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The effect of kangaroo care educational program for mother on weight gain of premature infants in neonatal intensive care units

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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: (pre, post and follow-up), *tool (2)* checklist of reported practices: (pre, post and follow-up), *tool (3)* knowledge of the mother about kangaroo care technique: (pre, post and follow-up). Results: More than three quarters of the studied mothers had unsatisfied knowledge about Kangaroo Mother Care in the pre educational program implementation while nearly all of them had satisfactory level of knowledge in the post educational program implementation, also about two thirds of them had insufficient practices in the pre educational program implementation while more than half of them had competent practices in the post educational program implementation; there was highly statistical significant

positive correlation between studied mothers total knowledge level and total reported practices level. Conclusion: The educational program had a significant positive effect on improving mothers' knowledge and practices regarding kangaroo care. Recommendation: Continuous educational programs to increase awareness of the mothers about Kangaroo Mother Care to ensure enough knowledge and practice about KMC.

Keywords---Educational program, Mothers knowledge, Practices, kangaroo mother care.

Introduction

Kangaroo Mother Care (KMC) is skin-to-skin contact between the mother and the premature infant. 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. (*Jagadale, 2018*).

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 (*Tully, 2018*).

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 premature infant 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, 2018*).

The kangaroo position provides ready access to nourishment. The WHO adjusted the kangaroo care's instructions and encouraged its application in developing countries.; 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 et al., 2017*).

Kangaroo care is a technique practiced on newborn, usually preterm infants, where 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 & Grow 2016*).

Nurses are the main contributors in kangaroo care of premature infants and their mothers. Nurses must be thoroughly aware with the several recent advances in

kangaroo care technique and educate mothers about it to improve weight gain of the premature infants (*Kely & Carman, 2018*).

Method

A quasi-experimental design was utilized to conduct this study. The study was conducted at Neonatal Intensive Care Unit (NICU) in Beni Suif University Hospitals. The neonatal intensive care unit in Beni Suif University Hospitals located in the sixth floor, consists of three rooms, the first room contains 8 incubators, the second room contains 8 incubators and the third room contains 4 incubators.

A purposive sample of 50 mothers attending to the previous mention setting accompanying their premature infants; under the following inclusion criteria weighting from 1000gm to 2500gm 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).

Results

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

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

Table (1) showed that, 64% of the studied mothers were in the age group 20<30 years old with mean age 26.20 ± 5.94 . Concerning the education level 28% of the studied mothers were illiterate, while 72% of them can read and write. In addition it was found that 68% of the studied mothers were working; also 66% of the

studied mothers were $3 \leq 4$ mother parity. In regard to type of delivery it was found that 66.0% of the studied mothers had cesarean delivery.

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

	No.	Percentage
Age		
28 < 29 wks	15	30.0
30 > 31 wks.	14	28.0
32 > 33 wks	21	42.0
Mean $\pm$ SD	28.85 $\pm$ 1.06	
Sex		
Male	8	16.0
Female	42	84.0
Birth weight		
≤ 1500 gm	0	0.0
1500 < 2000	2	4.0
2000 < 2500 gm	20	40.0
≥ 2500	28	56.0
Mean $\pm$ SD	1170.00 $\pm$ 1347.18	
Prematurity causes		
PROM	17	34.0
PET/ Eclampsia	19	38.0
GDM	7	14.0
Hypothyroidism	7	14.0
Length of Hospital Stay		
< 3 days	6	12.0
$3 \leq 6$ days	44	88.0
Mean $\pm$ SD	4.14 $\pm$ 0.98	
Weight gain (gram)		
< 50 gm	2	4.0
$50 \leq 100$ gm	48	96.0
Mean $\pm$ SD	73.00 $\pm$ 9.90	

Table (2) showed that, 42% of the studied premature neonates were in the age group 32>33 weeks old. With a mean age 28.85 ± 1.06 . Regarding the birth weight it was found that 56% of the studied premature neonates were in the group ≥ 2500 grams with mean weight 1170.00 ± 1347.18 . The table also showed that, 38% of the prematurity causes go to PET/ Eclampsia. The length of hospital stay for 88% of the group was $3 \leq 6$ with mean length = 4 ± 0.98 ; the weight gain achieved in 96% of the group was $50 \leq 100$ grams with Mean = 73.00 ± 9.90 .

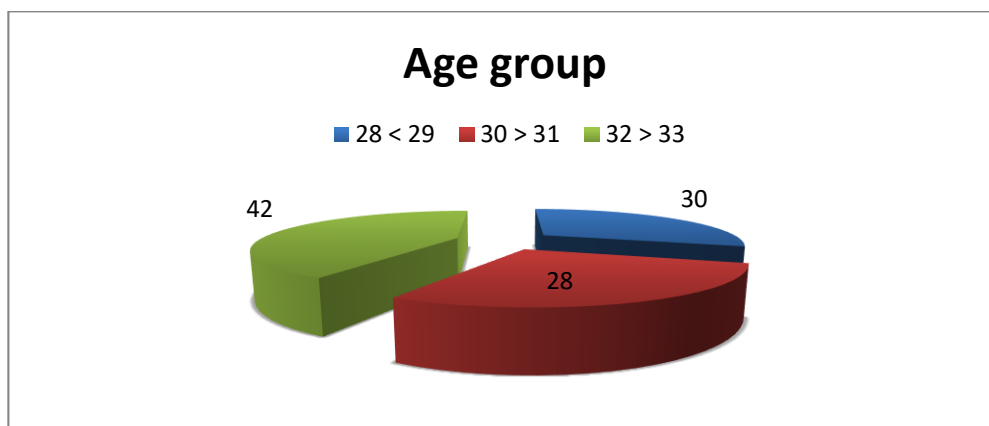


Fig. (1) Distribution of the studied premature infants regarding to their age

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

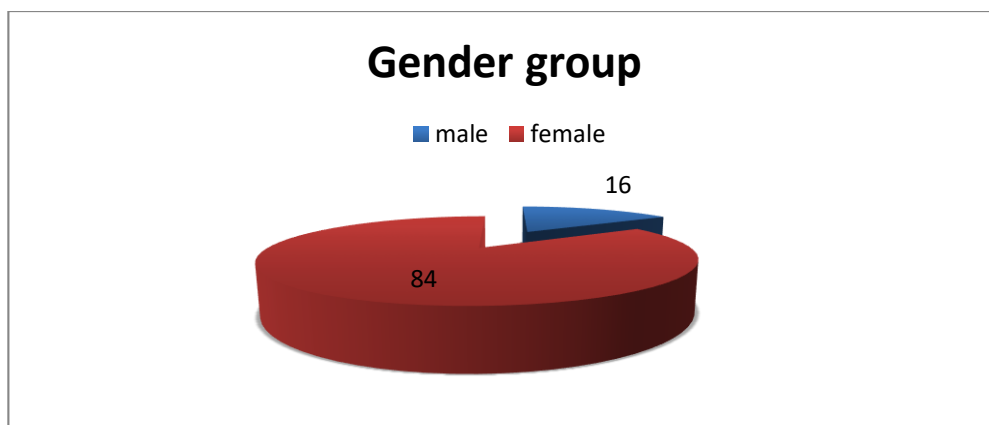


Fig. (2) Distribution of the studied premature infants regarding to their sex

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

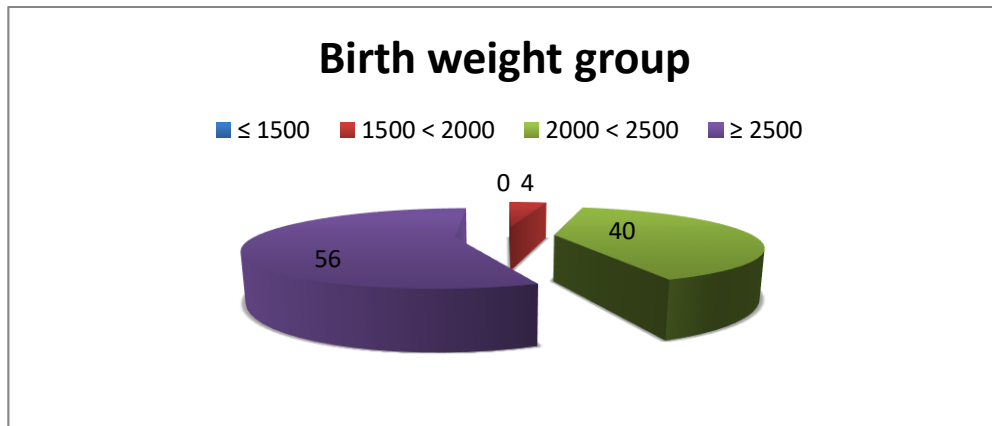


Fig. (3) Distribution of the studied premature infants regarding to their birth weight

Figure (3) showed that, (56%) of the studied infants were born with birth weight of ≥ 2500 , while 40% of them were in the group $2000 < 2500$ grams birth weight and only 4% and 0% of them were in the groups $1500 < 2000$ and ≤ 1500 grams birth weight respectively.

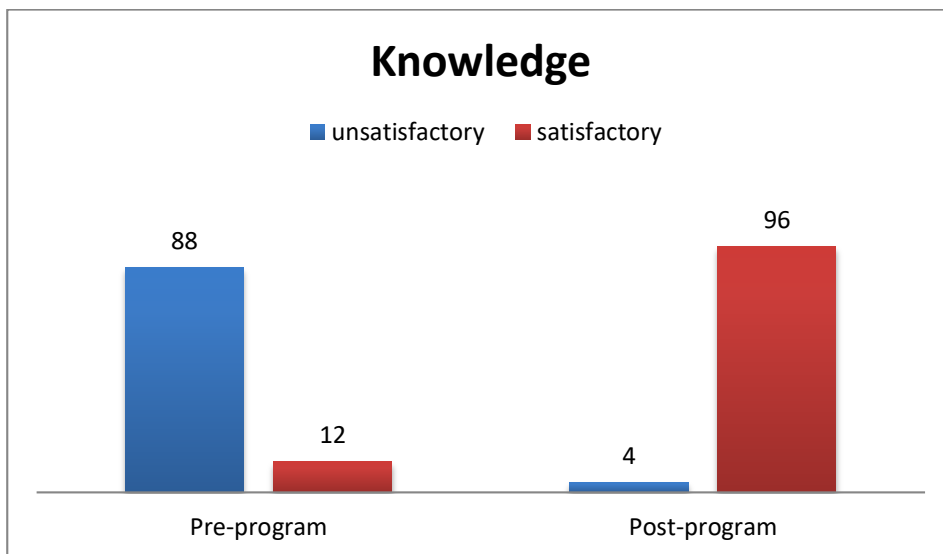


Fig. (4) Distribution of total Score of Knowledge about Kangaroo mother care Pre and Post Program among Studied Mothers.

Figure (4) showed that, 88% of the studied mothers had unsatisfactory knowledge about KMC pre educational program implementation, while the majority of them had satisfactory knowledge about KMC post educational program implementation.

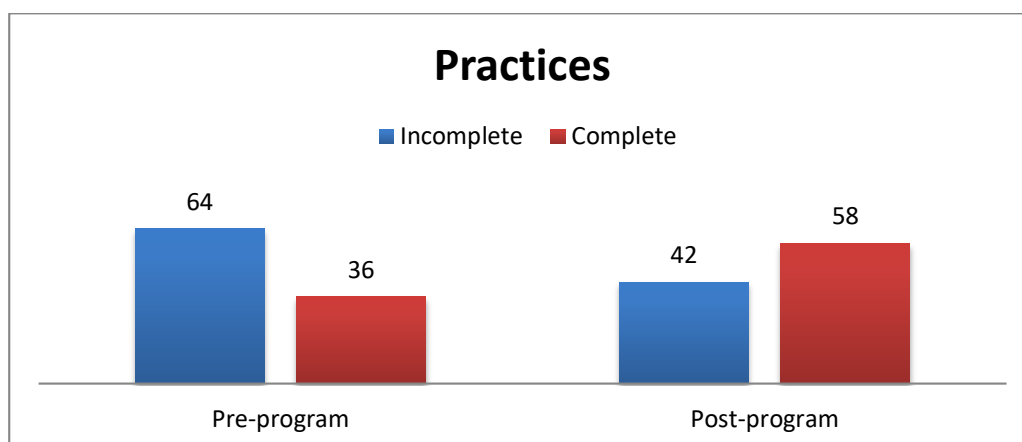


Fig. (5) Distribution of total score of Practice Pre and Post Program among Studied Mothers

Figure (5) showed that, 64% of the studied mothers had incomplete reported practices about KMC pre educational program implementation, while less than two thirds (58%) had complete reported practices knowledge about KMC post educational program implementation.

Discussion

As regard total mother knowledge about KMC, the current study revealed that the majority of them had insufficient knowledge about KMC in pre-education phase; while in post program phase, majority of them had sufficient knowledge. This finding was in the same line with the study of (Omar, 2018), who found that 80% had insufficient knowledge pre-program implementation.

Regarding total mother's practices, more than two thirds of studied mothers had insufficient reported practice of KMC in pre-educational phase. Meanwhile more than half of them had competent reported practice post program implementation. This study was in agreement with (El-Naggar, 2019) who found that, two thirds of studied mothers had insufficient reported practice of KMC in pre-educational on studying the effect of KMC on the premature neonates' physiological outcomes, the results of the present study revealed that there was statistical significant difference between pre and post application of KMC in relation to premature neonates' heart rate, respiratory rate, temperature and occurrence of apnea. 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.

Conclusion

Kangaroo care educational program for mother affect positively in premature infants weight gain.

Recommendation

Continuous educational programs to increase awareness of the mothers about kangaroo mother care to ensure enough knowledge and practices.

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