Stress of Mothers with Premature Baby in Neonate Intensive Care Unit Pediatric Teaching Hospitals in Baghdad City

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Abstract

Background: Premature baby birth is a stressful experience for families, especially the mothers, premature babies at larger risk for brain disorders, developmental delays. **Objectives:** to assess levels of stress and of mothers with premature baby, to find out the relationship between socio-demographic characteristics and levels of stress. **Methodology:** A descriptive cross sectional study included 100 mothers with premature baby that admitted in NICU in the pediatric teaching hospitals of Baghdad city, Iraq **Results**:. The majority of mothers has moderate level of total stress, the highest level related to baby looks and behaves subscale, There is negative association between level of stress in mothers with regard babies' gestational age, and positive association with length of respiratory support, and mechanical ventilation. **Conclusion:** mothers of premature babies in NICU are under significant stress. **Recommendation:** Future researches with a psycho-social interventional program and appropriate counseling towards specific stressors and coping ways is need.

Keyword: stress, Neonate Intensive Care Unit, Pediatric, Premature Baby

Introduction

The birth and hospitalization of a premature baby is a stressful event for both parents, research has verified the occurrence of emotional distress in parents, mainly in mothers related to preterm birth including sleep disruption, anxiety, and depression (Holditch-Davis et al., 2003). Latva et al. 2008 found women express bad opinions of per partum experience after the premature birth for 5 to 6 years, else, women with good experience show effective bonding with the baby. Many studies showed that mothers with premature baby in NICU suffered from stress, depression, and anxiety, a study conducted in Italy showed a high level of depression and anxiety in the mothers (Trumello et al., 2018). A study conducted in

India showed that stress levels among mothers of premature babies higher than mothers of full-term babies (Chourasia et al.,2013).

The preterm baby birth can put a family under a lot of stress, particularly if the baby is seriously ill (Henderson et al., 2016). The birth of a not seriously ill preterm baby has also been shown to be traumatic, causing emotional distress, dissatisfaction, alienation, anger, and worries about survival and long-term outcomes (Mackley et al., 2010).

Premature delivery causes a woman to be physically and emotionally separated from her baby, many researches indicate that the intense stressors induced by this separation directly cause trauma , furthermore, mothers with premature babies experience feelings of grief and depression, loss of self-esteem, mourning periods, and worry about their baby's survival and growth, These emotions build a barrier, making it difficult for the mother to form a healthy emotional connection with her baby (Jotzo & Poets, 2005). The effect of the premature delivery may be exacerbated by woman own personal weakness and even genetic predisposition to develop depression, her emotional symptoms can range from anxiety, insecurity, withdrawal, emotional distress, restlessness, and harm avoidance (Ravn et al , 2012).

Mother and father may be unable to adjust to their new situation in the days following their baby's birth and hospitalization (Franck et al., 2005).   Like most traumatized families, often ask the nurses the same questions repeatedly, unable to understand the answers, they are often suffered with the common NICU uncertainties, as the baby's physical state can change through one hour to another (Coppola et al., 2010).

In general the Intensive Care Units (ICUs) are not open to public, it should come as usual to the staff, the NICU noisy, busy, and high-stress environment (Nöcker-Ribaupierre, 2013). Despite increased efforts over the last decade to minimize noise levels in the NICU (for example, by using light alarms instead of acoustic alarms) and to make the atmosphere more private for the caregivers, there are still many NICUs where noise and lack of privacy pose significant problems to babies, caregivers, and health workers, While a few large NICU units have private rooms for the nurses and parents, this is not typical in many hospitals, and also some units may have the additional discomfort of having multiple incubators close together (Altuncu et al. ,2009).

Methodology

Design of the Study:

A descriptive (cross sectional) design was used in the present study, the study was carried out through the period of 1 st October 2020 to 1st March, 2021.

Ethical Issues:

Ethical approval was obtained from the ethical committee of research in the College of Nursing \ University of Baghdad regarding confidentiality and anonymity of the participants. Also the participants were fully acquainted with the study and its objectives then a voluntary verbal agreement was obtained from them.

Setting of the Study:

The study was performed in the Neonatal Intensive Care Units of the targeted hospitals in Baghdad city, Iraq (including Child Protection Teaching Hospital, Al Alwaiya Children Teaching Hospital, and Central Pediatric Teaching Hospital).

The Study Sample and sampling:

A Purposive method for selecting the sample. The sample consists of (100) mother of premature baby, who were admitted in the Neonatal Intensive Care Units of pediatric teaching hospitals in Baghdad City.

The Study Instruments:

The questionnaire consists of two parts :the first part focuses on the mother and the baby general information. The second part focuses on mother stress in the NICU by using parental stressors scale - NICU (Miles, Funk, & Carlson, 1993; Wereszczak et al., 1997).

Data Collection Methods:

It was started after obtaining the permission from the hospitals authorities. The questionnaire has been administered personally by mothers in the hospitals after explained the study and the objectives to the participants to ensure obtaining proper answers.

Statistical Data Analyses:

The data were analyzed through using the Statistical Package for Social Science Program (IBM SPSS) version 24.0.

1.Descriptive Statistical Data Analysis:

1.The description of demographic features is calculated using frequencies and percentages.

2.The means and standard deviation used for range score determination.

2.Inferential Statistical Data Analysis:

1.Pearson correlation coefficient used for the study instrument reliability testing.

2.Alpha Cronbach's test used to assess the study instrument reliability.

Results and discussion

1. Discussion of Socio-demographic Characteristics of Mothers: (Table-1)

Regarding the age of the mothers, 48% of mothers are with age group of 25-34 years old; their average age is 27 ± 6. This findings is approached to the results of study by Ango A.(2016) for examining the psychological distress and coping styles in mothers with preterm infants in the NICU, were 54,0 % of the mothers between (26_33) years old. Regarding the mothers residence, most of them are resident in an urban area with high percentage (98%). The finding is inconsistent with study of Al-Assadi, Al- Haroon, Al-Rubaye & Abdul-Rahman, (2018) for identifying risk factors and neonatal outcome among preterm birth at Basra central hospitals, were (62%) of the mothers living in rural area also the Centers For Disease Control And Prevention(CDC, 2013)
reported that highest PTB rates in the US non-core rural areas.

Regarding the socioeconomic status, more of mothers are associated with low socioeconomic level (70%). This finding is consistent with the study of Al-Assadi, Al-Haroon, Al-Rubaye & Abdul-Rahman, (2018) to identify risk factors and neonatal outcome among preterm birth at Basra central hospitals, who reported that the majority of the mothers were of low socio-economic status. in addition to poor regions residence and premature baby born and mortality. Many researches display the association between the premature birth and parents' racial and socioeconomic status, low socioeconomic level associated with malnutrition, low blood hemoglobin, maternal illness, and other difficulties that disturb the mothers and babies well-being.

Regarding the occupational status of the mothers, 79% of mothers are housewives and (21%) are employee. This finding is lesser than the study of Al-Assadi, Al- Haroon, Al-Rubaye & Abdul-Rahman, (2018), to identify risk factors and neonatal outcome among

preterm birth at Basra central hospitals, were the largest percentage of mothers who developed PTB were housewives (89%) and 11% of them workers.

Regarding the educational level of mothers, the highest percentage among mothers is referring to intermediate school (23%). This findings is inconsistent with Trumello et al. (2018) study for identifying differences in psychological functioning and mental representations of the baby and themselves among mothers of moderate and very preterm infants, were the highest percentage among mothers level of education related to high school (54.6%) while Middle school (13.6%)

2. Discussion of Socio-demographic Characteristics of the Premature Babies and Medical characteristics:(Table-2)

The male children are more than female (59% males and 41% females). This finding is consistent with the findings of Amsri, Deoisres, & Suppaseemanont (2019) study for examining level of stress among mothers with preterm infants, who reported that the most of the preterm infants were males (51.11%), and Wormald et al. (2015) study for determination of stress in parents of very low birth weight and preterm infants, who reported that the male babies are more than females. Regarding the birth order in the study, the highest percentage of premature babies are firstborn (39%).

Regarding the child medical diagnosis, the highest percentage 41% of premature babies are admitted to Neonate Intensive Care Unit with medical diagnosis of Respiratory Distress Syndrome (RDS). This findings is similar to Dudek-Shriber (2004) study for exploring parent stress in the NICU and the impact of parent and infant characteristics, in which the highest percentage 40.7% of premature infants are with respiratory disorders .

Regarding the birth weight of premature baby. 62% of them are weighing less than 1500 gram. This finding is approached to Çekin and Turan (2018) study for evaluation stress levels among parents with premature infants in the NICU, were 66.3% of the premature infants' birth weight less than 1500 gram.

Regarding the currently mechanical ventilation of premature, the study found that 49% of premature babies are connected to mechanical ventilation, while remaining is not. This finding is approached to the finding of Palma et al.(2014) study for determination the stress level of parents of newborns admitted to a NICU, in which (46%) of premature babies on mechanical ventilation.

Regarding to duration of hospitalization, 36% of babies are hospitalized for 7-12 days and 33% are hospitalized for 1-6 days. This finding lesser than Çekin and Turan (2018) study for evaluation stress levels among parents with premature infants in the NICU, were in related to hospitalization days 53.5% of the premature infants hospitalized in the NICU for 8 to 10 days and 46.5% for 5 to 7 days.

3. Overall Assessment of Stress among Mothers with Premature Baby:(Table-3)

Regarding the overall stress among mothers with premature babies, the highest percentages (60%) of them are experiencing moderate level of stress. The results is consistent with Woodward et al. (2014) study which aimed to examine causes, consequences of stress in NICU among mothers of very premature babies, were the most premature babies mothers with moderate level of stress.

Many of mothers try to control stress and increase their coping ability to avoid the negative impact on their health, which affects the health of their babies and care providing during the period of hospitalization, also the gap in this scale that it does not cover or take into account the stress resulting from the postpartum and the issues outside the NICU that cause additional stress on the mothers.

This table shows the mean and standard deviation for stress scale and its sub-domain.

4. Assessment of Parental Stress Scale and Sub-domains among Mothers:(Table-4)

The overall stress refers to 2.977 ±0.774. According to the results of the parental stress scale and sub-domains, the finding revealed that the mean subscale stress score was the highest for "Baby looks and behavior" (3.22). The finding is consistent with Ango A. (2016) study for examining the psychological distress and coping styles in mothers with preterm infants in the NICU, were "the baby looks and behavior" was the highest subscale (40.61) Regarding the overall stress level in the study the mean for total stress (2.97). this finding is less than the result of Fróes, Mendes, Pedroza, and Cunha (2020) studying stress of mothers of premature babies in NICU, were overall stress level among mothers of premature babies in the NICU was (3.62)

5. Correlation between Mothers' Stress and their Socio-demographic Characteristics:(Table-5)

Regarding the mother age the study finds that there is no significant relationship between levels of stress with regard to mother's age. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, were mothers age were not associated with increased stress.

Regarding the mother residency the study finds that there is no significant relationship between levels of stress with regard to mothers' residency. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, were mothers residency were not associated with increased stress.

The vast majority of mothers who live in urban areas, it is possible for this reason that a link between stress and the residency of the mother has not been evident.

Regarding the mother's socioeconomic status the study finds that there is no significant relationship between levels of stress with regard to socioeconomic status. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, were mother's socioeconomic status were not associated with increased stress. And inconsistent with Carter et al. (2007), study for comparing stress causes among parents during their infants' hospitalization in the NICU, were mothers of high stress with low income.

It is possible that there is no correlation between stress and the socioeconomic status as a result of the fact that most mothers are of one class, who is the low, and also the scale does not address the socioeconomic status of the mother.

Regarding the mother's occupation, the study finds that there is no significant relationship between levels of stress with regard to mother's occupation. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, were mother's occupation were not associated with increased stress.

It's possible due to the mothers during the hospitalization period do not care about anything else other than the health of their babies, also the vast majority of the mothers who housewives, and the scale does not address the occupation of the mothers.

Regarding the mother's education status the study finds that there is no significant relationship between levels of stress with regard to mother's education. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, were mother's education status were not associated with increased stress and a study of Ango A. (2016), for examining the psychological distress and coping styles in mothers with preterm infants in the NICU, were the finding show there was no relationship between mother's education, and their psychological distress.

Even if the mother is educated, she may not have sufficient information about how to deal with the period of hospitalization, for this reason there is no correlation between the educational level of the mother and the stress.

6. Correlation between Mothers' Stress and Socio-demographic Characteristics and Medical History of Premature Baby :(Table-5)

The study find there is no significant relationship between levels of stress with premature babies' gender. This may due to gender of the baby is not a source of stress to the mother, but the baby health condition appearance and the NICU environment act as stressors for the mothers.

The finding show that mothers with lower gestational age babies show higher stress level. This finding is consistent with Alkozei, McMahon, and Lahav (2014) study for examining the mother and infant sources that increased the stress during the hospitalization in the NICU, the infant age were not associated with increased stress.

Babies of lower gestational age have weak and flabby look, appear smaller than babies, and are more vulnerable to health and survival risks so that increase their mothers' stress.

Conclusions

The majority of mothers have moderate level of total stress, and all mothers have stress at different levels, and the highest level related to baby looks and behaves subscale. There is no association between level of stress in mothers with regard to premature babies' gender, birth order, medical diagnosis, child's birth weight, and duration of hospitalization. But there is association between level of stress in mothers with regard to premature babies' gestational age, length of respiratory support, and mechanical ventilation. There is no association between level of stress in mothers with mother's age, socioeconomic status, mother's occupation, education, and residency.

Recommendations:

Hospital staff should be educated and trained about how to psychologically support mothers in the NICU with activating the role of hospital social worker. Future research should recommend a psycho-social interventional program to reduce the stress in the mothers who have babies with prematurity and interventional programs to provide the information about coping strategies to help the mother deal with the problems.

Table (1): Distribution of the Sample According to Socio-demographic Characteristics of Mothers

Variables		F	%
Mother's age M±SD= 27±6	15 – 24 years	37	37
	25 – 34 years	48	48
	35 – 44 years	15	15
Residency	Urban	92	92
	Rural	8	8
Socioeconomic status*	Low (0-59)	70	70
	Middle (60-79)	29	29
	High (80-100)	1	1
Mother's occupation	Housewives	79	79
	Employed	21	21
Mother's education	Illiterate	5	5
	Read and write	8	8
	Primary school	21	21
	Intermediate school	23	23
	Secondary school	18	18
	High education	22	22
	Postgraduate	3	3
	Total	*100*	*100*

f: Frequency, %: Percentage, M: Mean, SD: Standard deviation

Table (2): Distribution of the Premature Babies according to their Medical and Health History Characteristics

Variables		f	%
Gender	Male	59	59
	Female	41	41
Medical diagnosis	Jaundice	12	12
	RDS	41	41
	GIT	5	5
	Sepsis	5	5
	Pneumonia	1	1
	More than diagnosis	34	34
Child's gestational age	24 – 28 weeks	17	17
	29 – 32 weeks	39	39

	33 – 37 weeks	44	44
Child's birth weight	1500 g ≤	38	38
	1500 g >	62	62
Mechanical ventilation	No	51	51
	Yes	49	49
Duration of hospitalization	1 – 6 days	33	33
	7 – 12 days	36	36
	13 – 18 days	17	17
	19 – 24 days	9	9
	25 days ≤	5	5
	Total	*100*	*100*

f: Frequency, %: Percentage

Table (3): Overall Assessment of Stress among Mothers with Premature Baby

Stress	f	%	M	SD
Low	5	5		
Moderate	60	60	2.30	.560
High	35	35		
Total	*100*	*100*		

f: Frequency, %: Percentage, M: Mean, SD: Standard Deviation
Low= 0-73, Moderate= 74-146, High= 147-220

Table (4) Assessment of Parental Stress Scale and Sub-domains among Mothers

Domains of parental stress scale	Mean	Standard Deviation
Sight and sounds	3.07	1.052
Baby looks and behaves	3.22	0.897
Relationship with the baby and parental role	2.867	0.975
Staff behavior and communication	2.69	1.082
Overall Stress Scale	2.977	0.774

Table (5): Correlation between Mothers' Stress, their Socio-demographic Premature Baby Characteristics (N=100)

Characteristics Stress	Pearson Correlation	P-value (2-tailed)	Significance

Mother's age	.030	.765	N.S
Residency	- .085	.398	N.S
Socioeconomic status	- .027	.789	N.S
Mother's occupation	.002	.987	N.S
Mother's education	- .020	.844	N.S

Correlation between Mothers' Stress and Premature Baby Characteristics			
Stress / Characteristics	Pearson Correlation	P-value (2-tailed)	Significance
Medical diagnosis	.108	.283	N.S
Child's gestational age	- 281	.005	**H.S**
Child's birth weight	-.164	.103	N.S
Child's gender	.054	.595	N.S
Length of respiratory support	.262	.008	**S**
Mechanical ventilation	.320	.001	**H.S**
Duration of hospitalization	.042	.678	N.S

H.S: High significant , S: Significant, N.S.: Not significant

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