

THE EFFECTIVENESS OF THE KANGAROO METHOD CARE (KMC) ON BODY TEMPERATURE STABILITY IN LOW BIRTH WEIGHT (LBW) BABIES IN THE PERINATOLOGY ROOM OF THE REGIONAL PUBLIC HOSPITAL DR ACHMAD DIPONEGORO PUTUSSIBAU

Lestari Makmuriانا, Dewi Ultari Srimentari, Tri Wahyuni, Lilis Lestari

STIK Muhammadiyah Pontianak, Indonesia

Email: lestarimakmuriانا@gmail.com, utaridewi554@gmail.com,

tri@stikmuhptk.ac.id, lilis_lestari90@yahoo.com

Abstract

Low birth weight is a baby born with birth weight of less than 2500 grams. Babies with low birth weight have a great potential to experience various health problems as a result of incomplete and mature organs and body functions. One of the problems than often occurs is the imperfect regulation of body temperature. To maintain the stability of body temperature, a methoded is used, namely the Kangaroo Method Care (KMC). The purpose of this study was to determine the effectiveness of the Kangaroo Method Care (KMC) on the stability of body temperature in Low Birth Weight (LBW) infants in the Perinatology Room of The Regional Public Hospital dr Achmad Diponegoro Putussibau. This research is a quantitative research. This study uses a quasy-experimental without a control group with the design used is a pretest post test one group design. This research test using Paired T-Test. This research was conducted in the Perinatology Room of the Regional Public Hospital dr Achmad Diponegoro Putussibau which was carried out on April 12th – June 24th 2021 with a total of 25 LBW respondents. The results of statistical tests based on the t-test, the count value was -11,126 with a p-value Of 0,000. It is known that the p-value is $0,000 < \alpha (0,05)$, this indicates that there is an effect of the Kangaroo Method Care (KMC) on the stability of body temperature in Low Birth Weight (LBW) infants in the Perinatology Room of The Regional Public Hospital dr Achmad Diponegoro Putussibau.

Keywords: Kangaroo Method Care, Body temperature, LBW

Introduction

One indicator to determine the degree of public health is the infant mortality rate (IMR). The infant mortality rate in Indonesia is still very high, the most common cause of infant mortality is the birth of low birth weight babies (LBW). IMR is the number of infant deaths in the first 28 days of life per 1000 live births. The infant mortality rate in Indonesia is still higher than other ASEAN countries, which is 27 per 1000 live births (Anindya et al., 2020). Reports of the incidence of LBW in 2015 in the world contained 15.5% low birth weight, which means that around 20.6 million babies are born each

How to cite:	Makmuriانا. L., et.al (2021) The Effectiveness of The Kangaroo Method Care (KMC) on Body Temperature Stability In Low Birth Weight (LBW) Babies In The Perinatology Room of The Regional Public Hospital Dr Achmad Diponegoro Putussibau, <i>Syntax Literate: Jurnal Ilmiah Indonesia</i> 7(1)
E-ISSN:	2548-1398
Published by:	Ridwan Institute

The Effectiveness of The Kangaroo Method Care (KMC) on Body Temperature Stability In Low Birth Weight (LBW) Babies In The Perinatology Room of The Regional Public Hospital Dr Achmad Diponegoro Putussibau

year, 96.5% of them in developing countries. The rate of LBW in developing countries (16.5%) is more than double the rate in developing regions (7%). Low birth weight (LBW) is one of the main problems in developing countries. India is one of the countries with the highest incidence of LBW. About 27% of babies born in India are LBW. South Asia has the highest incidence, with 28% of infants with LBW, while East Asia/Pacific has the lowest rate, at 6% ([World Health Organization \(WHO\), 2015](#)). In West Kalimantan, the trend of the percentage of LBW cases since 2014 in West Kalimantan Province has increased. The trend of the percentage of LBW cases in West Kalimantan Province in the last 5 years in 2014 was 2.60%, in 2015 it was 2.62%, in 2016 it was 3.20%, in 2017 it was 3.62% and in 2018 it increased by 3,66 % ([Dinas Kesehatan Provinsi Kalimantan Barat, 2019](#)). The work report of the Kapuas Hulu district health office is an accumulation of data reported from health care facilities with LBW Infant Coverage in 2018 as many as 343 LBW babies from a total of 4,222 live births, all of which were handled. Meanwhile, from the 2018 death rate report, of the 65 babies who died there were 5 babies with LBW cases, this LBW case is the number five contributor to infant mortality in Kapuas Hulu Regency ([Kapuas, 2018](#)). Based on data from the Perinatology Room of RSUD dr. Achmad Diponegoro Putussibau in 2019, the incidence of low birth weight (LBW) babies in the January to June 2019 range fell with a total of 106 LBW babies. From July to December 2019, it increased with a total of 138 LBW babies, there was an increase in the LBW birth rate with a difference of 30 babies per 6 months in 2019 ([Kapuas, 2018](#)). Low birth weight babies have a great potential to experience various health problems as a result of incomplete and mature organs and body functions. Health problems that need attention from the health care team when caring for LBW babies are problems that occur as a result of imperfect regulation of body temperature, respiratory function, nervous function, cardiovascular function, bleeding system, digestive system, and immune system ([Hughes & Simpson, 1995](#)). In Indonesia, there are still many people who do not know the benefits of Kangaroo Method Care (KMC). In general, hospitals or clinics that have complete incubator facilities are still limited in number. In addition, the use of incubators to care for LBW babies requires high costs. Due to the limitations of incubator facilities, it is not uncommon for one incubator to be occupied by more than one baby and can increase the occurrence of nosocomial infections in hospitals ([Acharya, Singh, Bhatta, & Poudel, 2014](#)). The Effect of Kangaroo Treatment Method on Increasing Body Temperature of Low Birth Weight Infants in Nicu Grandmed Lubuk Pakam Hospital showed that the results of the study showed that there was an effect of Kangaroo Treatment Method on increasing body temperature of low birth weight infants ([Acharya et al., 2014](#)). The results of this study were supported by the results of another study . Shows that health education is effective in improving the practice of kangaroo care methods. The gap that occurred in the RSUD dr. Achmad Diponegoro Putussibau, precisely in the Perinatology room, was limited in the special sling used for the kangaroo method care (KMC) care for babies with low birth weight. This special sling only amounts to 1 piece, while babies with low birth weight sometimes can have more

than 1 on the same day of care, as a result the health workers on duty have to replace them with long cloths. Another gap found is that there are no nurses/midwives on duty in the perinatology room who have attended special training on kangaroo care methods. Based on the above phenomenon, researchers are interested in conducting research on the effectiveness of the kangaroo method of care for the stability of body temperature in infants with low birth weight (LBW) in the perinatology room of RSUD Dr. Achmad Diponegoro Putussibau. The purpose of this study was to determine the effectiveness of Kangaroo Treatment Method on Body Temperature Stability in Low Birth Weight Babies (LBW) in the Perinatology Room of Dr. Achmad Diponegoro Putussibau Hospital.

Method

This research is a quantitative research. This study uses a quasi-experimental without a control group with the design used is a pretest post test one group design. The research test used Paired T-Test. In this study, the sampling technique used by the author is to use a non-probability technique, namely a saturated sample or often called total sampling.

The population of this study were infants with low birth weight (LBW) at the Regional General Hospital Dr. Achmad Diponegoro Putussibau who was treated in the Perinatology room from April 12th - June 24th 2021 were conducted in the perinatology room of RSUD Dr. Achmad Diponegoro Putussibau. With a total of 25 LBW respondents. This instrument was developed by the researcher after conducting a literature review on journals and books on kangaroo care methods. The data collection tools used were observation sheets, thermometers, pulse oximetry, informed consent and baby scales.

Intervention in the study began in April to June 2021. If at that time there were LBW babies who met the inclusion criteria, the researchers immediately took the baby as a sample of one baby, the kangaroo method was treated for at least 2 hours, then temperature measurements were taken before and after kangaroo care.

This research data collection used observation sheets, thermometers, pulse oximetry, informed consent and baby scales. After the patient agreed, the researcher asked the mother of the LBW baby to sign the informed consent form, after which the researcher conducted the study. This research has passed the ethical test from STIK Muhammadiyah Pontianak with registration number 99/II.IAU/KET.ETIK/IV/2021. Univariate analysis was conducted to describe the characteristics of age, gender and birth weight. Bivariate analysis was carried out on two variables to determine the relationship or correlation, differences. The qualitative independent variables in this study have two categories. Therefore, the test was carried out using the method of using the average difference test for two paired samples (paired sample t-test).

The Effectiveness of The Kangaroo Method Care (KMC) on Body Temperature Stability In Low Birth Weight (LBW) Babies In The Perinatology Room of The Regional Public Hospital Dr Achmad Diponegoro Putussibau

Results and Discussion

Results

1. Univariate analysis test

Before treatment with the Kangaroo Method on the stability of body temperature in Low Birth Weight Babies (LBW) the mean value (average) was 36.5740 and after the mean value (average value) increased to 37.1988. Before the Kangaroo Method Treatment was carried out on the stability of body temperature in Low Birth Weight Babies (LBW) the median value (middle value) was 36.550 and after the median value (middle value) increased to 37.1. Before the Kangaroo Method Treatment on the stability of body temperature in Low Birth Weight (LBW) infants the minimum value (lowest value) was 36.5 and after the minimum value (lowest value) was increased to 36.95. Before the Kangaroo Method Treatment for the stability of body temperature in Low Birth Weight Babies (LBW) the maximum value (highest value) was 36.90 and after the maximum value (highest value) was increased to 37.95.

Mean, Median, Minimum and Maximum Effectiveness of Kangaroo Method Treatment on Body Temperature Stability in Low Birth Weight (LBW) Babies in the Perinatology Room of Dr Achmad Diponegoro Putussibau Hospital.

Table 1

Body body temperature	Score			
	Mean	Median	Minimum	Maximum
Pre Test	36,5740	36,550	36,35	36,95
Post Test	37,1988	37,10	36,90	37,95

2. Bivariate analysis test (Paired Sample T-Test)

Based on table 2, it can be seen that before the Kangaroo Method treatment was given to the stability of body temperature in Low Birth Weight Babies (LBW) the mean value (average) was 36.5740 and after the mean value (average value) increased to 37, 1988. Based on the t-test, the t-count value was -11.126 with a p-value of 0.000. It is known that the p-value is $0.000 < (0.05)$, this indicates that there is an effect of Kangaroo Method treatment on the stability of body temperature in Low Birth Weight Babies (LBW) in the Perinatology Room of Dr. Achmad Diponegoro Putussibau Hospital.

The Effectiveness of Kangaroo Method Treatment on Body Temperature Stability in Low Birth Weight (LBW) Babies in the Perinatology Room of Dr Achmad Diponegoro Putussibau Hospital.

Table 2

Variable	Treatment	N	Mean	SD	T	P-value
body	Pre test	25	36,5740	0,13317	-	0,000

temperature	Post test	25	37,1988	0,21104	11,126
-------------	-----------	----	---------	---------	--------

Discussion

The Effectiveness of the Kangaroo Care Method on the Stability of Body Temperature in Babies with Low Birth Weight (LBW) in the Perinatology Room of RSUD Dr. Achmad Diponegoro Putussibau

The results of research conducted on 25 respondents with low birth weight babies in the Perinatology room of RSUD dr. Achmad Diponegoro Putussibau showed that the average body temperature of babies with low birth weight (LBW) before the Kangaroo Treatment Method was 36.50°C and after Kangaroo Care Method was carried out at 37.10°C. After the Paired T-Test test was carried out, the t-count value was -11.126 with a p-value of 0.000. It is known that the p-value is $0.000 < (0.05)$, this indicates that there is an effect of the Kangaroo Care Method on the stability of body temperature in Low Birth Weight Babies (LBW) in the Perinatology Room of Dr. Achmad Diponegoro Putussibau Hospital.

The ambient temperature of the baby while in the womb is 36°C-37°C and immediately after birth the baby is exposed to a generally lower environmental temperature. This causes the baby to lose heat in the baby's body or what is called hypothermia. Hypothermia in infants occurs due to the inability to maintain heat production in the baby's body and shivering, insufficient subcutaneous fat (brown fat), and an immature nervous system regulating body temperature (IBU, 2017). In addition, the baby's surface area will decrease thereby accelerating heat loss. LBW babies have little adipose tissue and decreased flexibility, so they need a warmer environmental temperature to reach a normal temperature (Nur'aisyah, 2020).

The findings in this study showed that all LBW infants who were respondents experienced an increase in body temperature, and an increase in the frequency of oxygen saturation after the Kangaroo Method Treatment. In other words, Kangaroo Treatment Method can normalize the baby's body physiology. The KMC method can also provide a stimulus to the hypothalamus which can release corticotropin-releasing factor (CRF) and also endorphins so as to produce a sense of comfort and calm in the baby (Yusuf et al., 2017).

In this study, according to the data obtained regarding the baby's weight before being given the kangaroo method, it was closely related to the incidence of mothers who gave birth before term. This is in accordance with the data obtained in this study, there were 5 infants with low birth weight who were not yet full term. Mothers who have a pregnancy of less than 37 weeks will be at risk of giving birth to babies with LBW. This can happen because the intrauterine growth of the fetus is not optimal. Where the

The Effectiveness of The Kangaroo Method Care (KMC) on Body Temperature Stability In Low Birth Weight (LBW) Babies In The Perinatology Room of The Regional Public Hospital Dr Achmad Diponegoro Putussibau

development and growth of the fetus in intrauterine takes \pm 38 weeks for the baby to be ready to be born and adjust to the environment outside the womb .

In this study also found mothers who gave birth to twins where there were 7 LBW babies who were twins. This can be influenced by the occurrence of LBW because the baby has to share nutrition with the two fetuses and also the space for the baby to grow and develop is getting smaller because there are two fetuses in one uterus. Given the unique physiological demands placed on the body during multiple pregnancies, it is imperative that healthcare providers advise women on the importance of adequate caloric intake and provide guidance on macronutrient and micronutrient intake for optimal pregnancy outcomes.

The benefits of the kangaroo method of care include a stable baby's heart rate, more regular breathing, so that the distribution of oxygen throughout the body is better. Babies can sleep soundly and for a long time, are calmer, cry less and gain weight faster, make breastfeeding easier, strengthen the bond between mother and child, and shorten the care period between mother and child.

In this study, the cloth used for the treatment of the kangaroo method was an ordinary long cloth, namely using a jarik cloth. Jarik cloth will be tied or tied behind the mother's shoulder to support so that the baby does not fall. The implementation of this kangaroo method uses a simple method. In hospitals with complete facilities, they usually use special cloths for kangaroo treatment, but in this study, researchers only used regular long cloths made of cotton. At the time of the implementation of the kangaroo method of care, there was no standard temperature application in the room, this was related to inadequate hospital facilities. The implementation of the kangaroo method was carried out in grade 2, there were 3 babies with LBW, and 22 babies with other LBW carried out in a class 3 room, all without any standard application of temperature.

Kangaroo mother care improves growth and reduces problems with low birth weight babies such as hypothermia, hypoglycemia, and length of hospital stay. Therefore, it should be recommended in the care of all these high-risk neonates.

Conclusion

Based on the results of research and discussion, it can be concluded that the average body temperature before Kangaroo Method Care (KMC) is 36.50C. The average body temperature after Kangaroo Method Care (KMC) is 37.10C. The effect of Kangaroo Method Care (KMC) on increasing body temperature in LBW in the perinatology room of Dr. RSUP. Achmad Diponegoro Putussibau in 2021 with a p-value of 0.000.

BIBLIOGRAFI

- Acharya, N., Singh, R. R., Bhatta, N. K., & Poudel, P. (2014). Randomized control trial of kangaroo mother care in low birth weight babies at a tertiary level hospital. *Journal of Nepal Paediatric Society*, 34(1), 18–23. [Google Scholar](#)
- Anindya, Kanya, Lee, John Tayu, McPake, Barbara, Wilopo, Siswanto Agus, Millett, Christopher, & Carvalho, Natalie. (2020). Impact of Indonesia's national health insurance scheme on inequality in access to maternal health services: A propensity score matched analysis. *Journal of Global Health*, 10(1). [Google Scholar](#)
- Dinas Kesehatan Provinsi Kalimantan Barat. (2019). Prevalensi Bayi Berat Badan Lahir Rendah (BBLR) di Provinsi Kalimantan Barat Tahun 2019. Retrieved from <http://data.kalbarprov.go.id/dataset/prevalensi-bayi-berat-badan-lahir-rendah-bblr-di-provinsi-kalimantan-barat-tahun-2019> [Google Scholar](#)
- Hughes, Dana, & Simpson, Lisa. (1995). The role of social change in preventing low birth weight. *The Future of Children*, 87–102. [Google Scholar](#)
- Ibu, Eksklusif Terhadap Tingkat Efikasi Diri. (2017). Pengaruh Edukasi Tentang Pemberian Asi Eksklusif Terhadap Tingkat Efikasi Diri Ibu Untuk Menyusui Bayi Berat Lahir Rendah. *Jurnal Involusi Kebidanan*, 7(13). [Google Scholar](#)
- Kapuas, Dinas kesehatan Kabupaten. (2018). *Kapuas Hulu Department Profile Book. infant mortality rate*. [Google Scholar](#)
- Nur'aisyah, Sholaikhah Sulistyoningtyas. (2020). *The Correlation Between Preeclampsia and the Incidence of Low Birth Weight (LBW) in RSU PKU Muhammadiyah Bantul*. [Google Scholar](#)
- World Health Organization (WHO). (2015). *Global Health Indicator*. Global Health Statistic. [Google Scholar](#)
- Yusuf, Nuuva, Hadisaputro, Suharyo, Runjati, Runjati, Suwondo, Ari, Mashoedi, Imam D., & Supriyana, Supriyana. (2017). The effectiveness of combination of kangaroo mother care method and lullaby music therapy on vital sign change in infants with low birth weight. *Belitung Nursing Journal*, 3(4), 352–359. [Google Scholar](#)

Copyright holder:

Lestari Makmuriana, Dewi Ultari Srimentari, Tri Wahyuni, Lilis Lestari (2022)

First publication right:

Syntax Literate: Jurnal Ilmiah Indonesia

This article is licensed under:

