

INTEGRATED EXCELLENT MATERNITY NURSING CARE FOR LOW -BIRTH-WEIGHT INFANT AT SANTI MEILALA INPATIENT PRIMARY CLINIC MEDAN POLONIA DISTRICT, NORTH SUMATRA PROVINCE IN 2025

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ABSTRACT

According to the World Health Organization (WHO, 2021), low birth weight (LBW) refers to infants who weigh less than 2,500 grams at birth. Meanwhile, Juriyah et al. (2024) state that LBW occurs from birth up to the first 24 hours after delivery. Infants with low birth weight are more susceptible to infectious diseases and frequently experience complications that may lead to death, as their organs are not yet fully developed. In Indonesia, several factors increase the risk of LBW, including maternal age under 20 or over 35 years, short intervals between pregnancies, a history of delivering LBW infants, strenuous physical labor, working without adequate rest, extreme poverty, underweight and poor nutritional status, smoking habits, alcohol consumption, anemia, preeclampsia or hypertension, infections during pregnancy, multiple pregnancies, congenital abnormalities in the baby, and infections related to pregnancy.

Keywords: Low birth weight, Infant, Maternity Nursing

Introduction

A previous study conducted by Nurjanah et al. (2020) showed a correlation between parity and low birth weight (LBW), while no association was found with maternal age or birth spacing. However, research by Sastri revealed no significant relationship between maternal age, parity, maternal education, or maternal occupation and the incidence of LBW (Kementerian Kesehatan RI, 2014). In contrast, Komarudin found a correlation between maternal age and occupation with LBW in their study. Based on these

differing findings, the aim of this study is to investigate the factors influencing LBW, with the hope that the results can support efforts to reduce the incidence of LBW and provide deeper insight into the contributing factors (Ester Simanullang, Siska Suci triana, Riska Susanti Pasaribu, Lisdayanti Simanjuntak, 2025).

WHO to data, the global prevalence of Low Birth Weight (LBW) in 2023 was 14.7%. Of all babies born worldwide, approximately 19.8 million were born with low birth weight (WHO, 2019). The neonatal period, particularly the first month of life, is the most vulnerable time,

with around 2.3 million infant deaths occurring each year—equivalent to about 6,400 deaths per day (Simanullang dan Dioso, 2020). LBW is a contributing factor in 40–60% of all infant deaths and occurs more frequently in developing countries than in developed ones. Approximately three-quarters of all LBW cases globally are concentrated in three regions: South Asia (47%), Eastern and Southern Africa (13%), and Western and Central Africa (12%). According to the Indonesian Ministry of Health, there has been a decrease in the incidence of infant mortality over the past four years. The Infant Mortality Rate (IMR) in Indonesia was 18.909 per 1,000 live births, a 6.08% decline from 2017. In 2019, the IMR dropped by 3.16% from 2018 to 18.311 per 1,000 live births, and in 2020, it further decreased by 3.27% to 17.713 per 1,000 live births. By 2021, Indonesia experienced a 3.37% decline in IMR from 2020, reaching 17.116 per 1,000 live births (Kementrian Kesehatan, 2022).

In North Sumatra, the main causes of infant mortality include asphyxia (218 cases), other causes (172 cases), and LBW (184 cases). Based on the 2023 report from the Central Statistics Agency (Badan Pusat Statistik) of North Sumatra, out of 283,182 live births, 1,301 infants were born with LBW, and 1,374 infants were reported to suffer from severe malnutrition (World Health Organization, UNICEF, UNFPA, World Bank Group, 2023).

Low birth weight infants (LBW) are newborns with a birth weight of less than 2,500 grams. Babies born with LBW are at risk of experiencing various health issues, such as an immature immune system, respiratory difficulties, digestive and nutritional problems, as well as underdeveloped liver and kidney functions. They may also suffer from

abnormalities in the nervous, cardiovascular, hematologic, and metabolic systems (Sinaga dan Manurung, 2017). This condition is generally caused by maternal malnutrition or inadequate nutritional intake during pregnancy, which can reduce blood volume and result in a smaller placenta. As a consequence, the supply of nutrients to the fetus becomes suboptimal, leading to restricted fetal growth (Sinaga *et al.*, 2024). The impact of LBW is not limited to birth, such as an increased risk of mortality and complications, but also affects long-term development, including physical growth and the psychological and cognitive development of the child (Simanullang, 2022).

Research Method

According to Miraturrofi'ah, Low Birth Weight (LBW) infants weigh less than 2,500 grams and are at a significantly higher risk of mortality—up to 20 times greater (Heryana, 2020). LBW is one of the leading causes of neonatal death in Indonesia and other countries, influenced by maternal anemia, poor nutritional status, and pregnancy complications such as preeclampsia (reosminingsih, widiaswari, rosyana, 2024). The findings of this study highlight the importance of addressing anemia, chronic energy deficiency (CED), and preeclampsia in order to reduce LBW rates (Fadjarajani *et al.*, 2020).

Low birth weight infants (LBW)

a) Genetic

A family history of low birth weight babies can increase the risk of a similar condition occurring. Research has shown that genetic factors play an important role in determining the likelihood of a baby being born with

low birth weight. A deeper understanding of these genetic factors can help identify high-risk groups and guide more targeted preventive efforts

b) Maternal Age

Pregnancy at a very young or advanced maternal age can be a risk factor. Scientific research indicates that a mother's age during pregnancy may be associated with the incidence of Low Birth Weight (LBW) babies. Health issues such as hypertension, diabetes, or infectious diseases can affect fetal growth.

c) Poor Nutrition

Nutritional deficiencies during pregnancy can affect fetal growth.

d) Maternal Diet

A mother's eating habits during pregnancy play an important role in fetal development.

e) Limited access to medical care

Limited access to healthcare services during pregnancy can lead to complications that contribute to low birth weight (LBW). Research findings highlight the importance of optimal nutritional intake during pregnancy. Successful nutrition education programs and access to nutritional supplementation can play a vital role in addressing nutritional deficiencies that may lead to LBW (Simanullang, 2025)

Result

1. Assessment

Baby A, a female infant, was born at Santi Meilala Clinic on March 11, 2025, at 16:00 WIB, as the second child of Mrs. S (28, Javanese, Muslim, housewife) and Mr. M (32, Javanese, Muslim, self-employed), residing at Jl. Karya Sumba Gang E No. 149. The mother was admitted on

March 9 for delivery preparation. At birth, Baby A weighed 2,200 g, measured 38 cm in length, with a head circumference of 30 cm (exceeding chest circumference of 28 cm). Currently aged 3 days, she presents with generalized weakness, poor sucking and swallowing reflexes, thin skin with rash around the moist umbilical area, and hypothermia requiring swallowing therapy. Feeding began on March 14, at 20 cc of breastmilk every 2 hours, later increased to 24 cc per interval. She produces about 60 cc of deep-yellow urine daily; meconium passed 6 hours before birth and current stool frequency is about three times per day. She is bathed each morning at 09:00 WIB with warm water and soap; her hair is kept dry, and she is dressed in warm clothing afterward.

On day 3 at 16:00 WIB, assessment showed:

- APGAR score: 7 (HR >100, strong cry, active movement, responsive muscle tone, pink skin)
- Umbilical cord: ~50 cm, with a 1.5 cm placental remnant, no abnormalities
- Vital signs: weight 2,200 g; length 28 cm; temperature 32.5 °C; HR 120 bpm; O₂ saturation ~60%; head 30 cm; chest 28 cm; abdomen 30 cm (Podungge, 2020)

Head-to-Toe Examination:

- Head small and round, fontanelle open; eyes normal with slightly pale conjunctiva; ears, nose, mouth, and genitalia normal; neck skin intact with weak tonic-neck reflex
- Chest symmetrical with wheezing breath sounds; abdomen symmetrical,

slightly distended, skin thin and wrinkled, rash near umbilicus; back symmetrical

- Neurologic reflexes (Moro, rooting, sucking) weak; Babinski reflex normal; extremities structurally normal but movement weak; the body is cold and shivering (Murni *et al.*, 2024)

2. Nursing Diagnosis

- 1) **Hypothermia (D.0131)** related to Low Birth Weight, evidenced by: Mother reports the baby feels cold when touched, Mother observes the baby's hands and feet are frequently cold, Mother notes the baby's body temperature has dropped, The baby has thin skin and cold extremities, Birth weight: 2,200 g, Body temperature: 32.5 °C, Appearance: bluish discoloration
- 2) **Risk for Nutrition Deficit (D.0032)** related to Impaired Sucking and Swallowing, evidenced by: Mother reports the baby appears weak and small, Birth weight: 2,200 g, Length: 38 cm, Head circumference: 30 cm, Chest circumference: 28 cm, Poor sucking reflex, Weak, whimpering cries, Decreased feeding frequency
- 3) **Risk for Infection (D.0142)** related to Altered Skin Integrity, evidenced by: Mother is unsure how to care for the umbilical cord, Mother fears infection at the cord site, Umbilical area shows a red rash, The umbilical cord appears moist, Rash is present on the baby's skin

3. Interventions

Thermoregulation Management – Concise Summary

Observation: Check body temperature every 2–4 hours in low-birth-weight (LBW) infants, **Therapeutic Actions:**

Dry and swaddle with warm blankets, including the head, immediately after birth or bathing to prevent heat loss
Education for Family: Explain why temperature control matters, particularly for LBW or preterm infants.

Nutrition Management – Narrative Format

Observation: The nurse carefully monitors the infant's sucking and swallowing ability, which are essential for safe oral feeding. **Therapeutic Actions:** Nurses assist mothers with proper breastfeeding techniques, ensuring correct positioning and latch to enhance feeding success. **Education for Caregivers:** Caregivers are taught to express breastmilk when the infant cannot feed directly.

Infection Prevention

Observation: Monitor the baby for signs and symptoms of infection, Inspect the umbilical cord area for any signs of inflammation or infection. **Therapeutic Measures:** Perform handwashing before and after contact with the baby, Wear sterile gloves when there is any wound or when caring for the umbilical cord. **Education:** Explain to caregivers the signs and symptoms of infection to watch for, Teach the family the correct technique for handwashing when performing umbilical cord care.

4. Implementation

Hypothermia Management (Concise English Version)

Observation: Measure the infant's body temperature every 2–4 hours.

Therapeutic Measures: Wrap the baby in warm blankets and clothing to conserve body heat, Shield from cold drafts by closing windows or reducing airflow.

Education: Explain to the family the

importance of keeping the infant's body temperature stable, to prevent complications like increased oxygen consumption, hypoglycemia, or infection.

Nutrition Management

Observation: Assess sucking and swallowing ability to ensure coordination among sucking, swallowing and breathing, Especially important in preterm infants where suck-swallow-breathe cycles may be immature. **Therapeutic Measures:** Support proper breastfeeding technique, including correct latch, positioning, **Education:** Explain to the mother the option to express milk when the baby cannot feed directly, ensuring continued intake of breast milk's nutrition and antibodies.

Infection Management

Observation: body temperature, skin color, Inspect the umbilical area for signs of inflammation or infection. **Therapeutic Measures (Prevention & Treatment).** **Therapeutic Measures (Prevention & Treatment):** Wash hands before and after contact with the newborn—this is one of the most effective ways to prevent transmission, Use sterile gloves if there is a wound or during umbilical care. **Education (Parental Guidance):** Teach the mother and family about the importance of hand hygiene prior to touching the baby, Explain to caregivers the key signs of infection to watch for:

5. Evaluasi

Hypothermia Management (Concise English Version)

Observation (Monitoring): Detect early temperature changes and evaluate

effectiveness of interventions and care, Identify circulatory issues or temperature drop, which may signal cold stress. **Therapeutic / Preventive Measures:** Prevent heat loss and help maintain thermal stability in the newborn, Enable caregivers to recognize early hypothermia signs, allowing prompt preventive action.

Nutrition Management

Observation: Ensure the baby can effectively swallow breast milk, Assess whether nutrition is adequate for growth and developmental needs. **Therapeutic / Care Actions:** Improve feeding efficiency by advising on correct positioning and technique during breastfeeding (proper attachment, positioning, and suckling leads to better milk transfer, comfort, and milk supply) . **Education (Parental Guidance):** Support milk production and supply by teaching techniques such as hand expression and offering alternative feeding methods when needed.

Infection Management

Observation: Monitor for early signs of infection in the newborn, Prevent rapid spread of umbilical infection in the infant. **Therapeutic / Preventive Actions:** Reduce hospital-acquired infections by maintaining strict hygiene, Prevent direct contamination of the umbilical area. **Education (Parental/Caregiver Guidance):** Teach how to prevent infection risks related to the umbilical stump, Highlight that good hand hygiene significantly reduces infection risk.

Discussion

On 14 marchth 2025, an assessment was conducted on Mrs. S's baby, aged 1 day, with a birth weight of 2300 grams and

a body length of 38 cm, with a medical diagnosis of Low Birth Weight (LBW). According to theory, LBW refers to a baby born with a body weight of less than 2500 grams. A major factor contributing to neonatal deaths in 2021 was LBW, accounting for 34.5%, followed by asphyxia at 27.8%. Mrs. S's baby was born with low birth weight at 36 weeks of gestation, through normal delivery, and did not cry immediately after birth (Simanullang, 2020).

Analysis of Nursing Care Using a Case Concept

The nursing assessment process conducted on the baby was in accordance with the theoretical assessment by Ismayanah et al (2020), as the client's assessment used a standardized nursing operational procedures. Based on the assessment through interviews, observation, and physical examination, the formulated nursing diagnoses in this case, using the Indonesian Nursing Diagnosis Standard, are as follows: Hypothermia (D.0131) related to Low Birth Weight, as evidenced by the mother of Baby A stating that the baby feels cold to the touch, the baby's hands and feet often feel cold, the baby's body temperature has decreased, thin skin, cold extremities, birth weight of 2200 grams, Risk for Nutritional Deficit (D.0032) related to Incomplete sucking and swallowing reflexes, as evidenced by the mother of Baby A stating the baby appears weak and small, birth weight of 2200 grams, body length of 38 cm, the baby appears weak, has a poor sucking reflex,. Risk for Infection (D.0142) related to Impaired skin integrity, as evidenced by the mother of Baby A stating she does not know how to care for the umbilical cord,

expressing fear of infection in the cord area, the umbilicus appears reddish and moist.

The first intervention performed is Body Temperature Management: Observation: Monitor body temperature every 2–4 hours, Observe skin color and moisture. Therapeutic: Wrap the baby in warm clothing or add extra blankets, Avoid direct exposure to cold air. Education: Educate the family about the importance of maintaining the baby's body temperature, Teach the warning signs of hypothermia that need to be monitored.

The second intervention is focused on Nutritional Monitoring and Support: Observation: Observe the baby's ability to suck and swallow, Monitor the amount and quality of breast milk received, Monitor the baby's weight daily. Therapeutic: Assist the mother in proper breastfeeding techniques, Recommend breast milk administration using a dropper or spoon if needed. Education: Instruct the mother to pump breast milk if the baby is unable to nurse directly.

The third intervention focuses on Infection Prevention and Control: Observation: Observe for early signs of infection such as changes in body temperature and skin color. Therapeutic: Perform hand hygiene before and after contact with the baby, Use sterile gloves if there are wounds during umbilical cord care. Education: Educate the mother and family about the importance of handwashing before touching the baby, Teach proper umbilical cord care techniques, Explain the importance of

maintaining a clean environment around the baby.

A newborn with hypothermia related to low birth weight received external active warming via Kangaroo Mother Care (KMC). Following implementation, the infant's skin temperature improved—extremities became warm to the touch and the feet were notably warm—with a measured body temperature of 36 °C. This outcome aligns with documented cases where KMC effectively raises body temperature in LBW infants over several days of use. For the diagnosis risk of nutritional deficit due to immature suck–swallow reflex, caregivers provided warm expressed breast milk using a pipette or spoon, and stimulated oral reflexes by gently touching the baby's cheeks. Regular weight monitoring was conducted, resulting in improved suck–swallow reflexes, enhanced feeding frequency, and the infant reaching a weight of 2500 g. In the case of risk of infection related to impaired skin integrity around the umbilicus, routine umbilical cord dressing changes were performed, the area was kept dry, and hand hygiene was strictly observed before and after care. As a result, signs of infection subsided: umbilical redness decreased, and the cord stump

Conclusion and Suggestion

Here's a concise narrative-style summary in English of the nursing process for Baby A—from assessment through evaluation—based on your input and best practices: During the nursing assessment, the team observed that Baby A was born with low birth weight. Diagnosis: Based on these findings, the following nursing diagnoses were established: Hypothermia

appeared drying normally, indicating effective infection control. Proper cord care practices like dry cord care significantly reduce neonatal infection risks.

On day 3, follow-up evaluations showed successful outcomes for all addressed nursing diagnoses: Hypothermia (D.0139) related to low birth weight: By day 3, the infant's body temperature had stabilized within normal range, indicating effective management of thermoregulation through interventions such as Kangaroo Mother Care and external warming techniques. This aligns with recognized outcomes where low birth weight infants achieve normothermia when appropriate thermal care is provided. Risk of Nutritional Deficit related to immature sucking and swallowing reflex: Also by day 3, the infant demonstrated improved ability to suck and swallow, confirming that the feeding strategies—including warm expressed breast milk delivery via pipette or spoon, cheek stimulation, and regular weight monitoring—were effective in overcoming the risk. Risk of Infection (D.0142) related to impaired skin integrity at the umbilical area: On day 3, evaluations confirmed that infection had not spread.

related to low birth weight, Risk for nutritional deficit related to immature sucking and swallowing reflex, Risk for infection related to impaired skin integrity. Interventions: To address these issues, the nursing care plan included: Nutritional management with supportive feeding techniques, Sterile care of wounds (e.g. umbilical area) to prevent infection Implementation: All planned interventions were carried out accordingly: feeding

support, wound care, and thermal protection were consistently provided and monitored.

Evaluation At follow-up, all three concerns had been successfully addressed: Hypothermia resolved, with stable body temperature, Feeding ability improved, with effective sucking and swallowing behavior.

For Educational Institutions: Provide a comprehensive, up-to-date list of current maternity nursing textbooks covering low birth weight (LBW) infant care, including: *Foundations of Maternal-Newborn and Women's Health Nursing*, 8th ed. (Elsevier, Feb 2023), *Essentials of Maternity, Newborn, and Women's Health Nursing*, 6th ed. (Oct 2024). For Future Research: This study contributes to practice-based evidence in providing service-excellent maternity care for LBW newborns, and can guide future researchers to develop interventions aligned with maternal-newborn standards.

For Klinik Santi Meilala: Findings from this research are expected to strengthen and sustain the quality of maternity nursing management by aligning practices with current operational standards.

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