

Parents' Perception Regarding Their Infants' Pain Experience in the NICU

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(Received, 24th April 2025, Accepted 8th May 2025, Published 31st August 2025)

Abstract: Neonates admitted to the Neonatal Intensive Care Unit (NICU) often undergo multiple painful procedures, yet their inability to verbally communicate can lead to underestimation and inadequate management of pain. Parental involvement in pain assessment and management is crucial for improving neonatal outcomes; however, limited knowledge and confidence among parents may hinder their effective participation. **Objective:** To assess parents' perceptions regarding their infants' pain experiences in the NICU of a tertiary care hospital in Lahore, Pakistan. **Methods:** A descriptive cross-sectional study was conducted among 200 parents of infants admitted to the NICU using non-probability convenience sampling. Data were collected through a structured questionnaire that comprised demographic details and six perception items, rated on a Likert scale. Perception scores were categorized as positive ($\geq 50\%$) or negative ($< 50\%$). Data were analyzed using SPSS version 21, with descriptive statistics applied to summarize the responses. **Results:** Most parents (71.5%) demonstrated a negative perception regarding their infant's pain experiences. A majority (68.5%) strongly disagreed that they could identify when their baby was in pain, and 78.0% disagreed that they could reduce their baby's pain. Confidence in performing kangaroo care was low, with only 31.0% agreeing they felt capable. Some parents expressed confidence in calming their infant, as 40.5% agreed they could soothe them to sleep during pain. However, fewer parents recognized the effectiveness of holding (38.0% agreed) or pacifiers (33.0% agreed) in stopping infant crying. **Conclusion:** The findings highlight significant gaps in parental confidence and awareness regarding infant pain recognition and management in the NICU. Targeted educational interventions are necessary to improve parental self-efficacy, foster active participation in pain management, and enhance neonatal care outcomes, particularly in resource-limited settings like Pakistan.

Keywords: Neonatal pain, NICU, parental perception, pain management, Pakistan

[How to Cite: Fatima SM, Ashraf A, Kauser ST, Perveen K. Parents perception regarding their infant's pain experience in NICU. *Biol. Clin. Sci. Res. J.*, 2025; 6(8): 50-53. doi: <https://doi.org/10.54112/bcsrj.v6i8.1944>

Introduction

The perception of pain in neonates, particularly those admitted to the Neonatal Intensive Care Unit (NICU), is a critical issue in pediatric healthcare that warrants comprehensive examination. Infants in the NICU frequently undergo numerous painful procedures, and their responses to pain often remain underestimated due to the inability to communicate verbally (1,2). Studies indicate that neonates experience acute pain and are susceptible to long-term adverse effects from untreated pain, including neurodevelopmental impairments (3,4). Consequently, healthcare professionals need to develop effective pain management strategies while actively involving parents in the care process. This collaboration can enhance overall satisfaction with care provided in the NICU, transitioning towards a more family-centered model (5,6).

The professional community has made significant strides in understanding the necessity of adequate pain assessment and management in neonates. A considerable barrier identified includes the lack of standardized pain assessment tools suitable for this vulnerable population, leading to inconsistent pain management practices (7-9). Moreover, educational initiatives have emphasized the importance of involving parents as active participants in their child's pain management plan, fostering a collaborative approach that can improve perceptions of care (10,11). Evidence suggests that parental involvement in pain management can lead to better outcomes for infants, as parents can provide insights into their child's usual behavioral responses to pain (12,13). However, the effectiveness of such collaborative efforts may be hindered by institutional constraints and varying perceptions of healthcare professionals regarding pediatric pain management (14,15).

In Pakistan, the context of neonatal care presents unique challenges and opportunities. Limited resources and varying levels of healthcare training can hinder adequate pain management practices in neonates. Increased

awareness and education surrounding neonatal pain management are essential, particularly in engaging parents as active participants in care (1,4). Socio-cultural factors may influence parental perceptions and responses to infant pain, necessitating culturally appropriate interventions to facilitate understanding and participation (16). By recognizing the importance of parental involvement and addressing the barriers to effective neonatal pain management, Pakistani healthcare providers can improve outcomes for vulnerable populations and ensure a more compassionate, informed, and holistic approach to neonatal healthcare.

Methodology

This descriptive cross-sectional study was conducted to assess parents' perceptions regarding their infants' pain experiences in the neonatal intensive care unit (NICU) of a tertiary care hospital in Lahore, Pakistan. The target population consisted of parents whose infants were admitted to the NICU during the study period. A non-probability convenience sampling technique was used to recruit eligible participants who met the inclusion criteria of being the parent of an infant currently admitted to the NICU. Parents with a medical background were excluded to minimize bias related to professional knowledge. The sample size was calculated using Slovin's formula, assuming a population size of 300, a 5% margin of error, and a 95% confidence level, which resulted in a required sample size of 200 participants.

Data were collected using an adopted, structured questionnaire consisting of two sections. The first section gathered demographic information, including age, gender, residence, education level, and socioeconomic status. The second section measured parental perception regarding infant pain in the NICU through six items rated on a Likert scale, ranging from "strongly disagree" to "strongly agree." The total perception score ranged from 0 to 30, with scores less than 15 ($< 50\%$) categorized as negative



perception and scores of 15 or more ($\geq 50\%$) classified as positive perception. The questionnaire was administered in person after obtaining written informed consent, with assistance provided to participants who required clarification.

Ethical approval was obtained from the Ethical Committee of the Department of Nursing, The Superior University, Lahore. Institutional permission was also secured from the study site. Participants were informed about the objectives, the voluntary nature of their participation, and the confidentiality of their responses. No identifying information was collected, and it was used solely for research purposes.

Data analysis was performed using IBM SPSS Statistics version 21. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics and responses to perceptions. Perception scores were computed, and participants were categorized into positive or negative perception groups based on predefined cut-offs. All analyses were conducted with a significance threshold of $p < 0.05$, in accordance with conventional statistical standards for similar studies.

Results

Table 1 summarizes the demographic characteristics of the 200 parents who participated in the study. The most significant proportion of participants was aged between 31 and 45 years (45.5%), followed closely by those aged 46–60 years (44.5%). A small proportion were aged 18–30 years (4.5%) or above 60 years (5.5%). Females represented the majority of respondents (59.0%), while males accounted for 41.0%. More than half of the participants (52.5%) resided in urban areas, whereas 47.5% lived in rural settings. In terms of educational background, 43.0% had completed 6–10 years of schooling, 28.0% had 1–5 years of education, 12.5% had completed 10–12 years of schooling, 13.5% had no formal education, and only 3.0% had qualifications above the intermediate level. Regarding socioeconomic status, almost half of the respondents (47.0%) reported experiencing insufficient funds sometimes, 32.0% reported having a balanced economic status, 12.5% had adequate funds for the whole year, and 8.5% indicated sufficient funds most of the time.

Table 1. Demographic Characteristics of Participants (n = 200)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–30	9	4.5
	31–45	91	45.5
	46–60	89	44.5
	>60	11	5.5
Gender	Male	82	41.0
	Female	118	59.0
Residence	Urban	105	52.5
	Rural	95	47.5
Education Level	Nil	27	13.5
	1–5 years	56	28.0
	6–10 years	86	43.0
	10–12 years	25	12.5
	More than intermediate	6	3.0
Socioeconomic Status	Insufficient funds for the whole year	25	12.5
	Insufficient funds sometimes	94	47.0
	Balanced	64	32.0
	Sufficient funds for most of the time	17	8.5

Table 2 presents the distribution of responses for each perception item related to infant pain in the NICU. A substantial proportion of participants (68.5%) strongly disagreed and 21.0% disagreed with the statement "I can tell when my baby is in pain," indicating a lack of confidence in identifying infant pain. Similarly, most respondents (78.0%) disagreed with the statement "I can lessen my baby's pain," suggesting limited self-efficacy in pain management. Responses to the statement "I feel confident doing kangaroo/skin-to-skin care" were more varied, with 37.0% disagreeing, 31.0% agreeing, and 9.0% strongly agreeing, indicating that some parents recognized the value

of this practice. When asked if their baby stops crying when held, 38.0% agreed and 20.5% strongly agreed, whereas 31.5% disagreed or strongly disagreed. For the statement "My baby stops crying when I give him/her the pacifier," 42.5% disagreed and 8.0% strongly disagreed, while 33.0% agreed or strongly agreed. Regarding the ability to soothe the baby into quiet sleep when in pain, 40.5% agreed and 20.5% strongly agreed. However, 24.0% disagreed or strongly disagreed, showing some confidence in calming techniques among a segment of participants.

Table 2. Parental Perception Regarding Infant Pain in NICU (n = 200)

Item	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
I can tell when my baby is in pain	137 (68.5)	42 (21.0)	17 (8.5)	3 (1.5)	1 (0.5)
I can lessen my baby's pain	44 (22.0)	156 (78.0)	–	–	–
I feel confident doing kangaroo/skin-to-skin care	30 (15.0)	74 (37.0)	16 (8.0)	62 (31.0)	18 (9.0)
My baby stops crying when I hold them	19 (9.5)	44 (22.0)	20 (10.0)	76 (38.0)	41 (20.5)
My baby stops crying when I give them the pacifier	16 (8.0)	85 (42.5)	33 (16.5)	44 (22.0)	22 (11.0)
If my baby seems in pain, I can get them into a quiet sleep	36 (18.0)	12 (6.0)	30 (15.0)	81 (40.5)	41 (20.5)

As shown in Table 3, the majority of parents (71.5%) demonstrated a negative perception regarding their infant's pain experience in the NICU, whereas only 28.5% had a positive perception. This finding

indicates a significant gap in parental awareness and confidence in recognizing and managing infant pain, highlighting the need for targeted education and counseling interventions.

Table 3. Overall Perception Score (n = 200)

Perception Type	Frequency (n)	Percentage (%)
Negative perception	143	71.5
Positive perception	57	28.5

Discussion

The findings of the present study regarding parents' perceptions of their infant's pain experience in the NICU align closely with contemporary literature, highlighting significant gaps in parental confidence and engagement in pain management. In our study, a substantial proportion of parents—71.5%—demonstrated a negative perception regarding their infant's pain experience (Table 3), which resonates with Govindaswamy et al. (17), who reported that 72% of the study parents felt apprehensive about physically interacting with their infants due to their hospitalization. This fear likely stems from a lack of trust in their ability to alleviate their child's discomfort, underscoring the need to enhance parental confidence through effective communication and education from healthcare professionals.

When examining specific items related to parental perceptions of infant pain, particularly the ability to identify signs of pain, our findings revealed that a majority, specifically 68.5%, strongly disagreed that they could tell when their baby was in pain (Table 2). This lack of self-efficacy in recognizing pain is consistent with Gates et al.'s systematic review (18), which identified that many parents reported inadequate information about procedural pain management and often felt excluded from decision-making processes concerning their infants' care. The perception that parents are not sufficiently informed or involved in their infant's pain management has been acknowledged in recent literature, reinforcing the notion that targeted educational initiatives could significantly enhance their confidence and involvement in pain assessment and intervention.

Significant findings were also observed regarding parents' perceived ability to alleviate their baby's pain, with 78.0% of participants indicating disagreement with the statement. Riddell et al. (19) highlighted that parental judgments of pain are primarily influenced by their perceptions and beliefs about their child's pain and their abilities to manage it; this suggests that addressing psychological barriers is crucial in enhancing parental competence in pain alleviation. Moreover, our data showed a variable attitude towards interventions such as kangaroo care, with only 31.0% of parents feeling confident in engaging in this practice. However, evidence suggests it is a beneficial method for pain relief (20).

In our study, responses to soothing techniques indicated some parental confidence, as 40.5% believed they could calm their baby into quiet sleep when experiencing pain. This stands in contrast to findings by Palomaa et al. (21), who noted that while parents may understand the role of comforting techniques, their overall capacity to assess their child's pain remains limited. This highlights an essential opportunity for healthcare providers to implement educational interventions that increase parents' understanding of soothing techniques as effective methods for managing infant pain.

Moreover, our study revealed that fewer parents recognized that their babies stop crying when held or soothed with a pacifier, with a considerable percentage disagreeing with these statements (42.5% and 38.5%, respectively). This reflects findings from Olsson et al. (22), which indicate that parents may misinterpret infant cues and can often struggle to identify and manage pain, highlighting a need for improved informational resources to empower parents effectively.

Overall, the high percentage of parents reporting negative perceptions indicates a critical need for educational programs targeting pain management in NICUs. This aligns with McNair et al. (23), who concluded that parental education significantly impacts parents' knowledge and practices towards infant pain management. The incorporation of structured educational interventions could foster more

active participation from parents, aiding them in mitigating their infant's pain more effectively while simultaneously alleviating their anxieties. Thus, our study emphasizes the urgent need for healthcare systems to enhance their approaches to educating and involving parents in pain management strategies for their infants in the NICU. Such enhancements are particularly crucial within the cultural context of Pakistan, where limited resources and varying levels of healthcare training can complicate parental engagement in medical settings. As the findings suggest, bolstering parental self-efficacy and providing comprehensive education surrounding pain management can significantly alter parental perspectives and empower them to participate meaningfully in their children's care.

Conclusion

This study reveals that most parents of NICU-admitted infants hold negative perceptions about their ability to recognize and manage their child's pain. Low confidence in identifying pain cues, implementing soothing techniques, and engaging in proven interventions such as kangaroo care underscores the urgent need for structured parental education. Strengthening communication between healthcare professionals and parents, coupled with culturally tailored training programs, can enhance parental competence, promote collaborative care, and improve neonatal pain management outcomes in Pakistan's NICU settings.

Declarations

- Data Availability statement**
All data generated or analysed during the study are included in the manuscript.
- Ethics approval and consent to participate**
Approved by the department concerned. (IRBEC-24)
- Consent for publication**
Approved
- Funding**
Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

- SMF (BS Nursing Generic Student)**
Manuscript drafting, Study Design,
- AA (BS Nursing Generic Student)**
Review of Literature, Data entry, Data analysis, and drafting articles.
- STK (Nursing Director)**
Conception of Study, Development of Research Methodology Design,
- KP (Associate Professor)**
Study Design, manuscript review, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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