



## PREVALENCE OF PARENTAL STRESS AMONG NEONATES MOTHER ADMITTED IN NEONATAL INTENSIVE CARE UNIT (NICU) OF TERTIARY CARE HOSPITAL: A CROSS SECTIONAL STUDY

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### Abstract:

**Background:** The hospitalization of a neonate in the NICU is usually stressful for the mother and all the other family members. The stressful nature of the NICU environment for parents, especially mothers of sick babies, The aim of the study was to identify the level of stress among mothers of neonates admitted to the neonate intensive care unit.

**Methodology:** A cross-sectional descriptive study design was used, while the study was conducted from May to October 2023 in two tertiary care hospitals in Khyber Pukhtankhwa, where the sample size was 620 using convenient sampling techniques, with a targeted population of mothers of neonates

that are admitted to the NICU. A valid and reliable parental stress checklist was used for data collection, and informed consent was obtained from the participants. An independent t-test, an ANNOVA, and a Pearson correlation test were applied as inferential statistics.

**Results:** In the current study, the number of mothers aged 31–35 years was higher among the total participants of 620, with a mean age score of  $30.9 \pm 5.0$ . The overall level of stress of mothers was moderate, while the majority of the participants level of stress in sight and sounds was moderate (62.1%), in look and behavior was also moderate (84.7%), and in parental role alteration was also moderate (77.9%). In the domains, the parental role alteration mean score was high ( $3.55 \pm 0.95$ ), followed by look and behavior mean score ( $3.44 \pm 0.43$ ), and sight and sound ( $3.35 \pm 0.55$ ).

**Conclusion:** The study concluded that parental stress among mothers was moderate, where parental role alteration contributed mostly because their role as women changed to that of parents, so there should be a social support program that may help parents prevent psychological trauma.

**Keywords:** Parental stress, neonates, neonates intensive care unit, clinical practice, nursing practice, psychological well-being.

### Introduction

The neonatal intensive care unit (NICU) is filled with challenging circumstances because of its advanced technology and multiple treatment protocols [1]. The unique circumstances of the NICU disturb the process of parental connection when a baby is admitted. In addition, the parents are anxious about the baby's health and the state of the entire family [2]. Educational initiatives, parent empowerment programs, and behavioral and psychological techniques and treatments are very important in lowering the stress levels of parents [3]. Suitable interventions and tactics raise parental self-efficacy and encourage parent-child physical and emotional communication [4]. Family-centered care is one strategy to help the parents and lessen their stress, and nurses are essential to its effective implementation [5]. Parental support enhances the attachment process and encourages a healthy parent-child connection [6].

When doing visits, nurses in the NICU should try to demonstrate to the mother that her infant appears comfortable since they understand how important infant safety is to new mothers [7]. Because the majority of attention is focused on the care and survival of unwell newborns, parental stress is frequently disregarded [8]. According to Yu's study, it might be hard for NICU nurses to fully sympathize with parents who would be conflicted as they watch their child being taken to the NICU and fighting to overcome their physical difficulties and illnesses because the majority of them are young and have never given birth [9]. In order to offer the family comprehensive treatment, it is important to recognize the high level of stress that parents of newborns brought to the NICU are under as soon as possible, in addition to tending to the unwell neonate. In order to obtain comfort, knowledge regarding the infant's treatment plan, and a boost to their self-esteem as parents, nursing support is crucial for moms of premature infants [10].

The admission of an infant to the NICU is not a local problem, but parental stress is a global concern [11]. Parental stress begins when the infant is admitted to the NICU, and may persist for up to a year after NICU release [12]. In the NICU, the focus is primarily on the survival and care of the unwell infant, often neglecting to consider parental stress [8]. Research on parental stress in the NICU has yielded a variety of results [2, 13, 14]. Fathers are more likely to endure stress, according to study findings [2]. Studies have indicated that mothers' changing duties as parents put them under higher stress when they are in the NICU [19, 20]. Mothers and fathers in the NICU go through the same stress levels, according to the findings of another study [15].

Therefore, we conducted the study to explore the level of stress experienced by mothers with newborns in the intensive care unit of a tertiary care hospital in KPK.

## Methodology

The researchers conducted a cross-sectional descriptive study from May to October 2023 in two tertiary care hospitals in Khyber Pukhtankhwa. We calculated the sample size for the study using an online Raosoft sample size calculator. The calculated sample size was 620, with a 95% confidence level, a 5% margin of error, and a prevalence of 50%. Data collection involved using a convenient sampling technique.

The inclusion criteria for the study were those mothers who are neonates, have been admitted to the NICU for 2 days, and are willing to be study participants. Exclusion criteria include mothers who, due to cultural restrictions, avoid communicating with the primary author.

The data collection process contains two portions: the first portion contains the demographic data of the mother and neonate, while the second portion contains the parental stress scale.

## Study Instrument

The researchers utilized the Parental Stressors Scale: Neonatal Intensive Care Unit (PSS: NICU) [16] as the instrument in this study. The scale contains 3 domains: sight and sound (6 items), look and behavior (11 items), and parental role alteration (10 items), with 0 indicating no experience of stress, 1 indicating no stress response, 2 indicating little stress, 3 indicating moderate stress, 4 indicating very stressful, and 5 indicating extreme stress. We set cutoff values for the analysis in the low stress range (1–2.9), medium (3–3.9), and high (4–5). The reliability of the checklist was already checked, with a Cronbach alpha of 0.92 [17].

Descriptive and inferential statistics were used to analyze the data through SPSS 22.0. Independent tests and ANNOVA were used to identify differences within the groups, while Pearson correlation was used to identify the association of parental stress with the demographic data of the mother.

## Ethical consideration

The aim and objectives of the study were explained to each participant, and first, the father of the neonate was informed that data from their mother was required. After obtaining approval from the husband, the primary investigator, along with female staff, approached the mother and collected the data after obtaining informed consent. An ethical review committee approved the study, assuring each participant that their data would be kept confidential.

## Results

### Demographic data of the mothers

In the current study, the number of mothers aged 31–35 years was higher among the total participants of 620, with a mean age score of  $30.9 \pm 5.0$ . Mother having elementary school education was 218 (35.2%), with the majority being a housewife (434 (70%)), and monthly income of 60,000 to 90,000 was also higher in number 291 (46.9%). (See table 1)

Table 1: Demographic data of mother

	Frequency (n-620)	%
<b>Age of mother</b>		
21-25	129	20.8
26-30	143	23.1
31-35	198	31.9
36-40	150	24.2
Mean $\pm$ SD	$30.9 \pm 5.0$	
<b>Education of mother</b>		
Illiterate	146	23.5
Elementary School	218	35.2
High School	133	21.5
University Diploma	123	19.8
<b>Employment status</b>		
House wife	434	70.0
Working women	186	30.0

Monthly income		
30,000 and below	44	7.1
Between 30,000 and 60,000	94	15.2
Between 60,000 and 90,000	291	46.9
90,000 and above	191	30.8

### Demographic data of the neonates

In neonates, the majority gender was female (344 (55.5%)), with a mean birth weight score of  $2432 \pm 505$ , a mean age of admission was  $6.7 \pm 5.9$ , and a mean length of stay score of  $2.7 \pm 1.2$ . (See table 2).

**Table 2: Demographic data of neonates**

	N-620 (%)
<b>Gender</b>	
Male	276 (44.5%)
Female	344 (55.5%)
<b>Birth weight (gm)</b>	
Mean and SD	$2432 \pm 505$
<b>Age of Admission (days)</b>	
Mean and SD	$6.7 \pm 5.9$
<b>Length of stay</b>	
Mean and SD	$2.7 \pm 1.2$

### Level of Maternal stress

According to the analysis, the mean score of sight and sound was  $3.35 \pm 0.55$ , while the mean score of look and behavior was  $3.44 \pm 0.43$ , and the parental role alteration score was  $3.55 \pm 0.95$ . All three mean scores were within the range of moderate stress according to cutoff values.

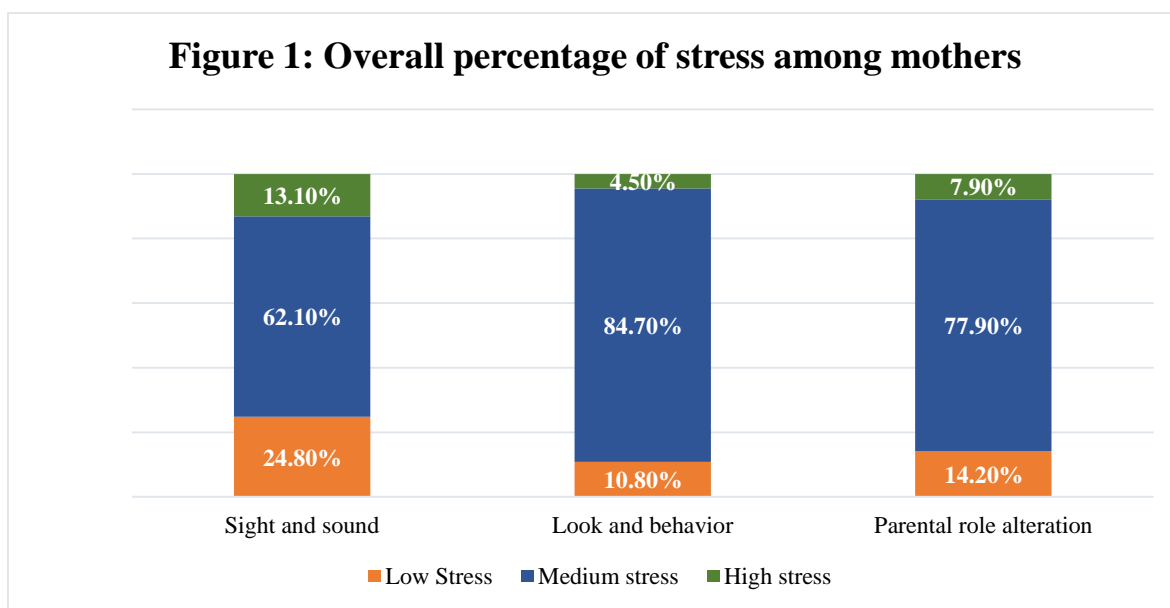
Table 3 illustrates that in age groups, there was no significant difference in sight and sound (0.11), look and behavior (0.98), or parental role alteration (0.06). In education, there were significant differences within groups of sight and sound (0.000), look and behavior (0.026), and parental role alteration (0.001). In terms of working status, there were no significant differences in all three domains. In monthly income, there was a significant difference within the group of parental role alteration (0.000). (see table 3).

	Sight and sound		Look and Behavior		Parental Role Alteration	
	Mean	SD	Mean	SD	Mean	SD
Mean $\pm$ SD	3.35	0.55	3.44	0.43	3.55	0.95
<b>Age</b>						
21-25 years	3.381	0.426	3.450	0.424	3.470	0.83
26 - 30 years	3.442	0.524	3.441	0.427	3.397	0.84
31 - 35 years	3.292	0.586	3.437	0.451	3.605	1.0
36 - 40 years	3.332	0.635	3.461	0.421	3.696	0.96
<i>F (p-value)</i>	<i>1.884 (0.11)</i>		<i>0.07 (0.98)</i>		<i>2.24 (0.06)</i>	
<b>Education</b>						
Illiterate	3.488	0.512	3.48	0.512	3.371	0.347
Elementary School	3.401	0.398	3.40	0.398	3.679	1.176
High School	3.167	0.488	3.52	0.319	3.377	0.578
University Diploma	3.155	0.568	3.39	0.477	3.721	1.245
<i>F (p-value)</i>	<i>19.56 (0.000)</i>		<i>3.11 (0.026)</i>		<i>5.910 (0.001)</i>	
<b>Working status</b>						
House wife	3.4658	0.519	3.462	0.427	3.488	0.894
Working women	3.0941	0.556	3.410	0.441	3.695	1.077
<i>F (p-value)</i>	<i>1.429 (0.23)</i>		<i>0.341 (0.55)</i>		<i>1.390 (0.23)</i>	

Monthly Income						
30,000 and below	3.265	0.590	3.484	0.320	3.302	0.348
Between 30,000 and 60,000	3.270	0.544	3.475	0.403	3.348	0.513
Between 60,000 and 90,000	3.376	0.552	3.430	0.508	3.687	1.187
90,000 and above	3.384	0.562	3.451	0.331	3.499	0.783
<i>F (p-value)</i>	1.428 (0.23)		0.390 (0.76)		4.626 (0.000)	

**Overall level of stress**

Figure 1 illustrates that majority of the participants level of stress in sight and sounds was moderate (62.1), in look and behavior was also moderate (84.7%), and in parental role alteration was also moderate (77.9%).



**Correlation of maternal stress with demographic variables**

In Table 4, it was revealed that first-domain sight and sound are associated negatively strongly with age, negatively weakly with education and employment and positively weakly with income. The second domains of look and behavior are positively and weakly associated with age, weakly negatively associated with education and income, and moderately negatively associated with employment. The third domain of stress was strongly positively associated with age and education, while weakly positively associated with employment and income.

	1	2	3	4	5	6	7
<b>1: Age in years</b>	-	.161**	.210**	.156**	-.072	.022	.068
<b>2: Education level Year</b>		-	.694**	.190**	-.277**	-.028	.072
<b>3: Employment status</b>			-	.193**	-.306**	-.055	.099*
<b>4: Monthly income</b>				-	.072	-.023	.061
<b>5: Sight and sound</b>					-	.311**	-.041
<b>6: Look and behavior</b>						-	.120**
<b>7: Parental role alteration</b>							-

## Discussion

In the province, this is the first study to highlight a point of concern that can promote a very healthy and effective environment in the NICU for the management of neonates. The findings reveal that the level of stress among the mothers was moderate in all three domains. Moreover, in sight and sound, 62.1% were medium with a mean score of  $3.35 \pm 0.55$ , in look and behavior, 84.7% of participants stressed was also moderate with a mean score of  $3.44 \pm 0.43$ , while in parental role alteration, 77.9% of the mothers were also suffering from moderate stress with a mean score of  $3.55 \pm 0.95$ . Supporting our findings, a study conducted in Lahore also reveals that the majority of the participants (49%) perceived stress as moderate, followed by low stress (33%), and high stress (18%), with a mean score of  $18.03 \pm 8.8$  [18]. A study conducted in India also reveals that the overall parental stress mean score was  $3.71 \pm 0.70$ . The study also reveals that there is no significant difference in the stress score between father and mother [15]. Contradicting our findings, a study conducted in Iran reveals that the participants level of stress was higher, where mother stress was higher ( $48.08 \pm 13.19$ ) than father stress ( $42.97 \pm 12.98$ ). The study's findings indicate that mothers of hospitalized infants in Iran's NICU require screening services and appropriate mental support actions; consequently, health policymakers should prioritize psychological counseling for parents, particularly mothers. These variations can be attributed to variations in care conditions [19]. Other studies have also reported a high level of stress among parents [20, 21]. A study conducted in India reveals that parental stress was lower; most of the study population appears to be protected against maternal stress by lower education; lower stress levels in their population may be explained by parental resources (education, family support) and staff behavior [22].

In the current study, the parental role alteration mean score was higher ( $3.55 \pm 0.95$ ), followed by look and behavior ( $3.44 \pm 0.43$ ) and sight and sound ( $3.35 \pm 0.55$ ). The study findings were in line with our results, which report that on the parental role alteration sub-scale, mothers scored much higher on stress, while the item titled "infant apnea" on the subscale of the infant's appearance and behaviors had the highest score (4.72). When a parent sees their baby stop breathing, they get scared and start to wonder if the baby will survive. Nurses should be sensitive to this and give a more thorough explanation of breastfeeding techniques and the baby's condition [23]. The findings are also consistent with earlier research [24, 25]. Contradicting our findings, the study of Kim discovered that the sub-scale measuring an infant's looks and behaviors had the greatest felt stress level (3.9), while the sub-scale measuring parental role adjustments only had a score of 3.5 [26].

## Conclusion

The study concluded that parental stress among mothers was moderate, where parental role alteration contributed mostly because their role as a woman changed to that of a parent, followed by the look and behavior of the neonate and the sight and sounds of the NICU environment. The study recommends that a parental support program should be part of the care in the NICU to prevent parents from psychological trauma and identify the factors that elevate levels of stress. It should be an area of concern for policymakers to pay attention to by providing social support that positively affects the health of neonates, their parents, and staff working in that environment.

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