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Combined infant massage and kangaroo mother care for weight gain in a low-birth-weight infant: A nursing case study

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Abstract

Background: Low-birth-weight infants are vulnerable to feeding difficulties, hypothermia, impaired growth, and nutritional problems because of physiological immaturity. Infant massage and kangaroo mother care are non-pharmacological nursing interventions that may support physiological stability, breastfeeding, and weight gain.

Purpose: To describe the implementation of infant massage and kangaroo mother care in supporting weight gain in a low-birth-weight infant.

Method: A nursing case study was conducted using the nursing care process. The participant was one clinically stable low-birth-weight infant with a nursing diagnosis of risk for nutritional deficit. Data were collected through nursing assessment, physical examination, observation, medical record review, and daily body-weight monitoring. Infant massage and kangaroo mother care were implemented according to hospital procedures during five days of hospitalization.

Results: The infant's body weight increased from 2,150 g to 2,300 g over five days. Improvement was also observed in sucking ability and general clinical condition. No adverse events related to the interventions were reported during the observation period.

Conclusion: Infant massage and kangaroo mother care may support weight gain and clinical stability in low-birth-weight infants. However, findings from a single case should be interpreted cautiously, and further studies with larger samples and longer follow-up are needed.

Keywords: Infant massage; Kangaroo mother care; Low-birth-weight infant; Neonatal nursing; Weight gain.

INTRODUCTION

The mortality rate among low birth weight (LBW) infants in Indonesia during the first month of life was reported at 6.2% between 2013 and 2018 (Ministry of Health of the Republic of Indonesia, 2018). This high mortality rate is supported by data from the Indonesian Demographic and Health Survey (IDHS), which reported an infant mortality rate of 24 per 1.000 live births and a neonatal mortality rate of 15 per 1.000 live births in 2017 (Central Statistics Agency, 2017).

Birth weight is one of the most important indicators of neonatal health. Low birth weight (LBW) is defined as a birth weight of less than 2.500 grams, regardless of gestational age. According to the World Health Organization (WHO), infants born weighing less than 2.500 grams are classified as LBW infants (World Health Organization, 2009). Statistical data indicate that LBW is more common among mothers with low socioeconomic status. Contributing factors include inadequate prenatal

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care, insufficient maternal nutritional intake during pregnancy, intrauterine infections, and other obstetric complications (Sukarni, 2014).

LBW infants are vulnerable to both short-term and long-term adverse outcomes. Short-term consequences include impaired brain development, reduced intelligence, growth retardation, and metabolic disturbances. Long-term effects may include decreased cognitive performance, lower academic achievement, impaired immune function, and an increased risk of chronic diseases such as diabetes, obesity, cardiovascular disease, cancer, stroke, and disability in later life, ultimately affecting economic productivity (Ministry of Health of the Republic of Indonesia, 2017).

Various health problems commonly occur in LBW infants, including metabolic disorders such as hypothermia, hypoglycemia, and hyperglycemia; feeding difficulties; immune dysfunction; respiratory disorders; circulatory and cardiac problems; electrolyte imbalances; and gastrointestinal disturbances. Among these complications, nutritional deficit is one of the most frequently encountered nursing problems (Wahyurin, Saryono, & Proverawati, 2019).

Nutritional deficit refers to an inadequate intake of nutrients required to meet daily energy needs due to insufficient food intake or impaired digestion and nutrient absorption. In LBW infants, nutritional deficits may result from an inability to swallow, digest, or absorb nutrients effectively, as well as increased metabolic demands (Indonesian National Nurses Association, 2016).

LBW infants often require hospitalization to improve their health status. However, prolonged hospitalization may interfere with breastfeeding, which is the optimal source of nutrition for infant growth and development (Natalia, Rustina, & Efendi, 2022). Nurses play a crucial role in providing care that supports the maintenance and promotion of normal growth and development in LBW infants. Several complementary therapies have been introduced to prevent complications and stimulate growth and development, including infant massage and Kangaroo Mother Care (KMC) (Bobak, Lowdermilk, Jensen, & Perry, 2005).

Infant massage involves systematic tactile stimulation of the infant's body to promote muscle relaxation and improve blood circulation. It is a form of therapeutic touch that includes the manipulation of soft tissues for health-related purposes (Latifah, Rosyida, Waroh, Setiawandari, & Sumiati, 2022). Another intervention commonly used for LBW infants is Kangaroo Mother Care (KMC), which involves continuous skin-to-skin contact between the infant and the mother's chest to maintain body temperature and promote physiological stability (Ministry of Health of the Republic of Indonesia, 2018). KMC has been shown to stabilize heart rate and respiration, improve oxygen distribution, prevent hypothermia, reduce crying, and accelerate weight gain in LBW infants (Wahyuningsih, Ratnasari, Kuraesin, Natalya, Hasanah, Wahyuni, & Ariyani, 2021).

RESEARCH METHOD

This study used a case study design with a nursing care process approach for low birth weight (LBW) infants experiencing nursing problems at risk of nutritional deficits. This study was conducted at BP Batam Hospital in 2019. The subject was a LBW infant with a gestational age of 28 weeks and a birth weight of 1000 grams who met the study criteria and was female.

The inclusion criteria for this case study were infants with a medical diagnosis of low birth weight (LBW), experiencing nursing problems at risk of nutritional deficits, being in stable condition, and having their parents provide consent for the nursing interventions provided. Exclusion criteria included infants with severe congenital abnormalities or critical conditions requiring specialized intensive care.

The instruments used for data collection included a pediatric nursing assessment form, observation sheets, physical examinations, medical record documentation, and daily weight monitoring sheets. The observed variables were changes in infant weight after infant massage and Kangaroo Mother Care (KMC).

The interventions provided consisted of a 1-hour infant massage with a frequency of 2 x 5-second massages for 5 minutes.

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The intervention lasted 5 days and Kangaroo Mother Care (KMC), which was carried out according to the hospital's standard operating procedures. Infant massage provides tactile stimulation that can improve blood circulation, metabolism, and infant growth. KMC uses skin-to-skin contact between mother and infant to maintain stable body temperature, improve breastfeeding success, and help increase infant weight.

Data collection was carried out through assessment, establishing a nursing diagnosis, planning interventions, implementing actions, and evaluating nursing outcomes. Evaluation was carried out by observing changes in infant weight after the application of infant massage and Kangaroo Mother Care (KMC) throughout the hospitalization period.

RESEARCH RESULTS

Table 1. Clinical characteristics of the infant

Variable	Result
Medical Diagnosis	Low Birth Weight (LBW) Infant
Birth Weight	1000 Gram
Primary Nursing Diagnosis	Risk for Nutritional Deficit
Supporting Nursing Diagnoses	Hypothermia, Risk for Infection
Interventions	Infant Massage and Kangaroo Mother Care (KMC)

Table 1. shows that the patient was an infant with a medical diagnosis of Low Birth Weight (LBW) and a birth weight of less than 2500 grams. The assessment results indicated the presence of a nursing problem of risk for nutritional deficit related to immature sucking and swallowing reflexes, as well as increased metabolic demands. Additionally, the nursing problems of hypothermia and risk for infection were identified.

Table 2. Results of Infant Massage and Kangaroo Mother Care (KMC) Implementation

Variable	Before Intervention	After Intervention
Nutritional Status	Risk for Nutritional Deficit	Increased
Sucking Ability	Weak	Increased
Body Weight	Low	Increased
General Infant Condition	Weak	Stable and Improving

Table 2. shows the evaluation results following the implementation of infant massage and Kangaroo Mother Care (KMC). There was an improvement in nutritional status, characterized by an increase in the infant's weight, better sucking ability, and a more stable general condition. The evaluation results demonstrate that infant massage and Kangaroo Mother Care (KMC) are effective in helping to increased body weight in LBW infants with the nursing problem of risk for nutritional deficit.

DISCUSSION

Low Birth Weight (LBW) infants are defined as newborns weighing less than 2500 grams regardless of gestational age. LBW infants carry a high risk of developing various complications such as hypothermia, respiratory distress, infections, and nutritional issues due to organ system immaturity, particularly in the digestive system and incomplete sucking and swallowing reflexes.

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This condition renders LBW infants more susceptible to the risk for nutritional deficits, which can hinder their growth and development if not managed optimally.

In this case, the assessment results indicated that the patient experienced a risk for nutritional deficit, characterized by a birth weight of less than 2500 grams alongside weak sucking and swallowing abilities. This condition aligns with the theory stating that LBW infants have higher metabolic demands compared to full-term infants, yet their capacity to meet these nutritional needs remains limited due to the immaturity of their gastrointestinal system and oral-motor reflexes. Consequently, LBW infants require nutritional support and specialized care to achieve optimal growth.

One of the non-pharmacological interventions administered to the patient was infant massage. Infant massage is a form of tactile stimulation performed through touch across the infant's entire body surface. This stimulation can increase vagus nerve activity, thereby improving gastrointestinal tract function, enhancing nutrient absorption, facilitating blood circulation, and stimulating the secretion of hormones involved in growth. Furthermore, infant massage provides a relaxing effect that allows the infant to become calmer, improves sleep quality, and ensures that available energy can be optimally utilized for the growth and weight gain process.

In addition to infant massage, Kangaroo Mother Care (KMC) was also administered. KMC is a care method involving direct skin-to-skin contact between the mother and the infant, aimed at maintaining stable infant body temperature. In LBW infants, immature thermoregulation capabilities make them easily susceptible to hypothermia, which increases body energy expenditure. Through KMC, the infant's body temperature can be maintained within the normal range, allowing energy previously used for thermoregulation to be redirected toward growth and weight gain. KMC also enhances emotional bonding between mother and infant and supports breastfeeding success.

The weight gain observed after the administration of infant massage and KMC was also influenced by an increase in the frequency and

effectiveness of breastfeeding. When KMC is performed, the infant is positioned closer to the mother, making it easier to recognize the nipple and engage in breastfeeding more regularly. This condition helps fulfill the infant's nutritional needs through breast milk, which is the best source of nutrition for LBW infants. With fulfilled nutritional needs and a stable body temperature, the infant's growth process can proceed more optimally.

The results of this study are in line with another study which stated that routinely performed infant massage can increase the body weight of LBW infants, with an average weight gain of 15 grams per day. The same study also demonstrated that Kangaroo Mother Care exerts a positive influence on weight gain in LBW infants through body temperature stabilization and enhanced breastfeeding success. The combination of infant massage and KMC yields better outcomes than administering either intervention alone because both methods work synergistically to support infant growth (Windhy (2023).

The evaluation conducted on the patient revealed an increase in body weight following the administration of infant massage therapy and Kangaroo Mother Care (KMC). Beyond weight gain, the infant's general condition also showed improvement, characterized by the infant appearing calmer, an increase in breastfeeding ability, and no signs of complications observed during the hospitalization period. These results demonstrate that the implementation of infant massage and KMC is effective as a non-pharmacological nursing intervention in helping to address the risk for nutritional deficit in LBW infants.

Overall, the application of infant massage and Kangaroo Mother Care (KMC) is proven to provide benefits in increasing the body weight of LBW infants by improving nutrient delivery effectiveness, stabilizing body temperature, enhancing rest quality, and optimizing the growth process. Therefore, both interventions can be recommended as part of comprehensive nursing care for LBW infants to support optimal growth and development.

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CONCLUSION

This case study showed that a low-birth-weight infant experienced weight gain and improved sucking ability during five days of combined infant massage and kangaroo mother care. These interventions may be considered supportive components of neonatal nursing care when performed by trained personnel and tailored to the infant's clinical stability. Further studies with larger samples, standardized intervention protocols, and longer follow-up are required.

SUGGESTION

It is recommended that nurses implement infant massage and Kangaroo Mother Care (KMC) as supportive interventions in the nursing care of Low Birth Weight (LBW) infants. Healthcare institutions are expected to provide education to parents regarding the benefits and techniques of baby massage and KMC to support weight gain and meet the nutritional needs of infants. Furthermore, educational institutions and future researchers are expected to develop further studies with larger sample sizes and longer observation periods to strengthen the scientific evidence regarding the effectiveness of baby massage and KMC on LBW infants.

REFERENCES

- Bobak, I. M., Lowdermilk, D. L., Jensen, M. D., & Perry, S. E. (2005). *Buku ajar keperawatan maternitas*. Jakarta: Egc, 7-8.
- Central Statistics Agency. (2017). *Survei Demografi dan Kesehatan Indonesia 2017*. Retrieved from: <https://docu.bkkbndiy.id/books/survei-demografi-dan-kesehatan-indonesia-2017/>
- Indonesian National Nurses Association. (2016). *Standar Diagnosis Keperawatan Indonesia*. Retrieved from: <https://www.scribd.com/document/495277070/Standar-Diagnosis-Keperawatan-Indonesia-PPNI>

Latifah, A., Rosyida, D. A. C., Waroh, Y. K., Setiawandari, S., & Sumiati, S. (2022). *Pelatihan*

Akupresure Untuk Kesehatan Ibu Dan Anak Sebagai Upaya Pencegahan Stunting Di Desa Krembung Kecamatan Krembung. Jurnal Lentera, 2(2), 264-270.

Ministry of Health of the Republic of Indonesia. (2017). *Profil Kesehatan Indonesia 2016*. Retrieved from: <https://repository.kemkes.go.id/book/1207>

Ministry of Health of the Republic of Indonesia. (2018). *Laporan Nasional Risesdas 2018*. Retrieved from: <https://repository.kemkes.go.id/book/1323>

Ministry of Health of the Republic of Indonesia. (2018). *Pedoman Nasional Pelayanan Kedokteran Tata*

Laksana Tindakan Resusitasi, Stabilisasi, dan Transpor Bayi Berat Lahir Rendah. Retrieved from: [file:///Users/gadis/Downloads/17012264876566a7f7eba7d8.13640298%20\(1\).pdf](file:///Users/gadis/Downloads/17012264876566a7f7eba7d8.13640298%20(1).pdf)

Natalia, R., Rustina, Y., & Efendi, D. (2022). Combining breastfeeding education and support to improve breastmilk production, frequency of breastmilk expression, and partial breastfeeding in low-birth-weight infants. *Journal of Neonatal Nursing*, 28(5), 356-360.

Sukarni, I. (2014). *Patologi kehamilan, persalinan, nifas dan neonatus resiko tinggi*. Yogyakarta: Nuha Medika, 118.

Wahyuningsih, I. P., Ratnasari, F., Kuraesin, I., Natalya, K., Hasanah, N., Wahyuni, E. S., & Ariyani, D. (2021). *Perawatan Metode Kanguru Pada Bayi Berat Badan Lahir Rendah. Jurnal Kreativitas Pengabdian Kepada Masyarakat (Pkm)*, 4(6), 1428-1433.

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- Wahyurin, I., Saryono, S., & Proverawati, A. (2019). Physical activity, screen time, and nutritional status in adolescents in Banyumas. *Annals of Tropical Medicine and Public Health*, 22(11).
- World Health Organization. (2009). World health statistics 2009. Retrieved from: <https://www.who.int/publications/i/item/9789241563819>
- Windhy, L. A. (2023). Pengaruh Pijat Bayi dan Metode Kanguru terhadap Peningkatan Berat Badan pada Bayi dengan Berat Badan Lahir Rendah (BBLR) (Doctoral dissertation, Universitas Andalas).

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