Assessment of Parents Stressors Regarding their Premature Infants in Neonatal Intensive Care Units (NICUs)

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Abstract

Background Premature infant is an infant born before the end of 37weeks of gestation, regardless of birth weight. parents stressors affect parents and premature infants relationship and development. **Aim:** This study aimed to assess parents' stressors regarding their premature infant in neonatal intensive care units (NICUs). **Design:** A descriptive design was used to achieve the aim of the study. **Sampling:** A purposive sample comprised of 50 parents using the sample size formula. **Setting:** This study was conducted at neonatal intensive care units at Children Hospital affiliated to Ain Shams University Hospitals and NICU at Children Hospital in Al Hamoul General Hospital in Kafr El-Sheikh **Tools:** three tools were used, 1st tool: An interviewing questionnaire format was used to assess parents and premature infants characteristics and assess parents' knowledge regarding prematurity. 2nd tool**:** Hospital stressors Scale which includes physical, psychological, social, and financial stressors, Assess parents' stressors who having premature infants in NICUs. 3rd tool: Parents' Anxiety Scale to assess parents' anxiety level regarding premature infants, **Results:** This study revealed that more than half of the studied parents had satisfactory knowledge regarding premature infants and moderate level of physical stressors, sever level of psychological and social stressors, high level of financial stressors regarding premature infants and more than half of the studied parents had sever level of total anxiety. **Conclusion:** It can be concluded that more than two thirds of studied parents had moderate level of physical stressors and two thirds of them had severe level of psychological stressors. **Recommendation:** Continuous health education program for parents about care of premature infants to reduce their stressors facing them in the Neonatal Intensive Care Units.

Keywords: Premature infants ,Neonatal Intensive Care Units**,** Parents Stressors**,**

Introduction

Prematurity is a term used for all neonates born less than 37 week's of gestational age. Whereas, the rates of preterm birth have been reported to range from 5-7% of live births in some developed countries and are estimated to be substantially higher in developing countries and it consider the direct cause for 24% of neonatal deaths **(Waitzman, et al., 2021).**

The most vulnerable time for premature infants' survival is the first 28 days of life. Premature infants the highest risk of dying in their 1st month of life at an average global rate of 18 deaths per 1000 live births in 2017. "Globally, 2.5 million premature infants died in the 1st month of life in 2017 alone – approximately 7000 neonatal deaths every day – most of which occurred in the 1st week, with about 1 million dying on the 1st day and close to 1 million dying within the next 6 days" **(Fathi et al., 2022).**

Preterm birth is a traumatic event that affects the parents' everyday lives. In most cases premature birth is the unexpected result of medical complications for parents, which makes necessary the immediate interruption of pregnancy, often in emergency situations, in order to avoid serious threats to premature infants and mothers' health **(Yoldaş et al., 2020).**

Preterm infants and parents influence each other. However, preterm birth itself does not cause negative developmental outcomes alone but that the stressful conditions following early delivery moderates the risk for later developmental difficulties. When the baby stays in NICU, parents usually feel powerless and helpless; therefore, they are more stressed and vulnerable to emotional difficulties than parents of full-term babies **(Sansavini & Faldella, 2013; Ionio et al., 2019).**

Parents need information about disease regarding thier premature infants in Neonatal Intensive Care Units when ther is insufficient parents' knowledge increase their stress level, as well as inability to adapt to life pattern. Moreover, parents' stressors cause bodily or mental tension**.** the stressors experienced by parents of infants who are admitted to the Neonatal Intensive Care Units (NICU) immediately following a premature birth. These stressors include loss of parenting role, parent-premature infants' separation, infant appearance and activity, communication barriers and environmental stressor **(Cristóbal-Cañadas et al., 2021).**

The birth of premature infants that needs admission in the Neonatal Intensive Care Unit (NICU) can be very stressful for the parents. Severe stress is experienced by a significant number of parents and can affect parents–premature infants' relationship and development subsequently parents alike, but for parents there are added stressors. The presence or absence of social support and economic challenges and other factors impacts stress for characteristics and parenting responsibilities that influence well-being in general, and parents' mental health in particular **(Arabzadeh et al., 2022).**

Beyond individual characteristics such as age, gender, and physical health, there are factors such as geographical location, socio-economic status, race, and ethnicity that impact the level of stress and threaten the physical and mental health of parents. Other sources of stress for parents of NICU premature infants have been found to be alterations in the parental role and relationship with the premature infants, outcome of the premature infants' health, and ineffective patterns of communication among health-care providers and parents **(Ganguly et al., 2020).**

Aim of the study

The present study aimed to assess parents' stressors regarding their premature infant in neonatal intensive care units (NICUs)

Research questions

This study was conducted to answer the following questions:

1- What are the stressors of parents regarding their premature infant in neonatal intensive care units (NICUs)?

Subjects and methods for this study were portrayed under four main designs as the following:

I. Technical Design
II. Operational Design
III. Administrative Design
IV. Statistical Design.

I-Technical design:

The technical design included research design, setting, subjects and tools of data collection used in this study.

Research design:

A descriptive research design was utilized to achieve the aim of the current study and answer the research question.

Research settings:

This study was conducted in Neonatal Intensive Care Units at Children's Hospital affiliated to Ain Shams University Hospitals and Neonatal Intensive Care Units at Children Hospital in Al Hamoul General Hospital in Kafr El-Sheikh due to the availability of large number of premature infants.

Research Subject:

A Purposive sample was included the premature infant. The sample size was estimated by 50 premature infants .

Inclusion criteria for the study preterm infants.

- Preterm infants regardless of their gender and birth weight.

Tools of the study:

Three tools were used in this study for data collection;

Tool (I): An Interviewing Questionnaire formate:

It was developed by the researcher after reviewing the relevant literatures. It was written in simple Arabic language to suit parents level of education. It was consist of two parts:

Part I: It was concerned with characteristics of study subjects:

a) Characteristics of the studied parents include : age, Level of education, jobs, residence, medical history, number of children in family, health problems and income.

b) Characteristics of the studied premature infant include: age , gestational age, gender, medical history, ranking, diagnosis.

Part Il: It concerned with the knowledge of parents regarding premature infants: definition, factors, health problems, prevention, complications, needs, role of parents' participation care, participation in the care of premature infants in NICU, adhered to measures during dealing with premature infants, benefits of parental participation of their premature infants, problems, challenges.

There were multiple-choice questions (12)

Scoring system:

Parents responses according to number of answer of the each questions has different total score, Each question scored one grade for correct answer and scored zero for incorrect answer or don't know.

The total score of questionnaire is 33grade that equal 100%. These scores were converted into a percentage score and classified as the following:

- Unsatisfactory knowledge less than 50%
- Satisfactory knowledge 50 % and more .

II- Hospital stressors Scale:

It was adopted from **Broome (2008)** to assess stressors for parents having premature infants in NICU , this scale consists of three parts

- Physical stressors factors. (20 items)
- Psychological stressors factors. (14 items).
- Social stressors factors. (15 items).

Scoring system:

For each items in physical, psychological& social stressors the scoring system ranged from zero to two for never, sometimes and always respectively. The scores of the items of each part were summed-up and the total divided by the number of the items, giving mean score for the part. These scores converted into a percentage score and the total stressors for parents having premature infants classified as the following:

- Mild stressors 0— 32
- Moderate stressors 33 —66
- Sever stress Score 67 —98

Financial stressors (10 items).

This tool was adapted from **Jalowiec and Powers, (1991)** to assess financial stressors of parents having premature infants in NICU, and include 10 items.

Scoring system

For each items in financial stressors the scoring system ranged from yes response was scored one grade and for no response scored zero These scores were summed - up and converted into a percent age score. Accordingly, the total scored was the following:

- 1-3 referred to low level of stress
- 4-6 referred to average level of stress
- 7-10 referred to high level of stress

III Parents Anxiety Scale:

It was adopted from **Spitzer et al., (2006)** to assess parents ' anxiety level, regarding premature infants.

Scoring system:

The scale composed of 7 statement, each statement ranged in its response from not occur, sometimes to usually, which scored as ranged from one grade, two grades and three grade respectively. The total score of the scale 21 degree and the parents's anxiety level was categories into:

- 5 – 9 grades referred to mild anxiety.
- 10 – 14 grade referred to moderate anxiety.
- 15 – 21 grade referred to severe anxiety.

Il. Operational Design

It includes preparatory phase, ethical consideration, pilot study and field work .

Preparatory Phase:

This phase included reviewing of literature related to stressors for parents having premature infants in NICU. This served to develop the study tools for data collection. During this phase, the researcher also visited the selected places to be acquainted with the personnel and the study settings. Development of the tools was under supervisors' guidance and experts' opinions .

Validity

Face and content validity:

The tools were tested and evaluated for its face and content validity, by a jury consists of three professor experts in the field of Pediatric Nursing to test the content validity. Modificaüons of the tools done according to the panel judgment on the clarity of sentences, appropriateness of content and sequence of items.

Reliability:

Reliability was examined using Alpha Cronbach test was used to measure reliability of the tools it was 0.729 for interviewing questionnaire formate and 0.935 for hospital stressors scale and 0.919 for parents anxiety Scale .

Pilot Study:

Pilot study carried out on 10% of the total sample(5 parents) before starting the actual study to evaluate the clarity and applicability of the study tools and to estimate the time needed to fulfill the tools of date collection. After obtained the result of the pilot study , the ambiguous items were omitted, other items were added or modified according to study subjects response . Then final form was developed .All the study subjects included in the pilot study were excluded from study sample.

IV-Statistical design:

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies, percentages and Mean ± SD. A correlation coefficient is a numerical measure of some type of correlation, meaning a statistical relationship between two variables. Statistically significant was considered at p-value < 0.05.

Results

Part I : Characteristics of the study subjects.

Table1 reveals that 42% of studied mothers aged 30 < 40 years and had high education, while 62% of them were working. 54% of studied fathers aged 30<40 years. This table also clarifies that, 56 % of fathers were high education level. Moreover, 100% of them were working.

Table 2 reveals that 94% and 88% of studied parents have correct knowledge

regarding of definition and role of parents participation care respectively. While, 12% of studied parents have incorrect knowledge regarding of role of parents participation care.

Figure 1 shows that 70% of studied parents had moderate level of physical stressors regarding premature infants while, 16% and 14% of them had severe and mild physical stressor respectively.

Table3 illustrate that 48% of them sometimes had feelling anxious, nervous and unbalanced while 18% of them don't becoming easily annoyed or irritable. Moreover, this table clarifies that 60% of the studied parents usually feeling a fraid as if something awful might happen.

Table4 shows that there is a positive correlation (r=.569, p=.00) between studied parents' knowledge ,stressors and their anxiety.

Table1 : Distribution of studied parents according to their characteristics (no = 50)

Items	Mothers		Fathers	
	No	**%**	**No**	**%**
Age in years				
Less than 20	11	22	4	8
20<30	16	32	15	30
30<40	21	**42**	27	**54**
40&more	2	4	4	8
Mean + SD	35.69 ±3.87		37.43 ±2.54	
Educational Level				
Illiterate	3	6	1	2
Read and write	6	12	1	2
Primary Education	3	6	7	14
Secondary Education	16	32	13	26
High Education	21	**42**	28	**56**
Master's in Administration	1	2	0	0
Jobs				
Working	31	**62**	50	**100**
Not working	19	38	0	0
Residence				
Rural	23	46	23	46
Urban	27	54	27	54

Part II: parents knowledge regarding premature infants

Table2 : Distribution of studied parents according to their knowledge regarding premature infants (no = 50)

	Correct		**Incorrect**	
Items	**No**	**%**	**No**	**%**
Definition	47	**94**	3	6
Factors	50	100	0	0
Health problems	50	100	0	0
Prevention	50	100	0	0
Complications	50	100	0	0
Needs of premature infants	50	100	0	0
Role of parents participation care	44	**88**	6	**12**
Concept of participation in the care	50	100	0	0
Adhered to measures during dealing with premature infants	50	100	0	0
Benefits of parental participation in the care of their premature infants	50	100	0	0
Challenges that parents faced while participating in providing care for their premature infants	50	100	0	0
Problems that parents may faced when participating in the care of your premature infants	50	100	0	0

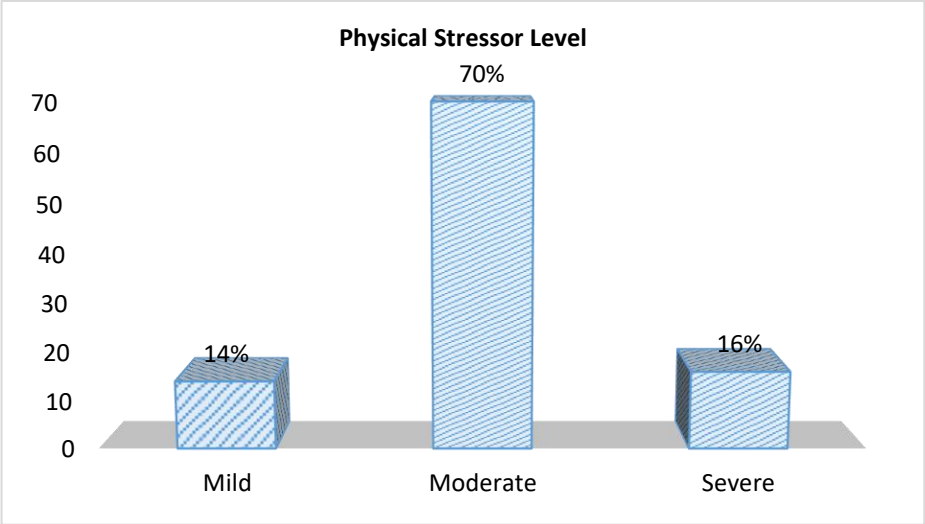

Figure 1: Percentage distribution of the studied partents according to their total physical stressors (no = 50)

Part IV: Parents' anxiety regarding premature infants

Table 3: Distribution of the studied parents according to their anxiety regarding premature infant. (no = 50)

Items	not occur		Sometimes		usually	
	No.	%	No.	%	No.	%
Feelling anxious, nervous and unbalanced	1	2	24	**48**	25	50
Not being able to stop control worrying	5	10	22	44	23	46
Worrying too much about different things	6	12	21	42	23	46
Trouble relaxing	2	4	21	42	27	54
Being so restless that it is hard to sit still	0	0	21	42	29	58
Becomíng easily annoyed or irritable	9	**18**	19	38	22	44
Feeling afraid as if something awful might happen	2	4	18	36	30	**60**

Table4 : Correlation between studied Parents' Knowledge, Stressors and their Anxiety (no = 50)

		Knowledge	Physical	Psychological	Social	Financial	Anxiety
Physical	**r**	.304*		.573**	.511**	.125	.569**
	P-value	.032		.000	.000	.389	.000
Psychological	**r**	.359*	.573**		.744**	.139	.618**
	P-value	.010	.000		.000	.337	.000
Social	**r**	.431**	.511**	.744**		.049	.697**
	P-value	.002	.000	.000		.737	.000
Financial	**r**	-.151	.125	.139	.049		.069
	P-value	.294	.389	.337	.737		.634
Anxiety	**r**	.235	.569**	.618**	.697**	.069	
	P-value	.101	.000	.000	.000	.634	
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Discussion

Regarding distribution of studied parents according to their characteristics the current study revealed that more than two fifth of studied mothers aged from 30<40 years and had high education, also more than two thirds of them were working. While, more than half of studied fathers aged from 30<40 years and hold high education level and all of them were working and more than half of them lived in urban area. This may be due to that men and women prefer to live in urban than rural areas where the work chances are more available and usually married after completion of high education degree and getting work.

These results were supported by **Akkoyun & Arslan, (2019),** who studied "Investigation of stress and nursing support in mothers of preterm infants in neonatal intensive care units", and revealed that more than one third of studied mothers had high education level. This result is similar with the result of study performed by **Baia et al., (2016**), which entitled "Parenting very preterm infants and stress in Neonatal Intensive Care Units", and revealed that more than two thirds of the mothers had thirty or more years of age. This may because of the disproportion of wages compared with the products prices.

Regarding distribution of studied parents according to their knowledge regarding premature infants the present study revealed that most of studied parents had correct knowledge regarding of definition and role of parents' participation care. Moreover, twelve percent of studied parents have incorrect knowledge regarding of role of parents participation care. This may be because most of studied parents had one or more babies in family admitted to NICU due to prematurity which increases their knowledge regarding premature babies.

This result agreed with **Matos et al., (2020),** who studied (Prematurity-related knowledge among mothers and fathers of very preterm infants), and the results revealed the existence of knowledge gaps regarding the prevalence and consequences of premature delivery. In addition this result was incompatible with **Atyia, (2014),** who studied "Impact of a Home Care Educational Program for Mothers Having Pre-term Infants in General Hospitals in Port Said", and revealed that mothers knowledge regarding premature infants definition, needs,

Regarding the studied parents, total physical stressors the present study showed that more than two thirds of studied parents had moderate level of physical stressors regarding premature infants. This may because the NICU environment and monitor alarms considered stressful in nature, their babies' appearance and devices made parents stressed.

These results were consistent with **Mahmoud et al., (2022),** who studied "Stressors Strategies among Parents with Premature Infant", and demonstrated that changes in the infant appearance was the highest mean scores followed by changes in sight and sound, then dealing with health team staff and lowest mean percent was parent infant relationship. These results come inconsistent with **Lim et al., (2017),** who studied "Parental stress and its influencing factors in the neonatal intensive care unit", and reported that, the majority of the parents had a low level of stress in relation to the sight and sound of the NICU, around half of the parents had a low level of stress in relation to the infants appearance and behavior, more than one quarter found it moderately stressful, and less than one fifth found it highly stressful.

Regarding distribution of the studied parents according to their anxiety regarding premature infants the present study illustrated that less than half of them sometimes had feeling anxious, nervous and unbalanced while less than one fifth of them did not becoming easily annoyed or irritable. Moreover, two thirds of the studied parents usually feeling a fraid as if something awful might happen. This may because interfere between parents work time of being in NICU and parents' having other children to care for at home.

This result was in the same line with **Ong et al., (2019),** who studied "Stress and anxiety among mothers of premature infants in a Malaysian neonatal intensive care unit", and revealed that the majority of mothers had a high level of state-anxiety and more than two thirds of mothers had a high level of trait-anxiety. Moreover, this result was supported by **Damanabad et al., (2019)**, who conducted study entitled "Evaluation of maternal anxiety in

mothers of infants admitted to the neonatal intensive care unit", and showed that the mothers of premature infants had state anxiety. More than two thirds of mothers experienced moderate level of state anxiety; while more than half of them had moderate level of trait anxiety.

Regarding correlation between studied parents' knowledge, stressors and their anxiety the current study revealed that there was a positive correlation between studied parents' knowledge, stressors and their anxiety. This may because people under stress experience mental and physical symptoms such as irritability, anger, fatigue and muscle pain which with time may causes persistent and excessive worries that causes anxiety. This result similar with **Ionio, et al., (2019),** who reported a lack of knowledge about what to do and what to expect provoked higher stress.

In addition, this result was similar with **Ong et al., (2019),** who revealed that the stress experienced by these mothers had a significant relationship with anxiety, and was found to be associated with state and trait anxiety levels. Moreover, this result was supported by the study conducted by **Alexopoulou et al., (2018),** which entitled "Assessing anxiety and depression in parents of preterm infants", and revealed that parents who considered themselves well-informed regarding their infant's condition experienced lower levels of anxiety.

Conclusion

Based on the findings of the current study, it can be concluded that, more than two thirds of studied parents had moderate level of physical stressors and two thirds of them had sever level of psychological stressors.

Recommendation

In the light of the study findings, the following recommendations were proposed:

- Health education program for parents about care of premature infants to reduce their stressors facing them at the Neonatal Intensive Care Units.

- Special care should be provided for all pregnant mothers to promote their health and their pregnancy outcomes.

- Involvement of parents in care of their preterm infants as possible to reduce their stressors.

- Parents should receive written information about discharge of premature infants with a verbal explanation upon discharge.

- Further studies are needed to investigate the parents' sterroser regarding their premature infant in different settings to generalize the results and to be evident to other studies.

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