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Mother's knowledge and Practice about Neonatal Danger Signs and Associated Factors in Wolkite Town, Gurage Zone, SNNPR, Ethiopia, 2017

Walelign Anmut¹, Bekana Fekecha^{1*} and Tigist Demeke¹¹Jimma University, Institute of Health, College of Health Science, South West, Ethiopia

*Corresponding author: Fekecha B, Jimma University, Institute of Health, College of Health Science, South West, Ethiopia, Tel: 251910716731; E-mail: bekf@rocketmail.com

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Abstract

Background: Neonates are more prone to show subtle signs of illness. Most infants are either born at home or are discharged from the health facility early, families should be able to recognize signs of newborn illnesses and bring the newborn infant to the attention of a health worker.

Methods: Community based cross sectional study design was carried out in wolkite town from March to April, 2017. A total of 368 mothers who gave birth within 12 months prior to the study period were selected by using systematic random sampling technique. Pretested Structured questionnaire was used to collect data. Data was entered into Epi data version 3.1 and exported into statistical package for social science version 21 for analysis. Bivariate and multivariable logistic regression model was used for identifying statistically significant associations between dependent and independent variables.

Result: In this study, 31.32% of mothers have good knowledge about neonatal danger sign. From a total of mothers, 64.5% respondents' practice for their sick neonate was unsafe. Mothers secondary and above educational level (AOR=1.21, CI 0.049, 0.677), income (AOR=0.44, CI 0.201, 0.964), place of birth (AOR=1.867, CI 1.102, 3.164) and source of information (AOR=0.173, CI 0.034, 0.875) were factors for having good knowledge. Husbands' educational level (AOR=0.183, CI 0.049, 0.677), husbands' occupation (AOR=0.132, CI 0.032, 0.543), place of delivery (AOR=6.45, CI 2.617, 7.185) and PNC follow up (AOR=6.19, CI 1.070, 5.626) were factors that contribute for mothers to bring their sick neonate to health institution.

Conclusion and recommendation: There was poor knowledge of mothers towards neonatal danger signs and unsafe practice. Town health office, NGOs and health workers should collaborate to create awareness about neonatal danger sign in the community.

Keywords Neonate; Neonatal Danger Sign; Knowledge; Practice

Abbreviations

ANC - Ante Natal Care; AOR- Adjusted Odd Ratio; CI - Confidence Interval; EDHS - Ethiopian Demographic Health Survey; IMNCI - Integrated Management of Newborn and Childhood Illness; IMR - Infant Mortality Rate; IRB - Institutional Review Board; Km - Kilo Meter; MDG - Millennium Development Goal; NMR - Neonatal Mortality Rate; OR - Odd Ratio; PNC - Post Natal Care; SDG - Sustainable Development Goal; SNNPR - South Nation Nationality Peoples Region; SPSS - Statistical Package for Social Science; UNICEF-United Nations Children Education Fund; WHO - World Health Organization.

Introduction

A newborn or neonate is a child under 28 days of age. During these first 28 days of life, the child is at highest risk of dying. It is thus crucial that appropriate feeding and care are provided during this period, both to improve the child's chances of survival and to lay the foundations for a healthy life [1].

Neonatal danger signs refer to presence of clinical signs that would indicate high risk of neonatal morbidity and mortality and need for early therapeutic intervention. Fever is an elevation of body temperature above the normal daily variation. It is one of the famous manifestations of diseases and it is the most common cause to seek health care provider and visit physicians in childhood. Convulsion, which is one of neonatal danger sign happen because of sudden, abnormal electrical activity in the brain. Lethargy and poor sucking, especially in an infant who was feeding well earlier, are very important and sensitive indicators of neonatal illness. An increased respiratory rate (more than 60 per minute when counted for at least one minute) and chest retractions indicate a serious problem. Vomiting and Jaundice are also important danger signs which require urgent treatment [2-5].

The neonatal period is the most critical time for the survival of an infant. For too many babies, their day of birth is also their day of death [6]. Every year an estimated 4 million babies die in the first 4 weeks of life and, Almost all (99%) deaths arise in low-income and middle-income countries. The highest numbers are

in south-central Asian countries and the highest rates are generally in sub-Saharan Africa [7]. In these regions, especially the sub-Saharan, preventable health conditions with access to affordable and simple interventions account for more than half of child deaths [8-10].

Childhood mortality levels are decreasing in Ethiopia. According to Ethiopian Demographic Health Survey 2016 Neonatal Mortality Rate are 29 per 1,000 live births. Infant mortality Rate (IMR) is 48 deaths per 1,000 live births and Under-five mortality was 67 deaths per 1,000 live birth [11]. Most neonatal death take place at home, this indicating that lack early recognition on the danger sign and low treatment seeking practice of mothers (care taker) towards modern health care service [12].

In Ethiopia, although significant works has been done in the implementation of IMNCI, children are still suffering from morbidities and mortalities related with danger signs. This is mainly attributed to parent's care seeking practices. Only few studies were conducted in Ethiopia with regard to care seeking practice of mothers for their children [13-19]. So this research aimed to assess the mothers' knowledge and practice about neonatal danger sign and what factors influence mothers to have poor knowledge and not seeking modern medical care for their sick neonates.

Materials and Methods

Community based cross sectional study design was carried out on mothers who gave birth within 12 months in Wolkite town from March 7 to April 30, 2017. Wolkite town, which is 158 km far from Addis Ababa, is the administrative center of the Gurage Zone of the Southern Nations, Nationalities and Peoples' Region (SNNPR). Its astronomical location is 07010' 08" North Latitude and 370 37'50" East Longitude and an elevation between 1910 and 1935 meters above sea level. Based on the 2007 Census conducted by the Central Statistical Agency, this town has a total population of 28,866, of whom 15,074 are men and 13,792 women. There are 2532 under one year children in the town.

Single population proportion formula was used to calculate a sample size, by using 50% of the proportion of expected mothers 'knowledge and practice about neonatal danger signs. Systematic random sampling technique was used for selecting study respondents. The town has 6 Kebeles; all Kebeles was included in the study. There are 2532 mothers who were eligible. The study participants in each Kebeles were proportionally allocated. Every house in each kebele which have those mothers gave birth within 12 months were coded then by using systematic random sampling technique every 7th mothers were interviewed.

Data was collected using structured interviewer administered questionnaires. The questionnaire consisted of information on socio-demographic characteristics, Obstetric characteristics, knowledge, and practice questions. The internal reliability of the item was checked by computing Cronbach's alpha (socio-demographic characteristics 0.87, Obstetric characteristics 0.75, knowledge 0.73, and practice 0.7) respectively. The gathered

data was coded, cleaned, recoded and entered into Epi-data version 3.1 and finally export to SPSS version 21 for analysis. Simple descriptive summary statistics was done. Tables, statements, charts and graphs were used to present the result of the analyzed data. Associations between independent and dependent variables were analyzed first using bivariate logistic regression analysis. Variables that had $p < 0.25$ on bivariate analysis were entered into multivariable logistic regression analysis. The statistical association between the different independent variables in relation to dependent was measured using OR, AOR, 95% CI and P-values < 0.05 was considered statistically significance.

Ethical clearance was obtained from the institutional Review Board (IRB) of Jimma University, institute of Health Science. Official letter was written from school of Nursing and Midwifery for wolkite town Health office. Other necessary permissions were gained from wolkite town Health office. Verbal and written consent was obtained from each participant after thorough explanation of the purpose of the study. Participation in the study was on a voluntary base. All responses were kept confidential and anonymous.

Result

Socio demographic characteristics of respondents

From a total of 368 mothers selected to participate, 355 mothers were completed the interview making the response rate of 97%. The mean age of the respondents was 27.7(SD \pm 6.19) years. Majority of the mothers had primary 96(27.0%) as their highest educational attainment. Two hundred ten (59.2%) mothers were house wife (**Table 1**).

Table 1: Socio-demographic characteristics of mothers in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017 (N=355).

Variables	Category	Frequency	Percent (%)	
Mother's status	educational	No formal education	128	36.1
		Primary	96	27
		Secondary	61	17.2
		Diploma and above	70	19.7
Husband status	educational	No formal education	105	29.6
		Primary	98	27.6
		Secondary	70	19.7
		Diploma and above	82	23.1
Husband occupation	Government Employee	90	25.4	
	Merchant	83	23.4	
	Daily laborer	80	22.5	
	Private employee	71	20	
	Other	31	8.7	

Family monthly Income	1200	90	25.4
	1200-3000	68	19.2
	3000-5000	106	29.9
	≥ 5000	91	25.6
Type of communication media used	Television	260	73.2
	Radio	95	26.8

Obstetrics history of the respondents

Among the interviewees, 277 (78.0%) of them attend ANC follow up for their last pregnancy. Two hundred and thirty four (65.9%) mothers were gave their last birth at health institution. Seventy one (20.0%) of mothers had PNC follow up in last delivery (**Table 2**).

Table 2: Obstetrics characteristics of mothers in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017 (n=355).

Variables	Category	frequency	Percent (%)
Place of last birth	Health institution	234	65.9
	Home	121	34.1
PNC follow up	Yes	71	20
	No	284	80
No of PNC follow up	<3	66	91.7
	≥ 3	6	8.3

Mothers' knowledge about neonatal danger sign

Out of the total 355 respondents, 281 (79.2%) of them had information (heard) about neonatal danger sign. The newborn danger sign for which there was high awareness among mothers was diarrhea 160 (57.3%), fever 136 (48.4%) and followed by persistent vomiting 127 (45.2%) (**Table 3**).

Table 3: Distribution of mothers by their knowledge about neonatal danger sign in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017.

Variable	Response	Frequency	Percent (%)
Heard about neonatal danger sign	Yes	281	79.2
	No	74	20.8
list of neonatal danger sign	Diarrhea	160	57.3
	Fever	136	48.4
	Persistent vomiting	127	45.2
	Difficulty/fast breathing	71	25.3
	Poor feeding or unable to suckle	55	19.6
	Baby is cold	31	11.1
	Convulsion	37	13.2
	Lethargy/unconsciousness	10	3.6
	Yellow Skin color (Jaundice)	4	1.4
	Other*	20	6.5

The overall knowledge level of study participants

68.68% of mothers found to have a good knowledge concerning neonatal danger signs. NB: Good Knowledge: those mothers listing three and above neonatal danger signs. Poor knowledge: those mothers list less than three of neonatal danger signs [20].

Practice of mothers for neonatal danger signs

Regarding place of seeking a care 78 (33.8%) of mothers preferred place of seeking a care for their sick neonate was home, 82 (32.0%) take to health institution, 56 (24.2%) take to traditional healers and 15 (6.5%) were do nothing. The home treatments mothers gave for their sick child were "damakesie", garlic, "tenadam", honey, a mixture of lemon and ash put on neonate's head for tonsil, match stick for convulsion, tepid

sponging for fever, exposure to sunlight for jaundice, rubbing by coconut oil for cold body.

The majority 118 (51.1%) of mothers continued breast feeding for their sick neonate while 113 (48.9%) were not (**Table 4**).

Table 4: Actions taken by mothers for danger signs in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017.

Variables	Category	Frequency	Percent (%)
Persistent vomiting	stop breast feeding	33	18.5
	give home treatment	56	31.5
	take to health institution	61	34.3

	take to tradition healer	19	10.7
	I don't know	9	5
	Total	178	100
Diarrhea	take to health institution	59	40.4
	I give home treatment	43	29.5
	take to traditional healer	32	21.9
	do nothing	12	8.2
	Total	146	100
Breathing problem	take to health institution	89	44.9
	take to traditional healer	67	33.8
	do nothing	42	21.2
	Total	198	100
Fever	take to health institution	79	37.8
	give home treatment	94	45
	take to traditional healer	36	17.2

	Total	209	100
Convulsion	take to health institution	5	19.2
	give home treatment	13	50
	take to traditional healer	8	30.7
	Total	26	100
Jaundice	take to health institution	3	20
	give home treatment	6	40
	take to traditional healer	6	40
	Total	15	100

Factors associated with maternal knowledge about neonatal danger signs

In multivariable logistic regression, mothers' educational status, income, place of birth and source of information are factors that contribute for mothers' knowledge towards neonatal danger sign (**Table 5**).

Table 5: Bivariate and Multivariate logistic regression for factors associated with mother's knowledge about neonatal danger signs in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017.

Variable	knowledge level		Odds ratio and 95%CI	
	Poor	Good	Crude	Adjusted
Mothers educational status				
No formal education	55 (59.8%)	37 (40.2%)	1.692 (0.947,3.022)	0.56 (0.094, 1.852)
Primary	55 (75.3%)	18 (24.7%)	0.823 (0.422,1.605)	1.21 (0.049,0.677)a
secondary and above	83 (71.6%)	33 (28.4%)	1	
Income				
1200	56 (74.7%)	19 (25.3%)	0.497 (0.245, 1.009)	0.44 (0.201,0.964)b
1200-3000	35 (68.6%)	16 (31.4%)	0.669 (0.312, 1.434)	0.462 (0.196,1.086)
3000-5000	61 (70.9%)	25 (29.1%)	0.600 (0.307, 1.172)	0.47 (0.226,1.003)
>= 5000	41 (59.4%)	28 (40.6%)	1	
Place of birth				
Health institution	139 (73.2%)	51 (26.8%)	0.535 (0.316,.907)	1.867 (1.102, 3.164)c
Home	54 (59.3%)	37 (40.7%)	1	
Source of information				
Health professionals	51 (78.5%)	14 (21.5%)	1	
Media	117 (63.2%)	68 (36.8%)	2.117 (1.091,4.107)	1.477 (0.721, 3.029)
Other*	25 (92.6%)	2 (7.4%)	0.291 (0.061,1.383)	0.173 (0.034, 0.875)d

Factors associated with maternal practice about neonatal danger signs

Similarly in multivariate logistic regression, husband educational status, husband occupational status, place of birth

and attending PNC were the factors that significantly affect maternal practice for neonatal danger signs (Table 6).

Table 6: Bivariate and multivariate logistic regression for factors associated with mother's practice about neonatal danger signs in Wolkite town, Gurage zone, SNNPR, Ethiopia, 2017.

Variables	Practice category		Odds Ratio and 95% CI	
	Unsafe	Safe	Crude	Adjusted
>5	12 (70.6%)	5 (29.4%)	1	
Husband educational status				
no formal education	46 (75.4%)	15 (24.6%)	0.143 (0.053,0.382)	0.355 (0.068, 1.851)
primary	41 (70.7%)	17 (29.3%)	0.341 (0.151,0.771)	0.418 (0.094, 1.852)
secondary	38 (73.1%)	14 (26.9%)	0.203 (0.079,0.524)	0.183 (0.049,0.677)a
diploma and above	24 (40.0%)	36 (60.0%)	1	
Husband occupation				
Merchant	33 (58.9%)	23 (41.1%)	1	
daily laborer	36 (80.0%)	9 (20.0%)	0.359 (0.145, 0.886)	0.371 (0.104, 1.323)
government employee	33 (53.2%)	29 (46.8%)	1.261 (0.608, 2.615)	0.391 (0.122, 1.256)
private employee	31 (63.3%)	18 (36.7%)	0.833 (.379, 1.832)	0.132 (0.032, 0.543)b
Place of birth				
health institution	83 (53.2%)	73 (46.8%)	3.906 (4.716, 6.335)	6.45 (2.617, 7.185)c
home	66 (88.0%)	9 (12.0%)	1	
PNC follow up				
yes	16 (31.4%)	35 (68.6%)	5.037 (2.538, 9.996)	6.19 (1.070, 5.626)d
no	133 (73.9%)	47 (26.1%)	1	

Discussion

Reducing child morbidity and mortality requires immediate caregiver's recognition of suggestive danger signs in the child and visiting the nearby health facility. But in this study only 31.3% of mothers have good knowledge about neonatal danger sign. This knowledge level report is higher when compared to the reports of the studies conducted in North West of Ethiopia 18.2% [20], slightly lower than the study conducted in Gedeo zone SNNPR, Ethiopia which is 32.4% [21] and higher than the study done in Southwestern Rural Uganda 14.8% of mothers were knowledgeable [8]. This discrepancy may be due to sample size variation, time gap, residence and socio cultural variation.

The result of this study showed that 65.1% of mothers had seen a sick neonate in their family in the past one year and only 32.0% of them take their neonate to health institution. This study varies with study conducted in Wardha, India in which 41.8% of sick neonates got medical treatment [22,23]. And 47.7% of Nigerian mothers took the child to the hospital immediately without any home intervention [24]. These variations might be explained by differences in the disease

spectrum between these different study areas and knowledge level of mothers.

This study revealed that maternal educational level was significantly associated with knowledge of mothers towards neonatal danger sign. Mothers who attended secondary and above were 1.21 times more knowledgeable when compared to primary educational level. The study conducted in north west of Ethiopia showed that those mothers who attended; collage and above were knowledgeable than primary [25,26]. The possible justification for this could be educated mothers acquire knowledge through their academic life and educated mothers take their sick neonate to health institution so they gain additional information from health providers.

Monthly house hold income was found to have association with women to have knowledge of danger sign. Those women whose household income was less than 1200 ET birr monthly income were 56% less likely knowledgeable than those gain greater than or equal to 5000 ET birr. This may be due to those mothers who have financial problem are less likely access to media. An increased exposure to media also increased the knowledge of mothers on neonatal danger signs.

Women's place of birth and source of information were significant predictors for knowledge of neonatal danger sign. Mothers who have gave birth in health institution in their last pregnancy were nearly two times knowledgeable than as compared to mothers who had given birth at home. Those mothers their source of information other than health professionals were 83% less likely knowledgeable as compare to mothers who gain information from health professionals. The study done in Kenya, showed that mothers receiving information on neonatal danger signs from care provider are increased having knowledge of neonatal danger sign [27,28]. The possible justification for this is mothers give birth in health institution receives post natal counselling by health professionals on appropriate time; this increases their awareness and they paid attention what they told.

Husband educational level is important to bring the neonate to health institution. Those mothers their husbands' educational level secondary were 82% less likely to visit health institution as compared to diploma and above. Similarly, those respondents whose husband's occupation private employee was 87% less likely to take their sick neonate to health institution as compared to merchants. Education of mother and father and their work status have strong effect on child survival in developing countries. Educated women tend to provide better healthcare, hygiene and are more likely to seek help when a child is ill [29]. This may due to educated husbands are more informed and can help their wives' to take the sick neonate to health institution and merchants may gain more income so they can fulfil medical payments.

Place of birth and PNC follow up were statistically significant to bring the sick neonate to health institution. Those mothers who deliver their last child in health institution were 6.45 times bring their sick neonate to health institution as compared to mothers who had given birth at home. Similarly, mothers who had PNC follow up were 6.19 times more likely to go health institution when compared to those who did not follow PNC care. The possible reason may mothers give birth at health institution and have PNC follow up are counselled about neonatal danger sign; this increase knowledge of the mother concerning the neonatal danger signs. They become alert for those signs and this help to bring their neonate to health institution when they become sick.

Conclusion

The findings of this study showed that there was poor knowledge of mothers towards neonatal danger signs in the studied area. Mothers practice for neonatal danger sign was unsafe; most mothers take their sick neonate to traditional healers and give home remedies. Maternal educational level, household monthly income, place of birth and source of information are contributing factors for good knowledge of danger sign. Husbands' educational level and occupation, place of delivery and PNC follow up were statistically significant for mothers to bring their neonate to health institution when they become sick.

Author's Contributions

All authors participated in the design and analysis of the study. WA searched the databases, and wrote the first and second draft of the article. BF and TD reviewed proposal development activities and each drafts of the result article. All authors revised the manuscript and approved the final version.

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