing new approaches for improving the newborn care practices and there by contributing to newborn survival.

2. Method and material

2.1. Study area and period

The study was conducted at Bonke District Southern Ethiopia, from March 15- April 15, 2018.

2.2. Study design, population and eligibility criteria

Community-based cross-sectional study was conducted. All mothers who reside in Bonke district were considered as the study population. Lactating mothers who had under six-month infants were included. Those mothers who were seriously ill and are not permanent resident of the district were excluded from the study.

2.3. Sample size calculation and sampling procedure

The sample size was calculated by EpiInfo-7 StatCalc using a single population proportion formula by considering the following assumptions: 59.0% (newborn care practice from a study conducted in Amhara region, Ethiopia [23], 95% level of confidence, and 5% margin of error. By adding a none response rate of 10% and multiplying by 1.5 for design effect the final sample size was 613. Lactating mothers were selected using multi-stage cluster sampling technique. First from the total of 35 kebeles of the Bonke district 8 were randomly selected by using lottery method and included in this study and the sample size was allocated proportionally to each kebele based on the number of lactating mother who had under six-month infants. Finally, the data were collected by using a simple random sampling technique by using sample frame from family folder of each kebele. A structured interviewer-administered questionnaire was prearranged after reviewing previous literature [15, 21]. The questionnaires were translated to the local language Amharic and Gamugna again translate back to English for checking the consistency and pretest was done on 5 % of the sample before the actual data collection. Standardized Cronbach's alpha used to test reliability of tool with the minimum score of >0.74. Data

collectors and supervisors were well trained prior to data collection. Close supervision was undertaken on a daily basis throughout the study period. Double data entry was done on 5% of the sample by two data clerks and consistencies of the entered data were cross-checked by comparing the two separately entered data sets.

2.4. Data processing and analysis

The data were visually checked by the investigators and entered to EpiData statistical software version 3.1. Then, the data were exported to SPSS version 25.0 for cleaning and analysis. Descriptive summary measures such as frequency, percentages, mean and standard deviation were used to describe characteristics of the participants. Binary logistic regression was carried out to identify the factors associated with newborn care practice. To control possible confounding factors, variables with a p-value of ≤0.25 in the bivariate analysis were taken to the multivariable analysis. Multicollinearity and model fitness was checked using standard error and Hosmer-Lemeshow test respectively. The adjusted odds ratio (AOR), with 95% confidence intervals (CI), was used to identify the independent variables associated with newborn care practice. All tests were two-sided and statistical significance was declared at P-value < 0.05.

2.5. Variables, operational definitions and ethical issues

The dependant variable was newborn care practice and the independent variables were: socio-demographic, knowledge of mothers regarding newborn care practice, utilization of maternal health care, Tradition and Obstetric factors. **A newborn**: an infant who is only hours, days, or up to a four weeks old (33). **Knowledge**: There were fifteen questions which can asses knowledge of mothers towards newborn care, the median score was used as a cut off to distinguish between poor knowledge and good knowledge. Thus, those scoring below the median are considered to have poor knowledge and above or equal to the median are considered to have good knowledge (22) . **Thermal care**: when the new born was dried and wrapped after birth (24). **Kebele**: Small administrative unit in the district **Colostrum**: the yellowish, sticky breast milk produced at the end of pregnancy(36).

Good Newborn Care Practices: There were nineteen questions which can asses practice of mothers towards newborn care, the median score was used as a cut off to distinguish between poor practice and good practice. Thus, those scoring below the median are considered to have poor practice and above or equal to the median are considered to have good practice (33). Ethical clearance was obtained from the Arba Minch University Research and Institutional Review Board (IRERB) to conduct the study. Permission of All Kebele administration was granted. Consent was obtained from women's after informing about the aim of the study. All the subjects were assured of confidentiality and the freedom to reject. There was no record of identification information and the interview was conducted in separated place after/before they get the service to ensure confidentiality and privacy.

3. Results

3.1. Socio-demographic characteristics

Table1: Socio-demographic characteristics of participants at Bonke district, Southern Ethiopia, 2018 (n= 596)

Variables		Number (n=596)	Percent (%)
• **Age (in years)**	15-19	16	2.7
	20-29	346	57.9
	30-39	229	38.3
	>40	5	0.8
Marital status	Single	24	4
	Married	563	94.5
	Divorced	7	1.2
	Widowed	2	0.3
Religion	Protestant	541	90.8
	Orthodox	45	7.6
	No religion	10	1.6
Ethnicity	Gammo	569	95.5
	Wollaita	10	1.7
	Others (Amhara, Gurage)	15	2.5
Educational status	No formal education	199	33.4
	Read & write	40	6.7
	Primary (1-8)	301	50.5
	Secondary and above	56	9.4
Occupation	House wife	549	92.1
	Merchant	27	4.5
	Others (St,private & Gov't employee)	20	3.4
Residence	Rural	562	94.3
	Urban	34	5.7
Family monthly income	No known monthly income	239	40.1
	<300	241	40.4
	301-600	77	12.9
	601-1000	18	3.0
	>1001	21	3.5

A total of 596 participants were involved, making a response rate of 97.2%. The mean (standard deviation (SD)) age of the participants was 28 (4.7 SD) years. Of the participants, 57.9% were within the age group of 20-29 years, and 90.8 % were protestant by religion. The majority of the participants, 94.5% were married, 92.1% were housewives, 63.3% were rural dwellers, and 33.4% didn't attend formal education (table: 1).

3.2. Obstetric characteristics

Among the participants, 33.1% were primipara, 95.6% had ANC follow-up, and 93.2% were delivered through the natural route. Four-fifths (80.2%) of the participants received counseling about breastfeeding techniques after delivery. The majority (86.7%) of the participants were delivered at term. The birth weight of the newborns was within the normal range for 92.0% of the participants. Nearly half (46.1%) of the infants were male.

3.3. Status of newborn care practice among mothers

Overall, the prevalence of good newborn care practice was 65.5% (95%, CI: 61.0%, 69.0%). Poor practice was observed among 34.4% of women. The first bath was given after 24 hours of birth by 377 (62.7%) mothers. Five hundred ten (85.6%) of participants kept their newborn baby warm by wrapping them with a dry cloth and covering the whole body including head and legs. Breastfeeding was initiated within an hour by 574 (96.3%) mothers. The application of traditional substances to the cord of the newborn was practiced by 58(9.7%) mothers (Table: 2).

Table 2: Newborn care practice among mothers in Bonke district Southern Ethiopia, 2018 (n=596)

Variables		Frequency	Percent
Cloth used to wrap a baby	Unwashed cloth	17	2.8
	Washed old cloth	510	85.6
	New unwashed cloth	69	11.6
*Method used to keep baby warm	Skin to skin contact	155	26.0
	Wrapped the baby immediately	574	96.3
	Clothing door and window	3	0.5
Methods used to keep cord clean and safe	Cover with cloth	119	20.0
	Uncover, keep dry and clean	413	69.3
	Don't know	64	10.7
Substance applied on the stump	Yes	58	9.7
	No	538	90.3
Types of substance applied	Butter	46	79.3
	Vaseline	8	13.8
	Other (ash, cow dung)	4	6.9
Cloth used to wrap a baby	Unwashed cloth	17	2.8
	Old washed cloth	510	85.6
	New cloth	69	11.6
Giving breast milk as first feed	Yes	584	98.0
	No	12	2.0
Time of first breastfeeding	Within one hour	574	96.3
	After one hr	22	3.7
Colostrum given for newborn	Yes	549	92.1

baby	No	47	7.9
Other fluid given to a newborn baby	Yes	23	3.9
	No	573	96.1
Wash breast and hand before breastfeeding	Yes	419	70.3
	No	177	29.7
Substances used to wash hand and breast	Only water	178	42.5
	Water and soap	241	57.5
Frequency of breastfeed	8 to 12 times	383	64.3
	On demand	208	34.9
	Don't breast feed	3	0.5
	(don't know)	2	0.3
Time of first bathing after birth	Immediately after birth	153	25.7
	after 6 hrs of birth	69	11.6
	after one day of birth	374	62.7
Make newborn baby to receive vaccination	Yes	509	85.4
	No	87	14.6
Colostrum given for newborn baby	Yes	549	92.1
	No	47	7.9
The reason to not given colostrum	Cause abdominal cramp	10	21.3
	Dirty	37	78.7
Over all practice	poor practice	205	34.4
	good practice	391	65.6

3.4. Factors associated with maternal practices on Essential Newborn Care

The odds of good newborn practice was 3 times (AOR=2.928 95% CI: 1.262, 6.794), higher among mothers who read and write as compared to those who had no formal education. Likewise, the odds of good newborn practice were 3 times (AOR=3.001; 95% CI: 1.188-7.579) among mothers who attend secondary (9-12) education as compared to those who had no formal education. Monthly income has positive association with good new practice and those respondents who earns 301-600 ETB per month were 2.539 (AOR= 2.539; 95% CI: 1.284, 5.023) times more likely to practice good newborn care than those who had not monthly income per month. (Table 3)

Table 3: Factors associated with newborn care practice among mothers in Bonke district, Gamo Zone, SNNPR, Ethiopia, March to April, 2018

Variables	**Poor practices**	**Good practices**	**COR(95%CI)**	**AOR(95%CI**	**P value**
Age of mothers					
15-19	8(50.0%)	8(50.0%)	1.00	1.00	0.292
20-29	127(36.7%)	219(63.3%)	0. 1.724(0.632-4.707)	1.764(0.525-5.928)	0.359
30-39	69(30.1%)	160(69.9%)	2.319(0.836-6.429)	2.400(0.699-8.246)	0.164
>40	1(20.0%)	4(80.0%)	4.000(0.363-44.113)	3.532(0.280-44.597)	0.329
Mothers level of education					
No formal education	87(43.7%)	112(56.3%)	1.00	1.00	0.029
Read and write	10(25.0)	30(75.0%)	3.862(.395-37.775)	2.928(1.262-6.794)*	0.012
Primary(1-4)	66(31.3%)	145(68.7%)	9.000(.838-96.627)	1.489(0.940-2.359)*	0.090
Primary (5-8)	29(32.2%)	61(67.8%)	6.591(.673-64.554)	1.349(0.736-2.474)*	0.333
Secondary and above	10(19.2%)	42(80.8%)	6.310(.629-63.316)	3.001(1.188-7.579)*	0.020
Mothers Occupation					0.600
House wife	189(34.4%)	360(65.6%)	1.00	1.00	0.265
Private employee	1(25%)	3(75%)	1.575(0.163- 15.245)	4.429(0.323-60.717)	0.750
Government employee	3(75%)	1(25.0%)	0.175(0.018-1.694)	0.542(0.013-23.315)	0.971
Merchant	6(22.2%)	21(77.8%)	1.837(.729-4.630)	1.021(.340-3.060)	0.320
Student	6(50.0%)	6(50.0)	0.525(.167-1.650)	0.492(0.122-1.990)	
Monthly income					
No monthly income	101(41.9%)	140(58.1%)	1.00	1.00	0.068
<300	79(32.8%)	162(67.2%)	1.479(1.021-2.144)	1.267(0.820,- 1.958)	0.286
301-600	15(19.7%)	61(80.3%)	2.934(1.578--5.454)	2.539(1.284-5.023)*	0.007
601-1000	4(23.5%)	13(76.5%)	2.345(.743-7.401)	2.190(0.620-7.731)	0.223
>1001	6(28.6%)	15(71.4%)	1.804(.676-4.809)	2.332(0.602-9.031)	0.220
Home visit by HEW					
No	66(40.2%)	98(59.8%)	1.00	1.00	0.017
Yes	139(32.4%)	290(67.6%)	0.065(.979-2.059)	1.868(1.120-3.114)	

Counseling on hand washing					
No				1.00	0.026
Yes	133(31.5%)	289(68.5%)	1.00	1.73(1.863-2.068)*	
	72(44.1%)	102(58.6%)	10.20 (6.78-115.33)		
Counseling on keeping baby warm					
No	170(32.6%)	351(67.4%)	1.00	1.00	
Yes	35(46.7%)	40(53.3%)	7.64(4.704-12.42)	2.08(1.863-2.471)*	0.018
Attending ANC					
No					
Yes	31(51.7%)	29(48.3%)	1.00		0.206
	174(32.5%)	362(67.5%)	2.224(1.299-3.807)	1.00	
				1.501(0.800-2.816)	
No of ANC visit					
No			1.00		
Two	31(51.7%)	29(48.3%)	2.069(0.685-6.246)		
Three	6(33.3%)	12(66.7%)	1.954(0.979-3.901)		
Four and more	27(34.6%)	51(65.4%)	2.178(1.259-3.768)		
	141(32.0%)	299(68.0%)			
Place of delivery					.292
Home			1.00	1.00	
Health institution	62(39.7%)	94(60.3%	1.370(0.939-1.998)	0.747(0.434-1.285)	
	143(32.5%)	297(67.5%)			
Knowledge					.000
Poor knowledge				1.00	
Good knowledge	104(49.3%)	107(50.7%)	1.00	2.945(1.997-4.344)*	
	101(26.2%)	284(73.8%)	2.733(1.921-3.889)		

The odds of good newborn practice was 1.868 times (AOR=1.868; 95% CI: 1.120, 3.114), higher among mother who are visited by health extension workers during pregnancy and postnatal period as compared with those who are not visited by health extension workers. Those mothers who received counseling on hand and breast washing before feeding newborn baby were 1.73 times (AOR= 1.73; 95% CI: 1.518, 2.068)) more likely to practice good newborn care than those who did not received counseling on hand and breast washing before feeding. Mothers those received counseling on keeping baby warm were 2.08 times more likely to practice good newborn care than those who didn't received counseling on keeping baby warm (AOR= 2.08; 95% CI :1.863-2.471). The odds of good newborn practice was 2.945 times (AOR=2.945; 95% CI: 1.997-4.344) higher among mothers who have good knowledge as compared with those who have poor knowledge

4. Discussion and Conclusion

This study revealed that 65.6% of lactating women exhibit good newborn practice. Having formal education,

being home visited by health extension workers (specifically counseling on hand washing and keeping baby warm) and having good knowledge towards newborn care practice were significantly associated with good newborn care practices. The prevalence of good newborn practice in this study is slightly higher than the studies conducted in Addis Ababa Ethiopia (60.6%) [20], Nekemte Ethiopia (53%) [25], Fitche Ethiopia (55.4%) [19] and Mandura District Ethiopia (59%) [17].This discrepancy might be due to the difference in the counseling during pregnancy and the postpartum period. In addition, it might be due study settings and period variation. The odds of good newborn care practice were almost three times higher among women who can read and write and have attended secondary education and above as compared to those who have no formal education. This finding is in line with the studies conducted in Varanasi and Northwest Ethiopia [16, 22]. This might be probably due to the fact that uneducated women need much more time to adhere and implement good newborn care. In addition, unschooled mothers may face some difficulties to acquire health information about appropriate newborn care practice. In this study, the likelihood of good newborn care practice was two point five times higher among Women's whose Monthly income was 300-600 ETB as compared to those who didn't have any income. This might be due to the effect of monthly income on living standard (personal hygiene, completion of basic needed materials) of the family. Those mothers who were counseled by health extension workers about newborn care were more likely to exhibit good newborn care practice as compared to those who have not received the information. This is in line with the studies conducted Nekemte and Fitche Ethiopia [16, 19]. This might be due to the fact that counseling about newborn care during pregnancy and the postpartum period are imperative to achieving effective newborn care practice. The odds of good newborn care practice were almost three times higher among women who have good knowledge as compared to those who have poor knowledge. This is in line with the studies conducted in Fitche, Ethiopia [19]. This might be due to the fact that, having good knowledge, helps women's to refrain them self from harmful traditional practices which may affect the health and development of newborns. In the study area, the proportion of newborn care practice was not satisfactory as per the recommendation of WHO. Being able to read and write, mothers those attending secondary school and Above, having monthly income of 300-600 ETB , being counseled by HEWs on new born care practice, and having knowledge about newborn care practice were significantly associated with newborn care practice. Hence, much work is needed to improve newborn care practice among women's. Empowering women, increasing, and providing continuous support.

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