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Case Study

# Kangaroo Method Treatment Increases Baby's Body Temperature With Low Birth Weight

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**Abstract**

Birth weight is less than 2500 grams which contribute to infant mortality especially during the perinatal period, one of the interventions that can be done with kangaroo method, this method can make the baby's body temperature stable because the baby who is in the care of the kangaroo method will feel like it exists in the uterus of the mother, in addition to the treatment of kangaroo methods aimed at helping to accelerate the process of increasing the baby's body temperature as well as being able to stabilize the body temperature in babies who experience low birth weight. The design of the study used is a descriptive method with a case study approach of nursing care using a pre and post-test design conducted on 2 respondents. Before being given the kangaroo method 1 respondent and respondent 2 experienced low weight measured using observation sheet for 3 days while after being given kangaroo method respondent 1 and respondent 2 experienced weight gain measured using observation sheet for 3 days characterized by normal weight. Kangaroo treatment therapy method can increase body temperature in babies with low birth weight in the perinatology room of K.R.M.T Wongsonegoro Hospital Semarang.

## INTRODUCTION

Low Birth Weight (LBW) is a baby born with a bodyweight of fewer than 2500 grams, where babies with less weight are prone to illness or infection if this is not treated immediately will be at risk of experiencing delays in motor development and learning ability.[1]

In terms of the relationship between the time of birth and gestational age, the baby's birth is grouped into three, including preterm (preterm) babies, namely babies born with a gestation period of fewer than 37 weeks (259 days), term babies, namely babies born with a gestation period of fewer than 37 weeks (259 days). gestation between 37 to 42 weeks (259-293 days), and babies over months, namely babies born with a gestation period of> 42 weeks or more than 294 days.[2]

Based on Riskesdas (2018) Basic Health Research results, the prevalence of the Indonesian population having low birth weight problems is 3.27 %. The prevalence of the population in Central Java with problems according to the proportion of birth weight <2500 was 2.93 % and according to the diagnosis or symptoms experienced by the patient was 3.72 %,

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while the prevalence of Semarang city according to the diagnosis by health personnel was 4.47 %. The prevalence of low birth weight at the age of 0-59 months according to the city of Semarang is 5.39%.[3]

Low birth weight their adipose tissue and subcutaneous fat over a little and epidermis is thinner than in adults. The elasticity of the baby's body decreases over the surface area, thereby accelerating heat loss. This is influenced by the length of the baby, the ratio of body surface to body weight for the age of the baby, all of which can affect normal temperature limits.[4] This is what causes LBW to need tools and methods, including by inserting the baby into an incubator, performing treatment with natural methods, namely by treating the kangaroo method to stabilize his body temperature to prolong life opportunities. The kangaroo method can meet the basic needs of LBW by providing situations and conditions similar to that of the uterus, thus giving LBW a chance to adapt well to the outside world. Given the various advantages, it can help to stabilize the baby's body temperature.[4,5]

The kangaroo method has a big effect on the baby's body temperature to stabilize because babies who are in the kangaroo method care will feel like they are in the mother's womb.[6] The kangaroo method is more effective at increasing body temperature, the heat transfer mechanism occurs in two mechanisms, namely conduction and radiation.[4,5] The behaviour regulates the balance between heat loss and production or more commonly referred to as thermoregulation. The hypothalamus detects small changes in body temperature. The anterior hypothalamus regulates heat loss, whereas the posterior hypothalamus regulates heat production.[7]

The formulation of the problem in this nurse final scientific paper is that this case study aims to determine the Kangaroo Method Treatment for Increasing Body Temperature of Infants with Low Birth Weight in the Perinatology Room of the KRMT Wongsonegoro Hospital Semarang.

## METHODS

Methods of this case study use descriptive method nursing process performed on two patients in January 2020 in the Hospital KRMT Wongsonegoro Semarang. The application of the kangaroo care method was carried out for 3 days. This case study inclusion criteria that baby weight between 1200 - 2499 grams, no complications were serious such Acute Respiratory Distress Syndrome (ARDS), not undergoing phototherapy, while the exclusion criteria for this case study is temperature> 37°C, parents or family members who will perform fever kangaroo care method. Before caregiving kangaroo method of patients in the first measuring body temperature, after the patient has been measured body temperature then intervention Care Award kangaroo method to patients performed for 20 minutes, do the treatment for the condition asks the patient how to level s body temperature after being given Kangaroo method treatment with intervals of 15 minutes. The equipment used in the application of this case study is swaddling cloth, baby hats, baby socks, digital thermometer. Before the application first, measure the temperature of the baby's body and then record the results. Use of the kangaroo method care can be given every day and after that, the baby is measured again in temperature.

## RESULTS

The subjects of this case study were 2 people consisting of male and female patients. Patient characteristics of both cases can be seen in Table 1 and the results of the assessment in both cases are shown in Table 2.

On January 11, 2020, the results of the assessment of data case of patient 1 gender woman, age 22 days premises n medical diagnosis LBW. The patient's mother said

that her child was still not fluent in drinking the mother's milk because she was not used to it. Based on objective data, bodyweight is 1600 grams, height/length 43 cm, head circumference 29 cm, chest circumference 24 cm, upper arm circumference 7c m, and physical examination results show pulse: 141x / minute, breath frequency 30 x/ minute, the temperature of 36.3°Celcius. On January 12, 2020, the results of a case review of a patient with 2 sexes were female, 19 days old with a medical diagnosis low birth weight. The patient's mother said that her child was still not fluent in drinking the mother's milk because she was not used to it. Based on objective data weight 1550 grams, High/body length 41 cm, Round Head 27 cm, Bust 23 cm, Arm Circumference above 8 cm, and examination of physical showed the pulse of 138 x/min, the frequency of the hub axle 33 x / minute, temperature 36.5 ° C.

Nursing diagnoses in patient 1 and patient 2 show that hypothermia is associated with low birth weight. This is confirmed by the analysis of data obtained from the history and physical examination which is influenced by Hypothermia on LBW because the baby is still difficult to adjust outside the mother's womb and organs. baby's body that has not been functioning optimally. For babies weighing ≥ 1500 grams or less than 2500 grams, babies will lose up to 10% of body weight during the first 7-10 days. If LBW is given quality care, it can reduce the neonatal mortality rate. Kangaroo Method Care (PMK) is an easy, simple and effective way to treat LBW because kangaroo treatment is a practical, economical and very effective treatment to meet the most basic needs of babies, namely warmth, breast milk, protection from infection, stimulation, safety and compassion.[8]

Interventions were given to the patient 1 and patient 2 is monitor vital signs, especially temperature, provide warmth through the incubator, monitor the provision of methods kangaroo, teach techniques of kangaroo appropriate method.

Implementation performed on the patient 1 and patient 2, namely the provision of kangaroo method to increase body temperature with a time of 20 minutes, to monitor the provision of kangaroo method, teaches techniques kangaroo method is how to position the baby's stomach and abdomen mother touching each other, monitors vital signs, especially body temperature. During the implementation stage, the nurse carries out the nursing care plan to help clients independently and in collaboration with other medical teams.

Evaluation in patient 1 and patient 2, namely body temperature in normal conditions, providing warmth through the incubator, collaboration with mother for breastfeeding. Based on the results of the evaluation, it can be analyzed that the nursing problem is partially resolved, it can be seen from the two patients experiencing an increase in body temperature, giving the kangaroo method is carried out for the child with low birth weight.

Table 2 The data obtained from the case study shows that before being given the kangaroo nursing intervention method, respondent 1 and respondent 2 did not experience a decrease in body temperature. Body temperature on the first day of respondent 1 and respondent 2 obtained a body temperature of 36.3 °C and 36.5 °C after the nursing intervention was given to respondent 1, it was found that body temperature was 36.4 °C and respondent 2 obtained body temperature of 36.5 °C. On the second day before the nursing intervention was given to respondent 1, the body temperature was 36.4 °C and respondent 2 was 36.5 °C. After the nursing intervention was given to respondent 1 and respondent 2 the body temperature was 36.6 °C and 36.7 °C. On the third day before the nursing intervention was given to respondent 1 and respondent 2, the result was a body temperature of 36.7

°C, after being given nursing intervention the results of respondents 1 and 2 were obtained 36.9 °C and 36.8 °C.

The results of the case study showed that the body temperature of children with low birth weight in the perinatology room of the KRMT Wongsonegoro Hospital in Semarang City experienced an increase in body temperature by the number of 2 patients, in patients 1 and 2 experienced an increase in body temperature from 36.3 °C and 36.5 °C to 36, 9°C and 36.8°C. The success of the process can be seen by comparing the process with the guidelines or process plan, while the success of the action can be seen by comparing the level of independence of the patient's mother.

Table 1
Case Characteristics

| Case I | Case II |
|---|---|
| Patient identity | Patient identity |
| Name: Baby Mrs S | Name: Baby Mrs D |
| Age: 22 days | Age: 20 days |
| Birthdate: December 19, 2019 | Birthday: December 21st, 2019 |
| Female gender | Female gender |
| Name of parents: Mrs S | Name of parents: Mrs D |
| Islam | Islam |
| Tribe: Javanese | Javanese ethnic |
| Occupation: Housewife | Occupation: Self-employed |
| Address: Demak, Central Java | Address: Semarang |
| Medical Diagnosis: LBW | Medical diagnosis: LBW |
| Assessment date: 11 January 2020 | Assessment date: January 12, 2020 |

Table 2
Body Temperature Before and After Kangaroo Method Treatment

| Patient | Day 1 | | Day 2 | | Day 3 | |
|---|---|---|---|---|---|---|
| | before | after | before | after | before | after |
| Patient 1 | 36.3°C | 36.4°C | 36.4°C | 36.6°C | 36.7°C | 36.9°C |
| Patient 2 | 36.5°C | 36.5°C | 36.5°C | 36.7°C | 36.7°C | 36.8°C |

## DISCUSSION

The results of these case studies show there is an increase in body temperature in children with low birth weight which experienced less weight than normal after a given method of storytelling for 20 minutes.

The results of this study are following the results of other studies which explain that the kangaroo method is more effective at increasing body temperature. The heat transfer mechanism occurs in two mechanisms, namely conduction and radiation.[8,9]

Similar results are also explained in other studies which explain that there is an increase in body temperature and body weight after skin-to-skin contact using the kangaroo method.[9]

Similar results were also explained in another study which explained that the kangaroo method affected body temperature in infants with low birth weight as evidenced by an increase in body temperature for infants.[10,11]

Birth weight is an important indicator of the health of the baby, a major factor for survival and a factor for the development and mental development of the baby in the

future. In terms of maternal factors, several factors affect LBW, including pregnancy and fetal factors. Maternal factors include malnutrition during pregnancy, maternal age (<20 years and> 35 years), a gestational distance too close, and illness from the mother herself. Pregnancy factors such as hydramnios and multiple pregnancies. Fetal factors that affect LBW, such as congenital defects and infections in birth. Other risk factors include parity, economic status, education and maternal occupation. Invalid sources specified.[12,13]

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## CONCLUSION

Kangaroo treatment method can increase body temperature, this is evident in patient 1 and patient 2 do not experience body temperature below normal. The kangaroo method is a simple way to care for a newborn where the mother uses her body temperature to warm the baby. Kangaroo care is an effective way to meet the most basic needs of babies, namely warmth for the baby, exclusive breastfeeding, protection from infection, safety and compassion.

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## CONFLICTS OF INTEREST

The author disclosures no potential conflicts of interest, financial or otherwise.

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