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Knowledge and Attitude of Nurses on Kangaroo Mother Care in Selected Hospitals of Dhangadhi

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Abstract

Background: Kangaroo Mother Care (KMC) is essential for reducing neonatal morbidity and mortality in preterm and low-birth-weight infants. However, inadequate knowledge among nurses can hinder its effective implementation. This study aims to assess nurses' knowledge and attitudes toward KMC in selected hospitals in Dhangadhi.

Methods: A descriptive cross-sectional study was conducted in selected hospitals in Dhangadhi, using a non-probability purposive sampling technique to select the hospitals and wards. The study included a complete enumeration of 115 nurses. A self-administered structured questionnaire was used to gather information on Kangaroo Mother Care. The data was coded, entered into SPSS version 16, and analyzed using both descriptive and inferential statistics (Chi-square test).

Results: The study revealed that 45.2% of nurses were aged between 20 and 25 years, with a mean age of 27.43±5.90 years. More than half (56.5%) had completed PCL nursing. Regarding knowledge of Kangaroo Mother Care, 36.5% of respondents had good knowledge, 43.5% had average knowledge, and 20.0% had poor knowledge. Additionally, 51.3% of respondents exhibited a positive attitude toward KMC. A significant association was found between knowledge levels and both work experience and hospital type. Furthermore, a significant association was observed between attitudes toward KMC and hospital type.

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Conclusion: In conclusion, nearly half of the respondents had an average level of knowledge, while more than half demonstrated a positive attitude toward Kangaroo Mother Care. Hospitals should implement comprehensive KMC protocols and targeted training to improve nurses' knowledge and attitudes.
Keywords: Kangaroo Mother Care, Preterm, Low birth weight, Nurse, Nepal

Introduction

Background of the Study

In 2020, an estimated 13.4 million babies were born preterm worldwide, representing 4-16% of all births (WHO, 2023). In 2019, approximately 900,000 children died due to complications of preterm birth (Ohuma et al., 2023). The World Health Organization recommends Kangaroo Mother Care (KMC) immediately after birth as a simple intervention to reduce mortality in preterm and low birth weight babies (WHO, 2022). Studies have demonstrated that KMC is a safe and effective method for managing low-birth-weight and preterm infants in both low- and high-income settings (Kumbhojkar et al., 2016; Sharma et al., 2018; Solomon & Rosant, 2012). Kangaroo Mother Care (KMC) enhances breastfeeding rates, supports growth, reduces morbidities, and shortens the duration of hospital stay (Kalita & Sharma, 2024). Good knowledge and attitudes are essential for the effective implementation of KMC in hospitals (Seidman et al., 2015). Healthcare providers play a key role in influencing the interaction between infants and parents (Duhn, 2010). Inadequate formal education on KMC among nurses is a significant barrier to its implementation (Zhang et al., 2018).

Studies conducted in the United States of America (USA) showed that 82% of hospitals offered skin-to-skin contact to mothers who requested it. However, nurses' knowledge of the benefits of Kangaroo Mother Care (KMC) was poor, and this inadequate knowledge negatively impacted their attitudes toward the practice (Almutairi, 2022). Similarly, a national survey in China showed that skin-to-skin contact is uncommon, with a major barrier to its implementation being the reluctance of physicians, nurses, and parents. Nurses' reluctance was primarily due to a lack of awareness about the benefits of skin-to-skin contact (Deng et al., 2018).

A study conducted in Nepal found that 32.8% of postnatal mothers had excellent knowledge and 94% demonstrated a positive attitude regarding Kangaroo Mother Care (Ghale & Mehta, 2022). Another study in Nepal found that 37.7% of doctors and 48.8% of nurses mistakenly believed that KMC was only for neonates with a birth weight under 2500 grams. Despite this misconception, 75% of doctors and 50% of nurses reported regular KMC practice in their wards. However, 22.2% of participants identified a lack of skills and knowledge as key barriers to consistent KMC implementation (Shah et al., 2018).

Rationale of the Study

Neonatal deaths accounted for 47% of total under-5 mortality globally in 2020 (WHO, 2024). Kangaroo Mother Care (KMC) is a cost-effective intervention that reduces neonatal mortality and improves the health of low-birth-weight and preterm infants through skin-to-skin contact,

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breastfeeding promotion, and infection prevention (Shah et al., 2018; Jadhao et al., 2020). Evidence indicates that KMC significantly reduces morbidity and mortality rates among these infants (Adisasmita et al., 2021). However, the full benefits of KMC can only be realized with adequate knowledge and a positive attitude toward its practice among healthcare professionals, particularly nurses (Adzitey et al., 2017).

Kangaroo Mother Care (KMC) benefits low-birth-weight (LBW) infants by promoting weight gain, breastfeeding, and bonding, while reducing risks for preterm infants, such as breathing and gastrointestinal issues (Koreti & Muntode Gharde, 2022). KMC also stabilizes infants' temperature and supports maternal prolactin production, enhancing breastfeeding and infant well-being (Pratomo et al., 2020). KMC is globally practiced by placing premature infants against the mother's chest, promoting both bonding and successful breastfeeding (Campbell-Yeo et al., 2015)

A study in Jakarta revealed that 46.2% of nursing staff had good knowledge of Kangaroo Mother Care (KMC), and all expressed a positive attitude toward its practice (Adisasmita et al., 2021). In Syria, however, most nurses demonstrated low knowledge and negative attitudes toward KMC (Ahmad, 2020). In Malaysia, 32% of nurses recognized KMC as a neonatal care method, while 82% acknowledged its benefits for infants (Manzoor et al., 2020). Study in Nepal indicated that most nurses had good knowledge and positive attitudes toward KMC, although its implementation was inconsistent (Shah et al., 2018).

Studies conducted worldwide have yielded varying results on the knowledge and attitudes toward Kangaroo Mother Care (KMC). However, limited research has been documented in Nepal. Therefore, the researcher aims to assess the knowledge and attitudes of nurses regarding KMC in this context.

Methods and Materials

A descriptive cross-sectional design was used to assess the knowledge and attitudes toward kangaroo mother care among nurses in selected hospital in Dhangadhi. The study was conducted in the NICU, Pediatric, and Maternity Wards of Seti Provincial Hospital, Maya Metro Hospital Pvt. Ltd., Nisarga Hospital and Research Center Pvt. Ltd., and Navajeevan Hospital Pvt. Ltd. in Dhangadhi. The study population consisted of registered nurses working in the NICU, pediatric, and maternity wards of the selected hospitals. Non-probability purposive sampling was used to select the hospitals and wards, and complete enumeration was applied for sample selection, resulting in a total sample size of 115 nurses.

A self-administered structured questionnaire was used for data collection, developed in alignment with the study's objectives, a comprehensive literature review, and guidance from the research advisor. The questionnaire consisted of three sections: Part I consisted of background information, including sociodemographic details, type of hospital, work experience, and types of training or in-service education. Part II included questions related to knowledge on Kangaroo Mother Care, comprising 14 multiple-choice questions and 3 multiple-response questions. For multiple-choice questions, nurses received one point for each

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correct answer and zero for incorrect answers. For multiple-response questions, one point was awarded for each correct option, and zero for non-responses to correct options. The total score was the sum of all individual scores. The total score was 27. Knowledge was categorized into three levels: high (≥75%), average (50%-74%), and low (<50%) based on Ahamad Anna (2020). Part III assessed the attitude of nurses toward Kangaroo Mother Care using 12 structured statements, consisting of 9 positive and 3 negative statements. Attitudes were measured on a five-point Likert scale, ranging from "completely disagree" to "completely agree." For positive statements, the scoring was as follows: 1 for "completely disagree," 2 for "disagree," 3 for "neutral," 4 for "agree," and 5 for "completely agree." The scores for negative statements were reversed. The total possible attitude score was 60. Nurses' attitudes were classified as positive or negative based on the mean score, with scores equal to or above the mean considered positive, and scores below the mean considered negative (Gebeyehu et al., 2022). Pre-testing of the instrument was conducted at KG Hospital Pvt. Ltd., and necessary modifications were made.

Once the proposal was approved by the Research Committee of Pokhara Nursing Campus, the data collection process began. Formal permission was first obtained from the relevant authorities at Seti Provincial Hospital, Maya Metro Hospital Pvt. Ltd., Nisarga Hospital and Research Center Pvt. Ltd., and Navajeevan Hospital Pvt. Ltd. in Dhangadhi. The purpose of the study was explained to the nurses, and informed written consent was obtained from each nurse. Ethical considerations were ensured by emphasizing that participation was voluntary and that nurses had the right to withdraw at any time or refuse to answer any question they felt uncomfortable with. Data was collected by the researcher at a time convenient for the nurses. The average time to complete the questionnaire was 20-25 minutes. Precautions were taken to protect the nurses' rights, and each questionnaire was assigned a code number during data entry. Confidentiality was maintained by ensuring that information was not disclosed and the data was used solely for study purposes. Data collection was conducted in selected wards of the hospitals over a two-week period, from January 28, 2024, to February 9, 2024.

The collected data was edited, organized, coded and analyzed using computer package with SPSS (Statistical Package for Social Science) software version 16. Data was analyzed by using descriptive and inferential statistics. Descriptive statistics i.e., frequency, percentage, mean, range, standard deviation was computed for the study variables. Inferential statistics i.e., Chi square test was used to find out the association. P value of <0.05 was considered significant.

Results

Out of 115 nurses, 45.2% were in the age group of 20-25 years, with a mean age of 27.43±5.901 years. In terms of academic qualifications, 56.5% had completed the proficiency certificate level in nursing. Regarding work experience, 30.4% had between three to five years of experience. The majority of the nurses (67%) were employed in private hospitals. Additionally, 44.3% worked in the maternity ward, and 28.7% had received training related to Kangaroo Mother Care (KMC). In this study, 36.5% of the respondents had a high level, 43.5% had an

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average level, and 20.0% had a low level of knowledge on Kangaroo Mother Care. The mean knowledge score was 20.44 ± 4.67. Additionally, 51.3% of the respondents had a positive attitude toward Kangaroo Mother Care, with a mean attitude score of 47.56 ± 4.62. There was a statistically significant association between the level of knowledge and working experience ($p=0.032$), as well as between the level of knowledge and the type of hospital ($p<0.001$). Additionally, a statistically significant association was found between attitude toward Kangaroo Mother Care and the type of hospital ($p<0.003$).

Table 1

Nurses Knowledge on the Concepts of Kangaroo Mother Care (n=115)

Correct Response	Number	Percent
Meaning		
Skin to skin contact between mother and baby	112	97.4
Primary goal		
To provide thermal care	46	40.0
Components *		
Skin to skin contact	108	93.9
Exclusive breast feeding	64	55.7
Early discharge and follow up	35	30.4
Advantages*		
Improve weight gain	97	84.3
Improve temperature regulation	93	80.9
Increase bonding with parents	78	67.8
Improve breast feeding	69	60.0
Reduce infection rate	56	48.7
Improve neurodevelopment	28	24.3
Recommended position for baby		
Upright position	77	67.0
Recommended position for mother while sleeping		
Semi-recumbent position	35	30.4
Use of KMC wrapper or pouch		
To maintains correct positioning	88	76.5
KMC is also provided by*		
Any relatives free from serious illness	88	76.5
Father	81	70.4
Grandmother	67	58.3
Sister	65	56.5
Contraindication		
Baby on ventilator	91	79.1

****Multiple Responses***

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Most nurses (97.4%) correctly understood the meaning of KMC, and 40% identified its primary goal as thermal care. Regarding the components of KMC, 93.9% correctly recognized skin-to-skin contact as an essential part. Additionally, 84.3% stated that KMC helps improve weight gain. For the recommended position of the baby, 67% chose the correct answer as upright, while 30.4% correctly identified the semi-recumbent position as the recommended sleeping position for mothers. Furthermore, 76.5% knew that a KMC pouch is used to maintain the correct position, and 76.5% understood that any healthy relative can provide KMC. Most nurses (79.1%) correctly identified that KMC is contraindicated for babies on ventilators (Table 1).

Table 2

Nurses Knowledge of KMC Requirements and Roles of Mother and Family (n=115)

Correct Responses	Number	Percent
Appropriate response to hypothermia during KMC		
Increase ambient room temperature	51	44.3
Room temperature during KMC should not be less than 25 °C	23	20.0
KMC session should not be less than 60 minute	63	54.8
KMC is necessary till baby attain 2.5 kg weight	86	74.8
Duration of exclusive breast feeding for infant receiving KMC is 6 months	98	85.2
Role of mother's in KMC		
Keeping baby direct skin to skin contact	102	88.7
Significance of involving father and family members		
Enhances family involvement and support	98	85.2
International kangaroo care awareness day on15th may	82	71.3

****Multiple Responses***

Table 2 shows that 44.3% of nurses correctly identified increasing the ambient room temperature as an appropriate response to hypothermia during KMC, and 20.0% mentioned that the room temperature should not be less than 25°C. More than half (54.8%) of nurses reported that the KMC session should last at least 60 minutes. Additionally, 74.8% noted that KMC should continue until the baby reaches a weight of 2.5 kg. Most nurses (85.2%) correctly identified the role of the mother in KMC as providing direct skin-to-skin contact, and 88.7% knew that the duration of exclusive breastfeeding for infants receiving KMC is six months. Regarding family involvement, 85.2% of nurses replied that KMC enhances family support, and 71.3% correctly answered that the International KMC Awareness Day is on May 15th.

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Table 3

Nurses Attitude toward Kangaroo Mother Care (n=115)

Statements	SD No.(%)	D No.(%)	U No.(%)	A No.(%)	SA No.(%)	Mean ± SD
KMC is beneficial to mother and baby	2(1.7)	1(0.9)	1(0.9)	36(31.3)	75(65.2)	4.57±0.72
KMC increases bonding between mother and baby	2(1.7)	3(2.6)	1(0.9)	37(32.2)	72(62.6)	4.51±0.79
KMC enhances breastfeeding	1(0.9)	8(7.0)	14(12.2)	55(47.8)	37(32.2)	4.03±0.89
KMC should be initiated immediately after birth	3(2.6)	22(19.1)	15(13)	38(33.0)	37(32.2)	3.73±1.18
KMC enhances growth and development of baby	1(0.9)	8(7.0)	14(12.2)	55(47.8)	37(32.2)	4.38±0.70
KMC reduce infection rate	2(1.7)	14(12.2)	24(20.9)	52(45.2)	23(20.0)	3.70±0.98
KMC decrease hospital stay and reduce cost	5(4.3)	9(7.8)	8(7.0)	54(47.0)	39(33.9)	3.98±1.05
KMC should be given to all newborns irrespective of their weight during winter season	7(6.1)	35(30.4)	20(17.4)	42(36.5)	11(9.6)	3.13±1.13
KMC increases burden to the Mother*	24(20.9)	38(33.0)	21(18.3)	26(22.6)	6(5.2)	3.41±1.19
KMC increase workload for staff*	29(25.2)	54(47.0)	15(13)	12(10.4)	5(4.3)	3.78±1.07
Mothers only should be involved in KMC *	38(33.0)	54(47.0)	11(9.6)	9(7.8)	3(2.6)	4.0±0.99
Family should support mother while giving KMC	2(1.7)	2(1.7)	5(4.3)	54(47)	52(45.2)	4.32±0.79

Negative statement, SD=Strongly Disagree, D= Disagree, U=Unsure, A=Agree and SA= Strongly Agree

The majority of nurses strongly agreed that KMC is beneficial to the mother and increases bonding between mother and baby, with 65.2% and 62.6%, respectively. Similarly, 47.8% agreed that KMC enhances breastfeeding, and 33% agreed that KMC should be initiated immediately after birth. Additionally, 47.8% agreed that KMC enhances the growth and development of the baby. Regarding infection reduction, hospital stay, and cost, 45.2% agreed that KMC reduces infection rates, and 47.5% agreed that KMC decreases hospital stay and reduces costs. Regarding the application of KMC during the winter season, 36.5% of nurses agreed that KMC should be given to all newborns, regardless of their weight. Meanwhile, 33% disagreed with the statement that KMC increases the burden on the mother. Forty-seven percent disagreed that KMC increases the workload for staff, and 33% strongly disagreed with the statement that only mothers should be involved in KMC. Lastly, 45.2% strongly agreed that

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the family should support the mother during KMC. The mean attitude score varied from 3.13 ± 1.13 to 4.51 ± 0.79 (Table 3).

Discussion

Kangaroo mother care reduces morbidity and mortality of low birth weight infant. Nurses need proper knowledge and a positive attitude for kangaroo mother care to be effective. The study was conducted to identify the level of knowledge and attitude of nurses on Kangaroo Mother Care in selected hospital of Dhangadhi.

The present study found that 36.5% of nurses had high knowledge, 43.5% had average knowledge, and 20.0% had low knowledge of Kangaroo Mother Care (KMC). These findings were similar to a previous study conducted by Shehta Arabie et al. (2022), which reported that 25% of nurses had good knowledge, 45% had average knowledge, and 30% had poor knowledge of KMC. In comparison, a study in India reported that 23.3% of nurses had good knowledge, 63.3% had average knowledge, and 13.3% had poor knowledge (Gupta et al., 2018). Similarly, another study conducted in Egypt showed that more than half (54.0%) of the nurses had a satisfactory level of knowledge on KMC (El-Sayed et al., 2022). The differences in knowledge levels may reflect regional variations in training and resources. These findings stress the importance of targeted education to enhance KMC knowledge.

The current study found that 51.3% of nurses had a positive attitude, while 48.7% had a negative attitude toward Kangaroo Mother Care (KMC). This study was similar to a previous study conducted in Indonesia which showed 51.4% of respondents had a positive attitude towards KMC (Fauziyah et al., 2021). The finding was contrasts with a study in Indonesia, where all respondents had a positive attitude toward KMC (Adisasmita et al., 2021). These differences may be due to cultural, healthcare, or training factors. The mixed attitudes highlight the need for more education and awareness to improve support for KMC.

The current study found a significant association between knowledge level and both working experience ($p=0.032$) and type of hospital ($p<0.001$). This is similar to a study in India, which found a link between knowledge level and years of experience, but no association with age, gender, or professional qualification (Gupta et al., 2018). However, it differs from another Indian study, which found associations between training, age, and knowledge level regarding KMC (Dalal et al., 2014). These differences may reflect variations in training practices and the influence of different factors on knowledge in different settings.

The current study found a statistically significant association between attitude toward Kangaroo Mother Care (KMC) and type of hospital ($p<0.003$). This is similar to a study conducted in the Philippines, where a significant association was also observed between healthcare facility type and attitude toward KMC (Almazan et al., 2019). This suggests that the type of healthcare facility may affect healthcare workers' attitudes toward KMC due to variations in resources, training, and support.

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Conclusion

In conclusion, nearly half of the nurses had an average level of knowledge, and more than half had a positive attitude toward Kangaroo Mother Care (KMC). Significant associations were found between knowledge level and both work experience and type of hospital, as well as between attitude and type of hospital. To enhance knowledge and attitudes toward KMC, hospitals should implement standardized protocols and offer regular training for nursing staff.

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