Original Article

Stress and Coping Strategies Among Parents of Neonates Admitted in Neonatal Intensive Care Unit – a Hospital-Based Study

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ABSTRACT

Background: Parents can experience feelings of guiltiness, helplessness, distress, fear, and anxiety whose neonates are admitted in Neonatal Intensive Care Unit (NICU) creating stressful family patterns and demanding coping mechanisms. This study aimed to assess stress and coping strategies among the parents of neonates admitted to NICU.

Methods: A cross-sectional study was conducted among 60 parents of neonates admitted to NICU of BPKIHS, Dharan. Data was collected using Parental Stress Scale: Neonatal Intensive Care Unit (PSS: NICU) for stress score, and Brief Coping Orientation to Problems Experienced (COPE) Inventory for coping score through face-to-face interviews and entered and analyzed data in Statistical Packages for Social Sciences (version 16). Categorical variables were presented as frequency and percentage whereas numeric variables as mean and standard deviation, paired t-test was used to compare mean stress and coping scores of parents. An independent sample t-test was used to compare mean stress score and coping strategies with selected demographic variables.

Results: Overall parental mean stress score was 3.14±0.48, higher among mothers compared to fathers (3.39±0.43; 2.89±0.37; p-value <0.001). The overall parental mean coping score was 2.79±0.20 (father: 2.79±0.21; mother: 2.79±0.18; p-value=0.922). The mother's stress score was higher in planned pregnancy (3.47±0.38, p-value=0.04) compared to unplanned (3.11±0.50) and higher in caesarean section (3.55±0.38, p-value=0.04) compared to vaginal delivery (3.23±0.43). The coping score was higher among newborn's parent with birth-weight ≥ 2.5 kg compared to newborn's parent with birth-weight < 2.5 kg (father: 2.67±0.23 versus: 2.85±0.19, p-value=0.03; mother: 2.69±0.18 versus 2.83±0.17, p-value=0.04).

Conclusion: Neonatal admission to NICU produces a varying degree of stress to the parents primarily due to alteration in a parental role leading to the adoption of various coping strategies.

Keywords: Coping, Neonatal Intensive Care Unit, Parents, Stress

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INTRODUCTION

Stress is a mental and bodily pressure or anxiety generated by physical, emotional, social, economic, or occupational circumstances, events, or reviews that might be tough to manipulate or endure.[1] Coping is the cognitive and behavioral efforts used to manipulate outside and inner worrying needs which might be appraised to be exceeding the assets of the persons.[1]Interesting occasion in the life of every couple is the ability to give birth to a new life but the same occasion can be replaced by stress and anxiety with an unexpected birth of a sick or preterm infant.[2] Having a

sick or high-risk infant that requires close monitoring in an intensive care unit generates major life changes and adjustments leading feelings of helplessness, shock, fear, and anxiety.[2,3] In the world picture, the rate of admission of neonates in NICU was 4.1% out of total birth in 2017 in Saudi Arabia, 6.8% in Jordan in 2012, and 5.6% in Boston in 2019.[4–6] Likewise, in Nepal, the rate of admission of the neonate in NICU ranged from 4.82% to 12.52%.[7]A study showed that 38% of mothers experienced high-level stress with only 25% having good coping.[8]More than half (52%) of the mothers whose neonates were admitted to NICU had experienced increased stress, of which 38% had depressive symptoms.[9]

A study has shown that 28% of parents developed symptoms of acute stress due to the admission of their neonates in NICU.[10] In addition, around 39% to 63% of mothers experienced post-partum depression (PPD).[11] It was revealed that 15% mothers and 8% fathers had PTSD when they were evaluated a month after their infants' NICU admission. [12]

After the sick newborn gets admitted to the NICU, parents and their emotions are neglected as a primary focus shifts toward the newborn, which leads to the increased amount of stress, low coping resulting in other psychiatric illnesses.[14] During this emotional stage, parents experienced that they were treated as an outsider; a sense that delivered the feel of helplessness, powerlessness, and hopelessness.[13] Identifying the stress and the stressors of parents by understanding the aspects of infants, parents and the environment may be helpful in assisting the health care provider in providing a complete family-centered care.[14] Thus, the study aimed to assess stress and coping strategies and their associations with selected demographic variables among parents of neonates admitted in NICU of BPKIHS, Dharan.

MATERIALS AND METHODS

Study design, setting, and study population: A cross-sectional study was conducted among the parents of neonates admitted to the NICU of B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan. BPKIHS is the tertiary and referral health care centre located in eastern part of Nepal with its bed count of seven in NICU.

Participant recruitment process: The study was conducted in Neonatal Intensive Care Unit of BPKIHS, Dharan from 5th January to 1st February 2020 using total enumerative sampling technique. The total newborn admitted in NICU during the study period was 34 where 60 parents (both father and mother of 30 neonates) met the eligibility criteria. Neonate's parents staying in the NICU for more than three days were included whereas non-biological parents were excluded from the study.

Assessment of Parental Stress Scale and Brief Coping Orientation to Problems Experienced (COPE) Inventory:

Parental stress was assessed using the Parental Stress Scale: Neonatal Intensive Care Unit (PSS: NICU) tool which was developed by Dr. Margaret S. Miles in 1989. In this scale, parents' rates sources of stress within 3 domains using a 5-oint likert scale. Three domains included a): Infant Behavior and Appearance, b) Sights and Sounds and c) Parental Role Alterations. Cronbach alpha for three subscales and total instrument were above 0.70 which was acceptable.[15]

Brief Coping Orientation to Problems Experienced (COPE) Inventory was used to assess a broad range of coping responses to stress. The cronbach alpha for the scale ranged from .71 to .94 for all subscales within COPE Inventory. Four point likert scales was used where each subscales gives information about different coping strategies. A high score obtained from a subscale implies that a particular strategy is used more often. [16]

Assessment of socio-demographic characteristics: Socio-demographic characteristics involved age (in completed years), sex (male /female), ethnicity (dalit /disadvantaged janjati /disadvantaged non-dalit terai caste /religious minorities /relatively advantaged janajati /upper caste), and education (illiterate /basic /secondary /higher), and occupation (agriculture /business /services /household /labor /others), sex of newborn (male /female), gestational age (in weeks), birth weight (in kg), and mode of delivery (vaginal/caesarean section).

Ethical Approval: Ethical approval (Ref No. 068/076/077, on 10/16/2019) was obtained from the Institutional Review Committee of BPKIHS, Dharan before starting this study. Informed written consent from each parent was obtained before recruiting them into the present study where confidentiality and anonymity of each participant were maintained and the participation was voluntary.

Data collection and management: Data was collected using a face-to-face interview of parents in the waiting area of NICU. The average time duration for an interview was around 1 hour for each parent and checked for completeness and errors of each questionnaire before finalizing collected data.

Statistical Analysis: Coded data were entered and cleaned in SPSS version 16 for statistical analysis. Categorical variables were presented as frequency and percentage whereas parametric numerical variables as

mean and standard deviation (SD). Paired t-test was used to compare mean stress and mean coping scores of parents. An independent sample t-test was used to compare mean stress score and coping strategies with selected demographic variables where p-value less than 0.05 were considered statistically significant.

RESULTS

The mean age of the father was 29.3 ± 4.9 years and the mother was 24.60±5.0 years. Sixty-three percent of the parents followed Hindu religion. Forty percent of fathers had pursued higher education whereas 30% of mothers were illiterate. Regarding occupation, an equal proportion (26.7%) of fathers works as a service holders and laborer whereas the majorities (80%) of the mother were homemaker.

Seventy seven percent had their pregnancies planned and more than half (63.3%) of the newborns were male. Seventy seven percent of the newborn were delivered at full term gestational age (37-42 weeks) and majority (63.3%) was born within the normal weight range. One-third (33.3%) of the newborn was admitted to the NICU due to respiratory distress followed by neonatal sepsis and congenital anomalies.

The stress score was significantly lower among father (2.89 ± 0.37) compared to mothers (3.39 ± 0.43) (p-value <0.001). All domains of the stress score were significantly higher in mothers compared to fathers. (Table 1)

The overall parental mean coping strategy score was 2.79 ± 0.20. The overall coping score was not significantly different between father and mother (p-value=0.922). Self-blaming score was significantly lower (p-value < 0.001) in father compared to mothers whereas self-distraction score (p-value<0.001), active coping (p-value<0.001) and substance use (p-value<0.001) were significantly higher in fathers compared to mothers. (Table 2)

Table 1: Comparison of stress score between father and mother

Domain	**Father (n=30) Mean score ± SD**	**Mother (n=30) Mean score ± SD**	***p-value ****
Parental Role Alteration	3.66 ± 0.43	4.26 ± 0.52	**<0.001**
Infant Behavior Appearance	2.89 ± 0.46	3.15 ± 0.49	**<0.001**
Sight and Sound	2.11 ± 0.53	2.76± 0.69	**<0.001**
Mean score	2.89 ± 0.37	3.39 ± 0.43	**<0.001**
Total parental stress score	3.14 ± 0.48		

*SD: standard deviation; n= Frequency; * Paired –t test*

Table 2: Comparison of mean coping strategy score between father and mother

Coping Strategies	**Father (n=30)**	**Mother (n=30)**	***p-value****
	Mean ±SD	**Mean ± SD**	
Use of emotional support	3.41 ± 0.05	3.63 ± 0.37	0.056
Use of instrumental support	3.31 ± 0.49	3.4 ± 0.42	0.305
Venting	3.05 ± 0.44	3.23 ± 0.44	0.078
Acceptance	3.23 ± 0.52	3.03 ± 0.50	0.056
Positive reframing	2.33 ± 0.56	2.16 ± 0.53	0.125
Self-blame	1.81 ± 0.93	2.61 ± 0.88	**<0.001**
Religion item	2 ± 0.91	2.11 ± 0.80	0.394
Self-distraction	2.30 ± 0.63	1.28 ± 0.44	**<0.001**
Active coping	2.1 ± 0.66	1.28 ± 0.46	**<0.001**
Planning	1.51 ± 0.71	1.4 ± 0.63	0.315
Substance Use	1.68 ± 0.59	1.00±00	**<0.001**
Denial	1.08 ± 0.29	1.25 ± 0.53	0.086
Behavioral disengagement	1.03 ± 0.18	1.06 ± 0.21	0.161
Humor	1.00±00	1.05 ± 0.15	0.083
Overall	2.79 ± 0.21	2.79 ± 0.18	0.922
Total parental coping score	2.79 ± 0.20		

*SD: Standard deviation; n=frequency; * Paired- t test*

Table 3: Comparison of mean stress score by demographic variables of parents					
Variable	**Category**	**Stress Score**			
		Father (n=30)		**Mother (n=30)**	
		Mean± SD	***p-value****	**Mean ± SD**	***p-value****
Age in Years	Less than 25 years	2.97±0.42	0.44	3.43 ± 0.46	0.44
	Greater or equal to 25 years	2.85±0.35		3.30 ± 0.37	
Education	Literate	2.73±0.32	0.46	3.34 ± 0.47	0.71
	Illiterate	2.90±0.38		3.41 ± 0.43	
Pregnancy	Planned	2.91±0.39	0.58	3.47 ± 0.38	**0.04**
	Unplanned	2.82±0.29		3.11 ± 0.50	
Sex of newborn	Female	2.96±0.43	0.40	3.33 ± 0.43	0.59
	Male	2.84±0.33		3.42 ± 0.44	
Birth Weight	Less than 2.5 kg	3.08±0.36	**0.03**	3.49 ± 0.51	0.44
	Greater or equal to 2.5 kg	2.80±0.35		3.35 ± 0.40	
Mode of delivery	Vaginal	2.80±0.35	0.20	3.23 ± 0.43	**0.04**
	Cesarean Section	2.97±0.38		3.55 ± 0.38	

SD: Standard deviation; n=frequency; * Independent sample t-test

There was significant difference of mother's stress between planned (3.47±0.38) and unplanned pregnancy (3.11 ± 0.50) and vaginal (3.23±0.43) and caesarean section delivery (3.55±0.38). The father's stress score was significantly different between birth weight of newborn less than 2.5 kg (3.08±0.36) and more than 2.5 kg (2.80±0.35) as summarized in Table 3.

The mother's coping score was significantly different between birth weight of newborn less than 2.5 kg (2.69±0.18) and more than 2.5 kg (2.83±0.17) with p-value 0.04. The father's coping score was significantly higher among father, with female gender newborn (2.91±0.17) and male gender newborn (2.72±0.19) with p-value 0.02 and newborn of birth weight more than 2.5 kg (2.85±0.19) and less than 2.5 kg (2.67±0.23) with p-value=0.03. (Table 4)

Table 4: Comparison of mean coping score by demographic variables of parents					
Variable	**Category**	**Coping Score**			
		Father (n=30)		**Mother (n=30)**	
		Mean ± SD	***p-value****	**Mean ± SD**	**p-value***
Age in Years	Less than 25 years	2.76±0.27	0.14	2.75±0.19	0.63
	Greater or equal to 25 years	2.81±0.19		2.86±0.15	
Education	Literate	2.66±0.41	0.28	2.76±0.15	0.61
	Illiterate	2.81±0.22		2.80±0.20	
Pregnancy	Planned	2.79±0.23	0.84	2.81±0.16	0.32
	Unplanned	2.81±0.17		2.72±0.24	
Sex of newborn	Female	2.91±0.17	**0.02**	2.85±0.17	0.16
	Male	2.72±0.19		2.75±0.19	
Birth Weight	Less than 2.5 kg	2.67±0.23	**0.03**	2.69±0.18	**0.04**
	Greater or equal to 2.5 kg	2.85±0.19		2.83±0.17	
Mode of delivery	Vaginal Delivery	2.85±0.20	0.18	2.81±0.21	0.54
	Cesarean Section	2.74±0.22		2.77±0.17	

SD: Standard deviation; * Independent sample t-test

DISCUSSION

The study was conducted to assess stress and coping strategies among the parents whose neonates are admitted to the NICU. In the study, the total stress score on NICU admission for parents was (mean=3.14 ± 0.48) which was consistent with the findings of studies conducted in Boston, India and Srilanka [9, 17-19] but contradicts with the study conducted in India which revealed the overall stress score of (2.73±0.334).[14] The contrary from the present study might be due to the

provision of orientation to the unit and the ward setup upon newborn admission to parents. Study has shown that if both parents are motivated and permitted to visit the NICU; an information and update are given by the NICU staff about the treatment procedures and prognosis of the baby then that makes the parents comfortable and may reduce stress. [22]

Admission of newborns in NICU was stressful for both the parents but more stressful for mothers than fathers which are similar to the study conducted in Madhya Pradesh, India. [14] This difference in stress between parents might be due to presence of mood disturbances from the birth of a baby through "postpartum blues", postpartum mood disorder or obstetric procedures among mothers. [2]

Concerning the different domains of stress measured by PSS: NICU, the finding of the study were consistent with the studies [2,12,14,20-23] all of which indicates that the most stressful aspect of having a neonate in NICU was due to the alteration in a parental role for both mother as well as for fathers. This may be due to the reason that parents find it difficult to carry out parenting activities (like involvement in caring, holding and feeding baby and the regular visit by family members) in the critical care set up.

The study shows that there is a significant association between planned or unplanned pregnancy and mother's stress, birth weight of newborn and father's stress and mode of delivery with mother's stress. This present finding contradicts with study done in India where gestational age, parent's gender, and education were associated with higher levels of stress. [20] It appears that the traumatic experience of the birth of the newborn and the physical separation from the newborn upon NICU admission is enough to produce significantly increased levels of stress before factors related to their infant's illness severity.

The most commonly adopted coping strategy by both the father and mother in the study was the use of emotional support for both the parents followed by the use of instrumental support, venting, acceptance, and positive reframing. This could be due to the provision of a joint family and sharing space with the large number of family members' parents who may be able to get continuous emotional support, comfort, and understanding from them. This finding is contrary to the study done in Florida where the most adopted coping strategies were acceptance followed by emotional support, active coping, positive reframing, and religion. [24] The contrary may be due to the lack of parental support programs, counseling programs, and the NICU environment being infant-centered instead of family-centered in Nepal. The least commonly used coping strategies were humor, behavioral disengagement, denial, and substance use which is almost comparable with the study conducted in Florida.[24] Findings of the study showed a significant association between sex of newborn and father's coping strategies, birth weight and father's coping strategies and birth weight and mother's coping strategies.

There are some limitations of this study. First, this study used non-probability convenient sampling technique and was restricted to one hospital and geographic location which prevents generalization of the study findings to other settings. Second, this study also lacked follow-up of parents due to time constraints. Finally, variation in time of administration of the tool was a limitation to this study as different health outcomes can occur at particular times in NICU in neonatal health.

CONCLUSION

Newborn's admission to NICU is stressful for both parents. Mothers experienced more stress as compared to fathers upon the admission of newborn in NICU. Alteration in the parental role was the area of greatest stress among parents. Both the parents adopted almost all of the coping strategies. Use of emotional support from family members was the most commonly used coping strategy. It is recommended to provide family-centered care and involve family member in parenting activities, and to have a support group for parents to facilitate the management of stress and plan for an individualized program for providing support, discussing the status of the infants in the NICU. Availability of mental health professionals in the general pediatric setting would be beneficial. Interventional studies can be conducted to see the effectiveness of relaxation programs, diversion therapies, and emotional support in reducing stress and enhancing coping.

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