

ORIGINAL ARTICLE

Psychological Well-being of Mothers with Low Birth Weight (LBW) Infants Using DASS-21 Scales

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ABSTRACT

Introduction: Every pregnant mother want their baby normal and healthy when is born. As a consequence, when their infants were premature and LBW, requiring hospitalization, especially in the NICU or SCN, it turned into a stressful situation that could lead to psychological suffering and emotional breakdown. Currently, research in Malaysia focuses on the prevalence of LBW; however, insufficient research on the psychological well-being of mothers with LBW has been conducted. **Method:** A cross-sectional study design with 130 respondents was selected using convenience sampling at SCN, Hospital Raja Perempuan Zainab 11, Kota Bharu, Kelantan. The DASS-21 scale was used. **Result:** A Chi-Square was performed and a p-value of less than 0.05 was considered statistically significant. For depression, the percentage of mothers reporting symptoms on the DASS-21 scales in the mild group was 18 (13.8 %), moderate at 20 (15.4 %), and severe at 4 (3.1 %), respectively. Anxiety was prominent in the mild group at 11(8.5 %), moderate at 39(30.0%), severe at 14(10.8 %), and extremely severe at 12(9.2 %). Meanwhile, mild stress symptoms were reported by 29 (22.3 %), moderate by 15 (11.5 %), and severe by 6 (4.6 %). The association between maternal age and anxiety ($p=0.036$), maternal age, and stress ($p=0.041$) was shown to be statistically significant. **Conclusion:** The majority of respondents in this study had anxiety rather than depression or stress. The study's information will help healthcare practitioners in developing effective intervention strategies to address the issue of psychological well-being among mothers of LBW infants.

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INTRODUCTION

In developing countries, low birth weight (LBW) is the leading cause of infant mortality. Even though LBW infants are more prone to develop or suffer from impairments, weight is an essential health indicator (1). Infants born with a low birth weight die 40 times more often than those born at a normal weight (2). In underdeveloped nations, LBW and preterm birth are significant considerations in prenatal survival as well as infant illness and death (3). Mothers with premature or LBW infants are more likely to experience emotional distress and depression following the birth of their child, and while these symptoms normally fade with time, some mothers stay dissatisfied (4). These stressors and experiences, particularly among mothers, potentially contribute to Neonatal Intensive Care Unit (NICU) distress (5). As a consequence of their child's early birth

and accompanying neonatal intensive care, parents may endure psychological distress (6). Families of infants hospitalized in a Neonatal intensive care unit (NICU) or Special Care Nursery (SCN) are more distressed than parents of healthy infants. Individuals' health and wellbeing and well-being vary. Guilt and shame, as well as depression and sadness, as well as a sense of failure and disappointment, are common feelings experienced by parents.

A previous study found that when their infant is in the NICU, mothers of premature infants experience increased stress, depression, and anxiety, which is understandable given the stressful nature of the situation (7). As a result, stress and depression among moms of preterm infants are being explored, as they appear to be more severe throughout the child's NICU admission (8). Every expecting mother hopes that their infant would be normal and healthy when he or she is born. The mother must adjust her idealized version of the infant to the reality of the actual baby. However, for the mother of an LBW infant, this adaptation is more challenging because the impact of premature birth is an emotionally

distressing event for most mothers, who are more likely to have anxiety and depression, even when the infant is clinically stable. As a consequence, when infants were premature and have low birth weight, necessitating admission, primarily to the NICU or SCN, it evolved into a difficult experience that could result in psychological suffering or even an emotional breakdown among mothers.

As a result, the goal of this research was to explore the psychological well-being of mothers who had LBW and were admitted to an SCN using Depression Anxiety Stress Scales (DASS) 21.

MATERIALS AND METHODS

A cross-sectional study at SCN in Hospital Raja Perempuan Zainab 11, Kota Bharu, Kelantan, was conducted using a convenience sampling method involving 130 respondents. Inclusion criteria: All mothers admitted to the SCN with an LBW infant [(preterm (< 37 weeks of gestational age) and full-term baby)]; Their babies’ conditions being stable and not in conditions that required intensive care; Mothers who are capable of reading and comprehending Bahasa Melayu and English; Mothers who are unfamiliar with SCN. Criteria for exclusion: Mothers who have a BBA (Birth before Arrival) baby; Mothers who have a normal baby; Mothers who have a large for gestational age (LGA) baby: that weighs more than 4000 grams; Mothers who do not agree to join.

The questionnaire is divided into three sections: Part A: Mother’s demographic factors include maternal age, ethnicity, education level, and mothers’, as well as fathers’ occupations, family income, and family size, which are socio-demographic variables. Part B: Infant demographic characteristics factors, gender, weight, head circumference (COH), length, and type of birth. Part C: Depression Anxiety Stress Scales (DASS) 21 scales adapted from Lovibond & Lovibond (9).

The DASS-21 scales, a self-report questionnaire for assessing negative psychological states such as depression, anxiety, and stress were used. The DASS-21 scales are a concise summary of Lovibond’s 42-item self-report, which assesses the negative emotional states of depression, anxiety, and stress (9). Almost all of the 21 items in this questionnaire are totally separate, as none of them address any particular culture or religion. The DASS’s 21-item form was integrated into the questionnaire to evaluate the severity of anxiety and depression symptoms. Mothers were required to rate how frequently they had had each symptom in the previous week using a four-point severity or frequency score ranging from “don’t ever” to “the majority of the time”. Each item consists of four possible responses with severity ratings ranging from 0 to 3. The frequency, mode, mean, standard deviation, and Chi-square test

statistics were obtained. Data with a p-value less than 0.05 were considered statistically significant.

DASS 21 scales (Table I)

- 1) For questions 3, 5, 10, 13, 16, 17, and 21, add the marked numbers, then calculate by 2, and add the result in this: Depression
- 2) For questions 2, 4, 7, 9, 15, 19, and 20, add the marked numbers, then calculate by 2, and add the result in this: Anxiety
- 3) For questions 1, 6, 8, 11, 12, 14, and 18, add the marked numbers, then calculate by 2, and add the result in this: Stress

Table I: DASS-21 scales

Rating	Depression #1	Anxiety #2	Stress #3
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	37+

Reliability of DASS-21

The original set of Depression, Anxiety, and Stress Scale, which is in English, is developed by Lovibond & Lovibond (9). Eventually, the Malay version of it was developed by Ramli (10) with permission obtained. DASS-21 scale was shown to be a reliable and valid measurement when assessing psychometric properties for undergraduate students in Malaysia with Cronbach’s alpha values of 0.91, 0.85, and 0.86 for depression, anxiety, and stress subscale respectively, and the overall Cronbach’s alpha value was 0.93 (11)

Ethical Clearance

The UiTM Research Ethics Committee, Faculty of Health Sciences, No. 600-FSK (PT.5/2) approved by the research ethics. Before this research endeavor may begin, the director of Hospital Raja Perempuan Zainab 11, Kota Bharu, Kelantan, was issued an authorization letter. The researchers explained the study’s aims and process to the participants. The researchers also notified the respondents that their replies would be kept private and used exclusively for academic purposes. The written informed permission of all participants was being sought.

RESULTS

Socio-demographic characteristics of the mothers

The overall number of participants in this study was 130, with a response rate of 100 %. Most of the participants in this study (n=129, or 99.2 %) were Malay. The respondents belonged to the age group between the ages of 16 to 45, with a mean (SD) of 29.03 (6.48 %). Most of those who participated (62.0 %) were between the ages of 20 and 29. (47.70 %). A total of 108 (83.1%) of those surveyed had obtained their secondary education (PMR, SPM, STPM). The

majority of respondents were housewives, with 91 (70.0 %) working as professionals, and 39 (30 %) working as non-professionals. The employment of the father was either categorized as professional or non-professional. The non-professional category accounted for 100 (76.9 %) of father occupations, while the professional group accounted for 30 (23.1 %). The majority of participants 66(50.8 %) have a family income of less than RM1000. The average number of dependents was 4.15 ±1.34. The majority of responders had 3-5 dependents, reaching 113 (86.9 %).

Infants’ birth characteristics

The majority of respondents, 90 (69.2 %), delivered their infants by vaginal birth, while 40 (30.8 %) delivered through cesarean section. There were 74 males and 56 females among the infants. The distribution of LBW newborns noticed over the period was as follows: LBW was 93 (71.5 %), VLBW was 29 (22.3%), and ELBW was 8 (6.2 %). The majority of infants were born prematurely 76(58.5%), followed by full-term infants 49(37.7%), and post-date infants were 5(3.8 %). The overall mean low birth weight was 1849.38±523.32 grams, with a minimum of 800 grams and a maximum of 2480 grams.

The prevalence of depression, anxiety, and stress

Table II shows that 18 (13.8 %) of mothers had mild depression symptoms on the DASS-21 scales, 20 (15.4 %) indicated moderate depression symptoms, and 4(3.1 %) reported severe depression symptoms. For anxiety, the percentage of mothers reporting symptoms on the

Table II: Prevalence of depression, anxiety and stress by using DASS-21 scales (n=130)

Rating	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	88(67.7)	54(41.5)	80(61.5)
Mild	18(13.8)	11(8.5)	29(22.3)
Moderate	20(15.4)	39(30.0)	15(11.5)
Severe	4(3.1)	14(10.8)	6(4.6)
Extremely severe	-	12(9.2)	-

DASS-21 scales in the ‘mild’ category was 11(8.5 %), ‘moderate’ was 39(30.0 %), and ‘severe’ was 14(10.8 %), and extremely severe was 12. (9.2 %). Meanwhile, the prevalence of stress among mothers reporting symptoms on the DASS-21 scales in the ‘mild’ category was 29 (22.3%), ‘moderate’ was 15 (11.5 %), and ‘severe’ was 6. (4.6 %).

The association between sociodemographic factors with mothers’ psychological well-being (Depression)

Table III shows the association between sociodemographic factors and mothers’ psychological well-being (depression) as measured by the DASS 21 scales. The Chi-Square test has been used, and a p-value of 0.05 was considered statistically significant. The distribution of depression by mother’s age revealed that there was no significant association between maternal age and depression ($\chi^2 =10.37, p=0.321$). In another sense, the age of the mother did not affect the depression. There was no strong association between

Table III: Association between socio- demographic factors and psychological well-being of mothers (Depression) n=130

Variable	Depression					χ (df)	p- value
	Normal n(%)	Mild n(%)	Moderate n(%)	Severe n(%)	Extremely severe n(%)		
Maternal age (years)						10.373 (9)	0.321
<19	5 (55.6)	3 (33.3)	1 (11.1)	-	-		
20-29	38 (61.3)	11 (17.7)	11 (17.7)	2 (3.2)	-		
30-39	39 (79.6)	3 (6.1)	5 (10.2)	2 (4.1)	-		
>40	6 (60.0)	1 (10.0)	3 (30.0)	-	-		
Maternal education						9.275 (6)	0.159
Primary	2 (50.0)	1 (25.0)	-	1 (25.0)	-		
Secondary	72 (66.7)	16 (14.8)	17 (15.7)	3 (2.8)	-		
Tertiary	14 (77.8)	1 (5.5)	3 (16.7)	-	-		
Occupation (Mother)						2.370 (6)	0.883
Housewives	61 (67.0)	13 (14.3)	13 (14.3)	4 (4.4)	-		
Professional	18 (66.7)	4 (14.8)	5 (18.5)	-	-		
Non Professional	9 (75.0)	1 (8.3)	2 (16.7)	-	-		
Estimation of family income						5.362 (9)	0.802
<RM1000	43 (65.2)	10 (15.2)	10 (15.2)	3 (4.5)	-		
RM1000-RM1999	22 (64.7)	4 (11.8)	7 (20.6)	1 (2.9)	-		
RM 2000-RM2999	9 (64.3)	3 (21.4)	2 (14.3)	-	-		
>RM3000	14 (87.4)	1 (6.3)	1 (6.3)	-	-		

*Significant P<0.05

maternal education and depression ($\chi^2=9.27, p=0.159$). Meanwhile, the impact of maternal occupation on depression was shown to be non-significant ($\chi^2= 2.37, p=0.883$). Furthermore, there was no statistically significant association between income level groups and depression.

The association between sociodemographic factors with mothers' psychological well-being (Anxiety)

Table IV depicts the link between sociodemographic characteristics and mothers' psychological well-being (anxiety) using DASS 21 scales. The distribution of anxiety among mothers based on their age revealed a statistically significant association between maternal age and anxiety ($\chi^2=22.10, p =0.036$). The findings revealed no link between maternal education and anxiety ($\chi^2=8.36, p= 0.398$). There was no significant association between mothers' occupations and anxiety ($\chi^2=9.16, p= 0.329$). The professions of mothers had no

significant association with anxiety ($\chi^2=9.16, p= 0.329$). There was no significant difference in anxiety levels between the four income levels ($\chi^2=12.12, p=0.436$).

The association between sociodemographic factors with mothers' psychological well-being (Stress)

Table V demonstrates the association between sociodemographic factors and mothers' psychological well-being (stress) by using DASS 21 scale. The distribution of stress among mothers based on their age revealed a statistically significant association between maternal age and stress ($\chi^2=17.50, p=0.041$). There was no significant association between maternal education and stress ($\chi^2=7.18, p=0.304$). The findings revealed that there was no significant association between mothers' occupations and stress ($\chi^2=6.76, p=0.343$). The findings revealed that there was no significant association between four income level groups and stress ($\chi^2=8.84, p=0.452$).

Table IV: Association between socio-demographic factors and psychological well-being of mothers (Anxiety) n=130

Variable	Anxiety					χ (df)	p-value
	Normal n(%)	Mild n(%)	Mod-erate n(%)	Severe n(%)	Ex-tremely severe n(%)		
Maternal age (years)						22.106 (12)	0.036*
<19	1 (11.1)	2 (22.2)	6 (66.7)	-	-		
20-29	27 (43.5)	4 (6.5)	13 (21.0)	11 (17.7)	7 (11.3)		
30-39	24 (49.0)	3 (6.1)	15 (30.6)	3 (6.1)	4 (8.2)		
>40	2 (20.0)	2 (20.0)	5 (50.0)	-	1 (10)		
Maternal education						8.367 (8)	0.398
Primary	1 (25.0)	1 (25.0)	1 (25.0)	-	1 (25.0)		
Secondary	42 (38.9)	10 (9.3)	33 (30.6)	12 (11.1)	11 (10.2)		
Tertiary	11 (61.1)	-	5 (27.8)	2 (11.1)	-		
Occupation (Mother)						9.162 (8)	0.329
House-wives	32 (35.2)	11 (12.1)	29 (31.9)	10 (11.0)	9 (9.9)		
Profes-sional	14 (51.9)	-	8 (29.6)	3 (11.1)	2 (7.4)		
Non Profes-sional	8 (66.7)	-	2 (16.7)	1 (8.3)	1 (8.3)		
Estimation of family income						12.123 (12)	0.436
<RM1000	23 (34.8)	7 (10.6)	21 (31.8)	7 (10.6)	8 (12.1)		
RM1000- RM1999	14 (41.2)	3 (8.8)	10 (29.4)	6 (17.6)	1 (2.9)		
RM 2000- RM2999	6 (42.9)	1 (7.1)	5 (35.7)	-	2 (14.3)		
>RM3000	11 (68.8)	-	3 (18.8)	1 (6.3)	1 (6.3)		

*Significant P<0.05

Table V: Association between socio-demographic factors and psychological well-being of mothers (Stress) n=130

Variable	Stress					χ (df)	p-value
	Normal n(%)	Mild n(%)	Mod-erate n(%)	Severe n(%)	Ex-tremely severe n(%)		
Maternal age (years)						n(%)	0.041*
<19	4 (44.4)	1 (11.1)	2 (22.2)	2 (22.2)	-		
20-29	33 (53.2)	18 (29.0)	8 (12.9)	3 (4.8)	-		
30-39	37 (75.5)	6 (12.2)	5 (10.2)	1 (2.0)	-		
>40	6 (60.0)	4 (40.0)	-	-	-		
Maternal education						7.186 (6)	0.304
Primary	2 (50.0)	-	1 (25.0)	1 (25.0)	-		
Secondary	65 (60.2)	27 (25.0)	12 (11.1)	4 (3.7)	-		
Tertiary	13 (72.2)	2 (11.1)	2 (11.1)	1 (5.6)	-		
Occupation (Mother)						6.767 (6)	0.343
Housewives	51 (56.0)	24 (26.4)	10 (11.0)	6 (6.6)	-		
Professional	20 (74.1)	4 (14.8)	3 (11.1)	-	-		
Non Profes-sional	9 (75.0)	1 (8.3)	2 (16.7)	-	-		
Estimation of family income						8.840 (9)	0.452
<RM1000	39 (59.1)	14 (21.2)	9 (13.6)	4 (6.1)	-		
RM1000- RM1999	19 (55.9)	10 (29.4)	3 (8.8)	2 (5.9)	-		
RM 2000- RM2999	8 (57.1)	3 (21.4)	3 (21.4)	-	-		
>RM3000	14 (87.5)	2 (12.5)	-	-	-		

*Significant P<0.05

DISCUSSION

The association between maternal age and depression, anxiety, and stress of mothers

Numerous studies have discovered an increase in birth weight as the mother's age increases. Age and the health of the mother were both significant factors in birth outcomes (12). Another study revealed that teen moms had a 35 percent greater risk of low birth weight neonates than women aged twenty to twenty-nine (9.6% versus 7.1%) (13). The incidence was larger than 14.1 percent among the youngest teens, those aged fifteen to fourteen, than in any other age group except forty-five to fifty-four. Adolescent moms under the age of 20 were 1.5 times more likely to have an LBW infant (14). The study's findings revealed that as LBW decreased, the mother's age increased considerably ($p < 0.005$).

There was no evidence of an association between maternal age and depression in this research using the DASS 21 scales. Regardless, there was a statistically significant association between maternal age and anxiety and stress. These findings paralleled findings of another study, which found that mothers aged 30 and under were more depressed than mothers aged 31 and above (15). Maternal age, on the other hand, did not affect the duration of depression symptoms. The mother's social class, education, race, age, or parity, on the other side, were not found to be correlated to postnatal depression symptoms (16).

The association between maternal education and depression, anxiety, and stress of mothers

LBW is linked with numerous significant developmental, educational, and socioeconomic effects later in life (17). In this study, there was no significant association between mothers' education and depression, anxiety, or stress. Both inherited and environmental factors are likely to influence maternal education. Apart from this issue, it is vital to maintain this variable under control when examining the effects of other genetic or environmental factors. In infants, children, and adolescents, maternal depression (antepartum or postpartum) has been linked to unfavorable health-related behaviors and negative consequences, including psychological and developmental abnormalities (18). Lower age, on the other hand, has been identified as a risk factor for depression, whilst a mother's education has been identified as a significant predictor (19).

Socio-cultural characteristics such as maternal education, severe manual labor, and geography all had a substantial impact on birth weight (20). With a correlation coefficient between income and mothers' education, there was a significant association between mother's educational level and birth weight, as well as a trend of increased birth weight with education (21). Study found that the maternal education level was found to be one of the most significant predictors of an

LBW baby.

LBW has also been correlated to maternal education in various studies. As the mother's educational level grows, the likelihood of having an LBW infant reduces, rendering maternal education a protective factor for LBW infants (22, 23, 24, 25). That might be because educated mothers were more aware of the importance of prenatal care and other considerations throughout the childbearing phase, which influenced the bodyweight of a newborn. Education, in addition to wealth, may have independent impacts since better-educated mothers may know more about contraception and safe pregnant behaviors (24, 25).

The association between family income and depression, anxiety, and stress of mothers

Social and economic aspects are even more difficult to determine. Although when important biological risk factors are considered, women in distress are more likely than wealthy women to have LBW and/or preterm infants. The majority of researchers are baffled as to why low socioeconomic level raises the incidence of LBW. Following the birth of an LBW infant, mothers are more likely to experience psychological distress during the perinatal stage, and the risk of neonatal death is greater (26). In this study, there was no significant connection between family income and depression, anxiety, or stress. Conversely, another study discovered that moms from lower-income households reported having more confidence in their abilities than mothers from higher-income families (27).

When an infant, especially a premature infant, was admitted to the hospital, the usual parenting routine and mental strength for parenthood were disrupted (28). Both of these pathways were disrupted by socioeconomic deprivation, which was linked to preterm birth and babies who were not born prematurely but were born underdeveloped (29). In developed countries, an initial thorough evaluation of the effect of economic inequality and macro-level social policies on infant mortality and LBW was recently published (30). Lower socioeconomic status has been associated in earlier research with an increased risk of unfavorable pregnancy outcomes such as prenatal death, early birth, and LBW (31).

A similar study in a preterm population found no correlation between maternal depression and poor socioeconomic status or maternal education (5). Low birth weight was due to a lack of socioeconomic status. Low birth weight can be prevented when pregnant mothers' socioeconomic status and health are enhanced. Indicators of socioeconomic status have been used as indicators for poverty risk. Previously, someone's socioeconomic status was established by their occupation, but it can also be determined by their income or educational achievement (32). A high incidence of LBW infants was associated with poor

maternal reproductive health, women's nutritional status, inappropriate pregnancy practices, and pregnant women's low socioeconomic position.

The association between mother's occupations and depression, anxiety, and stress of mothers

Mothers of low socioeconomic status, as measured by income, occupation, or education, are much more likely to give birth to infants with low birth weight. According to the findings of this study, there was no relationship between the employment of a mother and depression, anxiety, or stress. Low professional positions were linked to an increased incidence of depression (33). The profession played a vital impact in birth weight determination, with newborns from the "cultivators" family having the lowest birth weight (2670 grams) and infants from the provider holder family having the greatest birth weight (2844 grams) (21).

CONCLUSION

Based on the results of this study, psychological preventive interventions to encourage mothers to meet with them in a safe atmosphere should be created, where they are able to express feelings. Improving pregnancy outcomes earlier, during, and after pregnancy is crucial to reducing infant mortality and morbidity health, and financial consequences. It would be easier for nurses to help mothers if they understood how mothers would react in this situation. Furthermore, in this study, researchers observed there was a statistically significant association between maternal age and anxiety and stress. As a nurse should have been able to critically think to determine which psychosocial factors affect maternal health behavior and develop intervention programs to encourage a healthy lifestyle. As a result, the findings of this study have the capability to increase awareness about early diagnosis of Postpartum Depression (PPD) among postpartum mothers, hence reducing the harmful impact on women.

As a recommendation, health promotion programs focused on improving infant health must improve the health of women. Initiatives must focus on long-term socio-economic issues such as policy or legislative reforms to promote the health of both mothers and infants. Preventive health care services, family-friendly worksite options, changes in social norms, and individual behavior change should all be highlighted in these efforts. The establishment of psychosocial intervention programs in the neonatal unit to enable mothers to communicate their feelings and anxiety. The nurses might use this method to determine the mother's psychological status and recommend her to a counselor for emotional support. The most essential solution is to implement preventative measures that will aid in the long-term sustainability of health promotion activities aimed at improving the health of infants. It should be done prenatal as a preventive intervention to reduce the

incidence and fatality of preterm and low-birth-weight infants. Social support, which promotes good feelings and emotions, is one of the most crucial components of well-being. During this stage, social support is extremely vital in preventing depression and anxiety(34).

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