

A Study To Assess The Maternal–Infant Attachment Among Mothers of Premature Babies in A Selected NICU in Sangli Miraj Kupwad Corporation

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Abstract

Objectives

- 1.To assess the level of maternal–infant attachment among mothers of premature babies.
- 2.To determine the association between the level of maternal-infant attachment and selected demographic variables

Material and Methods

A quantitative, non-experimental descriptive cross-sectional was conducted across selected NICUs. research design was adopted for the study. Conducted across selected NICUs within the Sangli–Miraj–Kupwad Corporation, the study evaluated a sample of 110 mothers of stable preterm infants born before 37 weeks of gestation. Data were collected via a non-probability purposive/convenient sampling technique using a structured demographic questionnaire and a 25-item standardized 5-point Likert Maternal–Infant Attachment Scale. Analysis was completed in SPSS using descriptive statistics and the Chi-square test.

Results

Out of the 110 participants, the vast majority of mothers 90%, ($n = 99$) demonstrated a high level of maternal–infant attachment with their premature babies, while the remaining 10% ($n = 11$) exhibited a moderate level of attachment. None of the mothers fell into the low attachment bracket. Inferential statistics showed no statistically significant relationship ($p > 0.05$) between maternal–infant attachment levels and any demographic/clinical parameters, including mother's age ($p = 0.783$), family structure ($p = 0.340$), gestational age ($p = 0.103$), infants birth weight ($p = 0.562$), infant gender ($p = 1.000$), 5-minute APGAR score ($p = 0.459$), or length of NICU stay ($p = 0.063$).

Conclusion

Maternal–infant attachment is a natural, resilient emotional process that develops strongly regardless of individual maternal or neonatal demographic variants, even within challenging and stressful clinical environments like the NICU.

Keywords: Maternal–Infant Attachment, Premature Babies, Neonatal Intensive Care Unit (NICU), Kangaroo Mother Care, Family-Centred Care.

Introduction

Maternal–infant attachment is a deep, enduring emotional bond that evolves between a mother and her infant, acting as a crucial foundation for subsequent emotional security, cognitive development, and social-behavioural adaptation. This bonding process, which initiates during pregnancy and solidifies postpartum, requires active interaction, proximity, and mutual sensitivity. However, premature birth introduces significant public health and psychological challenges. India accounts for a uniquely high volume of preterm births globally, with millions of infants born before the completion of 37 weeks of gestation annually.

Preterm neonates frequently require prolonged admission to a Neonatal Intensive Care Unit (NICU) due to medical complexities such as low birth weight, respiratory distress syndrome, and physiological immaturity. Although necessary for physical survival, the highly technical NICU environment inadvertently separates the maternal-infant dyad. Physical barriers, continuous monitoring hardware, medical routines, and strict isolation policies significantly curb primary opportunities for natural bonding—such as early skin-to-skin touch, regular breastfeeding, and consistent eye contact.

Furthermore, mothers of hospitalized premature infants regularly face high levels of anxiety, psychological stress, sadness, and role alteration, which can hinder maternal sensitivity and responsiveness. Understanding the baseline status of early maternal attachment in Indian NICU frameworks is key to designing effective supportive protocols. This study was designed to systematically assess these bonding levels and explore key demographic variables that might influence them within the local health corporation zone.

Research Design and Setting

A quantitative, non-experimental descriptive cross-sectional research design was executed to examine attachment metrics at a fixed point during hospitalization. The study was performed in selected specialized NICUs within the Sangli–Miraj–Kupwad Corporation area.

Study Population and Sampling

- **Target Population:** mothers of premature infants.
- **Accessible Population:** Mothers whose preterm infants were admitted to the selected NICUs during the active data collection window.
- **Sample Size:** 110 participants, calculated based on standard prevalence formulas.
- **Sampling Technique:** Non-probability purposive sampling method.

Inclusion and Exclusion Criteria

- **Inclusion Criteria:** Biological mothers whose premature newborns were hospitalized in the NICU for more than 48 hours; mothers present during data collection intervals; and those capable of reading and understanding either English or Marathi.
- **Exclusion Criteria:** Mothers diagnosed with pre-existing visual, auditory, or cognitive impairments.

Data Collection Instruments

The direct data capture apparatus was validated by 17 field experts and deployed in parallel English and Marathi adaptations. It was structured into two primary components:

1. **Section A (Demographic and Clinical Profile Proforma):** Capturing mother's age, type of family, gestational age at birth, infant birth weight, infant gender, APGAR scores at 5 minutes, and length of NICU stay.
2. **Section B (Maternal–Infant Attachment Scale):** Comprising 25 positive behavioural and psychological statements evaluated via a 5-point Likert configuration (Strongly Agree = 4, Agree = 3, Neither Agree nor Disagree = 2, Disagree = 1, Strongly Disagree = 0).

Scale Interpretation Thresholds:

- **High Level of Attachment:** Total score age 67%) rate Level of Attachment: Total score (34% - 67%)
- **Low Level of Attachment:** Total score (33%)

Operational Procedures & Ethical Clearance

Formal approval was secured from the Institutional Ethical Committee of Bharati Vidyapeeth (Deemed to be University) College of Nursing, Sangli. Written informed consent was signed by every participant prior to administrative tool distribution. The investigator administered the scales personally, requiring 20–30 minutes per participant, ensuring total data confidentiality.

Statistical Analysis

Coded data matrices were handled utilizing SPSS and analysed through descriptive benchmarks (frequencies, percentage tables, standard deviation, and mean calculations). Inferential calculations utilized Chi-square (χ^2) analysis configurations to ascertain individual associations across categorical parameters at a predefined value threshold of ($p < 0.05$).

Results

Profile Characteristics of Sample Cohort

Table 1: Frequency and Percentage Distribution of Baseline Parameters (n = 110)

Baseline Variables	Sub-Category Profile	Frequency (f)	Percentage (%)
Maternal Age (in years)	20–30 years	76	69.1%
	31–40 years	34	30.9%
Family Structure Type	Nuclear Family	55	50.0%

	Joint Family	55	50.0%
Gestational Age (weeks)	28–30 weeks	30	27.27%
	31–33 weeks	41	37.27%
	34–36 weeks	39	35.45%
Infant Birth Weight (grams)	950–1250 g	27	24.55%
	1300–1500 g	26	23.64%
	1550–1700 g	20	18.18%
	1750–2000 g	23	20.91%
	2100–2300 g	14	12.73%
Infant Gender	Male	60	54.5%
	Female	50	45.5%
5-Minute APGAR Score	Score: 3	10	9.1%
	Score: 4	34	30.9%
	Score: 5	28	25.5%
	Score: 6	35	31.8%
	Score: 7	3	2.7%
Duration of NICU Stay (days)	10 days	8	7.3%
	15 days	27	24.5%
	20 days	24	21.8%
	25 days	11	10.0%
	30 days	40	36.4%

Evaluation of Maternal–Infant Attachment Levels

Table 2: Prevalence Levels of Maternal–Infant Attachment (n = 110)

Attachment Score Categories	Sample Frequency (f)	Total Percentage (%)
High Level (Score range: 67–100)	99	90.0%
Moderate Level (Score range: 34–66)	11	10.0%
Low Level (Score range: 1e 33)	0	0.0%

Demographic Association Studies

Table 3: Association Between Attachment Status and Categorical Variables (n = 110)

Profile Parameter	Categorical Split	Moderate Level	High Level	(chi ^{2}) Value	(p)-value	Significance
Maternal Age	20–30 years	8	68	0.076	0.783	Not Significant
	31–40 years	3	31			
Family Type	Nuclear Family	7	48	0.909	0.340	Not Significant
	Joint Family	4	51			
Gestational Age	28–30 weeks	1	29	4.547	0.103	Not Significant
	31–33 weeks	3	38			
	34–36 weeks	7	32			
Birth Weight	950–1250 g	2	25	2.978	0.562	Not Significant
	1300–1500 g	1	25			
	1550–1700 g	2	18			
	1750–2000 g	4	19			
	2100–2300 g	2	12			
Infant Gender	Male	6	54	0.000	1.000	Not Significant
	Female	5	45			
APGAR Score	Score: 3	0	10	3.629	0.459	Not Significant
	Score: 4	3	31			
	Score: 5	4	24			
	Score: 6	3	32			
	Score: 7	1	2			

NICU Duration	10 days	1	7	11.950	0.063	Not Significant
	15 days	0	27			
	20 days	2	22			
	25 days	0	11			
	30 days	8	32			

Discussion

The principal outcome of this investigation indicates that an overwhelming majority of mothers (90%) preserve and express a high level of psychological and emotional attachment toward their premature infants despite the stress of the NICU environment. These insights indicate that protective factors such as biological maternal instinct, intense emotional concern regarding infant clinical outcomes, supportive counselling from neonatal nursing professionals, and intermittent opportunities for visual or physical contact act as powerful balancing agents against situational separation stressors.

These outcomes align with international studies. Prior research shows that maternal distress during hospitalization does not completely hinder attachment, as mothers often compensate through increased emotional involvement and vigilance. While classical literature highlights that environmental noise, equipment lighting, and isolation barriers can trigger emotional distress in parents, systematic support can mitigate these barriers.

The complete absence of a statistically significant association between attachment levels and any maternal or neonatal demographic variable ($p > 0.05$) indicates that early attachment security is independent of baseline structural and physical traits. Factors like lower birth weight, prolonged hospitalization (up to 30 days), and poor initial physiological vitality (such as lower APGAR scores) did not cause a meaningful drop in attachment scores. This reinforces the universal nature of maternal bonding, confirming that natural emotional closeness thrives even during complex situations.

Conclusion

This study confirms that a high level of maternal–infant attachment is prevalent among mothers of preterm infants admitted to specialized care settings. Crucially, attachment status is not significantly affected by variations in maternal age, family setup, gestational age, birth weight, infant gender, APGAR scores, or length of stay. Neonatal nursing teams should use these findings to integrate regular supportive interventions—including early Kangaroo Mother Care (KMC), flexible family visiting hours, and proactive parental education—to sustain maternal confidence and optimize developmental outcomes for preterm infants.

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