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"Relationship between Maternal Emotional Distress, Confidence, and Early Dyadic Interaction among Preterm Mothers during Hospitalization".

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ABSTRACT
Preterm birth and hospitalization of preterm babies in neonatal intensive care units cause significant emotional distress among mothers and may negatively influence maternal confidence and mother–infant bonding. The present study aimed to assess the relationship between maternal emotional distress, confidence, and early dyadic interaction among preterm mothers during hospitalization in a tertiary care hospital in Chennai. A quantitative non-experimental descriptive design was adopted among 60 mothers of preterm babies selected through a convenience sampling technique, and data were collected using the Edinburgh Postnatal Depression Scale, State-Trait Anxiety Inventory, Maternal Concerns Questionnaire, and Mother–Infant Bonding Scale. The study findings revealed that 41.66% of mothers experienced severe depression, 43.33% had severe anxiety, and depression showed a negative correlation with maternal confidence and bonding scores. The study concluded that increased maternal emotional distress adversely affected confidence and early dyadic interaction among mothers of preterm babies during hospitalization.

Keywords: Preterm mothers, emotional distress, anxiety, maternal confidence, mother–infant bonding

1. Introduction

Preterm birth is one of the leading causes of neonatal morbidity and mortality worldwide and remains a major public health concern. Mothers of preterm infants frequently experience psychological stress, anxiety, depression, fear, and uncertainty during neonatal intensive care unit hospitalization. Emotional

distress during the postpartum period may interfere with caregiving ability, maternal confidence, and early bonding with the infant. Maternal confidence is essential for successful adaptation to motherhood and effective infant care. Mothers with reduced confidence may experience difficulties in breastfeeding, handling neonatal care, and emotional attachment toward the baby. Early dyadic interaction between mother and infant plays an important role in infant neurodevelopment, emotional regulation, and secure attachment.

Several studies have identified that mothers of preterm babies experience higher levels of emotional disturbances compared to mothers of term infants. Early identification of maternal emotional distress and supportive interventions are therefore essential to improve maternal psychological well-being and mother–infant interaction. Hence, the present study was undertaken to assess the relationship between maternal emotional distress, confidence, and early dyadic interaction among preterm mothers during hospitalization.

Need for the study

Preterm birth is a major public health problem associated with significant maternal psychological distress and impaired mother–infant interaction. According to the **World Health Organization (2023),** nearly 13.4 million babies were born preterm globally. **Worrall et al. (2023)** reported that mothers of preterm infants commonly experience anxiety, depression, and emotional stress during hospitalization. **Premji et al. (2017)** identified reduced maternal confidence among mothers of preterm babies, while **Polizzi et al. (2021)** highlighted disturbances in early dyadic interaction among preterm mother–infant pairs. However, limited Indian studies have explored these variables during hospitalization. Therefore, the present study was undertaken to assess maternal emotional distress, confidence, and early dyadic interaction among preterm mothers.

Objectives

1. To assess the level of maternal emotional distress, confidence, and early dyadic interaction among preterm mothers during hospitalization.
2. To determine the relationship between maternal emotional distress, confidence, and early dyadic interaction among preterm mothers during hospitalization.
3. To associate maternal emotional distress, confidence, and early dyadic interaction with selected demographic and obstetrical variables.

Methodology

A quantitative research approach with a non-experimental descriptive design was adopted for the study. The study was conducted at the Institute of Obstetrics and Gynaecology and Government Hospital for Women and Children, Chennai. The study population consisted of mothers of preterm babies admitted to the postnatal ward and the neonatal intensive care unit. A total of 60 mothers were selected using a non-probability convenience sampling technique. Mothers who were willing to participate and able to understand Tamil or English were included in the study. Data were collected using a socio-demographic questionnaire, the Edinburgh Postnatal Depression Scale (EPDS), the State-Trait Anxiety Inventory (STAI), the Maternal Concerns Questionnaire (MoCQ), and the Mother–Infant Bonding Scale (MIBS). Ethical clearance was obtained from the Institutional Ethical Committee before data collection. Written

informed consent was obtained from all participants. The collected data were analyzed using descriptive and inferential statistics.

Ethical considerations

The study was conducted after obtaining approval from the Institutional Ethical Committee of Madras Medical College and the Institute of Obstetrics and Gynaecology, Chennai. Written informed consent was obtained from all the mothers of preterm babies before data collection. Participation in the study was entirely voluntary, and right to withdraw from the study at any time without any consequences.

Results

The findings revealed that the majority of the mothers of preterm babies were aged 25 to 29 years (40%), homemakers (68.33%), and belonged to nuclear families (63.33%). Most mothers delivered between 35 and 37 weeks of gestation (66.67%) and underwent caesarean section (58.33%), as shown in Table 1. Table 2 shows that the mean depression and anxiety scores were 19.70±5.45 and 43.70±8.15, respectively, indicating higher emotional distress during hospitalization. Table 3 demonstrates a significant positive correlation between depression and anxiety scores ($r=0.42$, $p<0.05$). Depression and anxiety showed significant negative correlations with maternal confidence and bonding scores. A significant association was identified between emotional distress and selected demographic variables such as educational status, support system, monthly family income, and previous history of preterm delivery at $p<0.05$ level.

Table 1. Distribution of Demographic and Obstetric Variables among Mothers of Preterm Babies (N=60)

Demographic Variables		Frequency (n)	Percentage (%)
Age of the mother	20–24 years	20	33.33%
	25–29 years	24	40.00%
	30–34 years	13	21.67%
	35–39 years	3	5.00%
	40 years and above	0	0.00%
Educational Level	Informal education	0	0.00%
	Primary education	17	28.33%
	Higher secondary	19	31.67%
	Graduate degree	24	40.00%
Employment Status	Homemaker	41	68.33%
	Govt employed	1	1.67%
	Private employment	14	23.33%
	Business	4	6.67%
Monthly Family Income (In Rupees)	Less than Rs.10,000	19	31.67%
	Rs.10,000–30,000	37	61.66%
	Rs.30,001–50,000	4	6.67%
	>Rs.50,000	0	0.00%
Residence	Urban	42	70.00%
	Semi urban	5	8.33%

	Rural	13	21.67%
Type of Family	Nuclear family	38	63.33%
	Joint family	15	25.00%
	Extended family	7	11.67%
Number of Children	1 child	32	53.33%
	2 children	24	40.00%
	3 children and above	4	6.67%
Pre-term Delivery History	Yes	36	60.00%
	No	24	40.00%
Support System	Strong support system (family, friends, etc.)	29	48.33%
	Moderate support system	28	46.67%
	Weak or no support system	3	5.00%
Religion	Hindu	48	80.00%
	Christian	7	11.67%
	Muslim	5	8.33%
Obstetrical Variables		**Frequency (n)**	**Percentage (%)**
Gravida (Total Number of Pregnancies)	Primigravida	31	51.67%
	Multigravida	29	48.33%
Gestational Age at Delivery (Weeks)	28–31 weeks	10	16.67%
	32–34 weeks	10	16.67%
	35–37 weeks	40	66.67%
Mode of Delivery	Vaginal delivery	25	41.67%
	Caesarean section (C-section)	35	58.33%
	Assisted vaginal delivery (Vacuum, forceps)	0	0.00%
Antenatal Care (ANC) Visits	Less than 3 visits	27	45.00%
	3–5 visits	16	26.67%
	6–8 visits	5	8.33%
	More than 8 visits	12	20.00%
History of Pregnancy Loss	Yes	14	23.33%
	No	46	76.67%

Table 2. Percentage of Mean Depression, Anxiety, Confidence, and Bonding Scale Scores among Mothers of Preterm Babies (N=60).

Variables	Maximum Score	Mean ± SD	Percentage of Mean Score
Depression	30	19.70 ± 5.45	65.67% ↓
Anxiety	80	43.70 ± 8.15	54.62% ↓
Confidence	210	111.70 ± 16.41	53.19% ↑

Bonding	30	8.28 ± 3.90	27.60% ↑

Table 3. Correlation between Depression, Anxiety, Confidence, and Bonding Scores

Correlation between Variables	Mean ± SD	Karl Pearson Correlation Coefficient (r)	p-value	Interpretation
Depression score vs Anxiety score	19.70±5.45 / 43.70±8.15	0.42	0.05*	Significant positive moderate correlation
Depression score vs Confidence score	19.70±5.45 / 11.70±16.41	-0.38	0.05*	Significant negative fair correlation
Depression score vs Bonding score	19.70±5.45 / 8.28±3.90	-0.45	0.01**	Significant negative moderate correlation
Anxiety score vs Confidence score	43.70±8.15 / 11.70±16.41	-0.44	0.01**	Significant negative moderate correlation
Anxiety score vs Bonding score	43.70±8.15 / 8.28±3.90	-0.37	0.05*	Significant negative fair correlation
Confidence score vs Bonding score	111.70±16.41 / 8.28±3.90	0.35	0.05*	Significant positive fair correlation

***Significant at p<0.05 level, **Highly Significant at p<0.01 level**

Discussion

The present study assessed maternal emotional distress, confidence, and early dyadic interaction among mothers of preterm babies during hospitalization. The findings revealed that most mothers experienced moderate to severe levels of depression and anxiety during the postpartum period. A similar study by **Davis et al. (2020)** reported that mothers of preterm infants experienced persistent psychological distress from NICU admission until one year after discharge. Similar findings were observed in the present study, where mothers demonstrated increased depression and anxiety scores during hospitalization. The study, consistent with the study by **Mesa et al. (2021),** identified higher levels of stress and emotional burden among mothers of infants admitted to NICU settings. The present study also revealed that emotional distress was highly prevalent among mothers of preterm babies. Another supportive study by **Yahya et al. (2021)** found that postpartum depression was common among NICU mothers and significantly affected maternal well-being. The current study findings are consistent with their report, as most mothers

demonstrated moderate to severe depression scores. **Jeličić et al. (2022)** stated that maternal distress negatively influences maternal sensitivity and infant developmental outcomes. Similarly, the present study identified a negative correlation between depression and mother–infant bonding. A study by **Worrall et al. (2023)** observed elevated anxiety levels among mothers of very preterm infants during the postpartum period. Comparable findings were noted in the present study, where severe anxiety was identified among a large proportion of mothers. A study congruent with the study by **Fuertes et al. (2024)** emphasized that prematurity and maternal stress adversely affect attachment and dyadic interaction. The present study findings also showed reduced bonding and confidence scores among mothers with increased emotional distress. The overall findings of the present study indicate that maternal emotional distress negatively affects maternal confidence and early mother–infant bonding during hospitalization. Early psychological screening and supportive nursing interventions may help improve maternal adaptation and emotional well-being.

Conclusion

The study concluded that mothers of preterm babies experienced considerable emotional distress during hospitalization. Increased depression and anxiety negatively affected maternal confidence and mother–infant bonding. Early identification of emotional distress and supportive nursing interventions are essential to improve maternal well-being and early dyadic interaction.

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