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Awareness and Practice Regarding Neonatal Danger Signs among Postnatal Mothers attending at Rural Tertiary Care Centre of Nepal

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ABSTRACT

Background: Neonatal danger signs were proposed by the World Health Organization (WHO) which indicates newborns are at high risk of illness and death. Due to parents' ignorance or minimal reorganization of neonatal danger signs in many developing countries like Nepal, almost all neonates are not treated timely when they are sick and neonates lose their life at home. Therefore, mothers' health-seeking behavior and practice strongly rely on their awareness regarding neonatal danger signs. Mothers' awareness and newborn care practice are essential for appropriate and timely health management and reduction of neonatal morbidity and mortality. The study's objective was to assess the awareness and practice regarding neonatal danger signs among postnatal mothers.

Method: A descriptive cross-sectional study design was conducted among 139 postnatal mothers, who were attending the maternal and child health (MCH) clinic and postnatal ward of Karnali Academy of Health Sciences (KAHS), Jumla. Probability sampling technique (lottery method) was used. Data were collected by using a semi-structured interview questionnaire. After the collection of the data, coding was done. Coded data was entered into EXCEL and transformed into SPSS for analysis.

Result: Out of 139 postnatal mothers, 75.5% had a poor level of awareness and only 24.4% had a good level of awareness regarding neonatal danger signs. Similarly, 82% of the respondents had poor practice on neonatal danger signs. Only 18% had good practice on neonatal danger signs.

Conclusion: Mothers' awareness and practice level about neonatal danger signs in rural Nepal is extremely low even though the coverage of maternal and child health care services are expanded. Existing efforts should be enhanced for antenatal care visits, community awareness through health education & awareness program which helps to improve the mother's knowledge and practice on neonatal danger signs and avoiding early marriage as well as early childbearing.

Keywords: Awareness, practice, neonatal danger signs, newborn care,

INTRODUCTION

Neonatal danger signs were proposed by World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF), which indicates newborns being at high risk of illness and death. Any of these signs' existence needs early detection. Timely and adequate care-seeking is crucial to improve neonatal health and survival. Failure to seek medical care might be related to caregivers' inadequate knowledge of neonatal danger signs. Good knowledge of these signs plays a vital role in reducing mortality.[1]

The neonatal period is one of the critical periods for a child's survival. According to WHO, about 0.75 million neonates die every year in India, the highest for any country in the world, approximately 7,000 newborn deaths every day- more than one-third of these deaths occur in the first 24 h of birth, whereas three-quarter of the neonatal deaths takes place in the first seven days of birth.[2,3] Although the average global rate of neonatal mortality was 17 deaths per 1000 live births in 2019, down by 54% from 37 deaths per 1000 in 1990.[1]Globally 4 million new born die every year before they reach the age of one month. Out of them 1.5 million newborn's die in four countries of south Asia including Nepal.[4]

In Nepal, Neonatal deaths have not declined in the last five years, that still 21 deaths per every 1,000 live births according to the Nepal Demographic and Health Survey-2022 carried out by the Ministry of Health and Population.[5] The Sustainable Development Goals highlight the interconnectedness of neonatal health with other aspects of development. The third SDG for 2030 aims to reduce neonatal mortality rates to 12 per 1000 live births. [6]

A newborn or neonate is a child under 28 days of age. It is the most complicated period in the life of an individual. Out of every 100 children born alive, about 10 die before reaching the age of 5 years. Of these 10, about 4 die in the first month of life, the new born period. Most of these newborn deaths occur in the first week of life. [7,8]

Millions of mothers and their newborns throughout the world are living in a social environment that does not encourage healthcare-seeking behavior. Thus, many mothers do not generally seek formal healthcare during the postpartum, which has a major impact on healthcare-seeking for mothers and the survival of their newborn. [9]

Method: A descriptive cross-sectional study design was conducted among 139 postnatal mothers (within the 45 days of delivery) who were attending at MCH clinic and postnatal ward of Karnali Academy of Health Science, Jumla. Probability (Randomization) simple random sampling method was used. Ethical clearance and approval was obtained from the Institutional Review Committee (Ref: 078/ 079104) then written permission from hospital administration, Obstetrics and gynecology department and In-charge of MCH clinic and postnatal ward was obtained to conduct the study. Informed written consent was obtained from each participant. Privacy and confidentiality of the subjects were maintained throughout the study. Data were collected by using semi-structured interview questionnaire, which is divided into 2 parts.

Part I- It consists of questions related to socio- demographic characteristics.

Part II- It consist questions related to awareness and practice regarding neonatal danger signs.

Interview was taken by principal investigator for only one time and it was completed within 15-20 minute for each participant. Pretesting of tool was done on 10 percent of the calculated sample size and not included in

final study. Data was collected between 24th December 2021 to14th April 2022. After collection of the data, it was checked for completeness then coding was done. Coded data was entered into EXCEL2010 and transformed in SPSS 16 versions for analysis. Descriptive statistics (percentage) was used to describe the demographic and obstetric variables. Chi-square test was used to find out the association between the level of awareness and practices with selected variables.

RESULT

Out of 139 postnatal mothers, majority 93 (66.9%) of the respondent belong to age group of 20-30 years. Most 81 (58.3%) of the respondent belong to the ethnic group of Brahman/Chhetri. Majority136 (97.8%) of the respondents belong to Hindu religion. All 139 (100%) of the respondents were married. Most93 (66.9) of the respondents were married before the age of 20 years. Majority 121 (87.1%) of the respondents belong to the joint family. Majority 115 (82.7%) of them were agriculture by occupation. About more than one third 56 (40.3%) of respondents had higher secondary education. One third 47 (33.8%) of the husband had higher secondary education in which nearly two third 86 (61.9%) of them earns > 1, 00,000 per year.

Table 1: Obstetric Characteristics of the Postnatal Mother (n=139)

Characteristics	Frequency	Percentage
No of pregnancy		
Primigravida	62	44.6
Multigravida	77	55.4
No of children		
One	66	47.5
Two	45	32.4
Three	21	15.1
Four	06	4.3
Five	01	0.7
Complication presents in pastpregnancies		
Yes	06	4.3
No	133	95.7
ANC check up		
Yes	139	100
No	00	00
No. of ANC Visit		
<4	06	4.3
4-8	133	95.7
>8	00	00
Place of ANC check up		
Health-post	119	85.6
Hospital	20	14.4
Complication presents in current pregnancy		
Yes	10	7.2
No	129	92.8
Place of delivery		
Health facility	138	99.3
Ambulance	01	0.7
Type of delivery		
Normal delivery (SVD)	123	88.5
Caesarean section	14	10.1
Breech delivery	02	1.4

Table 1 depicts that most 133 (95.7%) of the women had no complication in her past pregnancy. more than half 77 (55.4%) of women were multi gravida mother. Nearly half 66 (47.5%) of the women had one child. Similarly, most 133 (95.7%) of the women had completed her 4-8 antenatal visit. Majority 119(85.6%) mothers done her antenatal check-up at health post. Most 129(92.8%) of the mothers had no

complication in her present pregnancy. Almost 138 (99.3%) mothers were delivered at health facility. Majority 123 (88.5%) of the mothers had spontaneous vaginal delivery.

Table 2: Awareness of Mother Regarding Neonatal Danger Signs (n=139)

SN	Neonatal danger signs	Frequency	Percentage
1	Fast /difficult breathing	109	78.4
2	Yellow discoloration of skin and eye	44	31.7
3	Poor sucking	77	55.4
4	Umbilical infection	71	51.1
5	Low birth weight	42	30.2
6	Pustules	29	20.9
7	Fits	14	10.1
8	Lethargy/unconsciousness	27	19.4
9	Fever	102	73.4
10	Cold body and extremities	14	10.1
11	Chest retraction	23	16.5

***Multiple Responses**

Table 2depicts that majority109 (78.4%) of the respondents knew fast/difficulty breathing as a neonatal danger sign. Most (73.4% and 55.4%) of the respondents have recognized fever and poor sucking as a neonatal danger signs respectively. More than half of the respondents (51.1%) knew umbilical infection as neonatal danger sign. Only 10.1% respondents were aware about fits and cold body and extremities as a neonatal danger sign.

Table 3: Level of Awareness regarding Neonatal Danger Sign among Postnatal mother (n=139)

Variables	Neonatal danger signs
Level of Knowledge	Frequency
Poor Level ≥4	105 (75.5%)
Good Level <4	34 (24.5%)

The data in table 3 illustrates that majority 105 (75.5%) of the mothers had a poor level of awareness regarding neonatal danger sign. Whereas only 34 (24.5%) had a good level of awareness regarding neonatal danger sign among postnatal mother.

Table 4: Presence of Neonatal Danger Signs in Neonate (n=139)

Neonatal danger signs	Frequency	Percentage
Yes	19	13.7
No	120	86.3
Total	139	100
If yes, (n=19)		
Fever	5	26.3
Yellow skin and eyes	3	15.8
Fast/difficult breathing	6	31.6
Pustules	3	15.8
Poor sucking	2	10.5
Total	19	100
Place of treatment received (n=19)		
KAHS	14	73.7
Health Post	4	21.1
Traditional healer	2	5.2
Total	19	100

Table 4 depicts that majority120 (86.3%) of the respondents had not presented the sign of neonatal danger signs and only 19 (13.7%) of the respondent had presented the danger signs, among those who had presented neonatal danger signs most 6 (31.6%) of them had fast/difficult breathing. 73.7% respondents were treated in KAHS who had presented neonatal danger signs.

Table 5: Level of Practice regarding Neonatal Danger Sign among Postnatal mother (n=139)

Variables	Neonatal danger signs
Level of Practice	Frequency
Poor Level	114 (82%)
Good Level	25 (18%)

The data in table 5 illustrates that 114 (82%) of the postnatal mothers had a poor level of practice and 25 (18%) had a good level of practice regarding neonatal danger sign among postnatal mother.

Table 6: Association between Socio-Demographic variables and Awareness level on Neonatal Danger Sign among postnatal mother (n=139)

Demographic variables	Awareness level		$\chi 2$	P value
	Poor	Good		
	Frequency	Frequency		
Age of women in year				
<20	26 (18.7%)	6(4.3%)		
20-30	70 (50.4%)	23 (16.5%)	1.528	0.466
>30	9 (6.5%)	5 (3.6%)		
Ethnicity				
Brahmin/Chhetri	63 (45.2%)	18 (13%)		
Dalit	24 (17.3%)	10 (7.2%)	0.675	0.714
Others	18(13%)	6(4.3%)		
Religion				
Hindu	103 (74.1%)	33 (23.8%)	0.131	0.572
Buddhism	2 (1.4%)	1 (0.7%)		
Age at Marriage				
<20 years	70 (50.4%)	23 (16.5%)	0.011	1.000
>20 years	35 (25.2%)	11 (7.9%)		
Type of family				
Joint	92 (66.2%)	29 (20.9%)	0.123	0.771
Nuclear	13 (9.3%)	5 (3.6%)		
Occupation				
Agriculture	89 (64%)	26 (18.7%)	1.236	0.299
Other	16 (11.5%)	8 (5.8%)		
Education level (n=110)				
Primary level	12 (10.9%)	5 (4.5%)	1.566	
Secondary level	30 (27.3%)	7 (6.4%)		0.667
Higher secondary level	43 (39.1%)	13 (11.8%)		
Husband's education level (n=126)				
Primary level	5 (4%)	5 (4%)	5.882	
Secondary level	27 (21.4%)	10 (7.9%)		
Higher secondary level	39 (31%)	8 (6.4%)		0.208
University level	23(18.2%)	9 (7.1%)		
Family Income per year (rupees)				
<50,000	3(2.2%)	2 (1.4%)	2.876	
50,000-1,00,000	33 (23.7%)	15 (10.8%)		0.237
>1,00,000	69 (49.7%)	17 (12.2%)		

Significant at $p<0.05$*

Table 6 revels that there is no statistically significant association between socio-demographic variables like; age, ethnicity, religion, marriage age, type of family, occupation, education, husband's education level and family income with the awareness level of neonatal danger signs with *p*-value (p=0.466, p=0.714, p=0.572, p=1.000, p=0.771, p=0.299, p=0.667, p=0.208 &p=0.237) respectively.

Table7. Association between Obstetrics Characteristics and Awareness of mother on Neonatal Danger Signs (n=139)

Obstetrics Characteristics	Awareness level		χ^2	P value
	Poor	Good		
	Frequency	Frequency		
Complication presents in past pregnancies			0.206	1.000
Yes	5 (3.6%)	1 (0.7%)		
No	100 (72%)	33 (23.7%)		

Gravida			0.530	0.553
Primigravida	45 (32.4%)	17 (12.2%)		
Multigravida	60 (43.2%)	17 (12.2%)		
Number of children			1.120	0.328
Up to two	86 (61.9%)	25 (18%)		
More than two	19 (13.7%)	9 (6.4%)		
ANC Visit			2.214	0.157
<4 visit	3 (2.2%)	3 (2.2%)		
4-8 visit	102 (73.3%)	31 (22.3%)		
Place of ANC visit			5.334	0.045*
Health-post	94 (67.6%)	25 (18%)		
Hospital	11 (8%)	9 (6.4%)		
Complication presents in current pregnancy			4.261	0.061
Yes	3 (2.2%)	4 (2.9%)		
No	102 (73.3%)	30 (21.6%)		
Place of delivery			3.111	0.245
Health facility	105 (75.5%)	33 (23.8%)		
Ambulance	00 (00%)	1 (0.7%)		
Type of delivery			0.782	0.676
Normal delivery (SVD)	96 (69.1%)	30 (21.6%)		
Caesarean section	8 (5.6%)	3 (2.2%)		
Breech delivery	1 (0.7%)	1 (0.7%)		

Significant at $p<0.05$*

Table 7 display that there is no statistically significant association between socio-demographic variables like; complication present in past pregnancy, gravida, number of children, ANC visit, complication present in current pregnancy, place of delivery and type of delivery with the awareness level of neonatal danger signs with *p*-value (p=1.000, p=0.553, p=0.328, p=0.157, p=0.061, p=0.245 &p=0.675) respectively. There is statistically significant association between socio-demographic variables like; place of ANC checkup with the awareness level of neonatal danger signs with *p*-value (p=0.045).

Table 8: Association between Socio-demographic variables and practice level of mother on Neonatal Danger Signs (n=139)

Demographic variables	Practice level		χ^2	P value
	Poor	Good		
	Frequency	Frequency		
Age of women in year			2.902	0.234
<20	23 (16.6%)	9 (6.5%)		
20-30	79 (56.8%)	14 (10.1%)		
>30	12 (8.6%)	2 (1.4%)		
Ethnicity			2.240	0.326
Brahmin/Chhetri	66 (47.5%)	15 (10.8%)		
Dalit	26 (18.7%)	8 (5.8%)		
Others	22 (15.8%)	2 (1.4%)		
Religion			0.490	0.451
Hindu	112 (80.6%)	24 (17.3%)		
Buddhism	2 (1.4%)	1 (0.7%)		
Age at Marriage			1.138	0.353
<20 years	74 (53.2%)	19 (13.7%)		
>20 years	40 (28.8%)	6 (4.3%)		
Type of family			0.662	0.529
Joint	98 (70.5%)	23 (16.6%)		
Nuclear	16 (11.5%)	2 (1.4%)		
Occupation			1.832	0.247
Agriculture	92 (66.2%)	23 (16.6%)		
Other	22 (15.8%)	2 (1,4%)		
Education level (n=110)			3.591	0.309
Primary level	12 (10.9%)	5 (4.6%)		
Secondary level	33 (30%)	4 (3.6%)		
Higher secondary level	44 (40%)	12 (10.9%)		
Husband's education level (n=126)			3.780	0.437
Primary level	9 (7.1%)	1 (0.8%)		
Secondary level	29 (23%)	8 (6.3%)		

Higher secondary level University level	42 (33.3%) 24 (19.1%)	5 (4%) 8 (6.3%)		
Family Income per year (rupees) <50,000 50,000-1,00,000 >1,00,000	 4 (2.9%) 40 (28.8%) 70 (50.4%)	 1 (0.7%) 8 (5.7%) 16 (11.5%)	0.093	0.955

Significant at $p<0.05$*

Table 8 depicts that there is no statistically significant association between socio-demographic variables like; age, ethnicity, religion, marriage age, type of family, occupation, education, husband's education level and family income with the practice level of neonatal danger signs with *p*-value (p=0.234, p=0.326, p=0.451, p=0.353, p=0.529, p=0.247, p=0.309, p=0.437 &p=0.955) respectively.

Table 9: Association between Obstetric Characteristic and practice level of mother on Neonatal Danger Signs (n=139)

Obstetrics Characteristics	Practice level		χ^2	P value
	Poor	Good		
	Frequency	Frequency		
Complication presents in past pregnancies Yes No	 6 (2.9%) 108 (82.7%)	 0 (1.4%) 25 (13%)	1.375	0.591
Gravida Primigravida Multigravida	 51 (38.8%) 63 (46.8%)	 11 (5.8%) 14 (8.6%)	0.005	1.000
Number of children Up to two More than two	 91 (71.2%) 23 (14.4%)	 20 (8.6%) 5 (5.8%)	0.000	1.000
ANC Visit <4 visit 4-8 visit	 6 (3.6%) 108 (82%)	 0 (0.7%) 25 (13.7%)	1.375	0.591
Place of ANC checkup Health-post Hospital	 95 (75.5%) 19 (10.1%)	 24 (10.1%) 1 (4.3%)	2.671	0.125
Complication presents in current pregnancy Yes No	 5 (5%) 109 (80.6%)	 2 (0.00%) 23 (14.4%)	0.560	0.609
Place of delivery Health facility Ambulance	 114 (84.9%) 0 (0.7%)	 24 (14.4%) 1 (0.00%)	4.593	0.180
Type of delivery Normal delivery (SVD) Caesarean section Breech delivery	 102 (73.4%) 10 (7.2%) 2 (1.4%)	 24 (17.3%) 1 (0.7%) 0 (0.00%)	1.125	0.570

Significant at $p<0.05$*

Table 9 exhibit that there is no statistically significant association between socio-demographic variables like; complication present in past pregnancy, gravida, number of children, ANC visit, place of ANC checkup, complication present in current pregnancy, place of delivery and type of delivery with the practice level of neonatal danger signs with *p*-value (p=0.591, p=1.000, p=1.000, p=0.591, p=0.125, p=0.609, p= 0.180 &p=0.570) respectively.

Table 10. Association between levels of awareness and level of practice on neonatal danger signs (n=139)

Level of Awareness	Level of Practice		χ^2	P value
	Poor	Good		
	Frequency	Frequency		
Poor Good	88 (63.3%) 26 (18.7%)	17 (12.2%) 8 (5.8%)	0.938	0.440

Significant at $p<0.05$

Table 10 depicts that there is no any association between level of awareness and level of practice on neonatal danger signs with *p*-Value (*p*=1.000).

DISCUSSION

Socio-Demographic Characteristics of postnatal mother

In the present study, majority 93 (66.9%) of the respondent belong to age group of 20-30 years. This finding is similar to a study conducted in Ethiopia by Yosef T et.al which study revealed that 65.0% of respondent belong to age group of 18-28 years.[10]

Similarly, majority 56 (40.3%) of respondents had higher secondary education, which finding is consistent with study conducted in Nepal-by-Nepal M, KCS. which revealed that majority of mothers (54.3%) got higher secondary education. [11]

Obstetric Characteristics of the Postnatal Mother

In the present study, 99.3% of the women were delivered at health facility, this finding similar with study conducted in Ethiopia by Bulto GA et.al. and in Nepal-by-Nepal M, KC S. revealed that most (93.6%) of them gave birth at health institution and of (93.1%) respondents delivered their newborn at any health facilities respectively. [11,12] similarly, present study revealed that majority 123 (88.5%) of the women had spontaneous vaginal delivery, which result similar with study conducted in Nepal by Dhakal K showed that majority (74.5%) had normal vaginal delivery. [13]

In the present study 55.4% of women were multi gravida mother. This finding is not consistent with study conducted in India by Pathak PK et.al and in Nepal by Yadav S et.al which studies shows that 53.5% of mothers were primigravida and 63.0% were primipara respectively. [14,15]

Awareness of Mother Regarding Neonatal Danger Signs

In the present study, most 73.4% and 10.1% of the respondents have recognized fever and fits/convulsion as a neonatal danger sign respectively. These findings are similar to the study conducted by Ahmed NS, Al-Gamar EA in Khartoum State of Sudan, which study revealed that fever was the commonly recognized danger sign by 74.9% postnatal mothers and only 11.1% identified convulsion as a neonatal danger signs. [16] The finding of current study is also consistent with study conducted in Nepal-by-Nepal M, KC S which study revealed that least number of respondents (18.2%) were aware about convulsion as a neonatal danger signs. [11] The finding is consistent with study conducted in Nepal by Yadav S et.al which shows that 73.9% of mothers recognized hyperthermia as a neonatal danger sign. [15]

In the present study 78.4% of the respondents knew fast/difficulty breathing as a neonatal danger sign. The finding is consistent with the study conducted in Ethiopia by Mersha A et.al and in Nepal by Bhattarai S et.al which studies shows that 75.7% and82.10% of respondents knew fast breathing as a neonatal danger sign. [17,18]

In the present study, majority 105 (75.5%) of the respondents had poor level of awareness of neonatal danger signs compare to only 34 (24.5%) of the study subjects had good level of awareness regarding newborn danger sign. Which finding is similar to the study conducted in Nepal by Acharya S, Regmi A, Shrestha S. showed that (76.1%) respondents were not known about danger signs of new born. Also consistent with study conducted by Ahmed NS, Al-Gamar EA in Khartoum State of Sudan, the result of the study revealed that majority of study population under study (72.3%) had very poor knowledge about neonatal danger signs. Which is also nearly in line with study conducted by Bulto GA, Fekene DB, Moti BE, Demissie GA, Daka KB in Ethiopia, the result of the study showed

that only (20.3%) of postpartum mothers have good knowledge about NDSs. [4;16;12]

Practice of Mother Regarding Neonatal Danger Signs

In the present study, majority 114 (82%) of the respondents had a poor level of practice and only 25 (18%) had a good level of practice regarding neonatal danger sign among postnatal mother. This is in contrast with study conducted by Bulto GA, Fekene DB, Moti BE, Demissie GA, Daka KB in Ethiopia, the result of the study showed that 60.5% of mothers whom their baby developed danger-sign sought health care from health facility immediately.[12]

Association between Socio-Demographic variables and Awareness level on Neonatal Danger Sign

In the present study, there is statistically significant association between socio-demographic variables like; place of ANC checkup with the awareness level of neonatal danger signs with *p*-value (p=0.045). This is in contrast with study conducted by Zhou J, Hua W, Zheng Q, Cai Q, Zhang X, Jiang L in Southwest of China, the result of the study showed that based on multivariable analysis, four of these variables were significantly associated with mothers' knowledge about neonatal danger signs (p-value < 0.05). There were the number of ANC visits, maternal age, maternal ethnicity and family financial difficulty. [1]

Conclusion: The proportion of mothers with good knowledge and good practice of neonatal danger signs was extremely low. The study concluded that there is need to improve the knowledge and practices of post natal mothers regarding neonatal danger signs either during antenatal visit, post natal period or at community level. Community based awareness program should be launched to enhance knowledge, and practice of post natal mothers regarding neonatal danger signs.

Declaration of Completing Interest

The manuscript has not been submitted to any other journal for simultaneous consideration and mention work has not been published previously in any electronic or other form. No data have been fabricated or manipulated to support our conclusions. The data included in this manuscript is original.

Ethical Approval: This study was approved by the Institutional Review Committee (Ref: 078/079/04). All procedures performed were in accordance with the ethical standards of the institutional and national and 1964 Helsinki declarations and it's later. Consent to submit has been received explicitly.

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Conflict of interest: All the authors confirm that there is no conflict of interest in the submission or publication of this paper

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