



Effect Momming Guide Kangoroe Mother Care Skin to Skin Contact on the Body Weight on Low Birth Weight

Ni Ketut Mendri^{1*}, Atik Badi'ah¹, Amin Subargus²

¹PUI Novakesmas School of Health Polytechnics, Ministry of Health Study Program in Nursing Yogyakarta, Indonesia;
²Department of Manpower and Occupational Health and Safety, Yogyakarta, Indonesia

Abstract

Edited by: Mirko Spiroski
Citation: Mendri NK, Badi'ah A, Subargus A. Effect momming guide kangoroe mother care skin to skin contact on the body weight on low birth weight. Open Access Maced J Med Sci. 2024 Jan 27; 12(1):42-47. https://doi.org/10.3889/oamjms.2024.11343
Keywords: Body weight; Kangoroe mother care; Low birth weight; Momming guide; Skin to skin contact
***Correspondence:** Ni Ketut Mendri, PUI Novakesmas School of Health Polytechnics, Ministry of Health Study Program in Nursing Yogyakarta, Indonesia. E-mail: mendriniketut@yahoo.com
Received: 01-Dec-2022
Revised: 20-Dec-2022
Accepted: 14-Sep-2023
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Funding: This research did not receive any financial support
Competing Interests: The authors have declared that no competing interests exist
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BACKGROUND: Babies are children who are in the age range 0–12 months. Infancy is the first phase of human life, which at this time requires adaptation to the environment. Low birth weight (LBW) is a newborn who has a birth weight of <2500 g (up to 2499 g). Babies with LBW will have an impact in the long term in the future that will affect the quality of the nation's next generation. General management of infants with LBW is very necessary to prevent complications. General management that can be given to infants with LBW is maintaining body weight by weighing daily and monitoring nutritional intake. One of the actions that can be given to babies with LBW is using the Kangaroo Mother Care (KMC) method. KMC method of treatment is a skin to skin contact therapy, namely, conduction heat transfer from mother to baby so that the baby remains warm and stable so that it will increase the baby's weight. Researchers are interested in taking the title "The Effect of Momming Guide Kangoroe Mother Care Skin To Skin Contact on Body Weight in LBW in Puskesmas Daerah Istimewa Yogyakarta."

AIM: To find out the effect of Momming Guide Kangoroe Mother Care Skin To Skin Contact on Body Weight in LBW in Puskesmas Daerah Istimewa Yogyakarta

METHODS: Quasi experimental research type with the design of "Pre-test Post-test with Control Group Design." Sampling was carried out by purposive sampling with the criteria of parents (mothers) who have babies with LBW at the Yogyakarta Special Public Health Center. Data were analyzed analytically using t-test and Wilcoxon with a significant level of 0.05.

RESULTS: The difference in the weight of newborns with the 1st month and the 2nd month with the 3rd month there is a difference with the value of $p = 0.00$ (<0.05). While the difference in body weight in the 1st and 2nd month, there was a difference with $p = 0.005$ (<0.05).

CONCLUSION: There is an effect of Momming Guide Kangoroe Mother Care Skin To Skin Contact on Body Weight in LBW in Puskesmas Daerah Istimewa Yogyakarta.

Introduction

Babies are children who are in the age range 0–12 months. Infancy is the first phase of human life, which at this time requires adaptation to the environment. Low birth weight (LBW) is a newborn who has a birth weight of <2500 g (up to 2499 g). LBW is a problem that is often faced in the care of newborns. Babies with LBW require intensive care until they reach a stable condition [1]. According to the World Health Organization, the prevalence of LBW in 2015 is estimated at 15% of all births in the world. The Infant Mortality Rate (IMR) has increased from 2005 by 260 people, while in 2006 it was 273 people, which means an increase of 0.9%. About a third of this number of LBW died before stabilizing or in the first 12 h of the baby's life [2].

According to the results of the Basic Health Research in 2018, the prevalence of LBW in Indonesia was 6.2%. According to the National Population

and Family Planning Agency (BKKBN) in the 2017 Indonesian Demographic and Health Survey, the IMR in Indonesia is 24 deaths per 1000 live births. At this mortality rate, 1 in 67 children died in the 1st month of life. At the same time, the IMR decreased by 31% from 35 deaths per 1000 live births to 24 deaths per 1000 live births [3]. According to the Yogyakarta Special Region Health Office, the prevalence rate of LBW in DIY province in 2018 was 5.52%. This figure is higher than 2017 at 4.86%. According to the DIY Provincial Health Office in the Health Profile in 2018, the IMR in DIY was ranked in the top five best nationally along with East Kalimantan, DKI Jakarta, Riau, and South Sulawesi with 25/1000 live births.

A common cause of infant and neonatal mortality in the province of DIY is LBW [4]. Babies with LBW have a tendency to increase the incidence of infection and are prone to complications, problems in babies with LBW that often occur are disorders of the respiratory system, central nervous system, cardiovascular, hematology, gastrointestinal, kidney,

and thermoregulation [5]. Babies with LBW in general do not have maturity in the body's defense system to adapt to the environment. Premature babies with LBW tend to be hypothermic. This is due to the thinness of subcutaneous fat in infants so that it is very easily influenced by environmental temperature [2].

Babies with LBW will have an impact in the long term in the future that will affect the quality of the nation's next generation. General management of infants with LBW is very necessary to prevent complications. General management that can be given to infants with LBW is maintaining body weight by weighing daily and monitoring nutritional intake. One of the actions that can be given to babies with LBW is using the Kangaroo Mother Care (KMC) method.

Several studies have been conducted on the KMC method; the results say that this method is not just a substitute for incubators in infant care, the benefits that incubator care cannot provide [6]. One of the actions that can be given to babies with LBW is using the KMC method. KMC method of treatment is a skin-to-skin contact therapy, namely, heat transfer by conduction from mother to baby so that the baby remains warm and stable in normal temperatures. The mother's body temperature is an efficient and inexpensive source of heat, can provide a warm environment for the baby, as well as improve the mother's relationship with her baby [7].

Based on research from Atik [8] conducted at the Mardi Rahayu Kudus Hospital, the results showed that the Mardi Rahayu Kudus Hospital had not been able to carry out KMC optimally because of the lack of willingness of the mother or baby's parents to do KMC for fear of small babies so that make mothers and families feel less courageous to approach their babies and mothers also feel less confident to take care of them. According to research results in 2018, the prevalence of LBW in Indonesia was 6.2% of the baby birth rate, while in DIY Province the prevalence rate in 2018 in Sleman Regency in 2018 was 59 cases of the number of births so an average of 15–20 people per month. Based on a preliminary study at four health centers in the Special Region of Yogyakarta/DIY (Puskesmas Tegalrejo Yogyakarta City, Puskesmas Mlati II Sleman Yogyakarta, Puskesmas Sewon II Bantul Yogyakarta and Puskesmas Sentolo Kulon Progo Yogyakarta) from interviews with 12 mothers who have babies with LBW Low (LBW) in four puskesmas in Yogyakarta, the results showed that 76% of mothers said they did not understand how to use KMC and care for babies with LBW. Research based on the KMC method of care in infants with LBW is very important Agency on LBW at the Yogyakarta Special Region Health Center. This research is in accordance with the RIP (Research Master Plan) and the research Roadmap of the Applied Nursing Undergraduate Anesthesiology

Study Program (STKA) as part of the health profession directing research with the Yogyakarta Ministry of Health Poltekkes Roadmap, which is based on the use of innovative health science and technology, where material about Momming Guide Kanggoroe Mother Care Skin To Skin Contact Against Weight Loss in LBW has been included in the Health Promotion Course for semester IV STKA Study Program which is applied to target families in the community.

It is necessary to conduct research on "Effect Of Momming Guide Kangoroe Mother Care Skin To Skin Contact On LBW."

Methods

This research is a quasi-experimental study with a pre-test-post-test with control group design. The research design can be described as follows:

Pre test	Intervention	Post test
O ₁	X ₁	O ₂
O ₃	X ₂	O ₄

O1: Pre-test weight for LBW infants in the intervention group

O2: Post-test weight gain in LBW infants in the intervention group

O3: Pre-test weight for LBW infants in the control group

O4: Post-test weight loss in LBW infants in the control group

X: The intervention in the experimental group using the Momming Guide Kanggoroe Mother Care Skin To Skin Contact method was carried out once a week for 3 months with a duration of 30 minutes.

X2: Giving leaflets about Momming Guide Kanggoroe Mother Care Skin To Skin Contact to the control group

This research was conducted in 4 working areas of the Yogyakarta Special Region Health Center (Puskesmas Mlati II Sleman Yogyakarta, Puskesmas Tegalrejo Yogyakarta City, Puskesmas Sentolo I Kulon Progo and Puskesmas Sewon II Bantul Yogyakarta). The time of the study was carried out in 2021 (July–November 2021) and 2022. Independent variables: Effect of Momming Guide Kanggoroe Mother Care Skin To Skin Contact. Dependent variable: Body weight in LBW infants (Tables 1 and 2).

The population is all parents (mothers) who have LBW babies in the working area of the Special Region of Yogyakarta (Puskesmas Mlati II Sleman Yogyakarta, Puskesmas Tegalrejo Yogyakarta City, Puskesmas Sentolo I Kulon Progo and Puskesmas Sewon II Bantul Yogyakarta). Inclusion criteria: Parents

Table 1: The location of the study and the number of respondents in 4 health centers of the special region of Yogyakarta (Daerah Istimewa Yogyakarta)

Serial number	Location Research in Puskesmas	Number of respondents, frekuensi (%)	
		Experiment	Control
1	Sewon II	9 (26.47)	9 (26.47)
2	Mlati II	10 (29.41)	10 (29.41)
3	Tegalrejo	6 (17.65)	6 (17.65)
4	Sentolo	9 (26.47)	9 (26.47)
	Total	34 (100)	34 (100)

(mother) who have LBW babies and parents (mothers) who have LBW babies, male or female.

Exclusion criteria

Parents (mother) who have LBW babies with congenital abnormalities, parents (mothers) who have LBW babies with infections, and parents (mothers) who have LBW babies with complications were excluded from the study. In this study, respondents were two groups of parents (mothers) who had LBW babies in the working area of the Yogyakarta Special Public Health Center (Mlati II Public Health Center Sleman Yogyakarta, Tegalrejo Health Center Yogyakarta City, Sentolo I Health Center Kulon Progo and Sewon II Health Center Bantul Yogyakarta) as many as 34 in each intervention group and control group. The data from the examination will be analyzed descriptively and analytically with the help of the SPSS for windows version 16.0 program using the pair t-test and Wilcoxon test [5] with a significant level of 0.05.

Table 2: Characteristics of respondents in the experimental group and in the control group at 4 in Puskesmas Daerah Istimewa Yogyakarta

Serial number	Characteristics of respondents	Number of respondents, frekuensi (%)		
		Experiment	Control	
1	Baby age (days)	1	11 (23.4)	12 (35.3)
		2	13 (38.2)	15 (44.1)
		3	10 (29.4)	7 (20.6)
2	Baby's gender	Man	14 (41.2)	16 (47.1)
		Women	20 (58.8)	18 (52.9)
3	Child for	1 st	6 (17.6)	9 (26.5)
		2 nd	10 (29.4)	6 (17.6)
		3 rd	10 (29.4)	10 (29.4)
		4 th	8 (23.5)	9 (26.5)

The study has been approved by Health Ethics Committee of Politeknik Kesehatan Kemenkes Yogyakarta at Description Of Ethical Approval. With Number: e-KEPK/POLKESYO/0607/VII/2021.

Results and Discussion

The location of the study and the number of respondents in 4 Health Centers of the Special Region of Yogyakarta (DIY).

- Differences in body weight before the Momming Guide Kanggoroe Mother Care Skin To Skin Contact on LBW at the Yogyakarta Special Region Health Center. In Table 3 above, it can be seen in the experimental group that the weight of newborns was mostly <2500 g as many as 34 respondents (100%).

Table 3: Body weight in newborns, 1st month, 2nd month and 3rd month in the experimental group in four provincial health centers special region of Yogyakarta

Serial number	Weight (g)	Frekuensi (%)			
		New born baby	Month 1	Month 2	Month 3
1	< 2500	34 (100)	5 (14.7)	0	0
2	2500–3000	0	29 (85.3)	34 (100)	2 (5.9)
3	3001–3500	0	0	0	25 (73.5)
4	3501–4000	0	0	0	7 (20.6)
	Total	34 (100)	34 (100)	34 (100)	34 (100)

In Table 4 above, it can be seen in the control group that the weight of newborns was mostly <2500 g as many as 34 respondents (100%). Maryuni (2013) states that LBW has a thinner subcutaneous fat covering layer and the baby's body area is relatively larger so that the body's evaporation is even greater due to the lack of tissue under the skin (The baby's physiological response to cold exposure is the oxidation process of brown fat) [9]. This shows that LBW babies are at risk of experiencing hypothermia, so that fast efforts are needed in handling LBW such as the KMC method to keep the temperature stable. This study is also in line with research conducted by Bobak [10] explaining LBW, in this case premature babies, lose the opportunity to prepare for life outside the uterus which usually occurs in the third trimester. The younger the gestational age, the less adaptable it is. In order to have the same opportunity to adapt to a term baby, it must be given the same environment and needs as the conditions in the uterus. The general handling of LBW care is to maintain the baby's temperature to remain normal, give water to drink and prevent infection.

Table 4: Body weight in newborns, 1st month, 2nd month and 3rd month in the control group in four provincial health centers special region of Yogyakarta

Serial number	Weight (g)	Frekuensi (%)			
		New born baby	Month 1	Month 2	Month 3
1	< 2500	34 (100)	34 (100)	26 (76.5)	0
2	2500–3000	0	0	8 (23.5)	34 (100)
3	3001–3500	0	0	0	0
4	3501–4000	0	0	0	0
	Total	34 (100)	34 (100)	34 (100)	34 (100)

- Differences in body weight after the Momming Guide Kanggoroe Mother Care Skin To Skin Contact on LBW at the Yogyakarta Special Region Health Center.

In Table 3 above, it can be seen in the experimental group that the weight in the 1st month was mostly 2500–3000 g as many as 29 respondents (85.3%). Body weight in the 2nd month was mostly 2500–3000 g as many as 34 respondents (100%). Body weight in the 3rd month was mostly 3001–3500 g as many as 25 respondents (75.3%). In Table 4 above, it can be seen in the control group that the baby's

Table 5: Test the normality of the experimental group's body weight on the respondents in four Daerah Istimewa Yogyakarta provincial health centers

Variable	Parameter	p-value	Keterangan
Body weight	New born baby	0.53	Normal
	Month 1	0.98	Normal
	Month 2	1.40	Normal
	Month 3	4.80	Normal

weight at month 1 was mostly <2500 g as many as 34 respondents (100%). Body weight in the 2nd month was mostly <2500 g as many as 26 respondents (76.5%). Body weight in the 3rd month was mostly 2500–000 g as many as 34 respondents (100%) (Tables 5 and 6).

Table 6: Test the normality of the control group's body weight on the respondents in four Daerah Istimewa Yogyakarta provincial health centers

Variable	Parameter	p-value	Keterangan
Body weight	New born baby	0.27	Abnormal
	Month 1	3.19	Normal
	Month 2	0.13	Abnormal
	Month 3	4.20	Normal

The benefits of the kangaroo method are establishing closeness and bonding between parents and babies, accelerating breastfeeding, breastfeeding intensity more often so that the baby's weight and immune system increases, and shortening the time of hospitalization so as to save treatment costs because the mother takes more care her own baby. The mechanism of the kangaroo method in increasing the baby's weight occurs because the baby is in a relaxed state, resting in a pleasant position, similar to the position in the womb, so that the baby's anxiety is reduced and sleeps longer. In such a situation, oxygen and calorie consumption is at the lowest level, so that the available calories are used to increase body weight. In addition, weight gain is also caused by the frequency of breastfeeding more often. In the case after using the kangaroo method, there was an increase in the frequency of mothers giving breast milk. Because the baby is always in the mother's arms and in a condition when the patient feels thirsty and needs breast milk, the patient will look for the mother's nipple in her kangaroo shirt, so this also helps the patient in meeting the nutritional and fluid needs. The thing that must be considered in doing the kangaroo method is to make sure there are no problems with breathing difficulties in the baby, the development while in the incubator is good, the baby is not in intensive care, if the baby is still in intensive care, the kangaroo method should be postponed until the baby's condition is stable. While the thing that must be considered for those who provide the kangaroo method is to have a clean body condition so that the baby feels more comfortable when being held. The kangaroo method can be stopped with an indication that the baby's weight has exceeded 2500 g, and the baby feels uncomfortable with the kangaroo method, such as moving frequently when the kangaroo method is used and the baby crying when the kangaroo method is to be used

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Weight in LBW at the Yogyakarta Special Region Health Center.

In Table 7 above, it can be seen that the difference in the weight difference of newborns with the 1st month, 1st month with 2nd month, and 2nd month with 3rd month there is a difference with $p = 0.000 (< 0.05)$.

Table 7: Analysis of the data using the t test test for the difference in weight differences of newborns, 1st month, 2nd month, and 3rd month in the experimental group in four Puskesmas Daerah Istimewa Yogyakarta

Variable	Significns (p)		
	New born baby-month 1	Month 1-month 2	Month 2-month 3
Body weight	0.000	0.000	0.000

Several studies have been conducted on the kangaroo method, the results say that the kangaroo method is not only a substitute for the incubator in LBW care, but also provides many advantages that cannot be provided by incubator care [11], [12]. Kangaroo method care is beneficial in increasing body weight by stabilizing the baby's body temperature, stabilizing heart and breathing rates, reducing calorie use, children increasing baby's weight better. Research by Ruth [13] said that the kangaroo method of care had a positive and significant impact on motor development and cognitive perception in infants in the parenting process. The kangaroo method has a good impact on the neurophysiological development of infants, increases parental interaction, and helps families in the development of their babies. Research by Agudelo [14], [15] that the kangaroo method of care is an alternative for treating LBW so that mothers easily breastfeed their babies more often and exclusively. The study recommends that the use of the kangaroo method because it can reduce morbidity in LBW infants. The kangaroo method of care has a positive impact on newborns, especially LBW and premature so that it can be used as a hospital program, especially the perinatology room. The advantages of the kangaroo method of care include benefits for the baby and his parents. The benefits for the baby are the effectiveness of thermoregulation, stable heart rate, regular breathing frequency including reduced apnea, increased oxygen saturation, weight gain and faster baby development, reduced crying, supports exclusive breastfeeding, prolongs deep sleep and others. The benefits that can be felt by parents are speeding up bonding, increasing confidence in caring for their small baby, eliminating feelings of separation and incompetence, and parents feeling satisfaction because they have participated in caring for their baby [16]. Research related to PMK, has compared the kangaroo method of care with conventional nursing for babies born prematurely and having LBW. The results of the study stated that the respiratory rate, body temperature, and oxygen saturation were better in infants who underwent kangaroo treatment compared to infants who did not receive FMD [17].

The results of the study found that mothers who did kangaroo care felt more confident in caring for their babies compared to mothers who did not take care of the kangaroo method. Kangaroo care also increases the mother's closeness with her baby, reduces feelings of stress on the mother as well as on the baby, and makes the mother and baby, and makes the mother and baby more calm and relaxed [18].

Another effort in handling hypothermia in infants with LBW is the KMC method of treatment [19]. KMC method of care is treatment for LBW by making direct contact between the baby's skin with the mother's skin (skin-to-skin contact) by placing the baby on the mother's chest (Endang, 2010). The KMC method is able to meet the needs of LBW by providing situations and conditions that are similar to the uterus so as to provide LBW opportunities to adapt well in the world. This method can be done in the hospital and at home because the KMC method is a simple way to treat LBW babies who use the mother's body temperature to warm her baby [20].

Some of the advantages of using KMC are that it meets the most basic needs of babies, namely the contact of the baby's skin to the mother's skin where the mother's body will become thermoregular for the baby so that the baby gets warmth, facilitates breastfeeding, infection protection, stimulation, safety and affection [21]. Research results from several articles show that the KMC method has an effect on physiological responses in LBW infants, namely in maintaining body temperature, increasing body weight, increasing O₂ saturation and stabilizing pulse. According to Priyanti [21] in 28 infants, through a quasi-experimental method with pre and post-test control group designs, about the effect of applying KMC to increasing LBW weight.

There was an increase in body weight in infants who received KMC treatment, which was 1071.43 g, this means that there was an effect of KMC treatment on increasing the weight of LBW infants. This research is also supported by previous research conducted by Putri [22], [23] who said that there was a difference in the average weight of babies before and after treatment with the kangaroo method in the perinatology room of RSUD Dr. Achmad Mochtar Bukittinggi. This research was conducted with a one group pretest posttest approach based on the average weight of infants before the kangaroo method treatment and after the kangaroo method treatment, which was 2830 g with a standard deviation of 3093. This research was conducted for 2 weeks

Limitations

When the research took place at the same time as the Corona Virus 19 Pandemic Outbreak, so that the number of pregnant women who gave birth at the Puskesmas decreased and the number of visits by postpartum mothers to weigh their babies to the Puskesmas also decreased so that the implementation

of research that should have been carried out in the Puskesmas building was continued by home visits to homes mothers who have babies with LBW

Conclusion

1. The difference in body weight before the Momming Guide model of Kanggoroe Mother Care Skin To Skin Contact on LBW at the Yogyakarta Special Region Health Center was mostly < 2500 g
2. The difference in body weight after the Momming Guide model Kanggoroe Mother Care Skin To Skin Contact on LBW at the Yogyakarta Special Region Health Center is mostly 3001–3500 g
3. There is an effect of Momming Guide Kanggoroe Mother Care Skin To Skin Contact on Body Weight in LBW at the Special Region of Yogyakarta Health Center.

Suggestions

1. For the family. Can be used as a guide for families who have LBW babies in providing interventions for Momming Guide Kanggoroe Mother Care Skin To Skin Contact
2. For nurses in inpatient health centers. Can be used as the implementation and replication of the intervention model with the Momming Guide Kanggoroe Mother Care Skin To Skin Contact.

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