

# The impact of the involvement of Maternal Care of premature infants on their stress level

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**Abstract:** Family Integrated Care, empowering mothers in direct care delivery and decisions, is becoming the standard in neonatal intensive care units in many countries and can improve quality-of-life and health outcomes of preterm infants. The study aimed to evaluate the impact of maternal involvement for caring of their premature infants on their stress level. A quasi-experimental design was used to conduct the study. The study was conducted at Neonatal Intensive Care Units, Ain Shams Maternity Hospital. A purposive sample included 100 premature infants and their mothers. Three tools were developed and filled by the researchers to collect data of the study involved structured interview questionnaire, Parental Stress- Scale & Parental involvement attitude scale (pre/post). Results, there was a highly statistical significant differences ( $P < 0.001$ ) among stress related to their premature infants, where most of the mothers had stress during the care of their premature infants which is decreased post involvement in caring for their premature infant also, there was a highly statistically significant relation between the mothers' attitude towards their involvement in caring of their premature infants and their stressors. Conclusion: The study assured that involvement of maternal for caring of their premature infants decrease the maternal stressor and the results support the research hypothesis. Recommendations: Create an integrated involvement for mothers having premature infants include basic information and skills in how to caring their infants without stress.

**Keywords:** Premature infant, stressor, maternal, involvement and pediatric nurse.

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## 1. INTRODUCTION

Premature infant is the live born infant who is born before the end of 37 weeks of gestation, regardless of birth weight **Gomella & Cunningham (2011)**. Represents the highest percentage of high-risk group and account for the largest number of admission to the Neonatal Intensive Care Units (NICUs) (**Bakewett-Saches, 2009**). Approximately It 5% to 7% of all infants are born prematurely worldwide. In Egypt, premature births accounts for the highest mortality rate among infants in the first year of life because of the immaturity of premature body systems and lack of adequate nutritional reserves (**Medical Egyptian Journal, 2012**)

All premature infants need priority of care in the first days of life that must be met such as, initiation and maintenance of respiration, establishing of extra uterine circulation, control of body temperature, intake of adequate nourishment, establishment of waste elimination, prevention of infection and establishment of infant-parent relationship (**Henry, 2007**).

However, fulfilling these needs may require special care in the NICUs, which have specialized medical staff and equipment that can deal with the multiple problems faced by the premature infant (**Klossner & Hatfield, 2006**).

The birth of premature infant is an unexpected and stressful event for mothers. They are faced with the problem of learning about the special care needs of premature infants and how they differ from the needs of term infants. Ideally parents are involved in the physical care of their infants before discharge and developmentally supportive care practice in

the NICUs helps them adapt to the behavior of premature infants. On the other hand, comprehensive long-term follow-up care is especially important for every premature infant because of the incidence of significant handicaps and appropriate treatment when indicated will improve the outcome **Pillitteri, (2009)**.

The terms of involvement and participation were used interchangeably (**El-Naggar, 2004**). Participation were viewed as mother being involved in the care of their premature infant at NICU and sometimes performing procedures which nurses would see as an extension to their own role.

So, the nurse has an important and essential role in enable the mothers to be involved in care provided in order to provide psychological support for mothers. In addition to minimize their level of stress. Encourage the mothers to express their feelings of fear, anger, guilt, anxiety and sadness. The nurse can provide information, anticipatory guidance and re-establishment of the relationship through visiting and participating in care giving activities (**Kenner, Lott & Wright 2003**).

#### **Aims of the Study:**

The study aimed to evaluate the impact of maternal involvement for caring of their premature infants on their stress level.

#### **Research hypothesis:**

Involvement of maternal in caring of their premature infants will decrease their stressors and improve.

## **2. SUBJECTS AND METHODS**

#### **Research Design:**

A quasi experimental design was used to conduct the study.

#### **Setting:**

The study was carried out at Neonatal Intensive Care Units(NICUs) at Obstetrics & Gynecology Hospital affiliated to Ain Shams University.

#### **Subjects:**

A purposive sample of this study was composed of 100 mothers and their premature infants attending the previously mentioned settings over a period of 6 months and their premature infants according to

#### **Inclusion Criteria:**

Premature infants from both genders, age from 30 to less than 37 weeks of gestation, birth weight from 1500 to less than 2500 grams; low birth weight, free from congenital anomalies; or other health problems.

#### **Data collection tools:**

##### **I- Interview questionnaire sheet:**

That was designed by the researcher and written in simple Arabic language to gather data regarding the following:

- 1) Characteristic of premature infant such as gender, birth order, gestational age, birth weight...etc. these data were obtained from the infants medical record during hospitalization. And daily assess of the physical growth as length, weight, head circumference and chest circumference
- 2) Characteristic of the maternal having premature infant, such as age, level of education, employment and, maternal and obstetrical history namely, delivery number, delivery type, past obstetrical history....etc.
- 3) Maternal knowledge regarding premature infant includes, general knowledge about prematurity, definition of premature, causes of premature, health problem to exposure of premature infants, infants feeding, importance of feeding, types of feeding, benefits of breast feeding, administration of feeding and position of infant during feeding ..... etc.
- 4) Maternal knowledge regarding involvement in care of their premature infant includes general knowledge about involvement in care, definition of involvement, ways of involvement in care, adjustment during the involvement in caring

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Vol. 5, Issue 3, pp: (218-226), Month: September - December 2018, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

at NICU, benefit of involvement mother in care, maternal problems during involvement. Explanation to the mothers the procedures steps. Questions were in the form open and close ended and multiple choices. Each questionnaire was completed by the researchers.

### Scoring system:

The total score level for the questionnaire sheet was 100 marks.

The maternal Knowledge were categorized into either:

- Score < 60% referred to unsatisfied knowledge.
- Score > 60% referred to satisfied knowledge.

### II- Parental Stress- Scale (*pre/ post*):

Self-reported Scale by *Berry & Jones, (1995)*: this scale has been modified by the researchers.

- That contains 18 items representing pleasure or positive themes of parenthood (emotional benefits, self- enrichment personal development), and negative components (demons on resources, opportunity costs and restrictions).

- Respondents are asked to agree or disagree with item in terms of their typical relationship with their infants and the rate each item on a five level Likert scale:

1= strongly disagree 2= disagree 3= undecided 4= agree 5= strongly agree. The 8 positive items are reverse scored so that possible scores on the scale can range "between" 18-90. Higher scores on the scale indicate greater stress.

- The scale is intended to be used for assess the parental stress for mothers of premature infants with or without clinical problems.

This scale demonstrates satisfactory convergent validity with various stress, emotion and rate stratification, including perceived stress, work / family stress, loneliness, anxiety, guilt, marital satisfaction, marital commitment, job satisfaction and social support.

To compute the parental stress score, item 1, 2, 5, 6, 7, 8, 17 and 18 should be reverse scored as follows, (1=5) (2=4) (3=3) (4=2) (5=1) the item scores are then summed.

**III-Maternal involvement attitudes related to their involvement of care of premature infant at NICU:** adapted from *DeMaso, D, Campis L, & Freed, M. (1999)*: has been translated and modified by the researchers.

- The attitude statement consist of 15 statements, each statement has a score ranged from +2 to -2 as the following:
- Strongly agree +2, agree +1, sometimes 0, disagree -1, strongly disagree-2.

The total score ranged from -30 to +30. Eight of the statements indicated positive attitude {statements 1-8} and the other statements indicated negative attitude {statements 9-15} was scored on five points scale in the other direction.

### IV-Maternal involvement practices related to their premature infants checklist.

- It was adopted from *Bowden & Greenber, (2003)*:

It was used to assess the actual mother's involvement practices related to care of their premature infants at NICU regarded (feeding procedures care, eye care, umbilical cord care, diaper care, baby bath care, measuring infant's length and weight).

- The necessary modification was done by the researchers to suit the nature of the current study.
- Time consumed for each procedure for assessment and evaluation regarding mothers practices (15-20 minutes).
- Each mother was observed during the actual care for their premature infant after a permission from the head of NICU, using the maternal practices checklist which filled by the researchers, each mother was observed for three times and then the average score was obtained.

The average number of the mothers observed per day range from 1-4 mothers.

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- The total number of procedure was (7), each procedure scored of (10) to make a total score of (70) equal 100%.

The scoring system of maternal practices was classified into:

- Satisfactory (60% and more).
- Unsatisfactory (less than 60%).

### *Pilot study:*

A pilot study was carried out, involving 10% of the expected total study sample. To test the content validity, reliability and the effectiveness of the study tools and time required to fill in each tool. The result of the obtained data helped in modification of the study tools by adding or omitting some items as necessary.

### *Field work:*

The actual field work was carried out over 6 months started at March (2017) and completed at August (2017). The researchers were available two days /week during morning and afternoon shifts. Each mother was interviewed individually together the necessary data of the study. The researchers started by introducing themselves to the mothers, provided to them a brief idea about the study aim and its expected outcomes.

Tools were filled by interviewing the mothers from 20 to 30 minutes depending upon their physical and mental readiness

The stress scale was measured twice pre and post involvement of care.

### *Administrative design:*

An official permission was obtained from the director of study setting through a formal letter that was issued from the Dean of the Faculty of Nursing, Ain Shams University, medical and nursing directors of the previously mentioned settings. Also an oral and written approval to carry out the study was obtained from each mother.

### *Statistical analysis:*

The collected data were organized, reviewed, coded and tabulated. Statistical analysis was done by computer (SPSS version 20) as used to estimate the statistical significance difference between variables of the study. Data was presented in tables and figures.

### *Ethical considerations:*

The studied sample was informed that the study is harmless; all the gathered data were treated confidentially and used for research purpose only.

## 3. RESULTS

**Table (1):** shows that, the characteristics of the study premature infant it was found that, almost three quarters (72%) of the studied sample were males. Almost half of them (49%) were ranked as 1st birth order, GA in weeks was ranged 33 < 36 weeks as found in (43%), near to two thirds (58%) of the studied sample were ranged between 1.5 < 2 KG at birth, the mean weight of studied sample were 1.78 + 0.38 KG. most of them (89%) were small for their gestational age and as regarding their duration of hospitalization it was found that (77%) of the stayed for  $1 \leq 10$  days.

**Table (2)** illustrated that, the total mother's stressors toward their premature infant pre/post involvement in caring for their premature infant, it was clear that nearly three quarters (70%) of studied mothers had mild stressors while (2%) of them had severe stressors pre involvement of care, compared to the majority of mothers (81%) while 81% had no stressor post involvement of care. It was clear from current (table 2) that there was statistically significance relation between pre /post involvement in caring of premature infants' mothers and total maternal stress during the care.

**Table (3)** clarified that, the total maternal knowledge toward their premature infant pre/post involvement in caring for their premature infant, it was found that the majority of studied mothers (71%) were poor pre involvement compared with 31% post involvement having with statistically significant between pre and post intervention.

**Table (4)** clarified that, the total maternal attitudes toward their premature infant pre/post involvement in caring for their premature infant, it was found that the majority of studied mothers (81%) pre involvement compared with 36% post involvement having negative attitude toward their infants but lowest (19%) of them compared with (64%) of studied mothers had positive attitude pre and post involvement of care for their premature infant respectively.

Which reflect statistically significant difference between pre/ post intervention related to mothers attitudes, ( $p < 0.001$ ).

**Table (5) pointed out**, , the total maternal practice regarding pre/post involvement in caring for their premature infants was great majority (94%) of studied mothers had unsatisfactory practice compared to the majority (85%) of them done the procedures correctly post involvement. Which reflect statistically significant difference between pre/ post intervention related to total maternal practice, ( $p < 0.001$ ).

**Table (6)** Showed that, there were a highly statistically significant and positive correlation between maternal knowledge, practice and their-stressors pre/ post from implementing the involvement.it has +ve effect on mothers stressor toward care of their premature infants (  $r$  test  $< 0.01$ ).

**Table (1): Number and percentage distribution of the studied premature infant according to their characteristics (N=100).**

Items	No	%
<b>Gender:</b>		
Male	<b>72</b>	<b>72.0</b>
Female	28	28.0
<b>Birth order:</b>		
1 <sup>st</sup>	<b>49</b>	<b>49.0</b>
2 <sup>nd</sup>	17	17.0
3 <sup>rd</sup>	15	15.0
4 <sup>th</sup>	19	19.0
<b>Gestational age (weeks):</b>		
30 < 33	28	28.0
33 < 36	<b>43</b>	<b>43.0</b>
36 ≤ 39	29	29.0
<b>Birth weight (KG):</b>		
1 < 1.5	16	16.0
1.5 < 2	<b>58</b>	<b>58.0</b>
2 ≤ 2.5	26	26.0
<b>Mean±SD</b>	<b>1.78 ± 0.38</b>	
<b>Appropriateness of gestational age:</b>		
AGA	11	11.0
SGA	<b>89</b>	<b>89.0</b>
<b>Causes of admission at NICU:</b>		
Premature	22	22.0
LBW	<b>78</b>	<b>78.0</b>
<b>Hospitalization duration:</b>		
1 ≤ 10 days	<b>77</b>	<b>77.0</b>
11 ≤ 20 days	18	18.0
21 ≤ 30 days	5	5.0
<b>Mean±SD</b>	<b>7.60 ± 6.2</b>	

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Table (2): Percentage distribution of total maternal stressors towards their premature infant pre/post involvement in caring for their premature infant (N=100).

Total Mothers stressors	Score	Pre-involvement		Post involvement	
		No.	%	No	%
Non	Zero	20	20.0	81	81.0
Mild	1: 5	70	70.0	16	16.0
Moderate	6: 11	8	8.0	3	3.0
Severe	12: 18	2	2.0	0	0
Total		100	100.0	100	100.0
X <sup>2</sup>	33.84				
P-Value	<0.01*				

Table (3): Percentage distribution of total maternal knowledge towards their premature infant pre/post involvement in caring for their premature infant (N=100).

Item	Pre		Post	
	No	%	No	%
Satisfactory	29	29	69	69
Unsatisfactory	71	71	31	31
X <sup>2</sup>	23.84			
P-Value	<0 001*			

Table (4): Percentage distribution of total maternal attitude towards their premature infant pre/post involvement in caring for their premature infant (N=100).

Mothers attitudes	Score	Pre-involvement		Post involvement	
		No.	%	No	%
Negative	9- 15	81	81.0	36	36.0
Positive	1- 8	19	19.0	64	64.0
Total		100	100.0	100	100.0
X <sup>2</sup>	12.34				
P-Value	<0.001				

Table (5): Number and percentage distribution of total maternal practice regarding involvement of care of their premature infant (n=100).

Total Maternal practice	Score	Pre-involvement		Post involvement	
		No.	%	No	%
Satisfactory 60% and more		6	6.0	85	85.0
Unsatisfactory >60%		94	94.0	15	15.0
Total		100	100.0	100	100.0
X <sup>2</sup>	13.708*				
P-Value	<0.001				

Table (6): Correlation between maternal total knowledge, practice, attitude and stressors (N= 100).

Items	total knowledge		total attitude		total stressors		total practice	
	r- Test	P-Value	r- test	P-Value	r- test	P-Value	r- test	P-Value
Total knowledge	--	--	0.09	>0.05	0.60	<0.01	1.00	<0.01
Total attitude	0.09	>0.05	--	--	0.57	<0.01	0.09	>0.05
Total stressors	0.60	<0.01	0.57	<0.01	--	--	0.60	<0.01
Total practice	1.00	<0.01	0.09	>0.05	0.60	<0.01	--	--

#### 4. DISCUSSION

Premature infants are highly vulnerable group of the population. In Egypt premature births accounts for the highest mortality rate among infant in the first year of life **Ministry of Health & Population, (2002)**. This is properly the reason for increasing numbers of prematurity related researches done during the last twenty five years. The birth of premature infant is an unexpected and stressful event for which families are emotionally unprepared. Although the health of premature infant is the first foremost, the parental responsibility, mothers are considered the most plentiful primary health care workers around the world **Martinson, Widmer & Protillo, (2002)**.

Nurses teach parents to provide advanced care, prepares the parent to assume total taking an active role, responsibility for care after the child leaves the hospital. Nurses minimize psychological and physical distress experienced by parents. This involves listening to the parents and simply being present during stressful or emotional expenses; help families by suggesting way to support their children in the hospital and home care setting **Mello, et al., (2002)**.

NICU The aim of the study was to evaluate the effect of Maternal Involvement for caring of their premature Infants on their stress level.

Regarding to characteristics of studied premature infants, as observed in table (1), the present study reflected that, near to three quarter of studied sample were males, according to birth order it found that, near to half were ranked as the first order in their families, this finding was highly supported with a study done by **Lawhon (2002)**, who study mentioned that, most of premature infants were as regards infant birth order. Meanwhile, the current study found that near to half of infants ranked the first order; this result could be due to lack of maternal awareness and experiences about proper antenatal follow-up care. In the same line these results was supported also at **World Health Organization (2015)**, who reported that prematurity is more common in first births than among later births. Also **Wannous & Arous (2005)**, stated in similar study that the abnormally high rates of premature births have been found in primigravida, and lower rates were observed for the other parity categories.

The study finding clarified that, near to half of studied sample of premature infant's gestational age ranged between 33 to less than 36 weeks. The finding of the present study revealed that, the birth weight and gestational age were around 1.5 < 2 kg and 33 to 36 weeks respectively. also, it was clear that, the range days of infant hospital stay was less than ten days, this may be attributed to the specific selection criteria for study subject that the study sample was uncomplicated and free from respiratory distress However, they not connected of respiratory ventilator or prolonged hospitalization. This finding can be explained by **Villar & Belizan (2008)**, who stated that the relation between neonate's gestational age and birth weight reflects the adequacy of his intrauterine growth, whereas the organ system maturity depends largely on gestational age. Thus the greater gestational age neonate's the more development the organ system. The smaller the infant and the higher the risk of health problems.

Emphasized that all the maternal of premature infants were complaining from stress. Regarding the degree of stress the maternal involvement of care of their premature infants, as observed in table (2) that there was statistically significant difference between pre/ post involvement related mothers stress with  $p < 0.01$ , the present table revealed that nearly three quarter of the maternal had mild degree of stress and there were a little of them had severe degree of stress before implement the involvement of mothers, where this could be due to most of mothers struggle with feeling of failure and guilt; that lead, there to search for the cause of their neonates. Also, the current study showed that most of the studied samples complain from depression and stress such as apathy, loss of interest of appearance, self-withdrawal and loss of self-esteem. This finding was supported with **Henry, (2007)**, who concluded that most of the maternal had stressors related their premature infant as manifested by guilt and anger. In addition the current result was in accordance with **Simth, (2010)**, who mentioned that most of the studied sample had depression as manifested by anger during the care of premature infants.

A similar study were done by **Jackson, et al., 2015**, who found that maternal of high risk neonates are vulnerable to emotional reactions such as feeling of failure and guilt, as well as resumption of the relationship with the neonates. Also these studies reported that the physical appearance and behavior of high-risk neonate may be source of stress for the mothers.

Regarding total maternal knowledge towards their premature infant pre/post involvement in caring for their premature infant, the current study illustrated that the majority of mothers had satisfactory knowledge post implementation of the involvement, the researchers believes that the mother's knowledge regarding care of premature infants should be raised and updated to encourage mothers' practice of such technique



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Regarding to maternal attitudes towards their involvement in the care of their premature infant, as observed in table (4), it was found that learning is affected by emotions. The finding of this study cleared that the majority of them had negative attitude, while the rest of them had positive attitude toward the relation of all items, that there was a statistically significant difference between pre/ post involvement related mothers attitude with  $p < 0.01$ , this finding was in agreement with **Ammari, (2009)**, who stated that parents of infants with critical illness are challenged to meet the infant health care needs and which enable them to cope with the situation and most of them were involved in planning of the discharge from the NICU, also these finding was in agreement with, who concluded that retention of information was limited after significant gains from involvement in care during hospitalization.

In relation to total maternal practical regarding to involvement in care of their premature infant as observed in table (5), this study showed that about breast feeding and bottle feeding in relation to bottle care, sterilization, and preparation. The finding of the present study revealed that, the majority of maternal of statistical significant had unsatisfactory practice. Regarding hygienic measures of premature infants including daily routine care, namely, eye care, cord care, infant's bathing and diaper care. These finding were supported by **Abd El-Motaleb, (2007)**, who assess maternal practices about their care for premature infants, mentioned that the majority of maternal had unsatisfactory practices regarding practices of care of their premature infants.

Regarding to the correlation between maternal knowledge, attitude, stressors and practice, pre/ post involvement table (6), the result of the present study, it was clear that there were a highly statistically significant and positive correlation between maternal knowledge and their practice and stressors. It has +ve effect on mothers stressor from involvement the mothers having premature infants, this finding was supported by **Soliman (2001)**, Who found statistically insignificant and negative correlation between maternal knowledge and their attitude while the study of by **Walizer, (2010)**, found significant improve in correlation between maternal knowledge and their attitude.

### 5. CONCLUSION

The study concluded that, the majority of the mothers had unsatisfactory knowledge regarding to the premature infants and involvement of care, also most of the mothers had mild stress related to their premature infant pre involvement in care of their premature infant while this stressor decreased post involvement of care. There was a statistically significant difference between the mothers' attitude towards their involvement in care of their premature infants and their stressors. Also, the study result support the study hypothesis

### 6. RECOMMENDATIONS

Emphasize the importance of maternal involvement in caring for their premature infants at NICU and Maternal stressors related to involvement in care of their premature infant at NICU should be assessed by the pediatric nurse and provide appropriate intervention accordingly. Also, continuous evaluation and monitoring follow up for mothers having premature infants.

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