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Impact of Neonatal Nurses' Guidelines on Improving Their Knowledge, Attitude and Practice Toward Kangaroo Mother's Care

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Abstract
Kangaroo care is a technique practiced on newborn and seeks to provide restored closeness of the newborn with mother or father by placing the infant in direct skin to skin contact with one of them. The study aimed to evaluate the impact of neonatal nurses' guidelines on improving their knowledge, attitude and practice toward kangaroo mother care. Quasi experimental design was conducted for this study. The study was conducted in the neonate and neonatal intensive care unit in Mansura university children hospital Egypt. This is a convenient sample of 60 registered nurses who's worked in the mentioned above setting. For data collection an interview questionnaire (pre/post test format) was used to assess nurses knowledge, attitude and practice as regard to kangaroo care promote bonding, it have positive effect on physical wellbeing of infant, it improve breast feeding, kangaroo care should begin within few hours after birth, also all parents should be given relevant information on kangaroo care and nurses should remain with parent support and assistance during kangaroo care. The result of the study showed the effectiveness of neonatal nurses guideline on improving their knowledge and practice toward kangaroo mother care as a means of facilitating parent – infant attachment, and provides valuable insights into the attitudes and practices of neonatal nurses in promoting KMC within the highly specialized NICU environment. According to this study it is recommended to establish education program for all mothers about the benefits and management of KMC through booklets, posters. Hospital support for the mothers is needed to facilitate and continues early initiation of KMC through allowing the mother to visit her premature infants' all of the time without restrictions.

1. Introduction

A premature birth is a birth that takes place more than three weeks before the neonate is due. In other words, after less than 37 weeks of pregnancy, which usually lasts about 40 weeks? Premature birth gives the neonate less time to develop in the womb. Although, premature infants especially those born earliest, often have complicated medical problems (1, 2, 3), meanwhile not all premature experiences complications, these depending on how early a neonate is born, where's extremely preterm born at less than 25 weeks of pregnancy. Furthermore, very preterm born at less than 32 weeks of pregnancy and late preterm born between 34 and 36 weeks of pregnancy. However, most premature births occur in the late preterm stage. Generally, the earlier a neonate is born, the higher the risk of complications physiological and psychological. (2, 4)

In Egypt, despite increased efforts to prevent prematurity, the prevalence of premature birth has significant rate. It may reach approximately to 41,728 each year. These statistic may indicates in some way the highly rate of Neonatal Intensive Care Units (NICUs) admission in hospitals every year. (5) Consequently, because premature infants are born too early and weigh much less than full-term neonates. They may have health problems because their organs did not have enough time to develop. So, they need special medical care in a NICU and stay there until their organ systems can work on their own. (6)

Approximately 13 million babies are born prematurely worldwide. Prematurity is considered to account for 27% of four million neonatal deaths annually. In low-income countries, the mortality rate of premature infants is six times higher than that of high-income countries. Kangaroo mother care (KMC) has been proven to be an acceptable and feasible method to decrease the mortality rate of premature infants in low- and high-income countries. It has also been proven that mothers of premature infants are naturally less empathetic towards their infants, and tend to engage less with them visually, orally and tactilely. KMC has been found to have physiological, behavioral, psychosocial and cognitive developmental benefits, and it enhances mother-infant bonding. In addition, it promotes breastfeeding, enables the mother to become more confident when caring for her infant, and results in early hospital discharge. (7)

Preterm infants require special care in intensive care units, and may spend days or weeks in incubators, until their condition has clinically stabilized. Preterm infants have been traditionally separated from their mothers,

receiving the required care in incubator at intensive care units and usually deprived from maternal contact. Kangaroo care is a technique practiced on newborn, usually preterm infants where in the infant is held, skin-to-skin, with an adult. Kangaroo care seeks to provide restored closeness of the newborn with mother or father by placing the infant in direct skin-to-skin contact with one of them. (8)

Kangaroo healthcare providers are basically to teach, coach, offer expert counseling, and closely monitor the mother infant dyad. It is not "alternative" medicine but a scientifically sound, multilevel intervention. Although more research on KMC is needed, there is already enough evidence for it to be used extensively for low birth weight infants. Theoretically the infant should be kept in the skin-to-skin position for as long as possible. When skin-to-skin care is practiced for more than 20 hours a day it is called continuous KMC. Skin-to-skin care for a few hours a day is called intermittent KMC or kangaroo care (KC). (9)

KMC reduces neonatal mortality and morbidity especially due to infections, among preterm babies in hospital with a weight of ≤2000 g. In sub-Saharan Africa, 14 percent of babies are born LBW, a birth weight of less than 2500 g. Most newborn babies who die are LBW accounting for 60 to 90 percent of newborn deaths globally. There is little evidence for prevention of preterm births and LBW even in high-resource settings. KMC usually starts in hospital, is continued at home after discharge with routine follow up visits scheduled to weigh the baby, counsel on feeding and check for danger signs. To date no study has documented the continued practice of KMC amongst mothers and babies once they return to their communities without active follow up. (10, 11)

It has been recommended that staff initiate continuous KMC, even in a high tech-unit, as soon as possible after the infant is born and after initial resuscitation and stabilization (12, 13). Compared to traditional neonatal care, KMC yields instant physiological benefits for the preterm infant, such as thermal regulation (14), more stable oxygen saturation in intubated infants, and less severe infections. (15) Furthermore, KMC has a positive effect on breastfeeding, especially for the smallest and most vulnerable infants (16) and more quiet sleep has been identified in skin-to-skin holding infants comparing to traditional care. (17) It has also been shown to work as pain treatment, reducing the preterm infants' pain and salivary cortisol during heel stick. (18) Moreover, KMC can help decrease the time during which the infant needs hospital care. (19)

Mothers who practiced continuous KMC (24h/day) have reported that they liked having this close contact with their infant and that they felt safe with this care. However, some of the mothers were unsatisfied with the guidance and support offered by staff at the unit (20). The nursing perspective incorporates the idea that, in the context of promoting health and preventing illness, the effect of the parent-child relationship on the child´s health needs to be understood (21). Therefore, KMC should be promoted actively and should be viewed as a means of humanizing the process of giving premature birth (22). However, the implementation of KMC seems as the positive or negative attitudes of staff affect parental practice of KMC.(23)

Some Staff members at neonatal units have concerns over whether KMC should begin within a few hours of birth and some have concerns for the safety of preterm infants. Furthermore, staff has concerns over increased workloads and low staffing levels. It has been found that a key factor in developing a positive attitude is that staff find the facilitation of KMC professionally satisfying. When staff observed the improved wellbeing of parents and preterm infants during KMC, it gave them motivation to work toward further improvement. Nurses at units in which KMC is practiced seem to have very positive perceptions about the method and are more open-minded in their opinion of which infants could be cared for with KMC. In addition, while they do perceive some disadvantages regarding KMC, this does not seem to affect their implementation. (24)

Studies show that nurses play a vital role in supporting interactions between the infant and mother in the neonatal intensive care unit environment. How nurses implement this support is the subject of this literature review. (25) Staff at neonatal units viewed education as essential in providing them with the knowledge and skill to facilitate KMC. However, knowledge and practice are not necessarily related: knowledge alone does not change practice. Attitudes strongly influence action. Even if staff are aware of research literature, their own personal knowledge and beliefs influence their encouragement or discouragement of KMC. Hence, nurses may be unwilling to implement new nursing care interventions, regardless of their demonstrated effects, if they do not perceive the value of the intervention (24).This study is therefore designed to evaluate impact of neonatal nurses' guidelines on improving their knowledge and experience toward kangaroo mother care**.**

2. Aim of the Study:

The aim of this study was to evaluate The Impact of Neonatal Nurses' Guidelines on Improving Their Knowledge and Experience toward Kangaroo Mother's Care at Mansoura University Children Hospital.

2.1 Research Hypotheses:

1. There will be statistically significant differences among pre test group subjects and post test to the same group in relation to nurses' knowledge about Kangaroo Mother Care.

2. There will be statistically significant differences among pre test group subjects and post test to the same group in relation to nurses' attitude about Kangaroo Mother Care.
3. There will be statistically significant differences among pre test group subjects and post test to the same group in relation to nurses' practice about Kangaroo Mother Care.

3. Subjects and Methods:

3.1 Research design:

Quasi experimental deign was conducted for this study.

3.2 Setting:

The study was conducted in the neonate and neonatal ICU in Mansura University Children hospital in Egypt.

3.3 Sample:

A convenient sample of 60 registered a nurse who's worked in the mentioned above setting.

3.4 Procedure for Data Collection:

The participants were interviewed by the researcher. The aim of our study was explained to given assurance of confidentiality of information offered, and to gain their maximum cooperation. Consent was obtained. The questionnaires were obtained individually by the researcher, they were various questions they had were responded. Each participant needs to 20-30 minutes to complete the research questionnaires.

3.5 Data collection tools:

The tools of this study consisting of four instruments to gather the required data for the study as the following:

1. Socio-Demographic Characteristics Sheet:
   This sheet include socio-demographics characteristics of nurses and such as age, highest qualification attained, years of working experience as a registered nurse and specialized area of pediatric nursing…etc.
2. Nurses' knowledge on benefits of kangaroo care :
   Which include: Kangaroo cares promote bonding, kangaroo cares have positive effect on physical wellbeing of infant, and kangaroo care enhances patients' confidence. Kangaroo care result in more effective breastfeeding, kangaroo care should not be practiced with an incubated infant…….etc.
3. Nurses' Attitude about Kangaroo Care Sheet:
   Which includes attitude that KMC ↑ the work load, Will it compromise care to other sick babies ؟ Did mothers feel happy doing KMC? Did they accept it easily? Did it ↑ lactation in mother?.....etc.
4. Nurses' Practice Assessment Sheet:
   This assessment sheet includes if encourage mothers in participation of kangaroo care , if nurses assist mothers in participation of kangaroo care with normal term infants or preterm infants (weighing≥1000g) or infants (weighing≤1000g)……etc.

3.6 Administrative Design:

An official permission was obtained from Mansura University then from the Dean of Faculty of Nursing then from the directors of hospital and informed consent was obtained from the nursing staffs who participate in this study.

Scoring system:

The questionnaire consisted of 30 items questions to assess the knowledge, and attitudes were provided using 5 point likert scale (not at all, no, not sure, yes, very much) each of them has five alternatives from 1-5. Also, 13 questions for practice with score +1 for a correct answer, zero for an incorrect answer was considered. The total scores of questionnaire were less than 50% was graded as poor, 50% to less than 75% score was graded as average, and more than 75% score was graded as good for knowledge and practice.

Validity test was done by 5 expertise's of nursing faculty' staff from the pediatric nursing department. Reliability test was done by applying the questionnaire to 10 nurses using test-retest.

Guideline for nurses:

A guideline was designed by the researchers according to the actual educational need assessment of the studied nurses.

1. Assessment phase:

The program was designed by the researchers based on results obtained from pre assessment tools. It was revised and modified according to the related literature. Cultural and socio demographic aspect of the study sample were designed to cover nurses knowledge, attitude and practice toward kangaroo mother care.

2. Program development:

The guideline was in a form of Arabic language to be easy understood for the nurses. Pretest was given to identify weakness in nurses' knowledge to include it in the guideline. The content of the guideline model has information about kangaroo care definition, goals and benefits of it, effective breast feeding also nurses attitude about kangaroo care as it increase workload, mother feel happy doing KMC ,mother accept it easily and effect of KMC on increase lactation .

3. Implementation Phase:

A clear and simple explanation was offered to nurses about aim of the study and its expected outcomes. Each nurse was assessed individually (10-20 minutes) using the previously mentioned tools. The total number of the sample 60 nurses was divided by 10 nurses per week .The guideline model was introduced to each nurse separately over a period of one months and two weeks, 2 sessions /week the total numbers of sessions was 10 sessions. Each session is ranged from 1 - 2 hours. In the first session pre-test was done and objective of the program were explained to the nurses .Also, a copy from guideline was given to each nurse, then the subject of the session was introduced followed by a period of discussion.

4. Evaluation phase

The evaluation of the effectiveness the guideline was measured after one month by reassessing the nurses' knowledge, attitude and practice by using the same tools.

4.1 Limitation of the study

Many of the nurses were too overloaded with work, and there were many interruptions during the time of answering of questionnaires.

4.2 Ethical consideration:

Permission to conduct the study will be obtained from the dean of the Faculty and administrator of hospital manager. Verbal consent will be obtained from each participant. The researcher will offer adequate information about the study purposes and its significance. Participation is voluntary. Participants will be assured that their responses would be confidential and information that might reveal their identity would not be recorded, and only aggregated data would be communicated.

4.3 Pilot study

A pilot study was carried out on 6 nurses who working in the medical unit of Pediatric in Al-Mansura University Children Hospital in order to test the applicability of tools and clarity and simplicity of the included questions as well as to estimate the average time needed to fill in the sheets. Those who shared in the pilot study were excluded from the main study sample. Necessary modifications were carried out based on finding of pilot study to develop the final form of the tools.

4.4 Field work

- Preparation of data collection tools was carried out about period of two months and from beginning of February to end March 2013 after revised from experts' opinions, and validity test.
- Once the official permission was granted to proceed with the proposed study, plan for appointment with nurses to explain the nature & purpose of the study, as well as to discuss the plan of work to ensure their cooperation will be accomplished.
- Data collection was carried out two days / week (Monday and Wednesday) from 10 a.m. to 1 p.m. For assessment 10 nurses / week. Each study subject was interviewed and assessed individually using study tool . the program was carried out in 2 sessions for knowledge, attitude and practice including time for discussion in order to detect any defects . This was done through pre and post administration of an interviewing questionnaire.

4.5 Statistical Design

Data were revised, coded, tabulated and analyzed using numbers and percentage distribution and carried out in a PC computer SPSS program. The following statistical techniques were used: Percentage. Mean. Standard deviation- Test for quantity variables. Paired t-test for comparison of paired two quantity variables and Wilxon test.

Significance of the Results:

When $p > 0.05$ it is statistically insignificant difference.
When $p < 0.05$ it is statistically significant difference.
When $p < 0.01$ or $p < 0.001$ it is high statistically significant difference.

5.Results

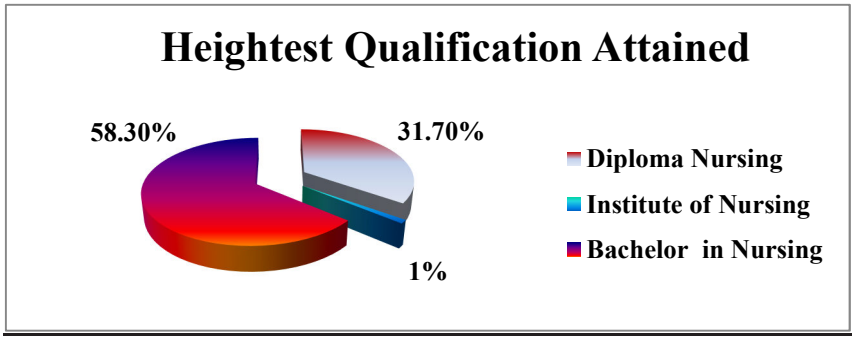

Figure (1) shows that more than half of nurses (58.3%) attained a bachelor degree in nursing as a highest qualificatio

Table (1):Distribution of the studied nurses according to their characteristics

Variables	No	%
Age of Nurses		
20 - < 25 years	10	16.7
25 – ≥ 30 years	50	83.3
M± SD	26.02±1.944	
Years of working experience as a Registered Nurse:		
Less than 1year	2	3.3
1 – 3 year	35	58.4
4 – 6 year	18	30
7 - 9 year	5	8.3
M± SD	2.433 ± 0.6978	

Table (1)) illustrated socio-demographic data of the nurses, more than two thirds (83.3%) of nurses aged from 25 – ≤ 30 years with Mean ± SD of age = 26.02±1.944. also less than two thirds of them (58.4%) were held in 1-3 years of working experience as a registered nurse.

Table (2):Distribution of nurses' knowledge Pre and Post Intervention Regarding Benefits of Kangaroo Mothers Care (KMC):

knowledge	Pretest	Posttest	t	P
	M ± SD	M ±SD		
1.kangaroo care promote bonding	1.8833±0.71525	3.9500± 1.0556	12.567	0.000*
2. kangaroo care have positive effect on physical wellbeing of infant	2.1667±0.88618	4.2500±0.89490	13.808	0.000*
3.kangaroo care enhances patients' confidence.	2.1167±0.80447	4.1333±1.03280	11.824	0.000*
4.kangaroo care result in more effective breastfeeding	2.3833±1.0099	3.8167 ±1.049	8.104	0.000*
4. potential benefits of kangaroo care have been overstated	2.4500±0.99873	2.8333±1.23737	1.837	0.071
6.kangaroo care should not be practiced with intubated infant	2.1333±1.11183	2.5000±1.15714	1.794	0.08
7.kangaroo care should only be practiced for infant weighing 1000g or more	2.4333±1.01458	3.6333±1.35256	5.515	0.000*
8.kangaroo care should begin within a few hours of birth	2.2333±0.90884	3.3667 ±1.60472	5.219	0.000*
9.All parents should be encouraged to practice kangaroo care	2.2667±0.89947	4.1167±0.92226	11.757	0.000*
10.All parents should be given relevant information on kangaroo care	2.5667±1.15519	3.9333 ±0.93640	8.217	0.000*
11. Nurses should remain with parent support and assistance during kangaroo care	2.9333 ±1.36378	4.1667± 0.74029	6.058	0.000*
12. Nurses should facilitate kangaroo care when NICU is quiet	2.4000 ±0.88681	4.2667±0.84104	11.655	0.000*
13. Facilitating kangaroo care is professionally satisfying	2.3833 ±1.64300	3.9833±1.04948	9.317	0.000*
14. Facilitating kangaroo care is an added burden to NICU nurses	1.8500 ±0.95358	2.9667±1.48400	4.696	0.000*
Total	**29.7500±3.758**	**51.9167±7.12668**	**22.128**	**0.000***

Table (2) showed Mean Score about knowledge on benefits of Kangaroo Mothers Care (KMC).In this table mean score in pretest 1.8833±0.71525 for nurses that kangaroo care promote bonding while posttest was3.9500± 1.0556. Also, mean score more for nurses that kangaroo care result in more effective breastfeeding in pretest was 2.3833±1.0099 while posttest was 3.8167 ±1.049 with statistically significant difference. Furthermore, total pretest 29.7500±3.758 while posttest was 51.9167±7.12668 with statistically significant difference.

Table(3): Distribution of Nurses' Attitudes Toward KMC:

Variables	Pretest	Posttest	t	P
	M ± SD	M ±SD		
1. Will KMC ↑ the work load?	1.9667 ± 0.84305	3.4833±1.3715	6.822	0.000*
2. Will it compromise care to other sick babies?	2.2000± 0.83969	3.7667±1.11030	8.414	0.000*
3. Did mothers feel happy doing KMC?	2.2833±0.88474	3.6833±1.22808	7.030	0.000*
4. Did they accept it easily?	2.5000±0.94779	3.0500 ±1.45468	2.461	0.01*
5. Did it ↑ lactation in mother?	2.2333±0.99774	3.9333±1.24692	8.530	0.000*
6. Were mothers more confident to handle their LBWI after KMC?	2.3833±0.76117	3.4333±1.18417	5.636	0.000*
7.Effect of KMC on behavior of baby (↓cry, ↑ sleep)	2.4667±0.83294	4.1167 ±1.10610	9.834	0.000*
8. Is it a useful method of care for LBWI?	2.3833±1.1061	4.1500±0.93564	8.798	0.000*
9. Would you recommend its use in community and hospitals?	2.4667 ±1.049	4.0667±1.1026	7.762	0.000*
10. Would you advise mothers to continue KMC at home?	2.0667± 0.68561	3.8333±1.2509	9.264	0.000*
11. Can mothers do it at home without supervision?	2.0833+0.7431	2.7000±1.3567	3.375	0.000*
12. Was KMC effective in care of baby's temperature and Vitals?	2.1333±0.70028	3.3000±1.33150	6.381	0.000*
13. During KMC, did you observe any apnea/ hypothermia?	2.08333±0.56122	2.9833±1.14228	5.266	0.000*
14. Did it ↓ the use of warming gadgets?	2.0167±0.6767	3.7167±1.12131	10.746	0.000*
15. Is it worth putting efforts in advocating KMC?	2.5000±0.81303	4.2167±0.76117	13.390	0.000*
16. How use full is family education about KMC?	2.45001±0.87188	3.8667±0.87269	9.508	0.000*
Total	**36.2167±3.59421**	**52.3000±8.03235**	**13.565**	**0.000***

Table (3) illustrated comparison between mean Score of nurses' attitudes toward KMC. The mean score of nurses about pretest KMC ↑ the work load was 1.9667 ± 0.84305 while posttest was3.4833±1.3715. Also, in relation to attitude that KMC increase lactation in mother; pretest mean score was 2.2333±0.99774 while posttest mean score was 3.9333±1.24692. Meanwhile total pretest mean score of them 36.2167±3.59421 while post test mean score 52.3000±8.03235 with highly statistically significant difference.

Table (4): Distribution of Nurses' Practice and activity about KMC

Nurses' Practice	Pre Test		Post Test		Z	P
	No	%	No	%		
1. Encourage mothers in participation of kangaroo care						
Yes	17	28.3	44	73.3	4.564	0.000*
No	43	71.7	16	26.7		
2. Assisted mothers in participation of kangaroo care with normal term infants						
Yes	16	26.7	49	81.7	5.284	0.000*
No	44	73.3	11	18.3		
3. Assisted mothers in participation of kangaroo care preterm infants (weighing≥1000g)						
Yes	24	40	43	71.7	3.413	0.001*
No	36	60	17	28.3		
4. Assisted mothers in participation of kangaroo care for preterm infants (weighing≤1000g)						
Yes	24	40	47	78.3	3.683	0.000*
No	36	60	13	21.7		
5. Assisted mothers in participation of kangaroo care preterm ventilated infants						
Yes	12	20	45	75	5.154	0.000*
No	48	80	15	25		
6. provided information about kangaroo care to the parents						
Yes	32	53.3	49	81.7	3.157	0.002*
No	28	46.7	11	18.3		
7. participated in a continuing education program about kangaroo care						
Yes	31	51.7	51	85	4.082	0.000*
No	29	48.3	9	15		
8. Have been supervised in the technique of kangaroo care						
Yes	28	46.7	38	36.3	1.890	0.059
No	32	53.3	22	36.7		

Table (4) showed nurses' practice and activity about KMC. In this table more than one quarter of the nurses (28.3%) encourage mothers in participation of kangaroo care in pre test compared to 73.3% of them in posttest with highly statistically significant difference. Also, 60% of the nurses not assisted mothers in participation of kangaroo care for preterm infants (weighing≥1000g) in pretest compared to 28.3% in posttest with highly statistically significant difference.

Table (5): Relationship between pretest and Post Mean Score in relation to Total Knowledge and Total Practice:

	Pretest	Posttest	t	P
	Mean ± SD	Mean ± SD		
Total Knowledge Score	29.7500 ± 3.75804	51.9167 ±7.12668	22.128	0.000*
Total Practice Score	4.6000 ± 2.25644	8.2833 ± 2.07562	9.850	0.000*

Table (5) shows Relationship between pretest and Post Mean Score in relation to Total Knowledge and Total Practice; pretest total knowledge score 29.7500 + 3.75804 compared to mean score posttest 51.9167 +7.12668. Furthermore, total practice score pretest 4.6000 + 2.25644 compared to posttest 8.2833 + 2.07562 with highly statistically significant difference.

6.Discussion

Childbirth has a significant effect on the social, psychological, and physical wellbeing of women and their families, so the role of the nurses is to support women during this period of adaptation, promote health, and minimize the consequences when preterm neonate is delivered. (26, 27)

The neonatal nurses educate the mothers about KMC by giving information verbally about benefits and needs to provide. Determine the mothers' readiness for KMC and obtain their agreement to provide KMC to their neonate. Secure all tubes and lines. Perform any needed procedures that may later interrupt premature infant holding, if possible. Set up rocker/recliner and privacy screen beside incubator. Check heart rate, respiratory rate, oxygen saturation, and temperature and assess pain score before and 15 minutes after transfer. (28, 29, and 30)

Currently, kangaroo care is an adjunct to standard care for stable low birth weight and premature infants. The core feature is early positioning of the infant, clad only in a nappy, prone and upright on the mother or father's chest to maximize skin-to-skin proximity. Associated features are kangaroo nutrition (exclusive breast feeding whenever possible) and early home discharge in the kangaroo position. Since kangaroo care was first introduced more than 260 studies have been published relating to its safety, efficacy, and feasibility. (31, 32, 33)

According to nurses socio-demographic characteristics (table 1), the current study found that a majority of nurses' age (83.3%) were from 25 to 30 years with mean age 26.5 (SD=1.944). More than half of nurses was diploma nursing (58.3%) attained the highest qualification, also, 58.4 % of nurses have 1-3 years working experience as registered nurse in neonate with mean, SD=2.433 ± 0, 6978, this is compatible with (34) with the mean age of the sample was 39.7 years (SD=7.74, range 25 to 56 years), with an average of 19.5 years of nursing experience and 9.9 years working in neonatal nursing. The basic nursing education qualification held by most nurses was a hospital diploma (61.8%).

Regarding the nurses' mean knowledge scores on benefits of Kangaroo Mothers Care (KMC) (table2), there were a highly statistically significance differences between nurses' knowledge before & after guidelines intervention in the majority of statements toward benefits of KMC with total mean score (pre=29.7500+3.758; post 51.9167+7.12668). Nurses' held higher mean score of knowledge after guidelines intervention when comparing to it before guidelines intervention with (pretest= 1.8833+0.71525; posttest =3.9500+ 1.0556) for kangaroo care promote bonding, kangaroo care have positive effect on physical wellbeing of infant, kangaroo care result in more effective breastfeeding, kangaroo care enhances patients' confidence, was higher after guidelines intervention. These results were consistent with (35) who report that a majority of the nurses strongly agreed that KMC has positive effects for mother -infant attachment (bonding), maternal feeling of closeness and increases the mother's confidence while enhancing the physiological and behavioral status of the infant. Similar results have been seen in other studies (23, 34, and 36).

Meanwhile, there were no statistical significant difference between nurses' mean knowledge scores before & after guidelines intervention toward statement; potential benefits of kangaroo care have been overstated, kangaroo care should not be practiced with intubated infant. Our results compatible with (23) who reported that Hesitance towards KMC for intubated infants. However, research by (37) show no obstacle to KMC with intubated infants if the unit has clear guidelines on how to handle the intubated infants during KMC.

Furthermore, there were statistically significant differences between pre and post nurses' mean knowledge scores for statements; KMC should only be practiced for infant weighing 1000g or more; all parents should be encouraged to practice kangaroo care; all parents should be given relevant information on kangaroo care. There was strong agreement with (34) who reported that KC is appropriate for intubated and very low birth weight (<1000 g.) infants; staff encourage parents to practice KC; the importance of nurses providing parents with relevant information and being present during KC to offer support.

While, regarding to nurses' attitudes toward kangaroo mothers Care (KMC) table(3), the current study found that the nurses held more higher mean scores post-intervention than pre-intervention with total mean scores (Pre =36.2167+3.59421 Post= 52.3000+8.03235). In relation to statement practicing kangaroo care may increase work load there was statistically significant difference after intervention. This is in contrast with (24) who reported that staff did not agree that practicing KMC increased their workload. While in a study that considered reasons for resistance to the implementation of KMC in developing countries, the researchers found that professional staff considered KMC to be sub-standard care, and that it increased the staff workload. (38)

A number of studies have investigated the physiological effects of KMC when used with premature infants and reported that with KMC, the premature infants typically snuggles into the breast and is deeply sleep within just a few minutes, Maternal breast milk supply becomes streamlined, making it easier for the mother to breastfeed the offspring for a longer duration that increased breast milk supply. (39, 40, 41, 42)

The results of the present study revealed that, significant differences was increased in nurses' attitudes after guidelines intervention toward statements; KMC ↑ lactation in mother; mothers more confident to handle their LBWI after KMC; Effect of KMC on behavior of baby (↓cry, ↑ sleep); KMC a useful method of care for LBWI; KMC effective in taking care of baby's temperature and Vitals and observe any apnea/ hypothermia. These

results were consistent with (43) who reported that there was statistical significant differences between pre and post application of KMC On studying the effect of KMC on the premature neonates' physiological outcomes, between premature neonates' heart rate, respiratory rate, temperature and occurrence of apnea in pre and post KMC respectively compared with control group. 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 resulting in decreased apneic events, encourage more homogenous sleep patterns (44,45,46,47).This is consistent with (48) who reported absence of hypothermia and apnea in their babies during KMC.

As regards nurses' practice and activity about KMC Table (4), the current study stated that there were statistically significant improvement of nurses' practice and activity toward kangaroo mother care, the majority of nurses encourage & assisted mothers of kangaroo care with normal term infants& preterm ventilated infants after intervention when comparing to pre intervention. This findings is consistent with (35) who reported that all nurses encouraged and assisted both mothers and fathers to practice KC with pre-term infants, irrespective of birth weight and whether the infant was intubated or not.

7.Conclusion

Sufficient evidence exists to support the practice of kangaroo mother care in conventional neonatal care in all situations. It is the neonatal nurse's role to advocate for the practice of KMC on behalf of care providers, parents and the vulnerable neonate. KMC practice in high care facilities requires the support of and adherence to quality standards which are, in turn, supported by higher management authorities. Consequently, the neonatal nurse's role is one of educators, trainers that advocate for KMC, caretaker of the infant, supporter of the parents, good team player, problem solver, as well as being the provider of emotional support and guidance.

This study highlights effectiveness of neonatal nurses' guidelines on improving their knowledge toward kangaroo mother care as a means of facilitating parent-infant attachment, and provides valuable insights into the attitudes and practices of neonatal nurses in promoting KC within the highly specialized NICU environment. The study concluded that neonatal nurses' guidelines were effectively improved their knowledge, attitude and practice.

8.Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Establish education program for all mothers about the benefits and management of KMC through booklets.
- Hospital support for the mothers is needed to facilitate and continues early initiation of KMC through allowing the mother to visit her premature infants' all of the time without restrictions.
- Help the mothers who are delivered premature or sick neonates to initiate KMC as soon as possible.
- Prepare a well-equipped room with warming and comforting needs for premature neonates and their mothers in all NICUs.

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