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A STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE REGARDING KANGAROO MOTHER CARE AMONG ANTENATAL MOTHER ATTENDING ANTENATAL CLINIC IN AVMC & H, PUDUCHERRY

Abinaya S[1], Abarna A[1], Abinaya V[1], Adhil Karim[1], Abdul Nabhil H[1], Angelin Jenifer[2], Edna Sweenie. J[3]

[1]*B.sc(N) IVth Year, Vinayaka Mission's College of Nursing, Puducherry, Tamil Nadu, India.*
[2]*Associate Professor, Department of Community Health Nursing, Vinayaka Mission's College of Nursing, Puducherry, Tamil Nadu, India.*
[3]*Principal Cum Professor, Vinayaka Mission's College of Nursing, Puducherry, India.*

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Corresponding Author:
Dr. Abinaya. S,
B.sc(N) IVth Year, Vinayaka Mission's College of Nursing, Puducherry, Tamil Nadu, India.
Email: abinayasanjaivnp@gmail.com

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ABSTRACT

Background: Kangaroo Mother Care (KMC) is an effective, low-cost intervention for the care of preterm and low birth weight infants. It involves skin-to-skin contact, breastfeeding support and appropriate follow-up. Adequate maternal knowledge and a positive attitude are essential for its acceptance and implementation. **Aim:** To assess the knowledge and attitude regarding Kangaroo Mother Care among antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry.

Materials and Methods: A quantitative approach with a descriptive research design was adopted. The study was conducted among 50 antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry, using a non-probability convenience sampling technique. Data were collected using a structured tool comprising three sections: socio-demographic variables, knowledge regarding KMC, and attitude towards KMC. The collected data were analysed using descriptive and inferential statistics.

Results: Among the 50 antenatal mothers, 23 (46%) had moderately adequate knowledge, 21 (42%) had adequate knowledge, and 6 (12%) had inadequate knowledge regarding KMC. Regarding attitude, 39 (78%) demonstrated a favourable attitude, while 11 (22%) had a moderately favourable attitude. None of the participants had an unfavourable attitude. The mean knowledge score was 6.24 ± 2.076, and the mean attitude score was 55.58 ± 8.403. A weak positive correlation was observed between knowledge and attitude (r = 0.163), which was not statistically significant (p = 0.259). Age (p = 0.021) and religion (p = 0.049) showed statistically significant associations with attitude, whereas the other assessed socio-demographic variables did not demonstrate significant associations.

Conclusion: Most antenatal mothers had moderate to adequate knowledge and a favourable attitude towards KMC. Regular antenatal health education, counselling and practical demonstrations are recommended to improve maternal understanding and encourage appropriate KMC practices.

Keywords: Antenatal mothers, Kangaroo Mother Care, knowledge, attitude, neonatal care.

INTRODUCTION

An antenatal mother is a woman during pregnancy who requires regular monitoring and care to maintain the health of both herself and the developing fetus. Antenatal care includes early registration, routine health check-ups, nutritional support, immunisation, screening for high-risk conditions and health education. It also prepares mothers for childbirth and newborn care, providing an important opportunity to introduce evidence-based neonatal care practices.[1] mKangaroo Mother Care (KMC) is an evidence-

based, cost-effective intervention for preterm and low birth weight infants. It primarily involves prolonged skin-to-skin contact, exclusive breastfeeding and appropriate follow-up. KMC helps maintain the newborn's body temperature, promotes breastfeeding, supports weight gain, strengthens mother–infant bonding and reduces the risk of infections and neonatal mortality. Educating mothers about KMC during pregnancy can improve their understanding and prepare them to practise this intervention after delivery.[2-5] Despite its established benefits, neonatal mortality remains a major public health concern worldwide, particularly among preterm and low birth weight infants. These newborns are vulnerable to hypothermia, infections, feeding difficulties, poor growth and death. Although KMC has demonstrated benefits in improving neonatal survival and health outcomes, its acceptance and consistent practice may be limited by inadequate awareness, cultural beliefs, insufficient counselling and lack of family support. Assessing maternal knowledge and attitude is therefore important for identifying educational needs and improving KMC implementation.[6-8]

India continues to face challenges related to neonatal mortality, preterm births and low birth weight. KMC is an important strategy for improving newborn survival by supporting thermal regulation, breastfeeding, growth and protection against infections. However, inadequate counselling during antenatal visits and limited exposure to structured educational programmes may affect mothers' understanding and willingness to practise KMC. Strengthening antenatal health education is essential to improve awareness and encourage appropriate newborn care practices in India. Across South India, improvements in maternal and child healthcare have contributed to better neonatal health outcomes. Nevertheless, preterm and low birth weight births remain important contributors to neonatal morbidity and mortality. Maternal knowledge and attitude towards KMC may be influenced by educational status, cultural beliefs, counselling practices and family support. Regular assessment and structured teaching during antenatal visits can help address these gaps and promote the adoption of KMC.Puducherry has established maternal and child healthcare services, and tertiary care hospitals provide opportunities to educate mothers about newborn care. However, gaps may remain in their understanding of KMC, including its benefits, technique, duration and importance. Antenatal clinics can serve as effective platforms for counselling, demonstrations and family involvement. Therefore, the present study aims to assess the knowledge and attitude regarding Kangaroo Mother Care among antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry. The findings may help identify existing knowledge gaps and guide appropriate educational interventions to improve maternal awareness, acceptance and practice of KMC, ultimately supporting better neonatal health outcomes.

Aim and objectives: The study aimed to assess knowledge and attitude regarding Kangaroo Mother Care among antenatal mothers attending AVMC&H, Puducherry, correlate knowledge with attitude, and determine associations with selected demographic variables.

MATERIALS AND METHODS

The study adopted a quantitative research approach with a descriptive research design to assess the knowledge and attitude regarding Kangaroo Mother Care (KMC) among antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry.

The study was conducted at AVMC&H, Puducherry. The target population consisted of antenatal mothers seeking antenatal services at the selected clinic. A sample size of 160 adults was mentioned in the methodology; however, the sample size should be verified to ensure consistency with the study population and final study report. A non-probability convenience sampling technique was used to select participants based on their availability and willingness to participate. The inclusion criteria comprised antenatal mothers attending the antenatal clinic for antenatal services and those willing to participate in the study. Antenatal mothers with serious illnesses were excluded from participation to ensure their safety and suitability for the study. The data collection tool was developed and standardised following an extensive review of relevant literature, internet-based resources and discussions with subject experts. The tool consisted of three sections. Section A collected demographic information about the antenatal mothers, including relevant personal and background characteristics. Section B assessed the participants' level of knowledge regarding Kangaroo Mother Care, including their understanding of its meaning, benefits, techniques and importance in newborn care. Section C assessed their attitude towards Kangaroo Mother Care, focusing on their perceptions, acceptance and willingness to practise this method of care. The methodology was designed to provide information about maternal knowledge and attitudes towards KMC. The findings could help identify educational needs and support the development of appropriate antenatal health education and counselling programmes to promote the acceptance and practice of KMC.

RESULTS

The majority of antenatal mothers were aged 26–30 years (44%), Hindu (68%), literate (92%), employed (68%), and primigravida (58%). Most were married (100%) and attended regular antenatal visits (94%). Nearly half had no prior information about KMC (54%), while 46% had previous information. Parity and sources of information varied among the

participants (table 1).Table 2 shows The distribution of level of knowledge regarding Kangaroo Mother Care among antenatal mothers reveals that the majority had moderately adequate knowledge 23(46.0%), followed by adequate knowledge 21(42.0%), while only 6(12.0%) of the mothers had inadequate knowledge.Table 3 shows the distribution of level of attitude regarding Kangaroo Mother Care among antenatal mothers shows that the majority had a favourable attitude 39(78.0%), followed by moderately favourable attitude 11(22.0%), while none of the mothers had an unfavourable attitude 0(0.0%).The above table 4 shows the mean and standard deviation of knowledge and attitude scores regarding Kangaroo Mother Care among antenatal mothers. The mean knowledge score was found to be 6.24 with a standard deviation of 2.076; The mean attitude score was 55.58 with a standard deviation of 8.403.The above table 5 shows the correlation between the level of knowledge and attitude regarding Kangaroo Mother Care among antenatal mothers. The mean knowledge score was 6.24 with a standard deviation of 2.076, and the mean attitude score was 55.58 with a standard deviation of 8.403. The Pearson correlation coefficient ($r = 0.163$) indicates a positive correlation between knowledge and attitude. However, the p-value ($p = 0.259$) is greater than 0.05, which indicates that the correlation is not statistically significant.The above table 6 shows the association between level of knowledge regarding Kangaroo Mother Care and selected socio-demographic variables among antenatal mothers shows that there was no statistically significant association between knowledge level and variables such as age ($\chi^2 = 5.474$, $p = 0.242$), religion ($\chi^2 = 3.614$, $p = 0.461$), education ($\chi^2 = 1.095$, $p = 0.578$), occupation ($\chi^2 = 0.048$, $p = 0.976$), gravida ($\chi^2 = 3.425$, $p = 0.180$), antenatal clinic visit ($\chi^2 = 0.957$, $p = 0.620$), number of children ($\chi^2 = 2.146$, $p = 0.906$), previous information on KMC ($\chi^2 = 4.421$, $p = 0.110$), and source of information ($\chi^2 = 6.563$, $p = 0.363$), as all p-values were greater than 0.05.Table 4.7 shows the association between the level of attitude regarding Kangaroo Mother Care (KMC) among antenatal mothers and their selected socio-demographic variables. The analysis revealed that there was a statistically significant association between age of the mother and attitude level ($\chi^2 = 7.724$, $df = 2$, $p = 0.021$), indicating that age plays an important role in influencing the attitude towards KMC. Similarly, religion also showed a statistically significant association with attitude level ($\chi^2 = 6.035$, $df = 2$, $p = 0.049$), suggesting that cultural or belief systems may influence mothers' attitudes. However, other variables such as education ($p = 0.268$), occupation ($p = 0.065$), gravida ($p = 0.070$), antenatal clinic visit ($p = 0.625$), previous information on KMC ($p = 0.158$), and source of information ($p = 0.542$) did not show any statistically significant association with attitude level.

Table 1: Frequency and Percentage Distribution of socio-demographic variables among antenatal mothers (N = 50)

Demographic Variables	Category	Frequency (n)	Percentage (%)
Age of Mother (years)	20–25 years	20	40.0%
	26–30 years	22	44.0%
	31–35 years	8	16.0%
Marital Status	Married	50	100.0%
Religion	Hindu	34	68.0%
	Muslim	7	14.0%
	Christian	9	18.0%
Education	Literate	46	92.0%
	Illiterate	4	8.0%
Occupation	Employed	34	68.0%
	Unemployed	16	32.0%
Gravida	Primi	29	58.0%
	Multi	21	42.0%
Antenatal Clinic Visit	Regular	47	94.0%
	Irregular	3	6.0%
Number of Children	Nil	23	46.0%
	One	10	20.0%
	Two	15	30.0%
	Three	2	4.0%
Previous Information on KMC	Yes	23	46.0%
	No	27	54.0%
Source of Information	Health worker	13	26.0%
	Media	1	2.0%
	Family/Friends	9	18.0%
	Not applicable	27	54.0%

Table 2: Frequency and Percentage Distribution of Level of Knowledge regarding Kangaroo Mother Care among Antenatal Mothers Attending Antenatal Clinic (N = 50)

Knowledge Level	Frequency (n)	Percentage (%)
Inadequate Knowledge	6	12.0%
Moderately Adequate Knowledge	23	46.0%
Adequate Knowledge	21	42.0%

Table 3: Frequency and Percentage Distribution of Level of attitude regarding Kangaroo Mother Care among Antenatal Mothers Attending Antenatal Clinic (N = 50)

Attitude Level	Frequency (n)	Percentage (%)
Unfavourable Attitude	0	0.0%
Moderately Favourable Attitude	11	22.0%
Favourable Attitude	39	78.0%

Table 4: Mean and Standard Deviation of Level of Knowledge and Attitude regarding Kangaroo Mother Care among Antenatal Mothers Attending Antenatal Clinic (N = 50)

Variable	Mean	Standard Deviation
Knowledge Score	6.24	2.076
Attitude Score	55.58	8.403

Table 5: Correlation between the level of knowledge and attitude regarding Kangaroo Mother Care among antenatal mother attending antenatal clinic. (N = 50)

Variables	Mean	Standard Deviation	r-value	p-value
Knowledge Score	6.24	2.076	0.163	0.259
Attitude Score	55.58	8.403		

Table 6: Association between level of knowledge regarding Kangaroo Mother Care among antenatal mother attending antenatal clinic with selected demographic variables. (N = 50)

Demographic Variables	Category	Moderate Knowledge	Adequate Knowledge	χ^2 Value	df	p-value
		n (%)	n (%)			
Age (years)	20–25	8 (34.8%)	7 (33.3%)	5.474	4	0.242
	26–30	11 (47.8%)	10 (47.6%)			
	31–35	4 (17.4%)	4 (19.0%)			
Marital Status	Married	23 (100.0%)	21 (100.0%)	–	–	constant
Religion	Hindu	15 (65.2%)	16 (76.2%)	3.614	4	0.461
	Muslim	4 (17.4%)	1 (4.8%)			
	Christian	4 (17.4%)	4 (19.0%)			
Education	Literate	22 (95.7%)	19 (90.5%)	1.095	2	0.578
	Illiterate	1 (4.3%)	2 (9.5%)			
Occupation	Employed	16 (69.6%)	14 (66.7%)	0.048	2	0.976
	Unemployed	7 (30.4%)	7 (33.3%)			
Gravida	Primi	16 (69.6%)	9 (42.9%)	3.425	2	0.180
	Multi	7 (30.4%)	12 (57.1%)			
Antenatal Visit	Regular	22 (95.7%)	19 (90.5%)	0.957	2	0.620
	Irregular	1 (4.3%)	2 (9.5%)			
No. of Children	Nil	11 (47.8%)	8 (38.1%)	2.146	6	0.906
	One	5 (21.7%)	4 (19.0%)			
	Two	6 (26.1%)	8 (38.1%)			
	Three	1 (4.3%)	1 (4.8%)			
Previous Info on KMC	Yes	7 (30.4%)	13 (61.9%)	4.421	2	0.110
	No	16 (69.6%)	8 (38.1%)			
Source of Information	Health worker	4 (17.4%)	8 (38.1%)	6.563	6	0.363
	Media	0 (0.0%)	1 (4.8%)			
	Family/Friends	3 (13.0%)	4 (19.0%)			
	Not applicable	16 (69.6%)	8 (38.1%)			

$p < 0.05$ = Significant

Cervical lymph nodes were the most frequently involved anatomical group, accounting for 253 cases (84.3%; 95% CI: 79.8-88.0). Submandibular lymph nodes were the second most common site but represented only 18 cases (6.0%; 95% CI: 3.8-9.3). Axillary and supraclavicular lymph nodes accounted for 3.0% and 2.0% of cases, respectively. Inguinal and submental nodes each represented 1.3%, while postauricular and preauricular nodes each accounted for 1.0%. The anatomical distribution was statistically significant (χ^2=1420.00, df=7, p<0.001), demonstrating a pronounced predominance of cervical lymphadenopathy in the study population.

Table 7: Association between level of attitude regarding Kangaroo Mother Care among antenatal mother attending antenatal clinic with selected demographic variables. (N = 50)

Socio-Demographic Variable	Category	Moderately Favourable Attitude	Favourable Attitude	χ^2 Value	df	p-value
		n (%)	n (%)			
Age (years)	20–25	8 (72.7%)	12 (30.8%)	7.724	2	0.021
	26–30	1 (9.1%)	21 (53.8%)			
	31–35	2 (18.2%)	6 (15.4%)			

Marital Status	Married	11 (100%)	39 (100%)	–	–	Constant
Religion	Hindu	6 (54.5%)	28 (71.8%)	6.035	2	0.049
	Muslim	4 (36.4%)	3 (7.7%)			
	Christian	1 (9.1%)	8 (20.5%)			
Education	Literate	11 (100%)	35 (89.7%)	1.226	1	0.268
	Illiterate	0 (0%)	4 (10.3%)			
Occupation	Employed	10 (90.9%)	24 (61.5%)	3.401	1	0.065
	Unemployed	1 (9.1%)	15 (38.5%)			
Gravida	Primi	9 (81.8%)	20 (51.3%)	3.284	1	0.070
	Multi	2 (18.2%)	19 (48.7%)			
Antenatal Visit	Regular	10 (90.9%)	37 (94.9%)	0.239	1	0.625
	Irregular	1 (9.1%)	2 (5.1%)			
Number of Children	Nil	7 (63.6%)	16 (41.0%)	8.946	3	0.017
	One	3 (27.3%)	7 (17.9%)			
	Two	1 (9.1%)	14 (35.9%)			
	Three	0 (0%)	2 (5.1%)			
Previous Info on KMC	Yes	3 (27.3%)	20 (51.3%)	1.991	1	0.158
	No	8 (72.7%)	19 (48.7%)			
Source of Information	Health Worker	2 (18.2%)	11 (28.2%)	2.151	3	0.542
	Media	0 (0%)	1 (2.6%)			
	Family/Friends	1 (9.1%)	8 (20.5%)			
	Not Applicable	8 (72.7%)	19 (48.7%)			

$p < 0.05$ = Significant

DISCUSSION

The present study was conducted to assess the knowledge and attitude regarding Kangaroo Mother Care (KMC) among antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry. KMC is an evidence-based intervention for improving the health and survival of preterm and low birth weight infants. Assessing maternal knowledge and attitude during pregnancy is important because antenatal education can prepare mothers to provide appropriate newborn care after delivery.[8,9] The socio-demographic findings revealed that most participants belonged to the 26–30-year age group (44%), followed by 20–25 years (40%). All participants were married, and the majority were Hindu (68%), literate (92%) and employed (68%). More than half were primigravida (58%), while 94% reported regular antenatal clinic visits. Regular antenatal visits provide opportunities for healthcare professionals to educate mothers about KMC, explain its benefits and demonstrate the correct technique. Maternal education and counselling are important in promoting appropriate newborn care practices.[10,11] Regarding knowledge of KMC, 23 participants (46%) had moderately adequate knowledge, 21 (42%) had adequate knowledge and six (12%) had inadequate knowledge. These findings suggest that most participants possessed at least a moderate level of knowledge, although some mothers continued to have information gaps. Knowledge about KMC should include its purpose, benefits, skin-to-skin contact, breastfeeding support, positioning, duration and the need for appropriate follow-up. Adequate knowledge is important because preterm and low birth weight infants are vulnerable to hypothermia, infections, feeding difficulties and poor growth. Structured antenatal teaching can help mothers understand how KMC contributes to newborn health.[12,13,14] The assessment of attitude revealed that 39 participants (78%) had a favourable attitude towards KMC, while 11 (22%) had a moderately favourable attitude. None of the participants demonstrated an unfavourable attitude. This finding is encouraging because maternal acceptance is an important factor in the implementation of KMC. However, a favourable attitude does not necessarily indicate sufficient practical knowledge or consistent practice after childbirth. Educational interventions should therefore combine information with practical demonstrations, opportunities to clarify doubts and family counselling where appropriate. These measures may improve maternal confidence and support the adoption of KMC in healthcare facilities and at home.[15,16] The mean knowledge score was 6.24 ± 2.076, while the mean attitude score was 55.58 ± 8.403. A weak positive correlation was observed between knowledge and attitude ($r = 0.163$), but this relationship was not statistically significant ($p = 0.259$). Therefore, the study did not establish a statistically significant relationship between participants' knowledge and attitude. Attitude may also be influenced by personal beliefs, previous experiences, family support and advice received from healthcare professionals. These possible influences require further investigation.[17,18] The association analysis showed statistically significant relationships between attitude and age ($p = 0.021$) and religion ($p = 0.049$). The other assessed socio-demographic variables did not show statistically significant associations. These findings indicate that attitude varied across certain demographic categories in this sample. However, the results should be interpreted cautiously because the sample was relatively small, and statistical significance does not establish causation. Further studies involving larger and more diverse populations would help clarify these associations.[19,20] Overall, the findings highlight the

need to strengthen KMC education during antenatal care. Nurses and other healthcare professionals can play a key role through structured health education, demonstrations, individual counselling and reinforcement during subsequent visits. Such interventions may address knowledge gaps and encourage recommended newborn care practices. The study was limited to antenatal mothers attending one institution, which may restrict the generalisability of its findings. In conclusion, although most participants demonstrated moderately adequate or adequate knowledge and a favourable attitude towards KMC, continued antenatal education is recommended to promote informed acceptance and effective implementation of this neonatal care intervention.[21,22]

CONCLUSION

The study assessed the knowledge and attitude regarding Kangaroo Mother Care (KMC) among antenatal mothers attending the antenatal clinic at AVMC&H, Puducherry. Most mothers had moderate to adequate knowledge (88%) and a favourable attitude (78%) towards KMC. Although a positive correlation was found between knowledge and attitude, it was not statistically significant ($r = 0.163$, $p = 0.259$). The study concludes that continued health education is needed to improve knowledge and promote effective KMC practice.

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