International Journal of Medical Toxicology & Legal Medicine Volume 27, No.5, 2024
e-ISSN: 0974-4614
p-ISSN: 0972-0448
https://doi.org/10.47059/ijmtlm/V27I5/086

Kangaroo Method Care In The Family: A Cross Sectional Study In Makassar City Indonesia

Aslinda[1,2], Masni[1] , Veni Hadju[1], Kadek Ayu Erika[1], Apik Indarty Moedjiono[1], Shanti Riskiyanti[1], Abdul Salam[1], Nursalam[3], Anwar Mallongi[1]

[1] Faculty of Public Health, Hasanuddin University, Makassar, Indonesia. 90243
[2]Muhammadiyah University of Makassar, Indonesia
[3]Airlangga University, Surabaya, Indonesia

Corresponding author e- mail: aslinda@unismuh.ac.id

Received: 14.10.2024 Revised: 15.11.2024 Accepted: 27.12.2024

ABSTRACT

Introduction: Kangaroo Method Care (KMC) is skin-to-skin contact between the baby and the mother on the chest of the mother or family that has been proven by several studies to be beneficial in improving the physiological function of Low Birth Weight (LBW) Babies, increasing closeness between mother and baby, increasing baby weight, and increasing exclusive breastfeeding. KMC is not only carried out in hospitals, but the continuity of the implementation of this care continues to be carried out at home. The inability of parents to care for babies and the disconnection of care from the hospital to the community causes the baby's health to not be monitored optimally. Health education and support are needed to increase the responsibility and awareness of mothers to carry out KMC because the role of the family is very important in maintaining the success of kangaroo care methods, but information regarding the description of the implementation of the kangaroo method at home is still limited.

Objective : This study aims to see the prevalence of kangaroo care methods, benefits, support and barriers to implementation at home.

Methods : This study is an analytical descriptive study with a *cross-sectional* study approach, sampling with *purposive sampling* and the number of respondents was 68. Univariate and bivariate analysis using SPSS version 24.0. Univariate analysis was conducted to determine the prevalence of kangaroo care at home, knowledge related to kangaroo care, sources of information, benefits of kangaroo care, obstacles and sources of support received by mothers in implementing kangaroo care at home. Bivariate analysis with the Chi-Squere test to identify the relationship between demographic factors of parents and infants, information related to KMC, sources of support and sources of information related to kangaroo care with the implementation of kangaroo care at home **.**

Results : LBW mothers who practiced kangaroo care at home were 41 (60.3%) with a maximum duration of 1-2 hours a day, the number of respondents was 19 (27.9%). As many as 50 (73.5%) received information related to kangaroo care (KMC) with the most information source from health workers as many as 34 (50%). The sources of support received came from husbands, parents and relatives. The form of support received was physical support, emotional support and information on instructions for implementing kangaroo care. The benefits obtained from implementing kangaroo care are improving the growth and health of low birth weight babies, increasing closeness to the baby and providing comfort to the baby. The obstacles obtained were lack of time, physical discomfort, lack of information, baby condition and difficulty in implementing KMC. There is a relationship between maternal education, maternal occupation, father's age, support from husband, family and relatives, information related to KMC, and sources of information from the internet and health workers with the implementation of kangaroo care at home with a value of p <0.05.

Conclusion: support from husband and parents as well as information related to kangaroo care methods are very necessary to maximize the implementation of kangaroo care methods at home.

Keywords: Kangaroo Care Method, information on kangaroo care at home, supporters and inhibitors of kangaroo care method.

INTRODUCTION

Kangaroo Care Method is an effective, cost-effective nursing action recommended by WHO for the care of premature babies and Low Birth Weight (LBW) Babies (1,2). This method is in the form of skin-to-skin contact care of the baby and the mother's skin on the chest of the mother or family which has been proven from several previous studies to be beneficial for LBW babies, especially in improving the physiological function of LBW babies, increasing the closeness of the mother and LBW, increasing the baby's weight, increasing exclusive breastfeeding so as to optimize the growth and development of LBW (3–6). This care is an important component of family-centered neonatal development and its implementation requires understanding and support from various factors, namely socio-demographic factors and public policy as well as access to services in hospitals (7–10). Not only implemented in hospitals, but the sustainability of the implementation of this care continues to be carried out at home and is monitored by related parties (10–12). The provision of continuous kangaroo care provides great benefits both for the survival of LBW itself and for the mental health of the mother (13–17).

Kangaroo Care Method (KMC) is one of the appropriate technologies that is simple, cheap and can be used when facilities for LBW care are very limited. However, in Indonesian society, the kangaroo method is not yet widely known, even though this method is quite effective and easy to do (18,19). Studies conducted in Ethiopia and India to increase the coverage of kangaroo care methods, the main obstacles and solutions were first identified. then using a model that is adjusted to the context of implementation science, the support of the local government, the belief of health workers that kangaroo care methods are the standard of care, changes in infrastructure, policies, skills, acceptance of mothers and families (20).

The inability of parents to care for their babies, and the disconnection of care from the hospital to the community causes the baby's health to not be monitored optimally. LBW babies experience re-hospitalization in the first two weeks after returning home from the hospital due to aspiration, diarrhea, and sepsis. This means that if parents are involved in care while the baby is being treated, it can increase the parents' confidence (21)**.** Efforts used to reduce the risk of delays in growth and development of LBW babies and improving the quality of life of LBW babies by using kangaroo care (KMC) which is carried out in the hospital and continues at home. (21).

The implementation of is not always easy, various challenges can arise. Research in Indonesia shows that obstacles to the implementation of kangaroo care methods for mothers are lack of family support, lack of family roles, household chores, lack of information about KMC from health workers, problems with empowering community health workers and awareness of Ante Natal Care (ANC) (22). A study related to factors for stopping kangaroo care methods at home is because there is no policy on follow-up care, the baby is uncomfortable and fussy, the baby's weight increases, there are still mothers who have never done kangaroo care methods since being in the hospital which illustrates that kangaroo care methods have not been strictly implemented by health workers in hospitals so that education, support from health workers for follow-up at home is needed to increase the responsibility and awareness of mothers to do it at home (23).

The role of the family is very important in maintaining the success of kangaroo method care, however, information regarding the implementation of the kangaroo method at home is still limited. Research on how the kangaroo method is implemented at home is needed, as well as identifying factors that support or hinder the implementation of this care in the home environment so that the implementation of KMC at home is more optimal, therefore, this study aims to describe the implementation of the kangaroo method at home by families of premature or LBW babies, the benefits obtained, support and obstacles they face in the care process.

MATERIALS AND METHOD

This study is a descriptive analytical study with a *cross-sectional* study approach that aims to determine the prevalence of kangaroo care at home, knowledge related to kangaroo care, sources of information, identifying the benefits of kangaroo care, obstacles and sources of support received by mothers in implementing kangaroo care at home and identifying the relationship between knowledge related to kangaroo care and the implementation of kangaroo care at home.

The procedure for taking subjects in this study was all babies born with low birth weight at Khadijah Hospital 1 during the period from February 2023 to February 2024 and sampling by *purposive sampling*. A total of 216 low birth weight babies were born and declared home in stable health conditions. Medical record data related to the identity and telephone number listed by the researcher were taken to be contacted or to come directly to fill out a questionnaire related to the implementation of kangaroo care at home. Of the 216 low birth weight babies who were declared home in stable condition, 68 respondents provided responses to the questionnaire given which indicated whether the mother of the low_birth_weight baby carried out kangaroo care at home.

The results of the study were obtained through univariate and bivariate analysis using SPSS version 24.0. Univariate analysis was conducted to determine the prevalence of kangaroo care at home, knowledge related to kangaroo care, sources of information, benefits of kangaroo care, obstacles and sources of support

received by mothers in implementing kangaroo care at home. Bivariate analysis with the Chi-Squere test to identify the relationship between knowledge related to kangaroo care and the implementation of kangaroo care at home.

The research has received ethical approval from the Health Research Ethics Committee of the Faculty of Public Health, Hasanuddin University with Number: 761/UN4.14.1/TP.01.02/2024

RESULTS

A total of 68 mothers with a history of LBW babies responded to this study. The proportion of LBW mothers who practiced kangaroo care at home was 41 (60.3%) with a maximum duration of 1-2 hours a day (27.9%) (figures 1 and 2). The age of mothers was mostly found at 20-29 years and the highest education was high school level (Table 1).

Among 68 mothers with a history of LBW, 50 (73.5%) received information related to kangaroo care (KMC) with the most information source from health workers (34) (50%). The sources of support received came from husbands, parents and relatives. The form of support received was physical support, emotional support and information on instructions for implementing kangaroo care. The benefits obtained from implementing kangaroo care include improving the growth and health of low_birth_weight babies, increasing closeness to the baby and providing comfort to the baby. The obstacles obtained were lack of time, physical discomfort, lack of information, baby's condition and difficulty in implementing KMC (Table 2).

The results of the Chi-Square test showed that there was a relationship between maternal education, maternal occupation, father's age, sources of support from husband, parents and relatives, the availability of information related to KMC and sources of information in the form of the internet and health workers with the implementation of kangaroo care methods at home with a value of p <0.05 (Table 3).

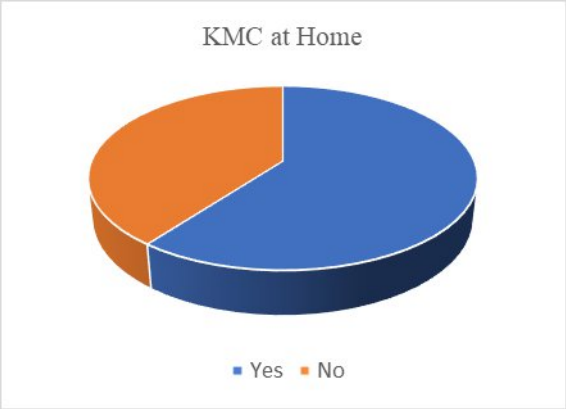

Figure 1. Proportion of KMC in Homes

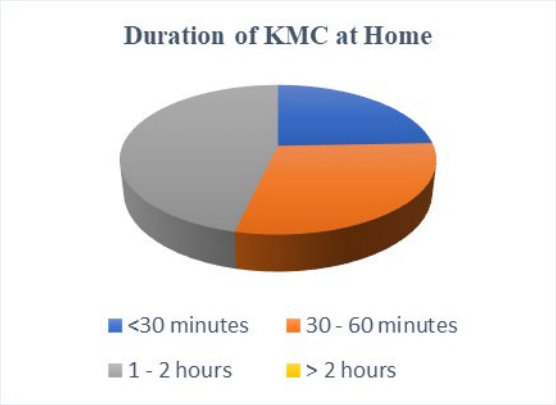

Figure 2. Daily duration of KMC

Table 1: Respondents' socio-demographic data

Characteristics		N	%
Mother's Age	20-29 years	29	42.6
	30-39 years	27	39.7
	≥ 40 years	12	17.6
Mother's Education	Elementary School	2	2.9
	Junior High School	6	8.8
	Senior High School	32	47.1
	Higher Education	28	41.2
Mother's Job	Work	19	27.9
	Doesn't work	49	72.1
Father's Age	20-29 years	27	39.7
	30-39 years	29	42.6
	≥ 40 years	12	17.6
Father's Education	Junior High	2	2.9

	School		
	Senior High School	47	69.1
	Higher Education	19	27.9
Father's occupation	Work	68	100.0
	Doesn't work	0	0.0
Birth Weight	< 1500 grams	2	2.9
	1500-2000 grams	17	25.0
	> 2000 grams	49	72.1
Duration_KMC	< 30 minutes	10	14.7
	30 - 60 minutes	12	17.6
	1 - 2 hours	19	27.9
	No KMC	27	39.7
Amount		68	100.0

Table 2 : Sources of information, support, sources of support, benefits and obstacles to implementing KMC at home

Variables		Yes		No	
		N	%	N	%
KMC_Information		50	73.5	18	26.5
Resources	Internet	23	33.8	45	66.2
	Pamphlet_Book	14	20.6	54	79.4
	health workers	34	50.0	34	50.0
KMC_Home		41	60.3	27	39.7
Support Resources	Relatives	9	13.2	59	86.8
	Parent	17	25.0	51	75.0
	Husband	18	26.5	50	73.5
Form of Support	Physique	28	41.2	40	58.8
	Emotional	8	11.8	60	88.2
	Info_Instructions	5	7.4	63	92.6
Perceived Barriers	Physical Discomfort	14	20.6	54	79.4
	Lack_of_Information	11	16.2	57	83.8
	Baby_Condition	3	4.4	65	95.6
	Lack of_Time	29	42.6	39	57.4
	Difficult	1	1.5	67	98.5
Benefits Obtained	Baby_Comfortable	14	20.6	54	79.4
	Near_Baby	19	27.9	49	72.1
	Healthy_Baby_Grow_Up	27	39.7	41	60.3

Table 3: Relationship of factors related to the implementation of kangaroo care methods at home

Variables			KMC_Home		Amount	p-value
			Yes	No		
Mother's Age	20-29 years	N	14	15	29	0.106
		%	48.3%	51.7%	100.0%	
	30-39 years	N	17	10	27	
		%	63.0%	37.0%	100.0%	
	≥ 40 years	n	10	2	12	
		%	83.3%	16.7%	100.0%	
Mother's Education	Elementary Scool	n	1	1	2	0.002
		%	50.0%	50.0%	100.0%	
	Junior High School	n	4	2	6	
		%	66.7%	33.3%	100.0%	
	Senior High School	n	12	20	32	
		%	37.5%	62.5%	100.0%	
	Higher Education	n	24	4	28	
		%	85.7%	14.3%	100.0%	
Mother's Job	Work	n	18	1	19	0,000
		%	94.7%	5.3%	100.0%	
	Doesn't work	n	23	26	49	
		%	46.9%	53.1%	100.0%	
Father's Age	20-29 years	n	12	15	27	0.005
		%	44.4%	55.6%	100.0%	
	30-39 years	n	17	12	29	
		%	58.6%	41.4%	100.0%	
	≥ 40 years	n	12	0	12	
		%	100.0%	0.0%	100.0%	
Father's Education	Junior High School	n	0	2	2	0.099
		%	0.0%	100.0%	100.0%	
	Senior High School	n	27	20	47	
		%	57.4%	42.6%	100.0%	
	Higher Education	n	14	5	19	
		%	73.7%	26.3%	100.0%	
Father's occupation	Work	n	41	27	68	-
		%	60.3%	39.7%	100.0%	
Birth Weight	< 1500 grams	n	2	0	2	0.436
		%	100.0%	0.0%	100.0%	
	1500-2000 grams	n	11	6	17	
		%	64.7%	35.3%	100.0%	
	>2000 grams	n	28	21	49	
		%	57.1%	42.9%	100.0%	
KMC_Information	Yes	n	41	9	50	0,000
		%	82.0%	18.0%	100.0%	
	No	n	0	18	18	
		%	0.0%	100.0%	100.0%	

Information Source (Internet)	Yes	n	20	3	23	0.003
		%	87.0%	13.0%	100.0%	
	No	n	21	24	45	
		%	46.7%	53.3%	100.0%	
Source of information (Pamphlet_Book)	Yes	n	12	2	14	0.061
		%	85.7%	14.3%	100.0%	
	No	n	29	25	54	
		%	53.7%	46.3%	100.0%	
Information Source (Health Workers)	Yes	n	28	6	34	0,000
		%	82.4%	17.6%	100.0%	
	No	n	13	21	34	
		%	38.2%	61.8%	100.0%	
Source of support from relatives	Yes	n	9	0	9	0.009
		%	100.0%	0.0%	100.0%	
	No	n	32	27	59	
		%	54.2%	45.8%	100.0%	
Source of support from parents	Yes	n	17	0	17	0,000
		%	100.0%	0.0%	100.0%	
	No	n	24	27	51	
		%	47.1%	52.9%	100.0%	
Source of support from Husband	Yes	n	18	0	18	0,000
		%	100.0%	0.0%	100.0%	
	No	n	23	27	50	
		%	46.0%	54.0%	100.0%	
Amount		n	41	27	68	
		%	60.3%	39.7%	100.0%	

Chisquare test $p < 0.05$

DISCUSSION

Intermittent kangaroo care method in hospital or continuous at home has been proven to increase physiological index (heart rate, respiration and temperature) in addition, it can affect the attachment of mothers to premature babies, increase breastfeeding and increase the weight of premature babies (24–27). This study tries to see the picture of the implementation of kangaroo care method at home, identify factors related to the implementation of kangaroo care method at home and the benefits and obstacles and support that can improve the practice of kangaroo care method at home

A total of 41 (60.3%) LBW mothers practiced kangaroo care at home. This achievement is still below the global target for kangaroo care coverage in 2025, which is above 75% (28). Similar research related to the proportion of kangaroo care at home that is still below the global target was conducted in Ethiopia (29). The duration of kangaroo care at home in this study was a maximum of 1-2 hours a day (27.9%), this is still very below the WHO recommendation, that the duration of continuous kangaroo care at home is carried out throughout the day (24 hours) if possible, if not then it can be done in several sessions a day with a minimum of 1-2 hours each session (28,30). This is likely due to misinformation regarding the duration of KMC implementation. A meta-analysis also showed that weight gain was higher when the duration of KMC was at least 8 hours/day and only babies who received 6 hours/day increased in length and head circumference. Almost all mothers did not continue KMC at home for 14 days and on average mothers stopped KMC 9 days after leaving the hospital. The reasons for stopping KMC included the baby being uncomfortable and fussy, the baby gaining weight, the baby's health being good, being busy, and never having done KMC since being in the hospital. Therefore, education, support from health care providers and continuing follow-up at home are needed to increase mothers' responsibility and awareness to do KMC at home (20).

The reported benefits of implementing kangaroo care at home in this study were improving the growth and health of low_birth_weight babies, increasing closeness with the baby and providing comfort to the baby. A randomized controlled trial related to the initiation of Kangaroo Care and early breastfeeding in Low_Birth_Weight Babies in the community showed a decrease in the incidence of severe infections, increased effectiveness and rates of exclusive breastfeeding and breastfeeding effectiveness and increased growth

parameters (31,32). Other studies have shown that implementing kangaroo care at home in addition to being beneficial for the growth of low_birth_=weight babies can substantially reduce the risk of moderate to severe postpartum depression in LBW mothers and problems with the closeness of the mother and baby relationship (31,33).

This study showed that there was a relationship between sources of support and the implementation of KMC at home and the greatest support received came from husbands as many as 18 (26.5%). Other studies also concluded that support from husbands, health workers and families was a significant factor in implementing KMC at home (29). A qualitative study in five hospitals in China also showed that increasing family support was one of the supporting factors in improving the implementation of KMC (34). A systematic review by Seidman et al showed that lack of family support and a conducive environment were two of the five main barriers to the practice of KMC. However, in the community, both barriers can be overcome. Mothers in the community are more likely to get support from family members, friends and other relatives than in the hospital (10). The presence of community health workers and positive attitudes of the community towards health workers, as well as antenatal and postnatal services are one of the conditions that support the implementation of KMC in health facilities and the sustainability of KMC at home (35).

The obstacles to implementing kangaroo care methods obtained from this study were lack of time, physical discomfort, lack of information, baby's condition and difficulty in doing KMC in line with research that stated obstacles to implementing KMC at home, namely lack of time due to the mother's workload, discomfort in carrying the baby on the chest, lack of information and lack of home visits by health workers (36). This is different from several studies that stated obstacles to implementing KMC, namely lack of KMC equipment, lack of trained health workers, lack of maternal awareness to do KMC, lack of support, the view that incubators are better and obstacles to socio-economic, cultural and structural factors that apply in the community (35,37). Qualitative studies related to KMC in the community found four themes of obstacles and facilitators to implementing KMC in the community, namely support and bonds, family support, household chores, and medical problems (34,38).

Information related to KMC and sources of KMC information in the form of the internet and health workers are related to the implementation of kangaroo care methods at home. In line with research that shows an increase in knowledge and practices related to LBW Care and Kangaroo Care Methods through health education and demonstrations as educational media in providing health education related to KMC can increase mothers' knowledge and attitudes regarding KMC to reduce fever in LBW (39,40). A study using leaflet media showed that there was a statistically significant difference between mothers' knowledge of KMC before and after counseling using leaflets (41). There is an influence of education on the implementation of kangaroo care methods on the level of mother's knowledge. Educational methods, both video and demonstration, are equally effective in increasing *self-efficacy* (42). Nurses can use videos to replace demonstrations when conducting discharge planning for kangaroo care methods (43).

CONCLUSION

The conclusion of this study is that the implementation of KMC at home has been implemented, but the duration of implementation is still very low. The benefits obtained from implementing KMC at home are improving the growth and health of LBW and increasing the closeness of mothers and LBW babies. Sources of support are obtained from husbands, mothers and relatives and health workers, inhibiting factors of kangaroo care methods are lack of time, physical discomfort, lack of information, baby conditions and difficulty in doing KMC so from the results of this study, the support of husbands and parents and information related to kangaroo care methods are very much needed to maximize the implementation of kangaroo care methods at home.

Conflict of Interest

There is no conflict of interest in this research.

Acknowledgement

Thank you to the mothers of LBW babies who have been involved in this study and all management of RSIA Sitti Khadijah 1 Muhammadiyah Makassar Branch. The author received financial support from the University of Muhammadiyah Makassar in the Doctoral Education process and Baznas Research Scholarship Assistance 2024.

REFERENCES

1. Mohammadi M, Bergh Am, Heidarzadeh M, Hosseini M, Sattarzadeh Jahdi N, Valizadeh L, Et Al. Implementation And Effectiveness Of Continuous Kangaroo Mother Care: A Participatory Action Research Protocol. Int Breastfeed J. 2021 Mar 8;16(1):24.

2. Ghazi M, Zare M, Ramezani M, Heidarzadeh M, Vashani Hb. The Effect Of Home Visit Program Based On The Continued Kangaroo Mother Care On Maternal Resiliency And Development Of Premature Infants: A Randomized Clinical Trial. Int J Community Based Nurse Midwifery. 2021;9(1):64–75.
3. Immediate "Kangaroo Mother Care" And Survival Of Infants With Low Birth Weight. New England Journal Of Medicine [Internet]. 2021 May 27;384(21):2028–38. Available From: Http://Www.Nejm.Org/Doi/10.1056/Nejmoa2026486
4. Mohammadi M, Bergh Am, Heidarzadeh M, Hosseini M, Sattarzadeh Jahdi N, Valizadeh L, Et Al. Implementation And Effectiveness Of Continuous Kangaroo Mother Care: A Participatory Action Research Protocol. Int Breastfeed J. 2021 Mar 8;16(1):24.
5. Zhang B, Duan Z, Zhao Y, Williams S, Wall S, Huang L, Et Al. Intermittent Kangaroo Mother Care And The Practice Of Breastfeeding Late Preterm Infants: Results From Four Hospitals In Different Provinces Of China. Int Breastfeed J. 2020 Jul 17;15(1).
6. Ritonga Nj, Sitorus R, Pulungan Sa. The Effect of Kangaroo Method on Reducing Body Temperature, Breastfeeding Frequency and Sleep Duration of Infants. Hesti Medan Research Journal Akper Kesdam I/Bb Medan [Internet]. 2021 Dec 31 [Cited 2024 Feb 4];6(2):127–33. Available From: Https://Www.Jurnal.Kesdammedan.Ac.Id/Index.Php/Jurhesti/Article/View/243
7. Mohammadi M, Bergh Am, Heidarzadeh M, Hosseini M, Sattarzadeh Jahdi N, Valizadeh L, Et Al. Implementation And Effectiveness Of Continuous Kangaroo Mother Care: A Participatory Action Research Protocol. Int Breastfeed J. 2021 Mar 8;16(1):24.
8. Kurt F, Kucukoglu S, Ozdemir A, Ozcan Z. The Effect Of Kangaroo Care On Maternal Attachment In Preterm Infants. Niger J Clin Pract. 2020 Jan 1;23(1):26–32.
9. Mony Pk, Tadele H, Gobezayehu Ag, Chan Gj, Kumar A, Mazumder S, Et Al. Scaling Up Kangaroo Mother Care In Ethiopia And India: A Multi-Site Implementation Research Study. Bmj Glob Health. 2021 Sep 13;6(9).
10. Jamali Qz, Shah R, Shahid F, Fatima A, Khalsa S, Spacek J, Et Al. Barriers And Enablers For Practicing Kangaroo Mother Care (Kmc) In Rural Sindh, Pakistan. Plos One. 2019 Jun 1;14(6).
11. Ghazi M, Zare M, Ramezani M, Heidarzadeh M, Vashani Hb. The Effect Of Home Visit Program Based On The Continued Kangaroo Mother Care On Maternal Resiliency And Development Of Premature Infants: A Randomized Clinical Trial. Int J Community Based Nurse Midwifery. 2021;9(1):64–75.
12. Calibo Ap, De Leon Mendosa S, Silvestre Ma, Murray Jcs, Li Z, Mannava P, Et Al. Scaling Up Kangaroo Mother Care In The Philippines Using Policy, Regulatory And Systems Reform To Drive Changes In Birth Practices. Bmj Glob Health. 2021 Aug 20;6(8).
13. Mathias Ct, Mianda S, Ginindza Tg. Facilitating Factors And Barriers To Accessibility And Utilization Of Kangaroo Mother Care Services Among Parents Of Low Birth Weight Infants In Mangochi District, Malawi: A Qualitative Study. Bmc Pediatr. 2020 Jul 29;20(1).
14. Rehman Mo Ur, Hayat S, Gul R, Waheed Kai, Victor G, Khan Mq. Impact Of Intermittent Kangaroo Mother Care On Weight Gain Of Neonates In Nicu: Randomized Control Trial. J Pak Med Assoc. 2020 Jun 1;70(6):973–7.
15. Charpak N, Tessier R, Ruiz Jg, Uriza F, Hernandez Jt, Cortes D, Et Al. Kangaroo Mother Care Had A Protective Effect On The Volume Of Brain Structures In Young Adults Born Preterm. Acta Paediatrica, International Journal Of Paediatrics. 2022 May 1;111(5):1004–14.
16. Zhang B, Duan Z, Zhao Y, Williams S, Wall S, Huang L, Et Al. Intermittent Kangaroo Mother Care And The Practice Of Breastfeeding Late Preterm Infants: Results From Four Hospitals In Different Provinces Of China. Int Breastfeed J. 2020 Jul 17;15(1).
17. Parsa P, Karimi S, Basiri B, Roshanaei G. The Effect Of Kangaroo Mother Care On Physiological Parameters Of Premature Infants In Hamadan City, Iran. Pan African Medical Journal. 2018;30.
18. Mohammadi M, Bergh Am, Heidarzadeh M, Hosseini M, Sattarzadeh Jahdi N, Valizadeh L, Et Al. Implementation And Effectiveness Of Continuous Kangaroo Mother Care: A Participatory Action Research Protocol. Int Breastfeed J. 2021;16(1):24.
19. Zhang B, Yue J, Duan Z, Zhao Y, Williams S, Huang L, Et Al. Maternal Experience Of Intermittent Kangaroo Mother Care For Late Preterm Infants: A Mixed-Methods Study In Four Postnatal Wards In China. Bmj Open. 2021 Sep 7;11(9).
20. Mony Pk, Tadele H, Gobezayehu Ag, Chan Gj, Kumar A, Mazumder S, Et Al. Scaling Up Kangaroo Mother Care In Ethiopia And India: A Multi-Site Implementation Research Study. Bmj Glob Health. 2021;6(9):1–11.
21. Hastuti P, Purwandani S, Amalia R, Setianto Ay. Health Education Improves Kangaroo Method Care (KMC) Practices in Postpartum Mothers. Journal of Health Research. 2018;7(1):32–6.
22. Mustikawati Is, Pratomo H, Martha E, Murty Ai, Adisasmita Ac. Barriers And Facilitators To The Implementation Of Kangaroo Mother Care In The Community - A Qualitative Study. Journal Of Neonatal Nursing. 2020;26(2):109–14.

23. Hariati S, Sutomo R, Lusmilasari L, Febriani Adb. Related Factors Of Discontinue Kangaroo Mother Care At Home For Low Birth Weight Infant After Nicu Discharge. International Journal Of Pharma Medicine And Biological Sciences. 2021;10(3):120–4.
24. Mehrpisheh S, Doorandish Z, Farhadi R, Ahmadi M, Moafi M, Elyasi F. The Effectiveness Of Kangaroo Mother Care (Kmc) On Attachment Of Mothers With Premature Infants. Eur J Obstet Gynecol Reprod Biol X. 2022;15(April):100149.
25. Siagian Y, Pujiati W, Sinaga Mi. The Effect of Kangaroo Method on Weight Gain in VLBW Babies. Smart Midwifery Journal. 2021 Dec 25;8(2):136–42.
26. Rehman Mo Ur, Hayat S, Gul R, Waheed Kai, Victor G, Khan Mq. Impact Of Intermittent Kangaroo Mother Care On Weight Gain Of Neonates In Nicu: Randomized Control Trial. J Pak Med Assoc. 2020 Jun 1;70(6):973–7.
27. Parsa P, Karimi S, Basiri B, Roshanaei G. The Effect Of Kangaroo Mother Care On Physiological Parameters Of Premature Infants In Hamadan City, Iran. Pan African Medical Journal. 2018;30.
28. World Health Organization. Kangaroo Mother Care A Transformative Innovation In Health Care [Internet]. 2023 [Cited 2024 Mar 2]. 1–52 P. Available From: Https://Www.Who.Int/Publications/I/Item/9789240072657
29. Ayele Mw, Wubie Mb, Ayele Sa. Proportion Of Mothers Practicing Kangaroo Mother Care At Home And Factors Influencing The Practices Following Hospital Discharge, South Wollo, Ethiopia. Journal Of Neonatal Nursing. 2021 Apr 1;27(2):118–22.
30. World Health Organization. Who Recommendations For Care Of The Preterm Or Low-Birth-Weight Infant. 123 P
31. Sinha B, Sommerfelt H, Ashorn P, Mazumder S, Taneja S, Bahl R, Et Al. Effect Of Community-Initiated Kangaroo Mother Care On Breastfeeding Performance In Low Birthweight Infants: A Randomized Clinical Trial. Matern Child Nutr. 2022 Oct 1;18(4).
32. Community-Based Randomized Controlled Trial Evaluating Effect Of Kangaroo Mother Care On Neonatal And Infant Outcomes. Vol. 56, Indian Pediatrics. 2020.
33. Takubo Y, Nemoto T, Obata Y, Baba Y, Yamaguchi T, Katagiri N, Et Al. Effectiveness Of Kangaroo Care For A Patient With Postpartum Depression And Comorbid Mother-Infant Bonding Disorder. Case Rep Psychiatry. 2019;2019.
34. Yue J, Liu J, Williams S, Zhang B, Zhao Y, Zhang Q, Et Al. Barriers And Facilitators Of Kangaroo Mother Care Adoption In Five Chinese Hospitals: A Qualitative Study. Bmc Public Health. 2020 Aug 13;20(1).
35. Hadush My, Gebremariam Ds, Beyene Sa, Abay Th, Berhe Ah, Zelelew Yb, Et Al. Barriers And Enablers Of Kmc Implementation In Health Facilities And Communities Of Tigray Region, Northern Ethiopia: Formative Research. Pediatric Health Med Ther. 2022 Sep;13:297–307.
36. Mohammadi M, Sattarzadeh N, Heidarzadeh M, Hosseini Mb, Hakimi S. Implementation Barriers For Practicing Continuous Kangaroo Mother Care From The Perspective Of Neonatologists And Nurses. J Caring Sci. 2021 Feb 14;10(3):137–44.
37. Bilal Sm, Tadele H, Abebo Ta, Tadesse Bt, Muleta M, W/Gebriel F, Et Al. Barriers For Kangaroo Mother Care (Kmc) Acceptance, And Practices In Southern Ethiopia: A Model For Scaling Up Uptake And Adherence Using Qualitative Study. Bmc Pregnancy Childbirth. 2021 Dec 1;21(1).
38. Cho. Y.C, Gai. A, Diallo. B.A, Samateh. A.L, Lawn. J.E, Martinez-Alvarez. M, Et Al. Barriers And Enablers To Kangaroo Mother Care Prior To Stability From Perspectives Of Gambian Health Workers: A Qualitative Study. Front Pediatr [Internet]. 2022 Aug [Cited 2024 Mar 6];1–14. Available From: Https://Pubmed.Ncbi.Nlm.Nih.Gov/36090565/
39. Ria Setia Sari. Improving Knowledge of Baby Care and Implementation of the Kangaroo Method in Parents of Bblr Babies Through Health Education. Jmm (Jurnal Masyarakat Mandiri). 2022;6.
40. Wahyu Dwi Agussafutri Cbpfaw. The Effect of Kangaroo Mother Care (Kmc) Demonstration on Changes in the Level of Knowledge and Attitude of Mothers in Implementing Kmc to Reduce Fever at Pmb Elisabeth. Indonesian Midwifery Journal. 2021;12.
41. Yunanda Rizki Amalia Harahap ANR. The Effect of Leaflet and Explanation Provision on Mother's Knowledge Regarding the Implementation of the Kangaroo Method on Low Birth Weight Babies. Diponegoro Medical Journal. 2017;6.
42. Khotimah SK, Rahmawati E, Susmarini D. Effectiveness of Video and Demonstration Methods on Kangaroo Mother Care Self Efficacy. Indonesian Journal of Nursing Education. 2019 Dec 23;5(2).
43. 'Oktiawati A 'Rustina, Y 'Chodidjah, S. Video-Based Education Improves Nurses' Knowledge and Motivation in Providing Developmental Care to Newborns. Jurnal Cendekia Utama (Journal of Nursing and Public Health). 2017;6.