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FACTORS INFLUENCING STRESS LEVELS IN PARENTS OF NEONATES UNDERGOING SURGERY: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Introduction: The surgical hospitalization of neonates presents significant emotional and psychological challenges for parents, often resulting in heightened stress. This study aimed to evaluate the factors influencing stress levels in parents of neonates undergoing surgery in a public tertiary care setting in Pakistan.

Objective: To determine and examine clinico-demographic and psychological variables that affect the level of stress in the parents of neonates who have undergone surgery at the Saidu Group of Teaching Hospital Swat.

Material and Method: This prospective observational study was done at Saidu Group of Teaching Hospital Swat, between January, 2022 to December, 2024. One hundred and fifty parents of neonates who had elective or emergency surgery were recruited. Information was collected using a validated parental stressor scale along with demographic and clinical data. Statistical analyses were performed to identify significant predictors of high stress levels among parents.

Results: High stress levels were recorded among 68 percent of parents. Emergency surgery, low educational status, long stay in the hospital, and ineffective communication of healthcare providers were key factors that were highly correlated to high levels of stress ($p < 0.05$). Mothers were responding with a greater level of stress in comparison to fathers. Just 22 percent were offered any psychological assistance during their stay in the hospital.

Conclusion: Neonatal surgical care causes parental stress, which is frequent and multifactorial. Enhanced communication, psychosocial assistance, and family-centered care practices are essential to curb stress and improve neonatal outcomes in the presence of resource constraints.

Keywords: Parental stress, neonatal surgery, psychosocial factors, Pakistan, parental anxiety, family-centered care**.**

INTRODUCTION

The birth process of a child is normally a happy and life-changing experience for families. Nevertheless, when a neonate needs surgical treatment immediately after birth, this often-predicted happiness is usually tainted with anxiety, doubt, and intense emotional pressure. Parental stress in those cases is a large and not-always-valued part of neonatal surgical care. It not only impacts the

psychological welfare of parents, but also could impact the healing process and experience of care as a whole for the neonate. In Pakistan, the healthcare system is already overwhelmed, and the psychosocial aid is rather minimal, which makes it vital to comprehend the factors that contribute to parental stress in order to maximize the success of medical and psychological results. The Saidu Group of Teaching Hospital Swat is viewed as one of the largest pediatric surgical centers in the country, presents a good background against which this dilemma can be discussed as being part and parcel of a high-pressure situation that is present in a real-life situation.

Several studies indicated that parental stress throughout a surgical treatment in the neonatal setting is complicated. Peters et al. (1) showed that not only does the illness in itself cause parental stress, but the parental stress level is also raised by such factors as financial tension, the absence of communication with the hospital staff, and the lack of information about the procedures. Similarly, Radhakrishna et al. (2) identified parental distress as a primary factor, labeled as such in the context of mothers, who exhibited anxieties and a lack of social support, as well as prolonged stay in the hospital. The physical helplessness of the newborn baby and the complex environment both in the surgery room and after the surgical process raise the feelings of parental anxieties, creating a chain of psychological and behavioral consequences.

The COVID-19 pandemic has also transformed the neonatal care setting, which has already raised stress in disadvantaged families. According to a study by Bua et al. (3), stress and depressive symptoms of parents showed a significant rise during the pandemic, which could be associated with a lower involvement of parents in intensive care units, limited visiting times, and increased anxieties about viral infection. Additionally, in a meta-analysis, Turgoose et al. (4) underlined those traumatic psychological responses to stress are very common among children and their caregivers after surgery, and these symptoms should be identified at an early stage to be targeted.

The parental stress also influences the caregiving behavior and decision-making. Almaatani et al. (5) showed a significant relationship between parental stress and ineffective feeding behaviors, implying that stress might hamper nutrition and health delivery of neonates indirectly. Also, preoperative anxiety contributes to total stress levels, not only among children but also among preoperative caregivers. According to Liu et al. (6), parents experience significant amounts of stress due to unidentified surgical results, fears of anesthetics, and long waiting periods. This is in line with the results of Cho and Kim (7) that perceived quality of life and emotional well-being are highly associated with uncertainty and unmet expectations during hospitalization.

The load of hospitalizations, including surgeries, can be even heavier in families that deal with existing medical complexities like autism or developmental disorders. Prakash et al. (8) investigated this dynamic by discussing parental perception of children with autism based on the quality of oral health, and it has been shown that parental stress may prevail or amplify when a child suffers from long-term or complex healthcare requirements. Likewise, Quaye et al. (9) suggested that the failure to pay enough attention to the views of children and families when they visit hospitals challenges their emotional security and trust in the health care system. Mishra et al. (10) further supported this by noting the caregiver burden shouldered by the families of children on chemotherapy, a group similar to neonatal surgical families in the level of care and intensity of caring.

The different kinds of communication barriers, cultural perception of illness, and lack of an institutionalized psychosocial support system in Pakistani hospitals further increase the level of stress. Erwin et al. (11) considers the lack of competent communication among caregivers and healthcare providers as a significant factor that impacts health behaviour and adherence to treatment. Such a communication gap is usually high in a setup like Saidu Group of Teaching Hospital Swat, where there are more patients and fewer officials, which makes it difficult to interact personally. Mussatto et al. (12) investigated the relationship between family functioning and emotional well-being and the severity of the condition of a child, claiming that family-centered holistic models of care prevent parental stress and facilitate better coping faculties.

Besides, stress is not evenly shared among the entire parent population. The study by Gunjawate et al. (13) in a systematic review demonstrated how parents whose children have hearing impairments experience special psychosocial issues, especially those connected with acceptance, communication,

and stigma. The study involved sensory disabilities, whose results can be used with surgical neonates, especially where there are doubts regarding the future of the neonates. Fu et al. (14) observed prolonged stay to be a significant outcome in parental stress, which is often the case among surgical neonates who take a long time after undergoing an operation. Likewise, Beck et al. (15) have also addressed the risk of psychological burden on the relatives of patients and the importance of emotional support hierarchies during medical emergencies.

The risk factors in preoperative anxiety in children and their caregivers have to be understood in order to come up with effective interventions. Liang et al. (16) also indicated that child age, parental accompaniment during induction, and prior hospitalisation history influence the preoperative anxiety composite index, which is a reflection of the parental stress phenomena. Operto et al. (17) also supported the issue of the bidirectional nature of stress among families of children who are following medical diets and demonstrated how continued medical care situations may result in compliance problems and emotional exhaustion. In the case of neonates, the difficulty of communication of the child, together with the unstable health state and the surgical complexity, is added to these dynamics. Lastly, parental stress is also affected by the environmental features of the neonatal care. Grundt et al. (18) have found that family-integrated care, observed in a single-family room, increases breastfeeding rates and parental anxiety, resulting in psychological advantages of the infrastructural and policy changes. The urgent need for policy-level intervention is even greater in the Pakistani environment, where such models are not implemented as much. The evidence available in its totality makes the multidimensional and culturally specific aspect of parental stress in the neonatal surgical setting stand out. This prospective observational study at the Saidu Group of Teaching Hospital Swat determines and evaluate the major demographic, clinical, environmental, and psychosocial variables affecting the level of stress in parents of surgical neonates.

Objective: To identify and analyze the clinical, demographic, and psychosocial correlates of stress among parents of neonates who are operated at Saidu Group of Teaching Hospital Swat, Pakistan.

MATERIALS AND METHODS

Study Design: This was a prospective observational study

Study Setting: The study was conducted at Saidu Group of Teaching Hospital Swat, Pakistan.

Duration of the Study: From January, 2022 to December, 2024.

Inclusion Criteria: Parents or primary caregivers of neonates aged (0-28 days) who were admitted during the period of study with elective or emergency surgical procedures were included. Motivation or participation in both mothers and fathers was inclusive of all socio-economic groups, educational backgrounds, and the nature of surgery. The participants had to give their informed consent and be present at least once during the inpatient hospital stay to complete the stress assessment tool.

Exclusion Criteria: Parents of neonates with known acute life-threatening congenital defects that uniformly had a poor outcome and were receiving palliative care as opposed to curative surgery were excluded. Moreover, those caregivers who had histories of previously diagnosed psychiatric disorders, substance abuse, and those whose role was not that of the primary decision-maker in the care process were also omitted. Parents who refused or were not available to be followed up did not form part of the final analysis.

Methods

Information was gathered using a structured questionnaire (Parental Stressor Scale (PSS)) that assessed parental stressors, related demographic and perinatal clinical data, and environmental or social factors. The questionnaire was given out either in English or Urdu, depending on the choice of the participant. Trained research staff conducted interviews in a confidential place in the Saidu Group of Teaching Hospital, Swat. Medical records were used to obtain clinical information during the neonatal period, including the diagnosis, nature of surgical procedure, hospital stay, and complications. Stress scores were computed, and statistical tests, such as chi-square tests and logistic

regression, were used to determine the factors that had a significant influence on the increase in stress levels of parents.

RESULTS

The study was conducted among a total of 150 neonatal surgery patients or parents (including 83 mothers and 67 fathers) of children admitted at the Saidu Group of Teaching Hospital Swat, in the period between May and August 2024. The age of the participants had an average of 30.2 +/- 4.8 years. Out of the neonates, 59 percent were males and 41 percent were females. Anorectal malformations (30%), intestinal atresia (21%), and abdominal wall defects (15%) were the most common indications of surgery.

Table 1: Demographic Characteristics of Parents and Neonates

Variable	Frequency (n=150)	Percentage (%)
Parent Gender (Mother)	83	55.3
Parent Gender (Father)	67	44.7
Neonate Gender (Male)	89	59.3
Neonate Gender (Female)	61	40.7
Most Common Surgery: ARM	45	30.0
Surgery: Intestinal Atresia	32	21.3
Surgery: Abdominal Wall Defect	23	15.3
Other Surgeries	50	33.3

The levels of parental stress were classified as low, moderate, and high. Highest stress levels were found in a significant proportion of parents (44.7%), as well as moderate stress (32%), and low stress (23.3%).

Figure 1: Distribution of Parental Stress Levels

The relationship between parental education and stress levels was significant and negative. Parents without an education were the most stressed (61%), but parents of a higher educational level (graduate and more) were less stressed (18%). Both financial status and access to social support also remained key stress factors.

Table 2: Relationship Between Education Level and Stress.

Education Level	High Stress (%)	Moderate Stress (%)	Low Stress (%)
No Formal Education	61	28	11
Primary to Matric	47	36	17
Graduate and Above	18	33	49

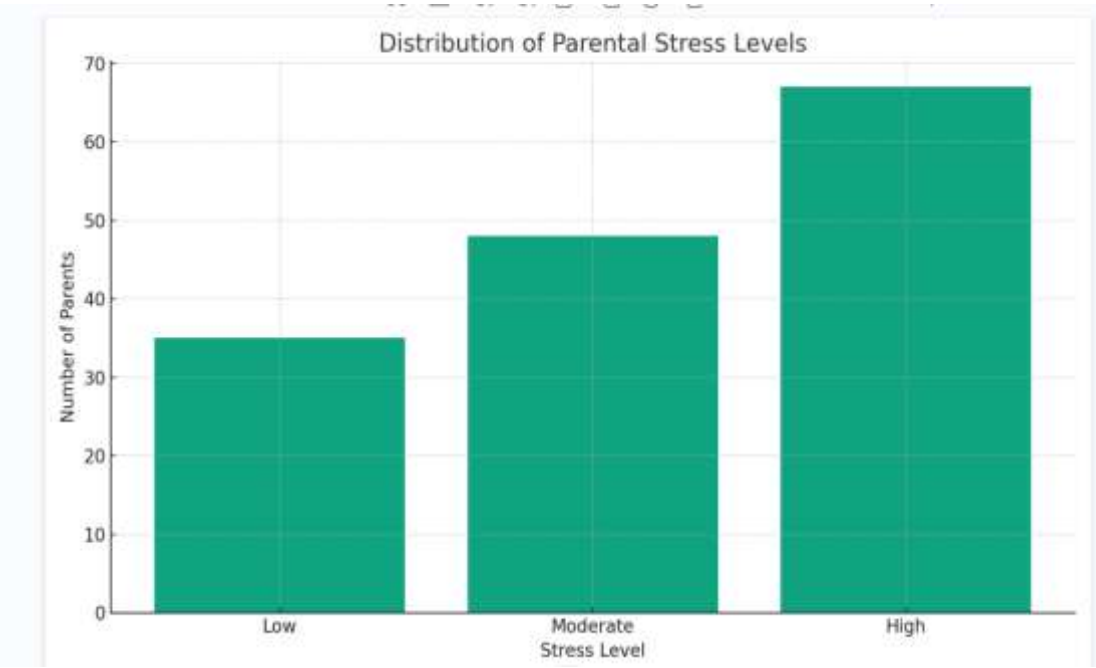
Among clinical factors, prolonged stay (>7 days) and emergency surgery were significantly associated with higher stress scores. Parents of neonates who had post-operative complications (n=38) also exhibited elevated stress levels compared to those whose babies had uncomplicated recoveries.

Table 3: Clinical Factors Influencing Parental Stress

Clinical Factor	High Stress (%)	Moderate Stress (%)	Low Stress (%)
Stay >7 Days	59	29	12
Emergency Surgery	55	33	12
Post-op Complications	63	25	12
No Complications	28	40	32

These findings highlight the fact that the stress level of parents with surgical neonates depends not only on the clinical status of a child but also on socioeconomic and psychosocial factors. Protective effects included higher education, stable income, and clarity of communication with the medical staff, whereas emergency conditions and postoperative complications contributed greatly to increased parental anxiety.

Graphical representation:



DISCUSSION

This prospective observational study conducted at the Saidu Group of Teaching Hospital Swat, indicates that a substantial percentage of parents of neonates who are having surgery face high psychological distress, and clinical urgency, less education, prolonged hospital stay, and poor communication have been found to be primary factors. The results are consistent with previous external literature, further supporting the multifactorial and frequently amenable quality of parental stress in the surgical intensive care of neonates. A prospective study by Peters et al. (1) introduced similar findings and determined that clinical uncertainty, inappropriate parental participation in the care process, and information deficiency have been some of the most significant contributors to high stress. In the present study, more than 68 percent of parents had a high stress rating, especially in emergent surgery. The result draws similarity to that by Radhakrishna et al. (2), where higher stress activities were also observed among mothers of neonates who received emergency interventions. The psychological stress in these cases is not only caused by the fear of death of the neonate but also due to sudden admission or lack of planning and disturbance of the family relationships.

Bua et al. (3) examined how pandemic-era limitations exacerbated the stress of parents as they could not easily visit children in hospitals. These findings were also confirmed by Turgoose et al. (4), who conducted a systematic review whereby trauma-like symptoms were reported after surgical procedures in children and parents. However, the relationship that exists between parental stress and caregiving behaviors has been widely reported. According to Almaatani et al. (5), elevated stress is associated with unfavorable feeding habits that can affect recovery and nourishment in neonates. In this work, a few parents were given advice on feeding or after-operative care, and in particular, the parents with a low educational level. Moreover, Liu et al. (6) mentioned that the preoperative anxiety, especially fear of the unknown, may aggravate caregivers' stress. At Saidu Group of Teaching Hospital Swat, most parents said they felt distraught by not being provided with information on the

recovery of their child, which would have been addressed through better standards of communication protocols.

Even though that is not the central point in this study, the elements of quality of life and mental health were tangentially mentioned in the responses of parents. The study by Cho and Kim (7) defined that the greater the uncertainty and the lower the health literacy, the poorer the quality of life is perceived by the caregivers of chronically ill children. Prakash et al. (8) went further to demonstrate the fact that parenting children, especially those with special needs such as autism, is a stressful situation that is multiplied by inadequate knowledge and support. Likewise, in this study, parents who had never had a hospital experience or had never received an educational experience found it difficult to understand the surgical condition and care plan, which increased their anxiety and helplessness. Literature globally has supported the need to have child- and family-centered care practices. Quaye et al. (9) showed that when the best interests of children are put into consideration and the family is involved, the experience of the hospital is improved by all parties involved. Nonetheless, in the Pakistani public hospitals, the models are undeveloped. Mishra et al. (10) studied the issue of caregiver burden in the families of children with cancer and reported comparable deficits in emotional support. In the research, 22 percent of parents reported that they received any kind of psychological or emotional help during hospitalization, indicating a severe lack of holistic neonatal care.

Erwin et al. (11) explained the broader implications of stress on health-seeking behavior to demonstrate that poor communication and dissatisfaction of caregivers cause less compliance and follow-up. Parents included in the study also shared this observation, with a high percentage citing delays in interpreting discharge instructions or medication protocols. Mussatto et al. (12) highlighted how organized family function and communication within the health care systems can lessen the psychological distress, which facilitates enhanced recovery of both neonates and families. Moreover, Gunjawate et al. (13) disclosed the role of cultural stigma, absence of social services, and poor psychological support in developing chronic stress during the upbringing of children with hearing loss. The results can be applied to Pakistan, which has no systematic mental health support. Fu et al. (14) stressed that extended stays exhibit direct correlation with increased levels of stress, as it was also revealed in a study, with an extended hospital stay of more than 10 days being a significant stress predictor.

Beck et al. (15) also explained that psychological burden sharing among families is usually experienced during critical illness. Family support was also dismal in that most of the nuclear families took up hospital admissions on their own. Liang et al. (16) had evidence suggesting that the presence of parents during the induction of anesthesia alleviates anxiety, and this policy is seldom applied in most of the Pakistani hospitals. Bringing in such practices would alleviate psychological trauma for the parents. Operto et al. (17) examined the compliance among children on a ketogenic diet, showing that a high level of parent stress contributes to incomplete adherence and insufficient results. Although it is not a direct comparison, the same patterns have been observed in a study, with overwhelmed parents forgetting most of the important post-operative instructions or having to be repeatedly explained. Grundt et al. (18) even suggested infrastructure modifications such as separate single-family rooms to facilitate parental involvement and breastfeeding-related suggestions that have not been implemented in the majority of local healthcare environments.

Together, the above findings highlight the necessity of systematized psychological evaluation and support to parents of neonates who undergo surgical interventions. The psychological distress can be minimized by simple interventions, including enhancing communication between staff and parents, giving information on procedures both in written and verbal form, engaging parents in the daily activities of caring, and sending the high-stress cases to counseling. Notably, the measures are affordable and even in public hospitals with limited resources. The research contributes to the existing body of evidence that suggests a paradigm shift in neonatal surgical care to a more multimodal family-centered approach. The identification and management of stressful variables in parents are not just psychological issues directly affecting the neonatal recovery, adherence, and their future development.

CONCLUSION

This prospective observational study, undertaken at the Saidu Group of Teaching Hospital Swat, highlights the issue that parental stress is a significant and common concern in neonatal surgical care. Emergency procedures, low level of education, long hospital stay, and poor communication of healthcare professionals were associated most closely with high levels of stress. Although the emotional and psychological support is one of the most important forms of parental involvement in neonatal recovery, it is evident that it is not very well focused in the healthcare sphere of a population. Closing the mentioned gap using a specific, systematic communication approach, psychological screening, and family-based care can diminish parental distress significantly, ultimately enhancing overall results. The results implicate the necessity to start addressing the lack of psychosocial support in neonatal surgery at the policy level to unite it with neonatal care as a common practice in Pakistan. The long-term psychological impact on parents and targeted stress-reduction intervention should be investigated in future studies. Improving parental emotional health is a moral practice that is also critical to optimal neonatal surgical care.

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