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Research Article

Mother's Knowledge about Neonatal Danger Sign and Associated Factors in Sodo Town, Wolaita Zone, Southern Ethiopia, 2019

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Abstract

Background: Neonatal period (the first 28 day of life) the child is at highest risk of dying. Sub-Saharan Africa had the highest NMR in 2018 at death per 1,000 live births; which is 10 time more likely to die than a child born in a high income country. In Ethiopia neonatal mortality rate was 30 deaths per 1,000 live births in 2019.

Objective: The aim of the study was to assess knowledge about neonatal danger signs and associated factors among mothers in Wolaita Sodo town, southern Ethiopia.

Method: Community based cross-sectional study design was employed from October 1 to 30, 2019. Systematic sampling technique was used to select 410 mothers. A pre-tested, structured and interviewed-administered questioner was used to collect data. Data were entered using Epi-data version 3.1and analyzed using SPSS version 21. Bivariate and multivariable analysis was carried out using binary logistic regression to test and check the association between dependent independent variables.

Result: Nearly two third (67.1%) of mothers had good knowledge regarding neonatal danger signs. 226 (54.9%) of mothers identified diarrhea as neonatal danger signs. Husband's educational status secondary school (AOR: 3.84, 95% CI: 1.66,8.89) and college and university (AOR: 2.41, 95% CI: 1.16, 5.03), place of residence (AOR: 2.04, 95% CI: 1.16, 3.57), Antenatal care (AOR: 2.79, 95 % CI: 1.49,5.19), Postnatal care (AOR: 1.87, 95% CI: 1.18,2.94) and mothers heard about neonatal danger signs (AOR: 2.14, 95% CI: 1.29,3.54).

Conclusion and Recommendation: Although not satisfactory in views of expectation, relatively high level of mothers' knowledge about neonatal danger sign neonatal danger signs had been observed in study area as compared with previous reports. The government, town health office, health workers should contribute to create awareness about neonatal danger signs in the community.

Keywords: *Neonatal Danger Sign; Knowledge; Sodotowen; Ethiopia*

Abbreviations

AOR: Adjusted Odd Ratio; ANC: Ante Natal Care; COR: Crude Odd Ratio; NGO: Nongovernmental Organization; NMR: Neonatal Mortality Rate; PNC: Post Natal Care

Introduction

Neonatal period (the first 28 day of life) the child is at highest risk of dying. The survival of the child is determined at this neonatal period. It is crucial that appropriate feeding care are providing during this period, both to improve the child the child's chances of survival and to lay the foundations for a healthy life. In order to continue to accelerate the reduction in under-five mortality, focusing on newborns should be a primary concern [1,2].

Between 1990 and 2017 the global Neonatal Mortality Rate (NMR) decreased by 51% from 36.6 deaths per 1,000 live birth in 1990, to 18.0 deaths per 1,000 live births in 2017. The estimated numbers of neonatal death during the same period decreased from 5.0 million to 2.5 million. Annual NMRs very widely across the world, but west and central Africa and south Asia had the highest NMRs in 2017 [3]. Sub-Saharan Africa had the highest NMR in 2018 at death per 1,000 live births; which is 10 time more likely to die than a child born in a high income country [4]. In Ethiopia neonatal mortality rate was 30 deaths per 1,000 live births in 2019; in 2016, it was 29 [5,6].

Neonatal danger sign refer to occurrence of sign that would show great danger of newborn mortality and morbidity and necessity for initial therapeutic intervention. Convulsion, which is one of newborn danger sign occur because of unexpected, unusual electrical activity in the brain. Fever is a raise of body temperature above the normal regular variation of the famous manifestation of diseases and it is the most common Coues to find health care provider and visit physician in childhood. Lethargy and poor breast milk sucking, especially in a baby who was feeding well previous, are very imperative and sensitive indicators of neonatal sickness. An increased respiratory rate (more than sixty per minute while counted for a minimum one minute) and chest retractions indicate a serious problem. Jaundice and Vomiting are also very significant danger signs which require urgent treatment [7-10].

In Ethiopia childhood mortality levels are decreasing. Ethiopian Demographic and health survey 2019 indicate that; neonatal mortality rate are 30 deaths per 1,000 live births. Post neonatal mortality rate was 13 deaths per 1,000 per 1,000 live births. Infant mortality rate was 43 deaths per 1,000 live births and child mortality rate was 12 deaths per 1.000 children surviving to age 12 month [5].

Ethiopia has made an important work on health implementation of Integrated children are still pain from mortalities and morbidities related with danger signs. This is mostly recognized to mother's attention seeking practices [11-13]. In the southern nation nationalities people region, a number of packages of interventions target newborn care. The health extension program is highly essential in delivering quality maternal, neonatal and child health services through efficient and effective linkages between health center, health post and community. Solitary limited studies remained conducted in Ethiopia with respect to care seeking practice of mothers for their children. So, this research intended to assess the mothers' knowledge and not seeking modern medical care for their sick neonates.

Materials and Methods

Study setting and design

Community based cross–sectional study was conducted on mothers who give birth within 12 months in Sodo town, Wolaita Zone, Southern Ethiopia, from October 1 to 30, 2019.Sodo town is located 390 km south of Addis Ababa, the capital city of Ethiopia and 153 kilometer far from Regional city, Hawasa. The town is divided in to four administrative sub-cities. As the town administrative office report, the total population of the town in 2018 was 182,607 (93,130 male and 89,477 females) from these, 28,499 under-five age children and 4576 infants less than one year of age. There are also 4963women in the reproductive age group (15 - 49 years). Functioning health

facilities in the town includes 17 health posts, 17 medium and lower level clinics, 3 health centers and two Hospitals (one private and one government).

Source and study population

All women in reproductive age group (15 - 49) living in Sodo town and two Sodozureakebele was source population and the potential study population from a list of those mothers who give birth in the last 12 months preceding the survey obtained from community health extension workers; each kebeles of the respective sub-city was study population.

Sample size determination and sampling procedure

Sample size was calculated by using the single population proportion formula by taking the following consideration; marginal error of 0.05, with 95% confidence interval and p-value 41% from study conducted in Arba Minch General Hospital, Southern, Ethiopia cross-sectional study in title knowledge about neonatal danger sign and associated factors among mothers attending immunization clinic in Arba Minch general hospital [14]. By adding non-response rate 10%, the final sample size was 410.

Mothers who give birth in the last 12 months was coded with health extension workers and the sample size was allocated proportionally to all administrative sub-cities of Sodo town and two Sodozureakebeles, then by using systematic random sampling technique every 6^{th} mothers were interviewed.

Measurement

Data was collected by face to face interview method with structured questionnaire. The questionnaire was first developed in English and translated into Amharic; which include: socioeconomic and demographic characteristics, obstetric and knowledge on neonatal danger sign. The questionnaire was taken from maternal and child health program of Johns Hopkins Program for International Education in Gynecology and Obstetrics. The outcome of this study is mothers' knowledge about neonatal danger signs [15].

Variables

Knowledge about neonatal danger sign was dependent variable and socio-demographic and socio-economic characteristics and obstetrics history was independent variable.

Operational definition

Good knowledge on neonatal danger sign: those mother listing 3 and above neonatal danger sign from listed 10 key neonatal danger sign. Poor knowledge: those mother list less than 3 of neonatal danger sign. The key neonatal danger sign includes diarrhea, persistent vomiting, fever lethargy, difficult breathing, convulsion, hypothermia, poor feeding, Jaundice and redness of umbilical cord [16,17].

Data processing and analysis

Data was coded, cleaned, recoded and entered in to epi-data version 3.1 and transported to SPSS window version 21 for analysis. Simple descriptive summary statistics was done. Table and statement was used to present the result of the data. Association between independent and dependent variables was analyzed first using bivariate logistic regression analysis. All variables with p-value less than

0.25 in bivariate logistic regression were entered to multivariable logistic regression for controlling possible confoundering and variable with p-value less than or equals to 0.05 considered as statistically significant.

Ethical consideration

Ethical approval was obtained from Wolaita Sodo University College of health science and medicine Ethical review board. Permission was obtained from Sodotown health office and the purpose and objective of the study was well explained to study participants and they were informed about their full right to withdrawal or discontinue participation at any time they want. In addition, privacy and confidentiality of participant was kept.

Result

Socio-demographic characteristics

From a total of 412 mothers selected to participate in this study 410 all (100% response rate) were completed the interview. The mean age was 24.45 (SD ± 6.2) years. Majority of mothers 173 (42.2%) have primary (grade 1 - 8) educational level. 295 (72%) mothers were housewife (Table 1).

Variables	Mothers knowledge about neonatal danger sign	
	Good knowledge Frequency (%)	Poor knowledge Frequency (%)
Mothers educational level		
Never attending school	39 (81.3)	9 (18.8)
Primary education	115 (66.5)	58 (33.5)
Secondary education	99 (65.1)	53 (34.9)
College and university	22 (59.5)	15 (40.5)
Husbands educational status		
Never attending school	31 (70.5)	13 (29.5)
Primary education	51 (58.6)	36 (41.4)
Secondary education	134 (65.0)	72 (35.0)
College and university	59 (80.8)	14 (19.2)
Mothers occupational status		
Merchant	32 (71.1)	13 (28.9)
Government employee	23 (65.7)	12 (34.3)
Housewife	199 (67.5)	96 (32.5)
Daily laborer	10 (50.0)	10 (50.0)
Students	11 (73.3)	4 (26.7)

Husband's occupation		
Merchant	72 (66.1)	37 (33.9)
Government employee	150 (65.8)	64 (24.2)
Daily laborer	45 (63.4)	26 (36.6)
Students	3 (50.0)	3 (50.0)
Farmer	5 (50.0)	5 (50.0)
Types of communication media		
Television	84 (63.6)	48 (36.4)
Radio	191 (68.7)	87 (31.3)
Residence		
Urban	208 (72.7)	78 (27.3)
Rural	67 (54.0)	57 (46.0)
Family monthly income		
500 - 1000ETB	188 (65.3)	100 (34.7)
1500 - 3000ETB	52 (73.2)	19 (26.8)
> 3500ETB	35 (68.6)	16 (31.4)

Table 1: *Socio demographic characteristics of mothers in Sodo town, Wolaita Zone, southern Ethiopia, 2019 (n = 410).*

Obstetrics history of participants

Regarding obstetric history of respondents; three hundred fifty four (86.3%) of them attend Antenatal Care (ANC) follow up for their last pregnancy.223 (54.4%) have history of Postnatal Care (PNC) services utilization (Table 2).

Variables	Mothers knowledge about neonatal danger sign	
	Good knowledge Frequency (%)	Poor knowledge Frequency (%)
Gravidity		
One	106 (67.5)	51 (32.5)
Two	65 (61.9)	40 (38.1)
> Two	104 (70.3)	44 (29.7)
Parity		
One	110 (67.5)	53 (32.5)
Two	64 (61.5)	40 (38.5)
> Two	101 (70.6)	42 (29.4)
ANC follow up		
Yes	248 (70.1)	106 (29.9)
No	27 (48.2)	29 (51.8)

PNC follow up		
Yes	164 (73.5)	59 (26.5)
No	111 (59.4)	76 (40.6)
Place of delivery		
Home	6 (85.7)	1 (14.3)
Health center	47 (66.2)	24 (33.8)
Hospital	222 (66.9)	110 (33.1)
Mode of delivery		
Spontaneous vaginal delivery	177 (61.5)	111 (38.5)
Instrumental delivery	90 (81.8)	20 (18.2)
Cesarian section	8 (66.7)	4 (33.3)

Table 2: *Obstetrics history of mothers in Sodo town, Wolaita Zone, southern Ethiopia, 2019 (n = 410).*

Mother's knowledge about neonatal danger signs

From a total of 410 participants, majority of mothers 284 (69.3%) had information or heard about neonatal danger sign. Among listed neonatal danger sign, high awareness among mothers was, diarrhea 226 (54.9%), persistent vomiting 211 (51.2%) and followed by fever 210 (51.0%) (Table 3).

Variables	Frequency	Percentage (%)
Heard about neonatal danger sign		
Yes	284	69.3
No	126	30.7
List of neonatal danger sign		
Diarrhea	226	54.9
Persistent vomiting	211	51.2
Fever	210	51.0
Lethargy	33	8
Difficult breathing	85	20.6
Convulsion	47	11.4
Hypothermia	37	9.0
Poor feeding	75	18.3
Jaundice	39	9.5
Redness of umbilical cord	48	11.7

Table 3: *Mother's knowledge about neonatal danger sign in Sodo town, Wolaita Zone, southern Ethiopia, 2019 (n = 410).*

Overall knowledge level of mother on neonatal danger sign

From a total of 410 respondents, 275 (67.1%) have a good knowledge regarding neonatal danger signs.

Factors associated with maternal knowledge on neonatal danger signs

In multivariable logistic regression, husband educational status, residence, ANC follow up, PNC follow up and heard about neonatal danger signs were factors contributed for mothers knowledge with neonatal danger sign. Mothers whose husband educational status from 9 to 12 (secondary education) has 3.84 time (AOR: 3.84, 95% CI: 1.66, 8.89) and college and university 2.41 time (AOR: 2.41, 95% CI: 1.16, 5.03) more likely have good knowledge level than when compared with never attend school. Mothers who were lived in urban were 2.04 time more likely knowledgeable than when compared with mothers who lived in rural (AOR: 2.04, 95% CI: 1.16, 3.57) (Table 4).

Variables	Knowledge level		Odds ratio with 95% CI	
	Good knowledge	Poor knowledge	Crude	Adjusted
Mothers educational level				
Never attending school	39 (81.3%)	9 (18.8%)	1	1
primary education	115 (66.5%)	58 (33.5%)	0.34 (0.12,1.0)	0.33 (0.09,1.15)
secondary education	99 (65.1%)	53 (34.9%)	0.74 (0.35,1.5)	1.01 (0.40,2.84)
college and university	22 (59.5%)	15 (40.5%)	0.78 (0.78,1.6)	0.92 (0.37,2.23)
Husbands educational status				
Never attending school	31 (70.5%)	13 (29.5%)	1	1
primary education	51 (58.6%)	36 (41.4%)	1.76 (0.74,4.2)	2.29 (0.87,6.02)
secondary education	134 (65.0%)	72 (35.0%)	2.97 (1.44,6.1)	3.84 (1.66,8.89)
college and university	59 (80.8%)	14 (19.2%)	2.25 (1.18,4.3)	2.41 (1.16,5.03)
Residence				
Urban	208 (72.7)	78 (27.3)	2.27 (1.46,3.5)	2.04 (1.16,3.57)
Rural	67 (54.0)	57 (46.0)	1	1
ANC follow up				
Yes	248 (70.1)	106 (29.9)	2.51 (1.42,4.4)	2.79 (1.49,5.19)
No	27 (48.2)	29 (51.8)	1	1
PNC follow up				
Yes	164 (73.5)	59 (26.5)	2.45 (1.50,3.9)	1.87 (1.18,2.94)
No	111 (59.4)	76 (40.6)	1	1
Heard about neonatal danger sign				
Yes				
No	284	69.3	1.97 (1.27,3.1)	2.14 (1.29,3.54)
	126	30.7	1	1

Table 4: *Bivariate and multivariable logistic regression for factors associated with level of mothers knowledge on neonatal danger sign in Sodo town, Wolaita Zone, southern Ethiopia, 2019 (n = 410).*

**Significant association at P-value < 0.05.*

Discussion

Reducing child illness and death required abrupt mothers and care givers recognition of suggestive known danger signs to take immediate actions. The finding this study indicates that the level of good maternal knowledge about neonatal danger sign in Sodo town was 275 (67.1%). The prevalence of mother's good level of knowledge about neonatal danger sign was higher when compare with the study conducted in Arba Minch general hospital, Arba Minch town 41% [14], study done in Wolkite town, Gurage zone, southern Ethiopia 31.3% [18], study done in Chencha district, southern Ethiopia 50.3% [19] and study done in Nigeria 30.3 [20]. The difference might be due to time gap, sample size variation, socio-cultural and residence variation.

The current study reviled that husband's educational level was significantly associated with knowledge of mothers towards neonatal danger sign. Husband education was significant predictor of mothers' good knowledge about neonatal danger signs were 3.84 times among mothers whose husbands achieved secondary school (grade 9 to 12) and 2.41 times among mothers whose husbands achieved college and university educational level. This study was in line with a study done in North West Ethiopia [16]. This might be due to that as fathers' in culturally pre-dominant position in decision-making positively affected the knowledge and attitude of mothers. Place of residence was significantly associated with level of mothers knowledge about neonatal danger sign. Mothers lived in urban area was 2.04 time more likely had good knowledge of neonatal danger sign than mothers lived in rural area. The current study is in line with a study done in Chencha district [19]. The reason might be mothers who live in urban had more access to health information from different sources and more to seek health care as compare to mother who live in rural part.

The current study also indicated that ANC follow up creates a good opportunity for mother to had good knowledge towards neonatal danger sign. Mothers attended ANC follow up were 2.79 times more likely to had good knowledge about neonatal danger sign as compared to their counterparts. The finding of this study is consistent with a study conducted in North West Ethiopia [16]. The reason might be during ANC the health care provider gives information and counseled on neonatal danger sign this increase mother's knowledge about neonatal danger sign. PNC follow up where statistically significant factor associated with mothers' knowledge on neonatal danger sign. Mothers had PNC follow up had 1.87 times more likely to have good knowledge when compared with to those mothers who had no PNC follow up. This study was in line with a study done in Wolkite town, Gurage Zone, Southern Ethiopia, North West Ethiopia and Arba Minch general hospital [14,16,18]. The possible reason might be mothers had PNC follow up are counseled about neonatal danger sign; this increase knowledge of mothers' related neonatal danger signs.

This study indicated that, mothers heard about neonatal danger signs were factor significantly associated with mothers' knowledge about neonatal danger signs. Those mothers had heard about neonatal danger signs have 2.14 times more likely to had good knowledge about neonatal danger signs. The reason may be the awareness creation or those mothers heard about neonatal danger signs are knowledgeable about neonatal danger signs.

The limitation of this study was cross-sectional nature of study design which leads the assessments of the exposure and outcome at the same point in time, so that we con not formulate a cause and effect relationship between identified factors and mothers knowledge about neonatal danger signs.

Conclusion

Although not satisfactory in views of expectation, relatively high level of mothers' knowledge about neonatal danger sign had been observed in study area as compared with previous reports. Mothers' husband educational status, ANC and PNC follow up, place of residence and heard about neonatal danger signs are factors associated with neonatal danger sign.

The current study suggested that as part of health education and sensitization, women should be taken through counseling on danger signs of newborn ill health preceding to their discharge from hospital so that they can easily detect signs and hurry to health care facilities whenever necessary. The government, town health office, health workers and NGO should contribute to create awareness about neonatal danger signs in the community.

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Availability of Data and Materials

All data and materials are available in the manuscript.

Computing Interest

The author declares that no competing interests.

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