
EFFECTIVENESS OF THE KANGAROO METHOD AS A TREATMENT FOR LOW BIRTH WEIGHT BABY (LBWB)

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ABSTRACT

Low birth weight babies are a risk factor that contributes to infant deaths and births, especially during the perinatal period. The impact of the birth of low birth weight babies affects the quality of future generations, characterized by slow growth and development of children and will have an impact on decreasing intelligence. Conditions that occur in low birth weight babies are that the temperature regulation center is not optimal, brown fat and subcutaneous tissue are thin, inadequate muscle growth and organ immaturity. Conditions like this cause low birth weight babies to experience different physiological responses to babies with normal birth weight. The death of low birth weight babies can be prevented using interventions that are inexpensive, easy to carry out and effective, namely the kangaroo method of care. The kangaroo method is a method of caring for newborns by placing the baby between the mother's breasts so that there is direct contact between the mother's skin and the baby's skin. The kangaroo method of care is an alternative for caring for low birth weight babies so that mothers can easily breastfeed their babies more frequently and exclusively. The aim of the research is to review and recommend kangaroo treatment methods that have a positive impact and can reduce morbidity in low birth weight babies. The search method for relevant articles uses Google Scholar and Garuda databases. Search for articles using predetermined keywords and criteria. Using population, intervention, conclusion, and output (PICO) analysis. Conclusion: The kangaroo method is effective as a treatment for low birth weight babies. The positive effect of the kangaroo method on low birth weight babies is increasing the baby's body weight, maintaining the stability of the baby's physiological responses including increasing body temperature, heart rate frequency and oxygen

	<i>saturation which are consistently within the normal range, and increasing the mother's confidence in caring for the baby.</i>
KEYWORDS	kangaroo method; low birth weight baby
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INTRODUCTION

Low birth weight babies are babies born weighing less than 2500 grams regardless of gestational age. The prevalence of low birth weight babies is estimated at 15% of all births in the world and often occurs in developing or low socio-economic countries. Statistics show that 90% of low birth weight babies occur in developing countries and the death rate is 35 times higher compared to babies with a birth weight of more than 2500 grams (Sohibien & Yuhan, 2019).

Low birth weight babies are a risk factor that contributes to infant deaths and births, especially during the perinatal period. The impact of the birth of low birth weight babies affects the quality of future generations, characterized by slow growth and development of children and will result in a decrease in intelligence (Putri et al, 2019). Low birth weight babies often face various problems, namely asphyxia, hypothermia, drinking, jaundice and respiratory problems (Nurhidayati & Setianingsih, 2017).

Every newborn baby will experience a huge transition process from the environment inside the uterus to outside the womb. In low birth weight babies, several conditions that occur are that the temperature regulation center is not optimal, brown fat and subcutaneous tissue are thin, inadequate muscle growth and organ immaturity (Padila et al, 2018). Conditions like this cause low birth weight babies to experience different physiological responses to babies with normal birth weight. In general, low birth weight babies require care in an incubator to obtain a good physiological response in undergoing the transition period from life inside to outside the womb, so expensive infrastructure is needed and requires experienced health workers (Permana & Wijaya, 2019).

Caring for babies in incubators results in the separation of mother and newborn. This condition is one of the causes of mothers' lack of confidence in caring for their babies. Mothers who have premature or preterm babies are found to be less confident in caring for their babies compared to mothers who have full-term babies (Setiati & Rahayu, 2017). A new innovation in the care of premature babies that brings the baby and mother closer together is the kangaroo method of care. The kangaroo method is a method of caring for newborns by placing the baby between the mother's breasts so that there is direct contact between the mother's skin and the baby's skin. In this way, there is continuous skin contact between the baby and the mother and the baby gets heat according to the mother's body temperature through the conduction process. Kangaroo method treatment can be done in 2 ways. Firstly, continuously for 24 hours or what is also called continuously and secondly intermittently or alternately. Kangaroo method treatment is recommended to be carried out continuously, however hospitals that do not provide combined care facilities can use kangaroo method treatment intermittently as a complement to incubator treatment (Bebasari et al, 2017).

The kangaroo method of care is useful in stabilizing the baby's body temperature, stability of the heart rate and breathing, better baby behavior, less crying and frequent

breastfeeding, reduced calorie use, better baby weight gain, longer sleep time for the baby, a better bond between the baby and the mother. good and will reduce the occurrence of infections in babies. (Herawati & Anggraini, 2020). Several studies show that the death of low birth weight babies can be prevented using interventions that are inexpensive, easy to carry out and effective, namely the kangaroo method of care. The kangaroo method is not only a substitute for incubators in caring for low birth weight babies, but also provides many benefits that incubator care cannot provide (Purwandari, 2019).

Research has been conducted saying that the kangaroo method of care has a positive and significant impact on motor development and cognitive perception in babies during the care process. The kangaroo method has a good impact on the neuro-physiological development of babies, increases parental interaction, and helps families in their baby's development. The kangaroo method of care is an alternative for caring for low birth weight babies so that mothers can easily breastfeed their babies more frequently and exclusively (Suryadi & Fitri, 2019).

The aim of the research is to review and recommend kangaroo treatment methods that have a positive impact and can reduce morbidity in low birth weight babies. To answer this question an attempt was made to systematically review and summarize the results of published studies regarding the effectiveness of the kangaroo method as a treatment for low birth weight infants.

RESEARCH METHOD

Search for relevant data base literature sources using Google Scholar and Garuda using the keywords: “effectiveness” + “kangaroo method” + “treatment” + “low birth weight baby”. The search for articles was adjusted to the inclusion and exclusion criteria using population, intervention, conclusion, and output (PICO) analysis. Apart from that, articles are taken from the last 10 years and are in full text form. The results of a Google Scholar and Garuda database search using the specified keywords yielded 251 research articles, then screening according to the title and year of publication yielded 14 articles. Then, eligibility was screened through abstract and full text, resulting in 10 articles. The final stage was screening with inclusion and exclusion criteria, 5 articles were obtained.

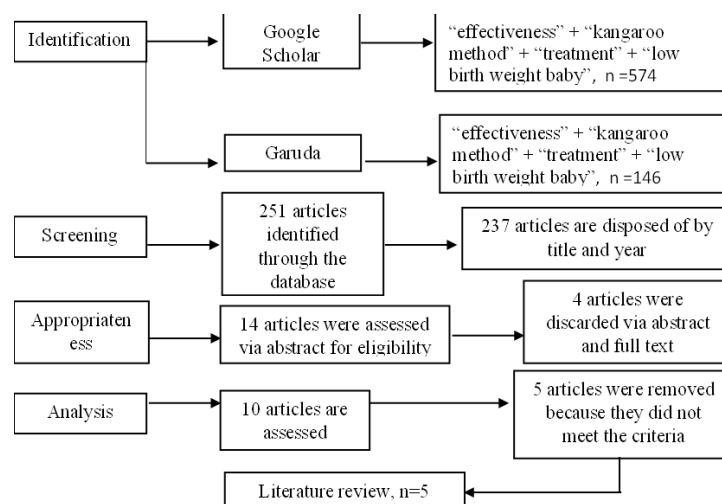


Figure 1. Literature Search Strategy

RESULT AND DISCUSSION

This study reviewed 5 articles relevant to the kangaroo method of care for low birth weight babies. There are 2 research articles from Herawati & Anggraini (2020) and Sumiyati et al (2020) which show that the kangaroo method is effective in increasing the weight of low birth weight babies. The research article by Sapurtri et al (2019) shows that the kangaroo method is effective in increasing the body temperature of low birth weight babies within normal limits. The research article by Wati et al (2019) shows that after the kangaroo method of treatment there was an increase in temperature, heart rate and oxygen saturation remained within the normal range. It can be interpreted that the kangaroo method of care can maintain the stability of the physiological response of low birth weight babies. In an article from research by Syamsu (2013), it is known that there are significant differences in body temperature, heart rate frequency, baby oxygen saturation, and mother's confidence in caring for premature babies before and after the kangaroo method of care.

Table 1. Summary of Literature Review

No	Author	Title	Methods and interventions	Sample	Results
1	Ita Herawati, Nofa Anggraini (2020)	Effect of Kangaroo Method Treatment on Weight Gain in Low Birth Weight Infants	Quasi experiment Kangaroo method treatment for 1-2 hours, this process is carried out for 7 days	30 low birth weight babies as cases and 60 low birth weight babies as controls	The average weight gain of babies who received the kangaroo method intervention was 30.2 grams, while the average weight gain of babies who were not intervened was only 15.5 grams. The statistical test results have a value of $p = 0.000$, meaning there is a significant difference in the average weight gain of babies who received the intervention and those who did not receive the kangaroo method intervention.
2	Sumiyati, Tri Wahyuningsih, Arum Lusiana (2020)	Kangaroo Method Treatment for Low Birth Weight Babies	Pre experimental design with pre test and post test one group design, without control Kangaroo method treatment for 3 days	32 babies Inclusion criteria were weight 1000-2500 grams, babies in incubator care, healthy babies, no abnormalities or comorbidities	The average weight gain after kangaroo method treatment increased on the first day by 0.47 grams; second day 15.47 grams; third day 20.62 grams; The average total weight gain over 3 days was 12.19 grams. Kangaroo Method treatment has an effect on changes in body weight over 3 days in low birth weight babies with a p value of 0.000.
3	Ika Nur Sapurtri, Dwi Handayani, Maharani Nazmi Nasution (2019)	The Effect of Kangaroo Treatment Method on Increasing the Body Temperature of Low Birth Weight Babies in the Nicu at Grandmed Lubuk Pakam Hospital	Pre experiment with one group pretest posttest design	22 low birth weight babies	The mean pretest body temperature measurement was 34.7 and posttest 36.7. The statistical test results obtained a value of $p = 0.004 < (\alpha = 0.05)$, so there was an effect of kangaroo method treatment on increasing the body temperature of low birth weight babies.
4	Rahayu Catur Ria Wati, Risa Etika, dan Esti Yunitasari (2019)	The Effect of Kangaroo Method Treatment on the Physiological Response of Low Birth Weight Infants	Pre-post experimental design Kangaroo method treatment was carried out for 90 minutes, carried out 2x a day for 3 days	21 low birth weight babies who had complete medical records and mothers who were in good health	After the kangaroo method treatment there was an increase in temperature, heart rate and oxygen saturation but remained within the normal range. It can be interpreted that the kangaroo method of care can maintain the stability of the physiological response of low birth weight babies.

5	Andi Fatmawati Syamsu (2013)	The Effect of Kangaroo Method Care on the Physiological Function of Premature Babies and Mothers' Confidence in Caring for Babies	Pre-experimental with one-group pre-post test design	premature babies who weigh less than 2500 grams with a minimum temperature of 36 °C	There were significant differences in body temperature, heart rate frequency, baby's oxygen saturation, mother's confidence in caring for premature babies before and after kangaroo method treatment, on day I (first), day II (second), and day III (third).
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Kangaroo method treatment is effective in increasing the weight of low birth weight baby (LBWB)

The results of a research review by Herawati & Anggraini (2020), research was conducted on patients with 30 low birth weight babies as cases and 60 low birth weight babies as controls. The intervention given was kangaroo method treatment for 1-2 hours, this process was carried out for 7 days. The average weight gain of babies who received the kangaroo method intervention was 30.2 grams, while the average weight gain of babies who were not intervened was only 15.5 grams. The statistical test results have a value of $p = 0.000$, meaning there is a significant difference in the average weight gain of babies who received the intervention and those who did not receive the kangaroo method intervention.

The results of a research review by Sumiyati et al (2020), research was conducted on 32 babies with inclusion criteria, namely body weight 1000-2500 grams, babies in incubator care, healthy babies, no abnormalities or comorbidities. Kangaroo method treatment for 3 days with the average result of weight gain after kangaroo method treatment was an increase of 0.47 grams on the first day; second day 15.47 grams; third day 20.62 grams; The average total weight gain over 3 days was 12.19 grams. Kangaroo Method treatment has an effect on changes in body weight over 3 days in low birth weight babies with a p value of 0.000.

The success in increasing a baby's weight after using the kangaroo method of treatment is influenced by the baby's ability to suck breast milk, which is a very important component in the baby's growth. The mother's milk that the baby drinks can meet the baby's nutritional needs which will result in an increase in the baby's weight. In the kangaroo method of care, the mother's frequency of providing breast milk is more regular and timely, thereby helping the baby meet its nutritional and fluid needs. Kangaroo method treatment can cause a higher increase in glucose levels in babies, causing cells to metabolize properly so that the cell growth process becomes better and there is a significant increase in body weight (Putri & Gusnila, 2014).

Kangaroo method treatment is a therapeutic intervention that can cause an increase in body weight through increased bonding between mother and baby which causes the relationship between baby and mother to be established, as well as touching for a longer time which can reduce the release of catecholamines in the blood thereby reducing the physiological stress of the fetus. The kangaroo method of care is useful for stabilizing the baby's performance better, breastfeeding more frequently and crying activities are reduced, calories used are reduced, the baby has a longer sleep time, the mother-baby bond is better so as to minimize infection in the baby (Arifah & Wahyuni, 2013).

The kangaroo method of care is effective in maintaining the stability of the physiological responses of low birth weight baby (LBWB) and increasing the mother's self-confidence

The results of a research review by Sapurtri et al (2019) with a sample of 22 low birth weight babies in the Nicu at Grandmed Lubuk Pakam Hospital, showed that the average pretest body temperature measurement was 34.7 and posttest 36.7. The statistical

test results obtained a value of $p = 0.004 < (\alpha = 0.05)$, so there was an effect of kangaroo method treatment on increasing the body temperature of low birth weight babies.

The results of a research review by Wati et al (2019) with a sample of 21 low birth weight babies who had complete medical records and the mothers were in good health. After kangaroo method treatment for 90 minutes, carried out twice a day for 3 days, there was an increase in temperature, heart rate and oxygen saturation but remained within the normal range. It can be interpreted that the kangaroo method of care can maintain the stability of the physiological response of low birth weight babies.

The results of a review of research by Syamsu (2013) on premature babies weighing less than 2500 grams with a minimum temperature of 36 °C, it was found that there were significant differences in body temperature, heart rate frequency, baby oxygen saturation, mother's confidence in caring for premature babies before and after the kangaroo method treatment, on day I (first), day II (second), and day III (third).

The kangaroo method of care is a special way of caring for low birth weight babies using the kangaroo method, namely making direct contact between the baby's skin and the mother's skin to help the baby's healthy development through increasing temperature control, breastfeeding and preventing infection (Proverawati, 2012). The kangaroo method can prevent heat loss in babies through skin-to-skin contact between mother and baby by conduction and radiation (Indrasanto, 2013).

During the kangaroo method of care, bonding occurs between the baby and the mother, the baby feels calmer and more comfortable so that the heart rate is relatively more constant and stable. Kangaroo method care reduces some of the invasive procedures usually performed on low birth weight babies when placed in an incubator. Sound and tactile stimulation can be provided during kangaroo method treatment. Mothers are advised to gently rub the baby's back and encourage the baby to talk to provide sensory motor and hearing stimulation and prevent periodic apnea. The kangaroo method of care has a positive influence on babies. The baby feels the mother's heartbeat so that if the baby experiences bradycardia, it will be stimulated so that its heart beats again to accompany the mother's heartbeat (Almgren, 2018).

Kangaroo method treatment significantly reduces respiratory frequency and increases oxygen saturation. This can be caused by the baby's upright position, so it is influenced by the earth's gravity and has an effect on ventilation and perfusion. The upright position optimizes respiratory function (Boundy et al., 2016).

The impact of the kangaroo method of care for mothers includes accelerating breast milk production and increasing breastfeeding success, early stimulation, increasing affection between mother and child, reducing nosocomial infections and shortening the length of hospitalization. The kangaroo method of care increases the closeness between the mother and her baby, reduces feelings of stress in the mother, and makes both mother and baby calmer and more relaxed. The earlier the kangaroo method is applied, the better the results. The kangaroo method of care can increase the mother's confidence in her ability to care for her own baby. A mother's confidence in caring for a baby can emerge when the mother is able to organize care for the baby and understand the baby's wishes. Continuous interaction between the mother and the baby will influence the mother's feelings of confidence in caring for her baby. The kangaroo method of care makes it easier to provide breast milk and the mother is more confident in caring for the baby and has better bonding attachment which has a positive impact on the psychology of the mother and family (Indrasanto, 2013).

CONCLUSION

The kangaroo method is effective as a treatment for low birth weight babies. The positive effects of the kangaroo method on low birth weight babies are increasing the baby's body weight, maintaining the stability of the baby's physiological responses including increasing body temperature, heart rate frequency and oxygen saturation which are consistently within the normal range, and increasing the mother's confidence in caring for the baby.

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