



## Mothers' Knowledge and Practice about Kangaroo Care and Weight Gain among Preterm Infants

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### Abstract

**Background:** Kangaroo care is one of the nursing practices with medical provision that can meet the important physical and emotional needs of the preterm such as warmth, stimulation, parental attachment, breast-feeding and safety. **This study aimed to:** assess the mothers' knowledge and practices about kangaroo mother care on weight gain of premature neonates in neonatal intensive care units. **Research design:** A quasi-experimental design was utilized in the current study. **Setting:** This study was conducted at neonatal intensive care unit in Beni Suef University Hospital. **Subjects:** A purposive sample of 50 mothers accompanying their premature infants. **Tools of data collection:** Three tools were used: *tool (1)* Interviewing questionnaire (characteristics of the mothers & the premature infants), *tool (2)* Knowledge of the mothers about kangaroo mother care technique, *tool (3)* Checklist of reported practices (of the studied mother). **Results:** More than three quarters of the studied mothers had unsatisfied knowledge about Kangaroo Mother Care while about two thirds of them had insufficient practices; there was highly statistical significant positive correlation between studied mothers total knowledge level and total reported practices level. **Conclusion:** The studied mothers had deficit knowledge and poor level of practice about Kangaroo Mother Care. **Recommendation:** A periodical educational program to improve the mothers' knowledge and practice about Kangaroo Mother Care.

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**Keywords:** Educational program, Kangaroo Moter Care, Mothers knowledge, Practices.



## Introduction

Kangaroo mother care (KMC) is skin-to-skin contact between the mother and the baby. It is a safe and inexpensive procedure that has proven benefits for mothers and children as compared to an incubator caring method. It plays a significant role on infant survival, neurodevelopment, and the quality of mother-infant bonding. KMC complements good quality care and allows providers to ration use of expensive resources such as warmers and incubators (*Jagdale, 2017*).

Preterm birth is considered to be the largest direct cause of neonatal mortality, accounting for an estimated 27% of the 4-million neonatal deaths every year. According to the World Health Organization (WHO), of all early neonatal deaths occurring within the first 7 days of life, 28% are due to preterm birth (*WHO, 2014*).

Kangaroo mother care is defined as early, prolonged, skin-to-skin contact between a mother and her low birth-weight (LBW) newborn. It can take place both in hospital and at home, and is usually continued until the baby reaches at least 2,500 grams in weight or 40 weeks age. Continuous KMC is practiced 24 hours every day and requires support from family members, including the husband or partner. Family members can assist the mother with continuous KMC by keeping the new born infants skin-to-skin when the mother has to bath or attend to personal need (*Ehalik, 2016*).

The kangaroo position provides ready access to nourishment. WHO adjusted the Kangaroo care's instructions and encouraged in developing countries, to its implementation; the incubators are often insufficient to meet the requirements of premature infants weight gain or not clean enough; the purchase of equipment and spare parts, maintenance and repair are difficult and expensive (*Bigelow, 2017*).

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Kangaroo care is a technique practiced on newborn, usually preterm, infants wherein the infant is held, skin-to-skin, with an adult. Kangaroo care for pre-term infants may be restricted to a few hours per day, but if they are medically stable that time may be extended. Some parents may keep their infants in-arms for many hours per day (*Higgins, 2016*).

Kangaroo care is one of the nursing practices with medical provision that can meet the important physical and emotional needs of the preterm such as warmth, stimulation, parental attachment, breast-feeding and safety. Previous research confirmed the KMC effectiveness for promoting the preterm and term infant's health, well-being and encourages the parents' participation in the infant's care (*Raman, 2017*).

In many countries, KMC was practiced in Neonatal Intensive Care Units (NICUs) for premature and low-birth weight infants and their families, allowing them to play a significant role in the care and survival of their neonate within the NICU setting. KMC provides a physical environment as safe as the incubator. Previous research has proven that KMC has been proved to be effective for maintaining body temperature, breastfeeding, stimulation and bonding irrespective of setting, weight, gestational age, and clinical conditions (*Salunkhee, 2017*).

### **Significance of the study:**

Premature infants in the neonatal intensive care unit is a critical care area, many newborn infants enter the area with multi needs and complications and become separated from their mothers which lead to many harmful results and negative attitudes to the infant, so an accurate management of premature infants will improve their outcome by having effect on electrophysiological measures as well as increase in weight. The closet contact occurs when mothers are giving K.C. because they hold their diapered infants underneath clothing and allow self-regulatory breastfeeding, while infant is in the kangaroo position is able to breastfeed whenever wants (*Ahn, 2018*).

According to the World Health Organization (WHO), preterm birth is considered to be the largest direct cause of neonatal mortality, accounting for an estimated 27% of the 4-million neonatal deaths every year, of all early neonatal deaths occurring within the first 7 days of life, 28% are due to preterm birth (WHO, 2014).



Previous studies about KMC reported some high level of mothers' satisfaction with KMC because it allowed them to be closer to their babies. Hence giving them the opportunity to observe their growth and become fully involved in the care, Premature infants come out of incubators and into cribs sooner, also premature infants feed earlier and more successfully and earlier discharge from the hospital (Moore, 2017).

In Beni-Suef University Hospital, no study has been conducted to evaluate the effect of kangaroo care educational program for mother on weight gain of premature neonates in the neonatal intensive care units. Therefore, from the researcher experience, it is important to conduct this study to evaluate the effect of kangaroo care educational program for mother on weight gain of premature neonates in neonatal intensive care units.

### **Aim of the Study**

This study aimed to assess the mothers' knowledge and practices about kangaroo mother care on weight gain of premature neonates in neonatal intensive care units.

### **Research Design:**

A descriptive study was utilized to conduct this study.

### **Research Setting:**

The study was conducted at Neonatal Intensive Care Unit (NICU) in Beni Suif University Hospitals which located in the sixth floor and consists of three rooms; the first room contains 8 incubators, the second room contains 8 incubators and the third room contains 4 incubators.

### **Research Subject:**

A purposive sample of 50 mothers attending to the study setting accompanying their premature infants; under the following inclusion criteria weighting from 1000 gm. to 2500 gm. with gestational age less than 37 weeks, the studied premature infants are not connected to mechanical ventilation and not have any other physical, mental or congenital condition that threatening life such as (heart disease, surgical problem and hypoxia).

### **Tools for data collection:**



Data was collected through the use of the following tools:

***Tool I: Structured Interviewing questionnaire:***

It was designed by the researcher after reviewing the current literature and translated to simple Arabic language. It will consist of the socio-demographic characteristics of the studied mother and premature infants.

***Tool II: Knowledge of the mother about kangaroo care technique; it was adopted from Ward, (2016)***

Knowledge of mothers about kangaroo care (technique, definition, importance, advantages, duration and newborn care).

***Tool III: Checklist of reported practices:***

It was adopted from Ward, (2014) to assess the reported practices of the mother about KC technique, hand washing technique and umbilical care technique.

***Tool IV: Neonatal Medical File: daily weight Sheet:***

To assess the weight of neonatal in order to follow the physical growth (wt.) of neonatal daily.

## **Ethical Consideration**

The researcher clarified the aim of the study to the studied mothers' and verbal approval was prerequisite to participate in the study. Mothers' were assured that all gathered data were used in research purpose only and the study was harmless. Additionally, mothers were allowed to withdraw from the study at any time without giving the reason. Confidentiality of the gathered data and results were secured.

## **Pilot Study**

A Pilot study was conducted to test the clearness and applicability of the study tools and to estimate the time needed for each tool, it was done on 10% of the total subjects, (5) mothers', (5) premature are excluded from the present study to avoid sample bias and contamination. In the light of pilot study analysis, modification was done and last form was developed.



## Field Work

The researcher was available in the study setting three days/ weekly over six months for data collection. The researcher firstly met the mothers, explained the aim of the study and obtained their acceptance to participate in the study. The researcher assured confidentiality and that the data will be used for research purpose only, the following phases of the educational program were adopted to achieve the aim of the current study; assessment, planning, implementation and evaluation phases.

## Statistical Design:

Statistical presentation and analysis of the present study was conducted using Pearson correlation test, ANOVA test and chi-square test. A significant level value was considered when P value < 0.01.

## Results

**Table (1)** showed that, 64% of the studied mothers were in the age group 20<30 years old.

**Table (2)** showed that, 42% of the studied premature neonates were in the age group 32>33 weeks old.

**Table (3)** showed that there was highly statistical significant positive correlation between total knowledge and total reported practices of the studied mothers pre and post educational program implementation.

**Figure (1)** showed that, 42% of the studied premature neonates were in the age group 32>33 months old.

**Figure (2)** showed that, 16% of the studied premature neonates were males while 84% of them were females.

**Figure (3)** showed that, (56%) of the studied infants were born with birth weight of  $\geq$  2500.

**Figure (4)** showed that, 64% of the studied mothers had incomplete reported practices about KMC.

**Table (1): Distribution of the studied mothers regarding to their characteristics. (n=50)**

	No.	Percentage
<b>Age</b>		
< 20	6	12.0
20 < 30	32	64.0
≥ 30	12	24.0
<b>Mean ± SD</b>	<b>26.20 ± 5.94</b>	
<b>Education</b>		
Illiterate	14	28.0
Read and Write	36	72.0
<b>Employment</b>		
Working	34	68.0
Not working	16	32.0
<b>History of parity</b>		
< 3	17	34.0
3 ≤ 4	33	66.0
<b>Mean ± SD</b>	<b>2.82 ± 0.96</b>	
<b>Type of delivery</b>		
Normal vaginal delivery	17	34.0
Cesarean section	33	66.0

**Table (2): Distribution of the studied premature infants regarding to their characteristics. (n=50)**

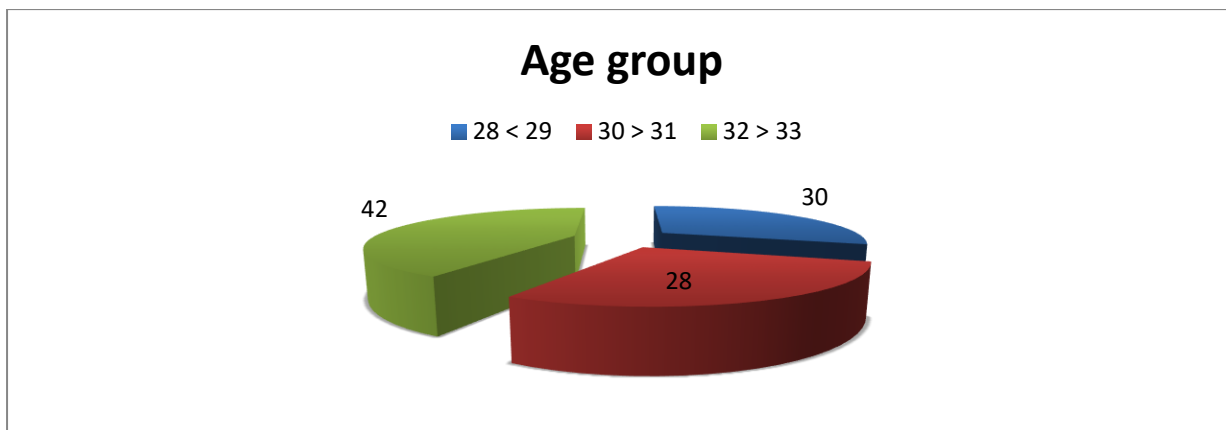
	No.	Percentage
<b>Age</b>		
28 < 29 wks	15	30.0
30 > 31 wks.	14	28.0
32 > 33 wks	21	42.0
<b>Mean ± SD</b>	<b>28.85 ± 1.06</b>	
<b>Sex</b>		
Male	8	16.0
Female	42	84.0
<b>Birth weight</b>		
≤ 1500 gm	0	0.0
1500 < 2000	2	4.0
2000 < 2500 gm	20	40.0
≥ 2500	28	56.0
<b>Mean ± SD</b>	<b>1170.00 ± 1347.18</b>	
<b>Prematurity causes</b>		

	No.	Percentage
PROM	17	34.0
PET/ Eclampsia	19	38.0
GDM	7	14.0
Hypothyroidism	7	14.0
<b>Length of Hospital Stay</b>		
< 3 days	6	12.0
3 ≤ 6 days	44	88.0
<b>Mean ± SD</b>	<b>4.14 ± 0.98</b>	
<b>Weight gain (gram)</b>		
< 50 gm	2	4.0
50 ≤ 100 gm	48	96.0
<b>Mean ± SD</b>	<b>73.00 ± 9.90</b>	

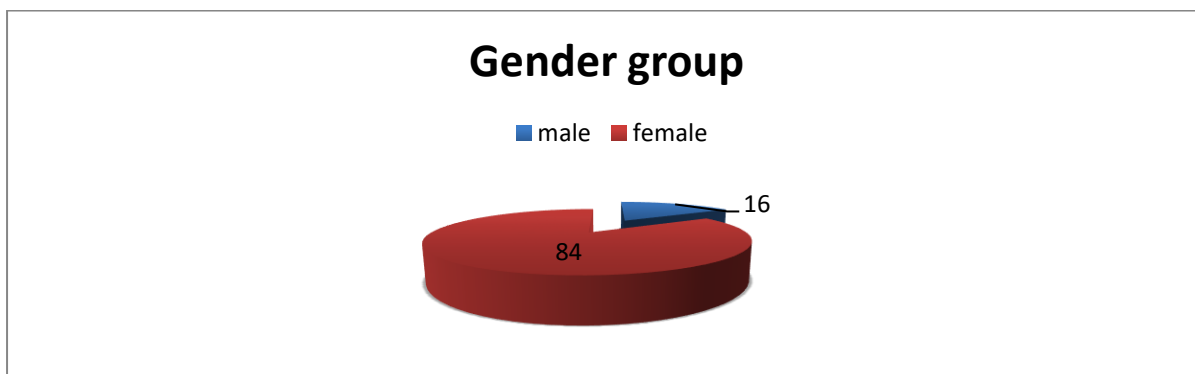
**Table (3): Correlation between the studied mothers' total level of knowledge and their practices (pre and post the program) (n=50)**

	Knowledge			
	Pre		Post	
	R	P	R	P
KMC practice	0.621	0.000**	0.393	0.005**
Hand washing technique	0.390	0.005**	0.610	0.000**
Infant's weight	0.556	0.000**	0.558	0.000**
Umbilical cord care	0.729	0.000**	0.513	0.000**
Physiological changes	0.732	0.000**	0.347	0.014*
Total Practice	0.936	0.000**	0.671	0.000**

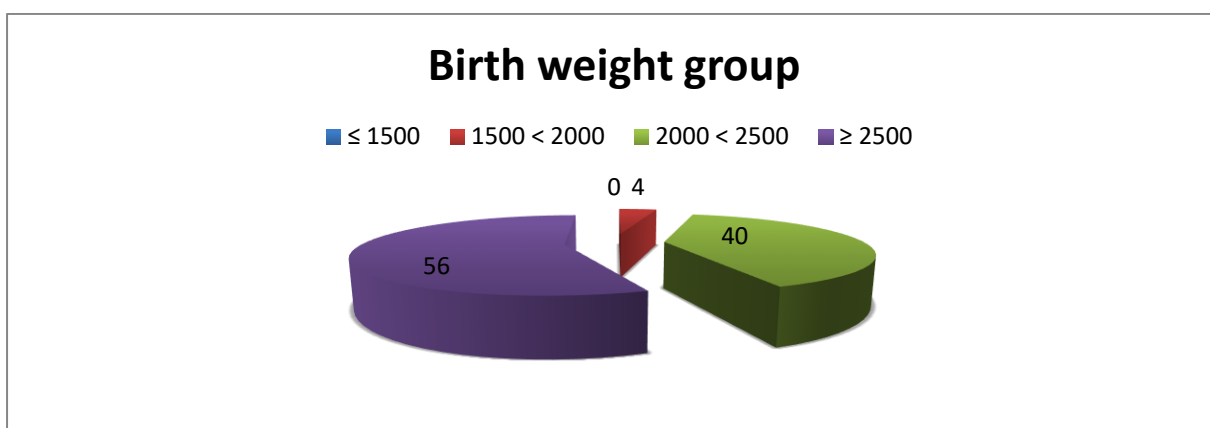




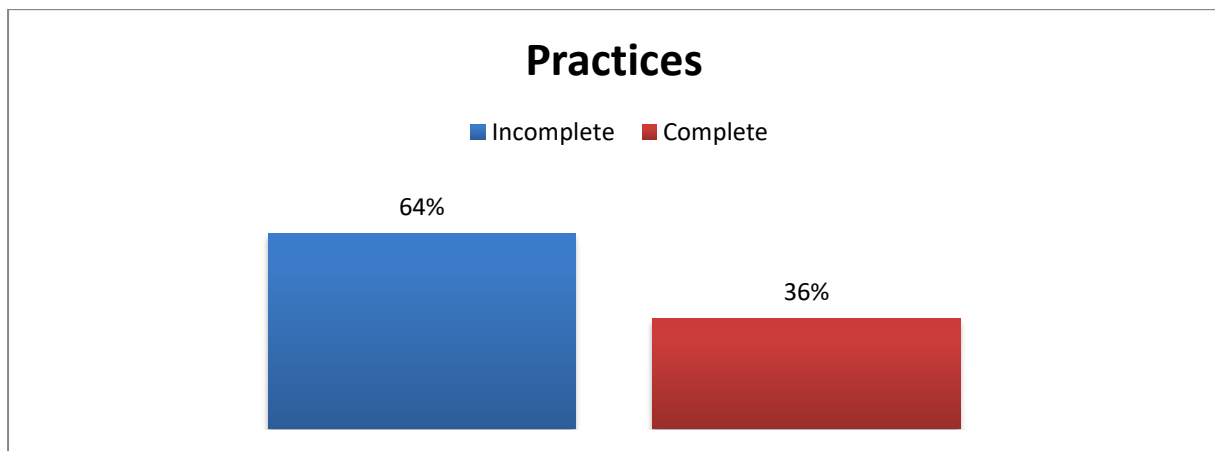
***Fig. (1) Distribution of the studied premature infants regarding to their age***



***Fig. (2) Distribution of the studied premature infants regarding to their sex***



***Fig. (3) Distribution of the studied premature infants regarding to their birth weight***



***Fig. (4) Distribution of total score of Practice***

## Discussion

Premature infants are highly vulnerable group of the population. Premature births accounts for the highest mortality rate among infants in the first year of life. This is probably the reason for increasing numbers of prematurity related researches done during the last twenty five years. The birth of a premature infant is an unexpected and stressful event for which families are emotionally unprepared. Although, the health of premature infant is first and foremost the parental responsibility, mothers are considered the most plentiful primary health care workers around the world (*El-Nagger et al., 2018*).

As regard the studied mothers' knowledge about prematurity, the current study showed that more than two thirds of them had unsatisfactory knowledge about prematurity; this study is supported by (*Rahman, 2019*) who found that: 70% of the studied mother had unsatisfactory knowledge about prematurity.

As regard total mother knowledge about KMC, the current study revealed that the majority of them had insufficient knowledge about KMC. This finding was in the same line with the study of (*Omar, 2018*), who found that 80% had insufficient knowledge.

Regarding total mother's practices, more than two thirds of studied mothers had insufficient reported practice of KMC. This study was in agreement with (*El-Naggar, 2019*) who found that, two thirds of studied mothers had insufficient reported practice of KMC on studying the effect of KMC on the premature neonates' physiological outcomes. However,



direct skin-to-skin contact between the infant and mother may stabilize the infant's temperature in the thermal neutral range, stabilize the infant's vital signs, respiratory pattern, and oxygenation, resulting in decreased apneic events, encourage more homogenous sleep patterns and potentially result in better weight gain.

This study was in accordance with (*Mohammed, 2018*) who mentioned that was statistical significant difference between pre and post application of KMC regarding premature neonates' physiological outcomes,

Regarding the premature infants' weight gain at discharge the current work clarified that the premature infants' weight increased by 1,53 gram in post KMC compared pre educational phase. However, they didn't need respiratory ventilator or prolonged hospitalization in addition to the effect of KMC application that promoting calming and decreasing the premature infants' crying and energy loss so, maintain weight gain.

Mother's knowledge is important to help their premature infants to increase weight regarding kangaroo care. The current study revealed that majority of the studied mothers had satisfactory level of knowledge in post educational program implementation. This improvement can be attributed to the comprehensive content of the educational program, its relevance to kangaroo mother care.

This finding was parallel to the study of (*Ali, 2018*) who found that more than three quarters of the studied mothers had satisfactory level of knowledge about kangaroo care, in post educational program implementation and there was high statistically significant difference between pretest and post-test.

On investigating mother's total reported practices level regarding kangaroo mother care, the finding of the present study indicated that more than two thirds of the studied mothers had incompetent reported practices in the pre-program implementation while more than half the studied mothers had competent reported practices in the post-program implementation.

On investigating, it was found that the studied mothers had poor level of reported practices. This could be due to lack of continuous training and education performed for mother regarding KMC. This finding of the current study was compatible with (*Ahmed,*



2019) who showed that, more than two thirds of the studied mothers had poor level of reported practices regarding KMC in the pre-educational program implementation.

In addition, after the educational program implementation more than half of the studied mothers had complete level of reported practices. This finding was in congruent with the study of (*Martin, 2018*) who reported that more than half of the studied mothers had satisfactory level of reported practices regarding KMC post-educational program implementation.

As regarding the relation between the mothers' knowledge and their characteristics. The study revealed that there was high statistical significance relation between mother knowledge and their age pre and post implementation of educational program with ( $P$  value  $< 0.05$ ). This result was comparable with (*Abdul-Reheem et al., 2019*) who stated that there was significant relation between age and total mothers' knowledge level pre and post implementation of the educational program.

As regard to the correlation between the studied mothers' total level of knowledge and their practices, the current study showed that there was highly statistical significant positive correlation between total knowledge and total reported practices of the studied mothers; this finding agrees with (*Abdulraheem, 2019*) who found that there was statistical significant positive correlation between total knowledge and total reported practices of the studied mothers.

## Conclusion

The studied mothers had deficit knowledge and poor level of practice about Kangaroo Mother Care. Recommendation:

## Recommendation

A periodical educational program is needed to improve the mothers' knowledge and practice about Kangaroo Mother Care.



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