e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2022; 14(12); 717-721

Original Research Article

# Study of Maternal, Neonatal Interactions in Low Birth Weight Babies During the Hospital Stay

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**Received: 15-07-2022 / Revised: 01-08-2022 / Accepted: 16-08-2022**
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**Conflict of interest: Nil**

**Abstract**

**Introduction:** Low birth weight (LBW) has become one of the major challenges in maternal and child health in medicine. A study was conducted to find the clinical outcome of LBW babies with their mothers.

**Methods:** It was a hospital based descriptive study conducted in the department of pediatrics, KMC, Hanumakonda. Study was conducted from November 2019 to October 2021. LBW babies who were critically ill and parents who have not given consent were included in the research. All mothers were interviewed on day 14 of post-natal life of their baby. They were asked if they had any doubt in any of the question or if they failed to understand anything in the questionnaire. All attempts were made to answer a participant's doubt. If parental bonding questionnaire (PBQ) diagnosed any bonding disorder in the mother, she was referred to psychiatry department for the treatment and counselling. Mild disorder, mothers experience delay in the onset, ambivalence, or loss of the maternal emotional response to the infant. For this, Brockington *et al*. criteria was considered. Mean scores were compared using paired t test and ANOVA. P< 0.05 was statistical significance.

**Results:** Out of the 305 babies in this research, 152 (49.8%) were male. Mean birth weight was 1833± 405. Majority (270; 88.5%) were lower middle class and the rest were upper middle category. Family wise, 71.8% were belong to nuclear family and 191 (62.6%) were gravida 1. Study included 85.6% mothers had no previous abortions and 14.4%mothers had previous abortion history. 155 (50.8%) were between 32-36 weeks of gestational age and 96.1% mothers had no previous illness.

**Conclusion:** This study included 67% premature born babies; 1/3$^{rd}$ were small for gestational age. Only 50% of the mothers offered KMC, 86.2% mothers showed no bonding disorder. Multicentre study's with large sample size for long time is recommended.

**Keywords:** Birth weight, baby, infant



## Introduction

Birth weight is a significant factor associated with childhood infections and survival. Low birth weight (LBW) has become one of the major challenges in maternal and child health in medicine. There was 20 times higher mortality rate in babies with LBW [1]. LBW poses risks for developmental disabilities and lifelong

illnesses as well, which include adult-onset diabetes, coronary heart disease, high blood pressure, intellectual, physical and sensory disabilities, and psychological and emotional distress.

The relationship of maternal mental health to parenting behaviour is important to investigate prospectively in preterm populations because maternal psychological status has been found to correlate with childhood emotional and mental well-being at school age in low birth weight and preterm children [2]. Mortality rate of LBW infant were up to 40 times higher than infants with birth weights of at least 2500 g, and they are many times more likely to end up with long-term handicapping conditions [3].

Majority of mothers who are depressed postnatally also showed significant psychological morbidity in the antenatal period. It is plausible that the adverse impact of maternal depression on infant growth may begin during the antenatal period, leading to LBW [4]. With these, a study was conducted to find the clinical outcome of LBW babies with their mothers.

## Methods

It was a hospital based descriptive study conducted in the department of pediatrics, KMC, Hanumakonda. Study was conducted from November 2019 to October 2021. Study protocol was approved by the institutional ethics committee. An informed written consent was taken from the parents of all the children. LBW children born in the institutional hospital were included in this research. LBW babies who were critically ill and parents who have not given consent were included in the research.

The children mothers were explained about the study. Written informed consent was obtained from the parents prior to their enrolment in the study. Socio demographic data of parents, birth details of the baby and health parameters of the baby were collected as per the predesigned case record form. Mothers who gave consent to participate in the study were asked to mark their answers as required on the questionnaire being provided to them.

All mothers were interviewed on day 14 of post-natal life of their baby. They were told to ask if they had any doubt in any of the question or if they failed to understand anything in the questionnaire. All attempts were made to answer a participant's doubt. If parental bonding questionnaire (PBQ) diagnosed any bonding disorder in the mother, she was referred to psychiatry department for the treatment and counselling. Mild disorder, mothers experience delays in the onset, ambivalence, or loss of the maternal emotional response to the infant. For this, Brockington *et al* [5]. criteria was considered.

### Statistical analysis

Data was analysed using SPSS version 21. Comparison of mean of scores were analyzed using unpaired t test and ANOVA. Level of significance was considered to be 0.05.

## Results

Out of the 305 babies in this research, 152 (49.8%) were male and 153 (50.2%) were female. P value is 0.96. Study included 5 babies (1.6%) under 1000gms, 42(13.8%) babies between 1000- 1499,137(44.9%) babies between 1500-1999and 121(39.7%) babies between 2000- 2499 grams. 258 babies (84.6%) weighed from 1500- 2499 grams group (Table 1) and mean birth weight was 1833± 405. Majority (270; 88.5%) were lower middle class and the rest were upper middle category.

**Table 1: Number of baby's according to the birth weight**

| Birth weight | Number | % |
|---|---|---|
| 1000 | 5 | 1.6 |
| 1000- 1499 | 42 | 13.8 |
| 1500-1999 | 137 | 44.9 |
| 2000- 2499 | 121 | 39.7 |
| Total | 305 | 100 |

**Table 2: Number of baby's according to the gestational age**

| Gestational age | Number | % |
|---|---|---|
| 25 – 28 | 7 | 2.3 |
| 29 – 32 | 52 | 17 |
| 33 - 36 | 155 | 50.8 |
| Total | 305 | 100 |

Family wise, 71.8% were belong to nuclear family, followed by joint (27.5%) and extended (0.7%) family. Most (191; 62.6%) of the new born's were gravida 1 and just 1.3% (5) were gravida 5. Study included 85.6% mothers had no previous abortions and 14.4%mothers had previous abortion history.

Gestational ages as follows. 7 babies (2.3%) were between 25-28 weeks of gestational age, 52 babies (17%) were between 29-32 weeks of gestational age, 155 babies (50.8%) were between 32-36 weeks of gestational age and 91 babies (29.8%) were above 37 weeks of gestational age. Study included 96.1% mothers had no previous illness; 8 has thyroid issues followed by pre-eclampsia (2). No indication of steroids for 91 mothers.30 mothers had taken 2 doses of steroid, 151 mothers had taken 1 dose of steroid and 33 mothers had not taken any steroid antenatally. Nearly half of the babies 152 (49.9%) were receiving only breast feeds and Kangaroo mother care was given to 165 (54.1%).

## Discussion

This study was done in 305 mothers with LBW babies admitted in this tertiary health care unit. The PBQ validation studies proposed that a threshold ≥ 26 should be used to identify a bonding disorder, with a threshold of ≥ 40 for severe disturbance of the bond [13]. In this study 86.2% mothers scored less than 26 which indicates that there is no mother-infant bonding disorder in most of the mothers. 11.1% of mothers showed score 26 – 40; this indicates some amount of bonding disturbance is present. 2.6% mothers scored >40 which indicates severe bonding disorder between mother and the baby. According to the Farre-sander *et al* [6]. the prevalence of MIB disorder is 13.8% which is similar to previous study.

In present study 24.6% of infants were started on breast feeding within 1 hour of birth and these mothers scores on PBQ were low as compared to their peers which indicates that the MIB is better in infants who were given breastfeeding within one hour. Infants not initiated on breastfeeding within one hour are known to have feeding issues and these mothers had poor MIB in our study. These results are similar to the study done by vengadavaran *et al* [7].

This study included 62% primiparous women and 38% multiparous women. PBQ scores significantly correlated with parity of mother with possible reason being the anxiety associated with primiparity due to lack of childbirth experience. Similar association was found in previous study done by Handelzalts *et al* [8].

This study has 14.4% of mothers with previous history of abortion. Total PBQ scores of mothers with previous history of abortion was low as compared to mothers without this; the association was not statistically significant (P=0.479).But these

scores were high compared to that of previous study [9,10].

This study included 1.6% ELBW babies and 1.8 % VLBW babies and remaining babies weighed between 1.5 to 2.5 kg. Anxiety about the infant factor of PBQ showed significant correlation with the birth weight with highest impact showing in babies weighing between 1000-1500 grams. Possible explanation for this might be that the care of the babies between 1000-1500 grams maybe done by mother herself causing her anxiety and fear in comparison to her peer mothers. ELBW babies are exclusively cared in NICU by the physician boosting the mother's confidence regarding her baby. This finding is exactly similar to the previous similar study [11-13].

This study included subjects from 3 major hospitals of Warangal district where patients from 70-80 villages are treated. One of the major drawbacks is that study has only upper and lower middle-class people. Even though the PBQ scoring is statistically significant in relation to socio economic class, possible conclusions cannot be drawn on this parameter due to lack of subjects from other classes of kuppuswamy classification [14].

This study contains 71% of subjects from nuclear family, 27% of subjects from joint family and 2% from extended family. PBQ scoring significantly correlated with type of family with subjects from extended families showing higher scores on PBQ indicating poor MIB [15,16].

As most of the subjects in this study are from middle class, responsibility of a woman increases in an extended family which might be the possible explanation for this. While interviewing mothers with LBW, many of the mothers verbally shared their views regarding this issue.

## Conclusion

This study included 67% premature born babies; 1/3$^{rd}$ were small for gestational age. Only 50% of the mothers offered KMC, 86.2% mothers showed no bonding disorder. Multicentre study's with large sample size for long time is recommended.

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