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Assessment Knowledge, Attitude and Practice of Kangaroo Mother Care among Postnatal Mothers

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ABSTRACT

Background: Kangaroo Mother Care (KMC) is a method first introduced by Dr. Rey in 1978 and later refined by Dr. Martinez and Dr. Navarrete until 1994. It involves placing a diaper-clad Newborn in direct skin-to-skin contact, positioned upright and prone on the mother's chest. Initially developed as a solution to overcrowding and limited resources in neonatal intensive care units, KMC is now formally endorsed by the World Health Organization (WHO).

Kangaroo Mother Care (KMC) is a simple, cost-effective, and evidence-based method of caring for preterm and low birth weight (LBW) infants. It was first initiated in 1978 by Dr. Edgar Rey in Bogotá, Colombia, as a response to the high mortality rate among premature infants due to overcrowded neonatal intensive care units (NICUs) and a lack of incubators. KMC involves early, continuous, and prolonged skin-to-skin contact between the newborn and the mother (or other caregiver), exclusive breastfeeding when possible, and early discharge with adequate follow-up. This method not only promotes thermal regulation and bonding but also enhances breastfeeding, reduces the risk of infections, and improves overall survival rates. Recognizing its multiple benefits, the World Health Organization (WHO) has formally recommended KMC as a standard practice in the care of preterm and LBW babies, especially in resource-limited settings.

KEYWORDS:*knowledge,attitude,practice,Kangaroomothercare, Jetapura, Dhar District Indore (MP).*

Objective: The aim of this study was to assess knowledge, attitude and practice of Kangaroo mother care among postnatal mothers in a tertiary care center of Jetapura, Dhar, District Indore, 2024.

Method: An institution based cross-sectional study method was conducted in Jetapura, DharSpecialized Referral Hospital in Dhar town. Sample size was calculated by using single population proportion sample formula and the final sample size was166. The study subject was selected by using consecutive sampling method, and adopted data collection tool was used. Data were analyzed using SPSS version 20. Descriptive analyses were performed and bivariate analyses were used to find out the association of independent variables.

Results: There was 82.53% of mothers had good knowledge, 82.53% had positive attitude towards KMC, 32.12% practiced KMC correctly. The participants also reported the benefits

of KMC, such as protection from infection, warmth to the baby, exclusive breast feeding, weight gain and growth, early discharge from hospital, safety and love.

Conclusion: The finding of this study showed that there was a clear gap in knowledge and practice. Therefore, it is very important to have health education sessions during ANC follow-up on KMC. A qualitative research to explore temporal relationship is also recommended.

BACKGROUND

Kangaroo Mother Care (KMC) is a method was invented by Dr. Rey in 1978 and developed by Dr. Martinez and Dr. Navarrete until 1994. It is holding a small nappy neonate in skin to skin contact, prone and up right on the maternal chest. At first it was developed to alleviate overcrowding and insufficient resources in neonatal intensive care units. But today it is formally approved by World Health Organization (WHO, 2003).

The key components of kangaroo mother care are skin-to-skin contact of the infant on the mother's chest, optimal breast feeding and support to the mother and infant. It has more advantages over usual new born care for mother and infant, such as effective body temperature control, exclusive breastfeeding, preventing infection, mother- infant bonding, early discharge, decreased mortality and morbidity. It is also an answer to the separation of mothers and infants (Conde Agudelo & Díaz Rossello, 2016; M Ludington-Hoe, 2011; Nyqvist et al., 2010).

Globally, each year nearly 7.7 million children under five years die; among this, about 3.1 million of the newborns die during the neonatal period and almost all (99%) deaths occur in the developing countries (Rajaratnam et al., 2010). World Health Organization estimation, neonatal deaths account for 45% of the under-five deaths (WHO, 2017).Three-quarter of the neonatal deaths takes place in the first seven days of birth and one-third of deaths take place in the first 24 h of birth (Akter, Dawson, &Sibbritt, 2016; Lawn, Cousens, Zupan, & Team). The three leading causes of neonatal mortality and morbidity worldwide are infections (35%), preterm birth and LBW (28%) and asphyxia (23%) (WHO & UNICEF, 2009).

Globally,babieswithlowbirthweightaccounts25 million and preterm accounts 15 million nearly all of them (96%) are in developing countries. Africa accounts the world's population of12%and25%oftheworld'snew-borndeaths takes place there (WHO, 2003; WHO &UNICEF, 2004).

Neonatal hypothermia is an important confront associated with morbidity and mortality (Trevisanuto et al., 2016)

The implementation of KM Cals of ocuses on the decision-making process not depends only on the mother's desire and willingness, but also on the support provided by the family members as well as kind hearted health care teams (Chisenga, Chalanda, & Ngwale, 2015).

Studyshowedthatonlyabout10%to25%of preterm and/or low birth weight babies receive KMC in Dhar district Indore (M.P) between 2024–2025, the estimates was derived from an assessment that was conducted in two hospitals that were providing KMC services in Jetapura, Dhar District Indore (MP). , after training; these hospitals provided KMC services to 36% of preterm babies (Lakew&Worku,2014). Mothers are the main caregiver to

newborns hence the care is habitually dependent on their level of knowledge, attitude, and practice (KAP) about new born care. Therefore, this study aimed to study the KAP of mothers about KMC.

METHODS

Study Setting and Participants

Cross-sectional study was conducted from 1 March to 30 March 2024 in Dhar District Indore (MP) Specialized University hospital located in JetapuraDhar.Hararislocatedateasterndirectionof16 km away from the capital. Specialized University hospital is one of the specialized university hospitals in the country which was established in 2017 and providingserviceformorethan5millionpeople in the catchment area.

Sample Size Determinations and Sampling Techniques

Sample size was calculated by using single populationproportionformulabytaking19.53% from a similar study (Jamie & Ahmed, 2020). Usingthe95%CIand5% marginal error (d)(n= (Zα/2)2p(1−p)/d2),thegivensamplesizeis242. According to Dhar District Indore (M.P) specialized university Hospital's delivery report, a total of 200-250 women delivered per month. Since the total population is lessthan10,000, correction formula was applied (*n=n/1+n/N*). So, the final sample size after adding 10% non-respondent rates was 166.

Dhar District Indore Specialized university hospital provides advanced services including Neonatal Intensive Care Unit (NICU) and KMC units, so the hospital was chosen deliberately due to this reason. Preterm and/or low birth weight (LBW) who were born among postnatal mothers were selected successively until the needed sample size was obtained. If there were two or more one baby was selected by lottery method to the study.

Normal postnatal mothers having reterm, LBW, stable in fants breathing on their own, and infants without life-threatening disease or mal formations that are willing to participate were included in this study.

Ethical Clearance

Consent was obtained from the administrative bodies of the health facility and from the participants.

Data Collection and Data Analysis

Data were collected by face-to-face interview using standardized questionnaire. For practice part, direct observation was done when they position, breast feed and ambulate. After data collection, the questionnaire was checked for completeness and coded. The data were entered intoEpi-infoversion3.5.3andexported,cleaned and analyzed by using SPSS version-20. Descriptive analyses were performed and bivariate analyses were used to find out the association of independent variables. Variables with a $p<0.05$ in the bivariate analysis were entered into multiple logistic regression and variables with $p<0.05$inthemultivariateanalysis were considered to have statistically significant associations.

RESULTS

Socio-Demographic Characteristics

One hundred sixty-six (166) postnatal mothers with preterm/ low birth weight were participated in this study 97 (58.43%) were age 18-35 years, 96 (57.83%) were residing in rural area, more than half 90 (54.22%) were illiterate, 146 (87.95%) of the neonates included in this study were healthy. Near to all158(95.18%)had ANC follow up. Majority 97 (58.43%) of deliveries was spontaneous vaginal deliveries (SVD). Majority of them 89 (53.61%) were preterm by gestational age and nearly all 162(97.59%) were LBW by birth weight group. (**See Table 1**).

Table1 Sociodemographiccharacteristicsofparticipantsina Dharregion,District Indore, 2024-25

Variable		**Frequency**	**(%)**
Agegroup(years)	18-35	97	58.43
	>35	69	41.57
Maritalstatus	Single	5	3.01
	Married	107	64.46
	Widows	7	4.22
	Divorced	47	28.31
Residence	Urban	70	42.17
	Rural	96	57.83
ANCfollowup	Yes	158	95.18
	No	8	4.82
Levelofformaleducation	Noformal education	90	54.22
	Primary	49	29.52
	Secondary	19	11.45
	Tertiary	8	4.82
Sexof infant	Male	78	46.99
	Female	88	53.01
Healthstatus	Healthy	146	87.95
	Sick	20	12.05
Typeof delivery	SVD	97	58.43
	Instrumental	14	8.43
	C/S	55	33.13
Typeof birth	Singleton	157	94.58
	Multiple	9	5.42
Gestationalage	Preterm	89	53.61
	Term	77	46.39
Birthweight	LBW	162	97.59
	VeryLBW	3	1.81
	ExtremelyLBW	1	0.60

Knowledge of Care Takers about the KMC Overall study participants 137 (82.53%) had heard about kangaroo mother care (KMC). Among those, all 137(82.53%)of respondents answered it as skin to skin contact of the infant on the mother's chest, whereas the rest of

them did not know. One hundred thirty-seven (82.53%)care givers know at least one benefit of KMC.

Study subjects were asked to their knowledge on the importance of KMC: 137 (82.53%) provides warmthtothebaby,117(70.48%)promotes exclusive breast feeding, 93 (56.02%) improves weight gain and growth, 71 (42.77%) reduces hospital stay, 93 (56.02%) reduces infection and 137 (82.53%) promotes baby-mother bonding. Regarding appropriate initiation time to KMC 93 (67.88%) of the answered that it should be started immediately after birth (See **Table 2**). The majority of the participants respond that the heard the information about kangaroo mother care through health professionals, mass media, friends, andposters86%,65%,23.3%and17.4%,respectively.

Table2 KnowledgetowardsKMCAmongPostnatalMothersinADhar District Indore,

Knowledge towards KMC		***n*(%)**
Do you hear about KMC	Yes	137(82.53%)
	No	29(17.47%)
What is KMC	Sk into skin contact to stabilizes baby's temperature	137(82.53%)
	In cuba torca rest abilizes baby's temperature	29(17.47%)
KMC provides warmth to the baby	Yes	137(82.53%)
	No	29(17.47%)
KMC promotes bonding between	Yes	137(82.53%)
Mother and baby	No	29(17.47%)
KMC improves the mother's	Yes	87(52.41%)
Confidence in handling her baby	No	79(47.59%)
KMC promotes breast feeding	Yes	117(70.48%)
	No	49(29.52%)
KMC promotes mental development	Yes	82(49.40%)
Of premature babies.	No	84(50.60%)
Babies who are given kangaroo care	Yes	97(58.43%)
Sleep deeply and wakeup less often	No	69(41.57%)
KMC prevents postpartum depression	Yes	99(59.64%)
	No	67(40.36%)
Babies are who given KMC cry less	Yes	124(74.70%)
	No	42(25.30%)
KMC promotes baby's growth and	Yes	93(56.02%)
development	No	73(43.98%)

KMC results in reduced infection in	Yes	93(56.02%)
The baby	No	73(43.98%)
KMC leads to early discharge	Yes	71(42.77%)
	No	95(57.23%)

Attitudes of Care Takers on KMC

One hundred thirty-seven (82.53%) of mothers believed positive regarding implementation of KMC for it corrects the temperature and promotes grow than development to f their small babies. On the contrary, only 19 (11.45%) respondents answered that both parents should be involvedinkangaroocare,themajorityleft147 (88.55%) said that only mother should be involved for the care of the neonates (See **Table 3**).

Table3 Attitude towards KMC Among Postnatal Mothers in A Dhar District Indore, 2024-25

Variable	**Agree**	**Notagree**
KMC provides warmth to the baby	137(82.53%)	29(17.47%)
KMC promotes bonding between mother and baby	137(82.53%)	29(17.47%)
KMC improves them other's confidence in handling her baby	87(52.41%)	79(47.59%)
KMC promotes breast feeding	117(70.48%)	49(29.52%)
KMC promotes mental development of premature babies.	82(49.40%)	84(50.60%)
Both parents should be involved in kangaroo care.	19(11.45%)	147(88.55%)
Babies who are given kangaroo care sleep deeply and wake up less often	97(58.43%)	69(41.57%)
Incubator care stabilizes baby's temperature than KMC	29(17.47%)	137(82.53%)
KMC prevents post partum depression	99(59.64%)	67(40.36%)
Babies are who given KMC cry less	124(74.70%)	42(25.30%)
KMC promotes baby's grow than development	137(82.53%)	29(17.47%)
KMC results in reduced infection in the baby	93(56.02%)	73(43.98%)
KMC leads to early discharge	71(42.77%)	95(57.23%)
KMC should be started immediately after birth	94(56.63%)	72(43.37%)

Practice of Care Takers on KMC

Participants were asked and observed on the correct practice of Kangaroo mother care on kangaroo position, clothing during KMC, KMC initiation and type of KMC. About 44 (32.12%) of respondents performed kangaroo position in setting or semi-reclined position appropriately, whereas the rest of respondents' position was inappropriate.Most49(57%) of

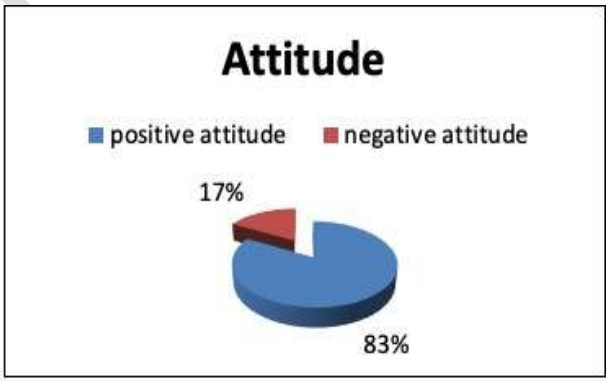
respondents dressed the baby with cap, socks and nappy appropriately, whereas the rest of them did not dress their baby properly. Nearly all 123 (89.70%) of KMC was performed by mothers,14 (10.22%) were performed by others which include grand mothers, aunts and maids, but there was no single one which was performed by fathers (See **Table 4**).

Table4 PracticeTowardsKMCAmongPostnatalMothersinADhar District Indore (MP)2024-25

Practice Towards KMC		**n**	**%**
KMC was performed by	Mother	123	89.7
	Father	0	0.00
	Others	14	10.22
Position for KMC	Proper	44	32.12
	Not proper	93	67.88
Dressing during KMC	Dressedcap,sock& nappy	44	32.12
	Nodressedwell	93	67.88
Type of KMC	Continuous	86	62.77
	Intermittent	51	37.23

Over all knowledge, attitude and practices core sum of the care givers towards KMC illustrated as follow.

Figure1 Knowledge, Attitude and Practice towards KMC Among Postnatal Mothers in A Dhar District Indore (MP) 2024-25



DISCUSSION

Findings of this study revealed the level of good knowledge among mothers (82.53%),which was very high compared to the study done in Rohil khand Hospital Bareilly that the knowledge was 33.3%(Sharma &Verma, 2019). Whereas it was lower than the study done in North Ethiopia (99.3%) (Tsegay,2015),Malawi (84%) (Chisengaetal.,2015), and Ghana(90%) (Nguahet al., 2011). This difference might be due to a difference in socio-demographic/ cultural/ economic characteristics in different regions and methodological difference.

This study showed that 82.53% of mothers had positive attitude towards KMC. The finding was lower than the study done among Indian mothers, which the acceptance of KMC was 96% (Parmar et al., 2009), and the study done in Cape Town with the acceptance of KMC was 96.6%, and 87.1% mothers who had favorable opinion towards the practice of KMC (Rosant, 2009). This could be influenced by socio- demographic/cultural /economic characteristics in different regions and methodological difference.

In this study, the level of correct practice was 32.12%, it is lower than a study done at Dhar, District Multispecialty Hospital which was 61.6%(GetinetK,2008).This difference may be due to the cultural characteristics of the respondents, study methodology and set up of services. Also, 42.77% of the participants agreed that KMC reduces hospital stay, the result was lower than that of a study done in South India 56.69% strongly agreed that KMC reduces hospital stay (Suhasimi Mekala, 2019). This difference could be related to the difference in study methodology.

Our findings also indicated that the participants reported the benefits of KMC, such as protection from infection, warmth to the baby, exclusive breast feeding, weight gain and growth, early discharge from hospital, safety and love. These have been also reported by other studies (MarchofDimes,PMNCH,SavetheChildren,&WHO,2012; WHO, 2003). Since the study incorporates only public facility but not private facilities, so the findings may be difficult generaliz able for general population.

CONCLUSION

The finding of this study on knowledge, attitude and practice of caretakers regarding kangaroo mother care showed that 82.53 % had good knowledge,82.53%hadpositiveattitude,and32.2%practicedcorrectly. However, there were clear gaps in knowledge and practice in the study. Therefore, it is very important to have health education sessions during ANC follow-up on KMC. Furthermore, it is recommended to conduct qualitative research to explore the temporal relationship.

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