CHAPTER 1

PRELIMINARY

1.1 Background

Low birth weight (LBW) is a condition when a baby born with a weight less than normal (Putri Rizkiyah, 2021). LBW is a baby born weighing ≤ 2500 gr. WHO classifies LBW into 3 types, namely LBW (1500–2499 grams), LBW (1000 - 1499 grams), LBW (< 1000 grams) (WHO, 2017). LBW is newborns with a weight <2500 grams. It is an indicator to see how the degree or health status of children, so it plays an important role in monitoring the health status of children since birth, whether the their health status is good or not (Putri, 2019). Hypothermia is a body temperature below the normal range (PPNI, 2017). It is an involuntary decrease in core body temperature to < 35°C (or 95°F). Locations for measuring core body temperature include rectal, esophageal, or tympanic membranes are performed correctly (Kustina, 2020). The infant mortality rate (IMR) is one of the important indicators to determine the degree of public health and assess the success of development in the health sector. One of the causes of the high infant mortality rate (IMR) is low birth weight (LBW) (Kementerian Kesebatan Republik Indonesia, 2016). LBW is a health problem that requires special attention in various countries, especially in developing countries or countries with low socio-economic conditions (Novitasari, Hutami and Pristya, 2020). Premature LBW infants are the main determinant of prenatal

and neonatal mortality. Premature LBW babies are more susceptible to disease than well-developed term babies (Kemenkes RI, 2019). Hypothermia is associated with increased morbidity and mortality. Premature infants often develop hypothermia when they are admitted to the NICU, but there are no data on the occurrence of hypothermia during the first hours after admission (Mank *et al.*, 2018).

Data from the World Health Organization states that the prevalence of babies with LBW in the world is 15.5% or about 20 million babies born every year, about 96.5% of them occur in developing countries (WHO, 2018). This shows that there has been a reduction from 2012 to 2019 from 20 million to 14 million LBW babies (Ferdiyus, 2019).

The proportion of birth weight < 2500 grams (LBW) in infants from all provinces in Indonesia is 6.2%. This percentage is the average result of all LBW cases that occurred throughout Indonesia, while East Java Province also experienced a fairly high incidence of LBW which was 10.1% (Dinkes Jawa Timur, 2020). The prevalence of LBW in Banyuwangi was reported in 2019 from 45 public liealtli center according to the special report for LB3 MCH neonatal as many as 950 (4.13%) out of 22,998 live births. When compared from 2016 to 2019, the number of babies with LBW cases still experienced the main cause of death with a record that 39 babies born with hypothermia had body temperatures and body weights below the average or <2500 grams, followed by congenital abnormalities and asphyxia in banyuwangi (Dinas

Kesehatan Kahupaten Banyuwangi, 2020). Based on a preliminary study the data ohtained from the Perinatology Room of Blambangan Hospital in October 9, 2021, in 2020 there were 147 who had low birth weight. In January to October there is a slight difference of 136 in 2021.

LBW is divided into 2 categories, namely premature birth or birth at 37 weeks gestational age and IUGR whicb is commonly referred to as impaired fetal growth or babies born with gestational age at term but weighing less. LBW can cause pain and even death (Setiati and Rahayu, 2017). There are so many factors cause LBW, they can come from the baby condition it self and also occur due to the mother factors. Factors from the fetus condition are genetic factors, congenital abnormalities in tbe fetus, not optimal fetal nutrition and other factors that can cause the fetus to lose weight at birth. Factors originating from pregnant women who are prone to giving birth to LBW babies (low birth weight) include maternal nutrition, mother's physical condition, maternal bealth status (such as hypertension, heart disease, etc.) (Putri Rizkiyah, 2021). Factors of maternal health,especially nutrition bave an important role because they include risk factors that cause premature babies with low birth weigbt. Babies born prematurely with low birth weigbt have a large body surface so that the thinner subcutaneous fat tissue causes excess evaporation coupled with exposure to outside temperatures which causes hypothermia. Low birth weight babies who experience hypotbermia are usually cbaracterized by cold acral, babies do not want to drink, less active, pale, tachypnea or tachycardia, and if prolonged hypothermia will result in increased

oxygen consumption, respiratory distress, acid-base balance disorders, hypoglycemia, coagulation effects, circulation, persistent fetal, acute renal failure, necrotizing enter colitis, and in severe cases can cause death (Hartina, 2017).

Newborns cannot regulate their body temperature adequately, babies get cold quickly, if it is not handled right away, babies will lose heat. Babies who experience heat loss (hypothermia) are at high risk of falling ill or dying (Putri Rizkiyah, 2021). Babies should be blanketed or carried to reduce the incidence of hypothermia because it can occur in babies who are wet even though they are in a relatively warm room. Newborns cannot regulate their body temperature adequately, do babies get cold quickly, if not handled right away, and babies will lose heat.

Efforts to prevent LBW with hypothermia due to lack of sub cutis fat tissue are using the Kangaroo Mother Care metbod and baby care in an incubator. Kangaroo Mother Care method is where a skin to skin contact with special care for low birth weight babies or premature babies (<2500 grams) or less months (<37 mg) by making direct contact between mother's and baby's skin (Yelmi Reni Putri, 2017). Baby care in an incubator is a method of caring for babies by inserting them into a device that functions to help create a sufficient ambient temperature with a normal temperature. There are two ways to treat the incubator, namely tbe closed and open method (Habibah *et al.*, 2019). The implementation of nursing in Indonesian Nursing Intervention Standards is management of body temperature, arguably hypothermic

management which consists of observation, therapy, education and collaboration if necessary (Tim Pokja SDKI DPP PPNI, 2018). Increase regular check-ups at least 4 times during the early preguancy period, especially for pregnant women with a high risk of developing LBW babies (Hartina, 2017).

1.2 Limitation of Problem

The problem in this case study is limited to Pediatric Nursing Care on Low Birth Weight (LBW) Clients with Hypothermia Nursing Problem in the Perinatology Room of Blambangan Regional Public Hospital Banyuwangi 2022.

1.3 Problem Formulation

How is Pediatric Nursing Care on LBW with Hypothermia Nursing Problems in the Perinatology Room of Blambangan Hospital Banyuwangi in 2022?

1.4 Purpose

1.4.1 General Purpose

Implementing Pediatrie Nursing Care on LBW Clients with Hypothermia Nursing Problems in the Perinatology Room of Blambangan Hospital Banyuwangi 2022.

1.4.2 Special Purpose

1 Implementing nursing assessments for low birth weight infants with hypothermia nursing problems in the Perinatology Room of Blambangan Hospital, Banyuwangi 2022.

2 Identifying nursing diagnoses for low birth weight infants with hypothermia nursing problems in the Perinatology Room of Blambangan Regioual Public Hospital, Banyuwangi 2022.

3 Formulating nursing plans for low birth weight infants with hypothermia nursing problems in the Perinatology Room of Blambangan Regional Public Hospital, Banyuwangi 2022.

4 Implementing nursing actions for low birth weight babies with hypothermia nursing problems in the Perinatology Room of Blambangan Regioual Public Hospital, Banyuwangi 2022.

5 Implementing an evaluation of LBW Babies with Hypothermia Nursing Problems in the Perinatology Room of Blambangan Regional Public Hospital, Banyuwangi 2022.

1.5 The Benefits of Writing

1.5.1 Theoretical Benefits

Providing additional knowledge especially related to LBW babies with hypothermia, providing knowledge about how to apply the pediatric nursing care for LBW babies with hypothermia in the Perinatology Room of Blambangan Regional Public Hospital.

1.5.2 Practical Benefits

1. For Nurse

It can be used as input and evaluation material in service practice, especially in the field of nursing related to LBW infants with hypothermia.

2. For Hospital

This case study can be used as a reference for Blambangan Regional Public Hospital in carrying out nursing actions and establishing SOP for low birth weight infants with hypothermia nursing problems.

3. For Educational Institutions

Thid case study can improve the quality of teaching and learning process especially neonatal course to produce professional nurses.

4. For Clients and Family

The results of this study are expected that babies receive professional nursing care so that babies with LBW get optimal health and families are able to care for LBW babies, so that families can prevent complications caused by LBW.

CHAPTER 2

LITERATURE REVIEW

2.1 Growth and Development Concept

2.1.1 Definition of Growth and Development

Children always have a characteristic that is always growing and developing from conception to the end of adolescence. Children show the characteristics of growth and development in accordance with their age. Growth is an increase in the size and number of cells and intercellular tissue, which means an increase in physical size and body structure in part or in whole, so that it can be measured in units of length and weight. While the meaning of development is the increase in more complex body structures and functions in the ability of gross motion, fine motion, speech and language as well as social skills and independence (Kemenkes RI, 2016).

2.1.2 Stages of Child Development

According to the Indonesian Ministry of Health (2016), children's growth and development takes place regularly, interrelated and sustainable, starting from conception to adulthood. Child development is divided according to the following stages:

1) Prenatal period

a) Zygote / embryo: conception - 2 weeks of gestation

b) Embryonic period: 2 weeks – 8/12 weeks

c) Fetal/fetus period: 9/12 weeks – birth

(1) Early fetal period: 9 weeks – 2nd trimester

(2) Late fetal period: the last trimester of pregnancy

2) Infancy: age 0-11 months

a) Neonatal period: 0-28 days old

(1) Early neonatal period: 0-7 days old

(2) Late neonatal period: age 8 – 28 days

b) Post-neonatal period: 29 days – 11 months

1) Early childhood: ages 12-59 months

2) Preschool age: 5-6 years old

2.1.3 Aspects of Growth and Development

1. Growth aspect

To assess growth in children, anthropometric measurements were carried out which included measurements of weight, height (body length), head circumference, upper arm circumference, and chest circumference (Saputri, 2014). Measurement of body weight is used to assess the results of an increase or decrease in all existing tissues in the body, measurement of height is used to assess the status of nutritional improvement in addition to genetic factors, while the measurement of head circumference is intended to assess brain growth. Small brain growth (microcephaly) is a condition that indicates mental retardation, if the brain is large (hydrocephalus) it occurs due to blockage of cerebrospinal fluid (Hidayat, 2011). The

size of the head circumference in children aged 6 months on average is 44 cm (Angelina, 2014).

2. Development Aspect

   a. Gross motor skills include large muscle activities such as arm movements, sitting, standing, walking and so on.

   b. Fine motor skills are physical skills that involve small muscles and eye and hand coordination that require careful coordination. Fine motor development begins to have the ability to wiggle tbe toes, draw two or three parts, draw people, wave bands and soon.

   c. Language is the ability to respond to souuds, follow commands and speak spontaneously, and communicate

   d. Socialization and independence are aspects related to independent abilities (eating alone, tidying up toys when finished playing), separating from mothers/caregivers, socializing and interacting with their environment.

2.1.4 Characteristics of Growth and Development

The cbaracteristics of the process of child growth and development according to the Indonesian Ministry of Health (2016) are as follows:

1. Development causes cbange. Development occurs at the same time as growth. Each growth is accompanied by a cbange in some function. For example, the development of intelligence in a child will accompany the growth of the brain and nerve fibers in the child.

2. Growth and development in the early stages determine subsequent development. Every child will not be able to pass one stage of development before he has passed the previous stage. For example, a child will not be able to walk until he is able to stand on his own. A child will not be able to stand if the growth of the legs and other body parts related to the child's standing function is hampered. Therefore, this development is a critical period because it will determine the future.
3. Growth and development have different speeds. As with growth, development has different speeds, both in physical growth and in the development of organ function and development in each child.
4. Development has a fixed pattern.

   The development of organ function occurs according to two fixed laws, namely:

   a. Development occurs first in the head area then towards the caudal / limb (cephalocandal pattern).
   b. Development occurs first in the proximal area (rough motion) and then develops into the distal part such as the fingers that have the ability to move smoothly (proximodistal pattern).
   c. Development has successive stages.

The stages of development of a child follow a regular and sequential pattern. These stages cannot be reversed, for example the child is first

able to make a circle before being able to make a box image, the child is able to stand before walking and vice versa.

2.2 Basic Concepts of Low Birth Weight Babies

2.2.1 Definition of LBW

LBW is a baby born weighing 2500 g. WHO classifies LBW into 3 types, namely LBW (1500–2499 grams), LBW (1000-1499 grams), LBW (< 1000 grams) (World Health Organization, 2017).

Low birth weight babies are babies with a birth weight of less than 2500 grams regardless of gestational age. Birth weight is the weight of the baby weighed within 1 (one) hour after birth (Novitasari, Hutami and Pristya, 2020).

Low birth weight (LBW) is a condition when a baby is born with a weight less than normal. Premature birth (before 37 weeks of gestation) and fetal growth restriction are the most common causes of low birth weight (Putri Rizkiyah, 2021).

2.2.2 Etiology

The causes of LBW babies' occurrence are generally multi factorial, so it is sometimes difficult to take preventive measures. Premature birth is a factor that causes low birth weight babies. The younger the gestational age, the greater the short and long-term risks can occur (Putri, 2019).

Factors related to LBW infants in general according to (Afifah, 2021), namely, as follows:

1) Mother Factor

a) Comorbidities :

1. Experiencing pregnancy complications, such as: severe cellular anemia, ante partum bleeding, hypertension, severe preeclampsia, eclampsia, infections during pregnancy (bladder and kidney infections).
2. Suffering from diseases such as malaria, sexually transmitted infections, HIV/AIDS, malaria, TORCH.
3. Causes of drug abuse, smoking, alcohol consumption.

b) Mother :

1. The highest incidence of prematurity is pregnancy at the age of <20 years or more than 35 years.
2. Multiple pregnancies or someone who has been pregnant before (multi gravid).
3. Birth spacing that is too close or short (less than 1 year).
4. Have a previous history of LBW.

c) The condition of social economy :

1. With low socioeconomic groups, often occupy the highest prevalence or with the highest incidence rates.
2. By doing physical activity for several hours without rest.
3. With poor nutritional status.

4. Insufficient antenatal protection.
5. The incidence of prematurity in babies born from illegitimate marriages, which is apparentiy higher when compared to babies born from legal marriages.

2) Fetal Factor :

Fetal factors include chromosomal abnormalities, chronic fetal infection (inclusion cytomegaly, congenital ruhella), fetal distress, and multiple pregnancies.

3) Placenta Factor

a) The weight of the placenta is large or hollow or both (hydramnios).

b) The surface area is reduced.

c) viral placentalitis (bacteria, viruses and parasites).

d) Infarct.

e) Tumors (chorioangioma, hydatidiform mole).

f) A detached placenta.

g) The detached placenta syndrome

h) The twin transfusion syndrome (parabiotic syndrome).

4) Environmental factor:

a) Live in a highland area.

h) Exposed to radiation.

c) Exposure to toxic substances.

According (Habibah *et al.*, 2019) relationship between birth weight / gestational age, newborn weight can be grouped into :

1. According to Pregnancy Period,
2. Small Gestational Period, and
3. Large Gestational Period, in the same way based on gestational age alone, babies can be classified as preterm, full term, or more months.

2.2.3 Classification

According Proverawati & Ismawati in (Ningsib and Indrasari, 2019) babies with low birth weight can be classified based on gestational age and weight at birth. There are several ways to classify LBW according to their life expectancy, namely:

1) Babies with low birth weight (LBW) with a birth weight of 1500 - 2500 grams.
2) Very low birth weight (LBW) babies with a birth weight of 1000 - 1500 grams.
3) Extremely low birth weight (LBW) babies with birth weight less than 1000 grams.

According to (Setiati and Rahayu, 2017) LBW is divided into 2 categories, namely :

a) Premature birth or birth at gestational age 37 weeks

b) IUGR (intrauterine growth restriction) which is commonly referred to as impaired fetal growth or babies born at term but underweight at birth. This means that the baby has growtb disorders and is a small baby for gestational age (KMK). The cause is any condition that interferes with the exchange of substances between mother and fetus.

2.2.4 Pathopbysiology

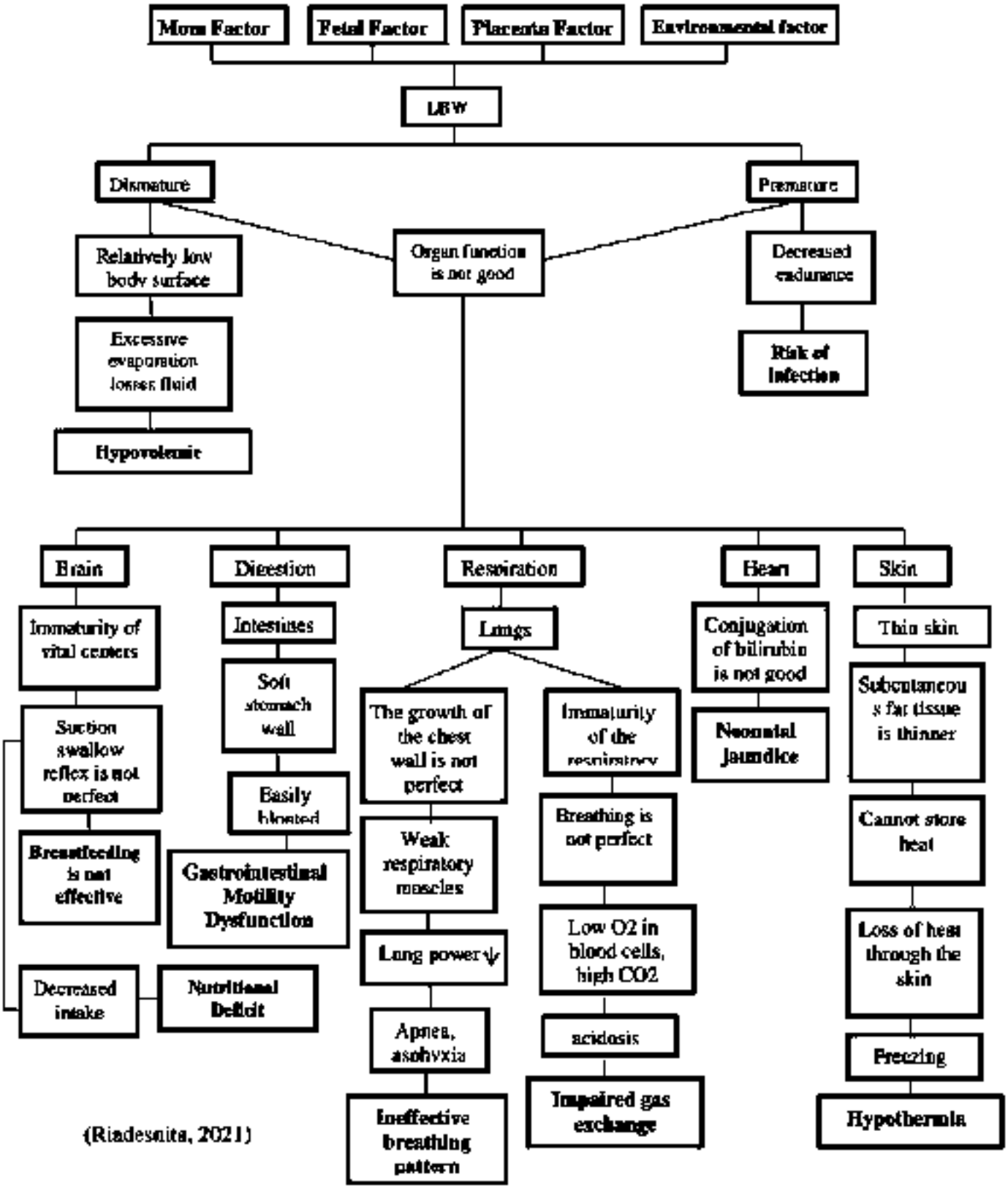
The high morbidity and mortality of low birth weigbt infants is still a major problem. Mothers who have poor nntritional status before pregnancy or are pregnant, more often produce premature LBW babies. Cbronic malnutrition in childhood with/without repeated illness will cause a "stunting" body shape in adulthood this condition often gives birth to premature LBW babies. Other factors during pregnancy such as severe illness, pregnancy complications, malnutrition, and stressful situations during pregnancy can affect fetal growth througb adverse effects on mother, or affect placental growth and transport nutrients to the fetus cause premature LBW babies. Premature LBW babies will bave a body that is not functioning properly. Therefore, they will have difficulty living outside their mother's womb. The shorter the gestation period, the less perfect the growth of organs in the body, with the result tbat it is easier for complications to occur and the higher the mortality rate (Maryunani, 2016).

In connection with the imperfection of tools in the body, both anatomical and physiological problems will easily arise, for example :

1) Unstable body temperature because it is difficult to maintain body temperature caused by increased evaporation due to a lack of fat tissue under the skin, a relatively wider body surface compared to body weight, inactive muscles, reduced heat production.
2) Respiratory disorders often cause severe disease in premature LBW, this is caused by incomplete lung growth and development, weak respiratory muscles and immature surfactant healing membrane formation.
3) Digestive disorders and nutritional problems, abdominal distension due to less intestinal motility, less gastric volume, so gastric emptying time increases.
4) Immature kidney both anatomically and physiologically, urine production is reduced.
5) Immunological disorders: the body's resistance to infection is reduced due to low levels of IgG gamma globulin. Premature infants are relatively unable to form antibodies and the phagocyte power and reaction to inflammation are still not good.
6) Intraventricular hemorrhage, this is because premature babies often suffer from apnea, hypoxia and respiratory syndrome, resulting in hypoxia, hypertension and hypercapnia, where this condition causes blood flow to the brain increase and this situation is caused

by the absence of cerebral auto regulation in premature babies so that it is easy to bleed from fragile capillaries (Nurarif & Kusuma, 2016).

2.2.5 *Web of Caution* WEIGHTLR



(Riadesnita, 2021)

2.2.6 Clinical Manifestations

According to (Afifah, 2021), In general the clinical picture of premature LBW infants is as follows :

1) Gestational age less than 37 weeks.
2) Weight less than 2500 gr.
3) Length is less than 45 cm.
4) Chest circumference less than 30 cm.
5) Head circumference less than 33 cm.
6) Bigger head.
7) Thin skin, transparent, lots of lanngos halr, less fat.
8) Weak hypotonic muscles.
9) Irregular breathing can lead to apnea.
10) Extremities: abducted thigh, knee joint or leg flexion-straight.
11) The head is unable to stand upright.
12) Pulse 100-140 beats/minute.
13) The crown and wide sutures.
14) Weak cry.
15) The suction power is weak especially in the first days.
16) The labia minora have not been covered by the labia majora (in women), the testes have not descended (in men).
17) Movement is less and weak.

2.2.7 Comphcations

There are several things can bappen to habies with premature LBW if they are not treated immediately, according to Heryani (2019). Direct complications can occur in low birth weight babies include:

1) Hypothermia due to lack of subcutaneous fat in LBW infants
2) Symptomatic hypoglycemia (glucose deficiency).
3) Infection.
4) The problem of neouatal jaundice.

Long-term problems that may arise in infants with premature LBW include:

1) Developmental disorders occur due to the maturity of body functions that are not yet complex, resulting in a lack of maturity in the structure and function of the body.
2) Growth disorders occur hecause premature LBW children have a lower growth pattern compared to children born at term, there is a growth restriction from the womb until 2 years so that the child never reaches the ideal body weight.
3) Increased morhidity and frequent hospitalization due to early Yesptation mechanisms in response to various adverse exposures in fetal and early childhood.
4) The increase in frequency of congenital ahnormalities does not occur in all LBW.

2.2.8 Management

a) Management of Pure Prematurity

The management of pure prematurity is very important according to Maryunani (2016), considering the imperfect work of organs in the body that are necessary for growth and development as well as adjustment to the environment outside the uterus. In connection with this, it is necessary to regulate the environmental temperature, provide food and if necessary give oxygen, prevent infection, prevent vitamin and iron deficiency.

b) Medical Management

According to (Derviş, 2019), medical management in infants with low birth weight includes:

a) Medicamentosa, administration of vitamin K1 injection 1 mg IM once given or orally 2 mg once given or 1 mg 3 times given (at birth, age 3-10 days, and age 4-6 weeks).

b) Dietics, premature babies or low birth weight babies have problems breastfeeding because their sucking reflex is still weak. For such babies, the milk must be pumped out or expressed and given to the baby via a gastric tube or pipette. By holding the head and holding it under the chin, the baby can be trained to suck while the milk that has come out is given by a pipette or a small tube attached to the nipple. Make sure the baby is getting an adequate amount of breast milk at all costs.

Pay attention to how to feed and assess the baby's ability to suck at least once a day. If the baby is not receiving IV fluids and is gaining 20 g/day for 3 consecutive days, weigh the baby twice a week.

c) Supportive, the main thing that needs to be done is to maintain a normal body temperature hy using one of the ways to warm and maintain the baby's body temperature, such as skin-to-skin contact, kangaroo mother care, heat transmitters, incuhators or warm rooms available at local bealth facilities according to instruction.

The things that must be considered for this supportive management are:

1) Maintain and monitor airway patency.
2) Monitor the adequacy of nutrition, fluids and electrolytes.
3) Build alliances with patients and patient members.
4) Instruct the mother to stay witb the baby. If not possible, let the mother visit at any time and prepare a room for breastfeeding

d) Incubator: Babies with low hirth weight are cared for in an incubator. Treatment procedures can he carried out through a "window" or a "sleeve". Before placing the baby in the incubator, the incubator is warmed to about 29.4°C for babies weighing 1.7 kg and 32.2°C for smaller babies.

Babies are cared for without clothes, this allows adequate breathing, babies can move without being limited by clothes, observation of breathing is younger.

e) Oxygen administration: Poor lung expansion is a serious problem for preterm low hirth weight infants, due to the absence of alveoli and surfactant. The concentration of O2 given is around 30-35% by using a head box; a high coneentration of O2 in the long term will cause damage to the baby's retinal tissue which can cause blindness.

c) **Nursing Management**

According to Heryani (2019), to handle babies with low birth weight are as follows:

a) The smaller the baby and the more premature the bahy, the greater the care that must he needed, because the possihility of cyanosis attacks is greater. All infant care must be carried out in an incubator.

b) Wrap the baby in a soft, dry cloth, blanket, use a hat to warm the ears.

c) Maintaining the body temperature of bahies with low birth weight, have difficulty in maintaining hody temperature. Babies will develop optimally, as long as the rectal temperature is maintained between36-37. The treatment temperature should

be above 25, for those weighing about 2000 grams, and up to 30 for babies weighing less than 2000 grams.

d) Prevention of infection, preterm infants with low weight has a poor immune system, have little or no resistance to infection. To prevent infection the nurse must wear special clothes, wash hands before and after caring for the baby, wear a mask, remove all accessories and should not enter the nursery with infection and skin pain.

2.2.9 Supporting investigation

According to (Derviş, 2019), Examinations that can support are as follows :

1) White blood cell count: 18,000 m/m3, nephrotile increased to 23,000-24,000 m/m3, the first day after birth (decreased if there is sepsis).
2) Hematocrit (Ht): 43% (increase to 65% or more indicates polycythemia, decreased levels indicate anemia or prenatal/perinatal hemorrhage.
3) Hemoglobin (Hb): 15-20 g/dl (lower levels are associated with anemia or excessive hemolysis).
4) Total biliruhin: 6 mg/dl on the first day of life, 8 mg/dl for 1-3 days, and 12 mg/dl on 3-5 days.
5) Destrosix: the first drop of glucose during the first 4-6 hours after birth an average of 40-50 mg/dl increased by 60-70 mg/dl on the

third day.3) Hemoglobin (Hb) : 15-20 gr/dl (lower levels are associated with anemia or excessive hemolysis).

6) Electrolyte monitoring (Na, K, Cl) is usually within normal limits initially.
7) Examination of blood gas analysis.
8) Check blood sugar levels (true glucose) with Destrosix or a laboratory if hypoglycemia needs to be overcome.

2.3 Hypothermia Concept

2.3.1 Definition Hypothermia

Hypothermia is an involuntary decrease in core body temperature to < 35°C (or 95°F) Locations for measuring core body temperature, including rectal, esophageal, or tympanic membranes, are performed correctly (Kustina, 2020). According Hardisman (2014) Hypothermia is defined when the core body temperature drops to 35°C (95°F) or even lower (Kustina, 2020).

According (Knstina, 2020), Hypothermia is caused by the loss of heat by conduction, convection, radiation, or evaporation. Local cold injury and frostbite occur because hypothermia causes a decrease in blood viscosity and intracellular injury. Hypothermia is a state of body temperature below 35°C, and can be categorized as follows:

a. Mild hypothermia : 32 – 35°C
b. Moderate bypothermia: 28 – 32°C

c. Severe hypothermia: helow 28°C

2.3.2 Mecbanism of Heat Loss

According to (Nanda-I, 2020) Before preventing heat loss, it is necessary to know in advance about the mechanism of heat loss in infants :

1) Evaporation, namely the evaporation of amniotic fluid on the body surface by the baby's own body heat. Because after birth, the baby's body is not immediately dried.
2) Conduction, namely loss of body heat through direct contact between the baby's body and cold surfaces, such as tables, beds, scales, and other objects wbose temperature is lower than the haby's body.
3) Convection, namely body heat loss occurs when the baby is exposed to cooler ambient air such as a cold room, the presence of airflow, and fans, blowing air through ventilation or cooling the room.
4) Radiation, namely beat loss that occurs because tbe baby is placed near objects that bave a lower body temperature than the baby's body temperature. Because, these objects will absorb heat radiation on the baby's hody (even though they are not in direct contact).

2.3.3 Cause

The causes that occur in hyperthermia patients in general according to (PPNI, 2018) are :

1) Hypothalamus damage.
2) Consumptiou of the hypothalamus.
3) Extreme body weight.
4) Subcutaneous deficiency.
5) Exposure to low ambient temperature.
6) Malnutrition.
7) Use of light clothing.
8) Decreased metabolic rate.
9) Not active.
10) Heat transfer.
11) Trauma.
12) Aging process.
13) Effects of pharmacological agents
14) Lack of exposure to information about prevention of hypothermia

2.3.4 Relevant Factors

There are several factors associated with LBW infants, namely:

1. Delay breastfeeding.
2. It's too early to bathe a newborn.
3. increased oxygen demand oxygen

2.3.5 Major Signs and Symptoms

According to (PPNI, 2017) major signs and symptoms are divided into 2, namely subjective and objective. The signs and symptoms of the objective are as follows:

1. Skin feels cold.
2. Shiver
3. Body temperature below normal value

2.3.6 Minor Signs and Symptoms

According to (PPNI, 2017) minor signs and symptoms are divided into 2, namely subjective and objective. The signs and symptoms of the objective are as follows:

1. Acrocyanosis
2. Bradycardia
3. Cyanotic nail bed
4. Hypoglycemia
5. Hypoxia
6. Capillary refill >3 seconds
7. Oxygen consumption increases
8. Decreased ventilation
9. Piloerection
10. Tachycardia
11. Peripheral Vasoconstriction
12. Cutis memorata (in neonates)

2.3.7 Related Clinical Conditions

1. Hypothyroidism.
2. Anorexia nervosa.
3. Brain stem injury.

4. Prematurity.
5. Low birth weight (LBW).
6. Drowning

2.3.8 Expected results

According to PPNI (2017) the expected results in Hypothermia are as follows:

1. Not shivering.
2. No oxygen consumption.
3. Normal body temperature.
4. Normal skin temperature.
5. Normal pulse rate.

2.3.9 Intervention

According to PPNI (2018) interventions on Hypothermia are as follows:

Hypothermia Management

Observation:

a. Monitor body temperature.
b. Identify the cause of hypothermia.
c. Monitor for signs and symptoms of hypothermia.

Therapeutic:

a. Provide a warm environment.
b. Perform passive heating (eg blankets, head coverings, thick clothing).

c. Perform external active warming (kangaroo method of care).

Heat Exposure Therapy

Observation:

a. Identify contraindications to the use of therapy.

b. Monitor the temperature of the therapy device (incubator).

c. Monitor skin condition during therapy.

Therapeutic:

a. Determine the duration of therapy according to the patient's response

2.3.10 Medical Diagnosis

Hypothermia is diagnosed by measuring the baby's body or skin temperature. Measurement of body temperature is very useful as one of the important clues for early detection of a disease, and its measurement can be done through the axilla, rectal or skin. Through the axilla is the recommended procedure for measuring the baby's temperature, because it is easy, simple and safe. However, rectal measurement is highly recommended for the first time in all newborns as well as a skin test for the possibility of imperforate anus. (Novitasari, Hutami and Pristya, 2020).

2.4 Kangaroo Mother Care (KMC) Concept

2.4.1 Definition Kangaroo Mother Care (KMC)

Kangaroo Mother Care (KMC) or also called skin-to-skin contact (Skin to Skin Contact) is a special care method for low birth

weight babies or premature babies (< 2500 grams) or less months (< 37 mg) by making direct contact between the mother's skin and the baby's skin.

2.4.2 Benefit of Kangaroo Mother Care (KMC)

The kangaroo method of care provides health development benefits for infants. But not only that, this method also provides psychological healing for the mother in relation to preterm birth and regaining the role of motherhood.

The benefits of the Kangaroo Mother Care method for mothers and little ones are as follows:

1) Benefits for Babies

a. Maintain body temperature, heart rate, and relative respiratory rate within normal limits.

b. Strengthens the baby's immune system thereby reducing the incidence of nosocomial infections, serious illnesses, or lower respiratory tract.

c. Contact with the mother causes a calming effect that reduces stress on the baby.

d. Decreases physiological and behavioral pain responses.

e. Increase body weight and improve growth more quickly in premature babies.

f. Increases the bond between mother and baby.

g. Has a positive influence in improving cognitive development in infants.

2) Benefit for Mother

a. Facilitate breastfeeding.

b. Increase breast milk production.

c. Increases duration and success in breastfeeding.

d. Provides a physiological effect of calm for the mother.

2.4.3 Kangaroo Mother Care Equipment and Supplies

Equipment and supplies in the Kangaroo Mother Care method are as follows:

a. KMC comfortable chair (with back and armrests) or bed.

b. The rooms are comfortably furnished.

c. Kangaroo shirt or long cloth.

d. Mother's clothing or protective suit or kimono.

e. Five hats and six socks.

2.4.4 Technique of Kangaroo Mother Care (KMC)

For the technique, namely, as follows:

1. The baby is placed perpendicular to the mother's chest so that the baby's skin will stick to the mother's skin.
2. Wash your hands before handling the baby.
3. Hold the baby with one hand placed behind the neck to the baby's back.
4. Should not wear undershirts or bras (Buste Hounder) during KMC.

5. Support the bottom of the baby's jaw with the thumb and other fingers, so that the baby's head does not bend and does not cover the airway when the baby is in an uprigbt position..
6. Place tbe baby under the buttocks, then place it near the mother's chest or attach the skin between the mother's chest and the baby as wide as possible.
7. Maintain the baby's position with a sling, the mother should wear loose clothes and front dog.
8. The baby's head is slightly tilted so that the baby can breathe properly.
9. The baby is not wearing a t-shirt, the baby may use a warm bat, wear a diaper and wear feet.
10. During the separation between mother and baby, family and also relatives, can also help the PMK to belp the process of mother-to-baby skin contact.

2.4.5 Method Component Kangaroo Mother Care (KMC)

1) *Kangaroo Position*

The baby is placed between the breasts in an upright position, the baby's chest against tbe mother's chest. This position is also known as skin-to-skin contact between the mother and baby skin. The position of baby is secured by using a kangaroo or long cloth. The baby's head is turned to the right or left with a slightly upturned or extended positiou. Head position like this, aims to keep the baby's

airway stable. The baby's legs must be in a frog position; the hands must be in a flexed position.

2) *Kangaroo Nutrition*

The position of the kangaroo is ideal for the breastfeeding process, through KMC the breastfeeding process becomes more successful and most babies are sent home and get breast milk.

3) *Kangaroo Support*

The form of support from KMC can be in the form of physical or emotional support. Data support was obtained from health workers, all family members, mothers and the community.

4) *Kangaroo Discharge*

Babies are allowed to go home with KMC still being carried out at home, babies can be sent home from the hospital when their health conditions improve and the family is very important for the success of KMC.

2.5 Concept of Nursing Care

2.5.1 Assessment

1. Identity of infants in the assessment of low birth weight, namely address. The environment influences the risk of giving birth to LBW. Environmental factors, namely if the mother lives in the highlands such as mountains. This causes low oxygen levels so that oxygen supply to the fetus is disrupted. This condition can

affect the fetus due to impaired oxygenation or lower air oxygen levels and can cause the birth of a baby with low birth weight.

2. Current health history: How did the client feel until he was admitted to the hospital or the course of disease.
3. Chief complaint: the main complaint that can be obtained from low birth weight babies is rapid breathing due to immature lung organs or the immaturity of the respiratory center. The decrease in body temperature is due to the thin subcutaneous tissue so that the skin loses heat.
4. Pregnancy and childbirth history that needs to be reviewed
   a) Antenatal History

      What needs to be known from the antenatal history in LBW cases is whether there are complications of disease during pregnancy (such as anemia, hypertension, preeclampsia, and comorbidities with examples of TORCH). According to Wiknjosastro in (Sari, 2019) TORCH is a term to describe a combination of four types of infectious diseases, namely Toxoplasma, Rubella, Cymtomegalovirus, Herves, simplex where the TORCH virus enters the uterus, resulting in immunological disorders in the fetus and an imbalance in nutritional intake and resulting in low birth weigbt.

      In LBW infants, gestational age or gestation period needs to be assessed. Gestational age is divided into 2 types,

namely premature and premature. The difference is, for premature is a condition that has not been "matnre" fonnd in infants born at a young age or have not reached 37 weeks. While dysmatur is a full-term baby but with a weight less than normal. Babies born with less than normal weight, namely babies who are less than normal (pre-tram), full-term (aterm), and past the month (post-term). This is because the fetus has growth disorders in the uterus (Intra Uterine Growth Retardaction) so that fetal growth is inhibited.

Pregnancy at the age of <20 years or >35 years is a high risk of pregnancy that threatens the safety of the mother and baby, this is because at a young age the reproductive organs and physiology are not yet optimal and psychologically not yet emotionally and psychologically mature enough so that it will affect the acceptance of her pregnancy which will ultimately have an impact on the maintenance and development of the baby which has an impact on the maintenance and development of the baby it contains. Meanwhile, mothers who are old, especially mothers who are more than 35 years old, are also at high risk for getting pregnant because it will cause complications in pregnancy and harm the development of the intra-uterine fetus and can cause LBW births (Wiknjosastro in (Sari, 2019)).

b) Natal History

Birth history that can be known is the type of delivery and the state of the umbilical cord. This type of delivery of a twin pregnancy is most likely to cause problems of prematurity. In twin pregnancies, the uterus is stretched (stretched) excessively, so that it exceeds the tolerance limit and premature labor often occurs (Wiknjosastro in (Sari, 2019)).

An umbilical cord that is too short or even too long and twisted can complicate the delivery process. The normal length of the umbilical cord is 50-60 cm, if it is below 40 cm it means that the umbilical cord is short. If this is the case, the delivery process must be done by cesarean section because the baby will not be able to reach the birth canal. Factors placenta (umbilical cord) must be considered with all the needs of the fetus, including nutritional intake, through the placenta. If the placenta has problems, the fetus will automatically experience low weight.

c) Post Natal History

In post natal that can be assessed is weak crying, weak reflexes, Apgar score >7. One of the causes of weak crying babies is due to premature birth conditions. In infants with

good LBW who are full term (term), especially infants who are less term (preterm), the condition is like gasping for alr, namely ineffective breatbing. This situation is caused by reduced oxygen due to the baby's lungs not expanding properly. Apgar score assessment has a close relationship with low birth weight and is usually assessed one minute and five minutes after the baby is born. Babies with low birth weight bave immature organs so they are very likely to have low Apgar scores.

5. Follow-up examination

a) General condition

The general condition that is obtained in premature infants is irregular breathing due to immaturity of the lungs, thin subcutaneous fat so that they lose heat quickly. Premature infants are at risk for hypothermia if the body temperature is less than 36^0C and at risk for byperthermia whose temperature is more than 37^0C.

Assessment of the baby's general condition based on the APGAR score

Table 2.1 APGAR Score (Heryani, 2019)

APGAR	0	1	2
Appearance (Skin color)	Pale	Red body, blue extremities	Whole body red
Pulse Rate	Nothing	< 100	>100

(pulse rate)			
Grimace (Excitatory reaction)	Nothing	A little facial movement (*grimace*)	Cough or sneeze
Activity (muscle tone)	Nothing	Extremities in slight flexion	Active movement
Respiration (Breathing)	Nothing	Weak or irregular	Good or cry

b) Vital Signs

In general, the body temperature is prone to bypothermia.

c) Physical examination from head to toe

1. Head

Inspection: The shape of the head hurts, the crown is large and small, sunken, the stitches bave not closed and seem to still move, Head circumference equal to or less than 33 cm.

2. Hair

Inspection: see whether the hair is even distribution or not, clean or split and fine or course.

Palpation: easy to fall off or not.

3. Eyes

Infection: usually the conjunctiva and sclera are normal in color, see the blink reflex is good or not, there is inflammation or not and the pupil is isocor. Miosis occurs iu the pupil when light is given.

4. Nose

   Inspection: usually there is nostril breathing, there is an excess secretion and installed O2.

   Palpation: tenderness and lumps.

5. Mouth and pharynx

   Inspection: pale cyanosis, dry mucous membranes, dry lips, and pale.

6. Ears

   Inspection: presence of dirt or fluid and how the cartilage is formed.

   Palpation: the presence of pain response in the earlobe.

7. Thorax

   Inspection: Breathe quickly and pull the lower chest in. At chest circumference equal to or less than 30 cm.

   Auscultation: The presence of stridor or wreezing indicates a danger sign.

8. Abdomen

   Infection: look for symmetry and an enlarged abdomen.

   Palpation: tenderness and abdominal enlargement

9. Skin and genitals

   Inspeetion: the skin looks wrinkled, thin, full of lanugo, on the forehead, temples, ears, and arms, visible only a little fat tissne. Genitalia growth is not perfect. Palpation: in

baby boys the testes bave not descended, while in baby girls the labia majora are more prominent (the labia majora has not yet closed the labia minora).

10. Musculoskeletal

Inspection: the heels look shiny, and the soles of tbe feet feel smooth, the muscle tone is still weak so that tbe bahy is less active and his movements are weak, the body lacks muscle tone, and the skin looks wrinkled and thin. Palpation: teuderness and lumps.

d) Neurology or reflex Nerve function that has not been effective and the cry is weak Morrow's reflex: Surprised when startled (band gripping). Sucking reflex: suckling Swallowing reflex: still poor or lacking. Immature cough reflex.

6. Basic needs :

a. Nutritional Patterns Neonates with LBW need special care, because the organs of the body, especially the stomach, are not yet perfect.

b. Elimination Patterns Generally, clients experience bowel disorders because the organs of the body, especially digestion, are not perfect.

c. Personal bygiene Nurses and patients' families must maintain patient hygiene, especially during defecation and defecation,

when defecation and urination must be changed to dry and smooth LBW baby special diapers.

d. Sleep pattern It can be seen that the baby's movements are still passive, the crying is still whimpering, even though the baby is hungry, the baby still doesn't cry, the baby tends to sleep more and is lazy.

7. Reflexes in babies that must be recognized from birth

According to (Putri Rizkiyah, 2021) Reflex checks in infants include :

a) Reflex sucking (sucking reflex), the baby will make a sucking motion when you touch the nipple to the tip of the baby's mouth.

b) Reflex grasp (palmar grasp reflex), the gasping reflex is a reflex movement of the fingers gripping objects that are touched by the baby, the baby will automatically hold the finger when you thrust your index finger to him.

c) Gawn reflex, the baby will look yawning.

d) Neck reflex (tonic neck reflex), there is an increase in the strength of the baby's muscles in the arm and leg area when the baby turns to one side.

e) The search reflex (rooting reflex), occurs when the baby's cheek is ruWeighted (stroked) or it can be touched at the edge of the mouth as a response and an attempt to find something.

f) Moro reflex (moro reflex), which is a sudden response in newborns that occurs due to a startling sound or movement when startled. Newborns will arch their backs, throw their heads back and spread their arms and legs.

g) Babinski Reflex, a primitive reflex in infants in the form of finger gripping movements when the bottom of the foot is ruWeighted, an indication that nerves are developing normally.

b) Swallowing Reflex is the movement of swallowing objects that are brought close to the baby's mouth.

i) Breathing Reflex, movements such as inhaling and exhaling repeatedly. Its function is to provide O2 and remove CO2 permanently in life.

j) Eyeballing Reflex, movements such as closing the eyes and blinking.

k) Pupillary Reflex, the movement to narrow the pupil of the eye against bright light.

l) Reflex Tonic Labyrinthine / labyrinth in the supine position, this spot can be observed by lifting the baby's leg a few moments and then released. The raised limb will last a while.

m) Reflex Crawling (crawling), if the mother cupped her newborn, she formed a crawling position because when in the womb (womb) her legs were bent towards her body.

n) Reflex Stepping, walking and stepping if the mother or someone holds the baby in a standing position and the soles of her feet touch a hard surface, the mother/person will see a walking reflex, namely leg movements such as walking.

o) Yawning reflex, which is a reflex like screaming and crying when he feels hungry.

p) The plantar reflex, called the grasp reflex, is a movement that appears from birth and lasts up to one year of birth. This reflex can be checked by ruWeighting something on the sole of the foot to beud tightly.

q) Reflex Swimming, this movement is shown when the baby is placed in a pool filled with water, he will start pedaling and kicking like a swimming movement.

2.5.2 Nursing Diagnosis

According to PPNI (2017) nursing diagnoses that appear are as follows:

1) Hypothermia related to subcutaneous fat deficiency.
2) Neonatal jaundice associated with weight loss in newborus.
3) Ineffective breathing pattern related to difficulty breathing.
4) Gastrointestinal motility dysfunction related to malnutrition.
5) Nutritional deficit related to inability to swallow.
6) Impaired gas exchange related to ventilation-perfusion imbalance

7) The risk of infection is characterized by inadequate secondary body defense.

2.5.3 Nursing Intervention

Table 2.2 Intervention of Nursing PPNI (2018)

<table>
<tr><th>No.</th><th>DIAGNOSIS
SDKI (Indonesian nursing diagnosis standards)</th><th>RESULT CRITERIA
SLKI (Indonesian Nursing Outcome Standard)</th><th>INTERVENTION
SIKI (nursing intervention standards</th><th>RATIONAL</th></tr>
<tr><td>1.</td><td>CODE D.0132
Hypothermia related to subcutaneous fat deficiency</td><td>Neonate Thermoregulation
CODE L.14135
After taking nursing care for 3x24 hours, it is expected that body temperature will improve.

Result Criteria :<table><tr><th>Indicator</th><th>Score</th></tr><tr><td>Shivering</td><td>5</td></tr><tr><td>Oxygen consumption</td><td>5</td></tr></table>
Information :
1 = decrease
2 = moderately decreased
3 = medium</td><td>Hypothermia Management
CODE I.15506
Observation :
a. Monitor body temperature.
b. Identify the cause of hypothermia.
c. Monitor for signs and symptoms of hypothermia.

Therapeutic :
a. Provide a warm environment.
b. Perform passive heating (eg blankets, head coverings, thick clothing).
c. Perform external active warming (kangaroo method of care).

Heat Exposure Therapy
CODE I.14586
Observation :
a. Identify contraindications to the use</td><td>CODE I.15506
Observation :
a. Body temperature below normal values is a sign of hypothermia.
b. Treatment of hypothermia is more appropriate if the cause has been found.
c. Nurses can perform treatment appropriately.

Therapeutic :
a. With a warm environment can support the process of keeping the baby's body temperature from hypothermia.
b. Blankets, head coverings and thick clothes can warm the baby's body.
c. Maintain body temperature, heart rate, and respiratory rate within normal ranges.</td></tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>4 = moderately increased
5 = increase

<table><tr><th>Indicator</th><th>Score</th></tr><tr><td>Body temperature</td><td>5</td></tr><tr><td>Skin Temperature</td><td>5</td></tr></table>
Information
1 = Increase
2 = Moderately increased
3 = Medium
4 = Moderately decreased
5 = Decrease</td>
<td>of therapy.
b. Monitor the temperature of the therapy device (incubator).
c. Monitor skin condition during therapy

Therapeutic :
a. Determine the duration of therapy according to the patient's response</td>
<td>CODE I.14586
Observation :
a. The nurse did not perform contraindications.
b. Provide the right temperature in the incubator for the baby or KMC.
c. By looking at the condition of the skin, the nurse can detect whether or not the therapy is sufficient for the baby.

Therapeutic :
a. Babies get therapy in the right duration of time.</td>
</tr>
<tr>
<td>2.</td>
<td>CODE D.0024
Neonatal jaundice related to weight loss in newborns</td>
<td>Neonate Vexptation
CODE L.14098
After taking nursing care for 1x24 hours, it is hoped that the body temperature will improve.

Result Criteria :
<table><tr><th>Indicator</th><th>Score</th></tr><tr><td>Weight</td><td>5</td></tr></table>
Information :</td>
<td>Neonatal Phototherapy
CODE I.03091
Observation :
a. Monitor for jaundice in the sclera and skin of the baby.
b. Identify fluid requirements according to gestational age and body weight.
c. Monitor temperature and vital signs every 4 hours (eg hyperthermia, rash on the skin, weight loss of more than 8-10%).</td>
<td>CODE I.03091
Observation :
a. Spread of jaundice occurs in the sclera and skin of infants.
b. Provide fluid needs precisely as needed.
c. Anticipating the occurrence of side effects of phototherapy.

Therapeutic :
a. Ensure that phototherapy equipment is</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>1 = decrease
2 = moderately decreased
3 = medium
4 = moderately increased
5 = increase

<table><tr><td>Indicator</td><td>Score</td></tr><tr><td>Mucous membrane</td><td>5</td></tr><tr><td>Yellow skin</td><td>5</td></tr><tr><td>Yellow sclera</td><td>5</td></tr></table>
Information
1 = Increase
2 = Moderately increased
3 = Medium
4 = Moderately decreased
5 = Decrease</td>
<td>Therapeutic:
a. Prepare a phototherapy lamp and an incubator. Remove baby's clothes except diapers.
b. Give the baby an eye patch.
c. Measure the distance between the lamp and the baby's skin surface 30 cm.
d. Let the baby's body be exposed to phototherapy rays on an ongoing basis
e. Change the baby's pad and diaper immediately if you have a bowel movement or a bladder.

Education:
a. Advise the mother to breastfeed for about 20-30 minutes

Collaboration :
a. Collaboration of direct and indirect bilirubin venous blood examination.

Baby Care
CODE I.10338
Observation :
a. Monitor baby's vital signs.</td>
<td>ready for use. UV rays can reach all surfaces of the baby's body.
b. Prevents eye damage caused by UV rays.
c. The distance between the lamp and the baby's body is exactly 30cm.
d. The photo therapy process runs efficiently.
e. Makes baby feel comfortable.

Education:
a. Prevents dehydiation.

Collaboration :
a. Knowing the success rate of photo therapy.

CODE I.10338
Observation :
a. Know the baby's vital signs.

Therapeutic :
a. Prevent hypothermia in infants.
b. Prevent the occurrence of hypothermia and keep the baby from the risk of infection.
c. Prevent infection.
d. Prevents infection in the umbilical cord.
e. Keeps baby's body temperature warm.

Education:
a. Provides nutritional needs for babies</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td></td>
<td>Therapeutic :
a. Bathe the baby at room temperature 21-240 C.
b. Bathe the baby within 5-10 minutes and 2x a day.
c. Treat the umbilical cord.
d. Put the baby's diaper under the umbilicus if the umbilical cord has not come off.
e. Wear baby clothes made of cotton.

Education:
a. Advise the mother to breastfeed according to the baby's needs</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>CODE D.0005
Ineffective breathing pattern related to respiratory effort obstruction</td>
<td>Breath Pattern
CODE L.01004
After nursing care is carried out for 1 x 1 hour, it is expected that body temperature will improve.

Result Criteria :
<table>
<tr><td>Indicator</td><td>Score</td></tr>
<tr><td>Dyspnea</td><td>5</td></tr>
<tr><td>Use of accessory muscles for breathing</td><td>5</td></tr>
<tr><td>expiratory phase</td><td>5</td></tr>
</table></td>
<td>Airway Management
CODE I.01011
Observation :
a. Monitor breathing pattern (frequency, depth, effort of breath).
b. Monitor for additional breath sounds (eg, gurgling, wheezing, wheezing, dry crackles).

Therapeutic :
a. Position semi fowler or fowler (15°-60°).
b. Give oxygen, if necessary.

Collaboration :</td>
<td>CODE I.01011
Observation :
a. An increase in the frequency, depth, and effort of breathing is a sign that the breathing pattern is ineffective.
b. Gurgling, wheezing, wheezing, and dry rhonchi are obstructions in the airway that can result in an ineffective breathing pattern.

Therapeutic :
a. Increases lung extension so that the flow of O2 is smooth.
b. Meet the needs of O2 in the body when O2 saturation decreases.</td>
</tr>
</table>

		prolongation Information 1 = Increase 2 = Moderately increased 3 = Medium 4 = Moderately decreased 5 = Decrease Indicator / score Breathing frequency / 5 Depth of breath / 5 Information : 1= getting worse 2 = quite bad 3 = medium 4 = quite improved 5 = improved	a. Collaborative administration of bronchodilators, expectorants, mucolytics, if necessary. **Respiration Monitoring** **CODE I.01014** Observation : a. Monitor breathing patterns (eg, bradypnea, tachypnea, hyperventilation). b. Palpate for symmetry of lung expansion. c. Auscultate breath sounds. d. Monitor oxygen saturation. Therapeutic : a. Adjust the respiratory monitoring interval according to the patient's condition. Education: a. Explain to the family the purpose of the monitoring procedure. b. Inform the family of the results of monitoring	Collaboration : a. Bronchodilators are drugs that can provide vasodilation in the bronchi. Expectorants and mucolytics are drugs that can thin phlegm. **CODE I.01014** Observation : a. Bradypnea, tachypnea, and hyperventilation are major symptoms and signs of an ineffective breathing pattern. b. Asymmetrical lung expansion is one of the causes of ineffective breathing patterns. c. Ineffective airway clearance can be detected by auscultation of breath sounds. d. Low saturation can result in an ineffective breathing pattern. Therapeutic : a. LBW infants often experience apnea so that respiration must be monitored closely. Education: a. The family understands and is cooperative with the nurse. b. The family knows the progress of the patient.

<table>
<tr>
<td>4.</td>
<td>CODE D.0005
Disfungsi motilitas gastrointestinal b/d malnutrisi d/d residu lambung menurun.</td>
<td>Gastrointestinal Motility
CODE L. 03023
After nursing care is carried out for 1 x 1 hour, it is expected that body temperature will improve.

Result Criteria :
<table>
<tr><td>Indicator</td><td>Score</td></tr>
<tr><td>Painful</td><td>5</td></tr>
<tr><td>Abdominal cramps</td><td>5</td></tr>
<tr><td>Nauseous</td><td>5</td></tr>
<tr><td>Gag</td><td>5</td></tr>
<tr><td>Diarrhea</td><td>5</td></tr>
</table>
Information :
1 = decrease
2 = moderately decreased
3 = medium
4 = moderately increased
5 = increase
<table>
<tr><td>Indicator</td><td>Score</td></tr>
<tr><td>Peristaltic sound</td><td>5</td></tr>
</table>
Information
1 = Increasc
2 = Moderately increased</td>
<td>Parental Nutrition Management
CODE I.03120
Observation :
a. Identification of indications for parental nutrition (eg impaired absorption of food, bowel rest, intestinal motility disorders, enteral route is not possible).
b. Identify the type of parental access required (eg peripheral, central).
c. Monitor the patency of intravenous access.

Therapeutic :
a. Calculate calorie needs.
b. Providc parenteral nutrition as indicated.
c. Adjust the rate of infusion appropriately.

Education:
a. Explain to the family the goals and procedures for parental nutrition.

Infection Control
CODE I.14551
Observation :
a. Identification of patients with infectious diseases.

Therapeutic :
a. Apply universal precautions.</td>
<td>CODE I.03120
Observation :
a. Meet nutritional needs in case of problems with the digestive system.
b. The right type of parental access can be performed on peripheral or central veins.
c. Prevents phlebitis

Therapeutic :
a. Provide proper nutrition.
h. Determine proper nutritional needs.
c. Determine the appropriate dose of fluid needs in infants.

Education:
a. The family understands and is cooperative in nursing actions.

CODE I.14551
Observation :
a. Prevent transmission.

Tberapeutic :
a. Reduces the occurrence of infection.
b. Tbe isolation room is more sterile than the usual room.
c. Prevent infections caused by the tools used.</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>3 = Medium
4 = Moderately decreased
5 = Decrease</td>
<td>b. Place it in an isolation room.
c. Sterilize and disinfect equipment as needed.

Education:
a. Teach families how to wash their hands properly.</td>
<td>Education:
a. Avoid nosocomial infections from the family.</td>
</tr>
<tr>
<td>5.</td>
<td>CODE D.0019
Nutritioual deficit related to inability to swallow.</td>
<td>CODE D.03030
After taking nursing care for 3x24 hours, it is hoped that the body weight will improve.

Result Criteria :
<table>
<tr><td>Indicator</td><td>Score</td></tr>
<tr><td>Weight</td><td>5</td></tr>
<tr><td>Body length</td><td>5</td></tr>
</table>
Information :
1 = decrease
2 = moderately decreased
3 = medium
4 = moderately increased
5 = increase
<table>
<tr><td>Indicator</td><td>Score</td></tr>
<tr><td>Yellow sclera</td><td>5</td></tr>
<tr><td>Yellow skin</td><td>5</td></tr>
</table></td>
<td>Neonatal Phototherapy
CODE D.03119
Observation
a. Monitor baby's sclera and skin.
b. Identify fluid requirements and according to gestational age and body weight.
c. Monitor temperature and vital signs every 4 hours.
d. Monitor side effects of phototherapy (eg byperthermia, diarrhea, rash on tbe skin, weigbt loss of more than 8-10%).

Therapeutic
a. Prepare a phototherapy lamp and an incubator or baby box.
b. Remove baby's clothes except diapers.
c. Give the baby an eye patch.
d. Leave the body exposed to light and the baby's skin surface.</td>
<td>Neonatal Phototherapy
CODE D.03119
Observation
a. Knowing the yellow skin changes in babies.
b. Knowing tbe fulfillment of fluids according to gestational age and weight.
c. Knowing tbe temperature changes in babies.
d. Knowing the results of the pbototherapy effect.

Therapeutic
a. Tools to be used during therapy.
b. The effect of the phototherapy device will absorb into the baby's body directly.
c. Protects tbe nerve layer of tbe eye.
d. Waiting for the reaction from pbototherapy in babies

Education</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>Information
1 = Increase
2 = Moderately increased
3 = Medium
4 = Moderately decreased
5 = Decrease</td>
<td>Education
a. Instruct the mother to breastfeed for about 20-30 minutes.
b. Encourage mothers to breastfeed as often as possible.

Collaboration
a. Collaboration of direct and indirect bilirubin venous blood examination.</td>
<td>a. Babies need nutrition.
b. Fulfillment of nutrition in infants with low birth weight.

Collaboration
a. Knowing liver function or red blood cell damage</td>
</tr>
<tr>
<td>6.</td>
<td>CODE D.0003
Impaired gas exchange related to ventilatiou-perfusion imbalance</td>
<td>CODE L.01003
After nursing actions for 1x24 hours.
Expect patient oxygcnation will increase.

Result Criteria :
<table><tr><td>Indicator</td><td>Score</td></tr><tr><td>Dyspnea</td><td>5</td></tr><tr><td>Additional breath sounds</td><td>5</td></tr></table>
Information :
1 = decrease
2 = moderately decreased
3 = medium
4 = moderately increased
5 = increase</td>
<td>CODE L.01003
Observation
a. Monitor rate, rhythm, depth, and effort of breathing.
b. Monitor for airway obstruction.
c. Anscultate breath sounds.
d. Monitor oxygen saturation.

Tarapeutic :
a. Adjust the respiratory monitoring interval according to the patient's condition.
b. Document monitoring results.

Education
a. Inform mouitoring results, if necessary.</td>
<td>CODE L.01003
Observation
a. Know the frequency, rhythm, depth, and effort of breathing.
b. Recognizing the presence of obstruction in the airway.
c. Notice the presence of additional breath sounds.
d. Knowing the oxygen saturation is normal or not.

Therapeutic
a. Knowing the frequency of respiratiou.
b. Monitoring results must be recorded to avoid unusual events

Education
a. It can be recorded or informed to the patient's family to find out the condition of the baby.</td>
</tr>
</table>

		<table><tr><td>Indicator</td><td>Score</td></tr><tr><td>PCO2</td><td>5</td></tr><tr><td>PO2</td><td>5</td></tr><tr><td>Breathing pattern</td><td></td></tr></table> Information 1 = Increase 2 = Moderately increased 3 = Medium 4 = Moderately decreased 5 = Decrease		
7.	**CODE D.0023** Hypovolemia related to active fluid loss	**CODE L.03028** After nursing actions for 1x24 hours, Expect patient oxygenation will increase Result Criteria: <table><tr><td>Indicator</td><td>Score</td></tr><tr><td>Pulse power</td><td>5</td></tr></table> Information : 1 = decrease 2 = moderately decreased 3 = medium 4 = moderately increased 5 = increase	**CODE L.03116** Observation a. Check for signs and symptoms of hypovolemia (such as increased pulse rate, weak pulse, decreased blood pressure, etc.). b. Monitor fluid intake and output. Therapeutic a. Calculate fluid requirements. b. Give fluids orally. Education a. Encourage increased oral fluid intake. b. Recommend avoiding changes. Collaboration a. Collaborative administration of	**CODE L.03116** Observation a. Knowing the level of ups and downs on the frequency of signs and symptoms of hypovolemia. b. Knowing the patient's fluid intake. Therapeutic a. Knowing the lack of fluid needs in patients. b. Fulfillment of fluids in the patient. Education a. Know how to fulfill nutrition in patients. b. Avoiding unwanted events in newborn patients. Collaboration

<table>
<tr>
<td></td>
<td></td>
<td>
<table>
<tr><th>Indicator</th><th>Score</th></tr>
<tr><td>Dyspnea</td><td>5</td></tr>
<tr><td>Weight</td><td>5</td></tr>
<tr><td>Additional breath sounds</td><td>5</td></tr>
</table>

Information
1 = Increase
2 = Moderately increased
3 = Medium
4 = Moderately decreased
5 = Decrease

<table>
<tr><th>Indicator</th><th>Score</th></tr>
<tr><td>Pulse rate</td><td>5</td></tr>
<tr><td>Mucous membrane</td><td>5</td></tr>
</table>

Information :
1= getting worse
2 = quite bad
3 = medium
4 = quite improved
5 = improved
</td>
<td>
isotonic IV fluids (eg NaCl, RL).
b. Collaborative administration of hypotonic IV fluids (eg glucose 2.5%, NaCl 0.4%).
c. Colloidal fluid administration collaboration (eg albumin, plasmanate)
</td>
<td>
a. Raise the decreased fluid level.
b. Collaborative fluid administration meets patient needs.
c. Fulfillment of electrolyte fluid in the patient.
</td>
</tr>
<tr>
<td>8.</td>
<td>CODE D.0005
Risk of infection d/d inadequate secondary</td>
<td>Infection Rate
CODE L.14137
After nursing actions 1x24</td>
<td>Immunization/ Vaccination Management
CODE L14508</td>
<td>CODE L14508
Therapeutic :
a. Babies are properly immunized.</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>body defense</td>
<td>hours, it is hoped that the problem will not become actual.

Result Criteria:
<table><tr><td>Indicator</td><td>Score</td></tr><tr><td>Hand hygiene</td><td>5</td></tr><tr><td>Body hygiene</td><td>5</td></tr></table>
Information :
1 = decrease
2 = moderately decreased
3 = medium
4 = moderately increased
5 = increase

<table><tr><td>Indikator</td><td>Nilai</td></tr><tr><td>Fever</td><td>5</td></tr><tr><td>Redness</td><td>5</td></tr><tr><td>Swollen</td><td>5</td></tr><tr><td>White blood cell levels</td><td>5</td></tr></table>
Information
I = Increase</td>
<td>Therapeutic :
a. Schedule immunizations at appropriate time intervals.

Education:
a. Explain to the family the goals, benefits, reactions that occur, schedule, and side effects.
b. Inform the family of immunizations that the government requires for the family

Infection Prevention
CODE I.14539
Observation :
a. Monitor for signs and symptoms of local and systemic infection.

Therapeutic :
a. Limit the number of visitors.
b. Wash hands before and after contact with patients and the patient's environment.
c. Maintain aseptic technique in high risk patients.

Education:
a. Teach families how to wash their hands properly.

Collaboration
a. Collaboration on immunizations</td>
<td>Education:
a. The family understands and is cooperative with nursing actions.
b. Families understand and are cooperative in giving immunizations to infants in accordance with government regulations.

CODE I.14539
Observation :
a. Signs of infection are more quickly recognized and treated promptly.

Therapeutic :
a. Prevents nosocomial infections.
b. Prevents nosocomial infections.
c. Prevents nosocomial infections.
Education:
a. Families understand and are cooperative in preventing infection.
Collaboration :
a. Babies get the right immunizations.</td>
</tr>
</table>

		2 = Moderately increased 3 = Medium 4 = Moderately decreased 5 = Decrease		

2.5.4 Implementation

Nursing implementation is a series of activities carried out by nurses to help patients from health status prohlems faced to health status which describes the expected outcome criteria. Implementation process implementation should he centered on the client's needs, other factors that affect nursing needs, nursing implementation strategies, and activities communication (Ahyar et al., 2020).

2.5.5 Evaluation

Evaluation is a systematic planning and comparison of the client's health system, there are 2 types of evaluation statements, namely formative and summative. Formative statements reflect the nurse's observations and analysis of the client, to the immediate response to nursing interventions. Summative statements reflect the recapitulation and synopsis of observations and analyzes of the client's health status over time. SOAP/SOAPIER components include:

S: Subjective Data

The nurse writes down the patient's complaints that are felt after nursing actions are carried out.

O: Objective Data

The data is based on the results of measurements or direct observations of nurses after nursing actions are carried out.

A: Analysis

Interpretation of subjective data and subjective data.

P: Planning

Nursing plans that will be continued, discontinued, modified or added from a predetermined nursing action plan.

I: Implementation

Nursing actions are carried out in accordance with the instructions identified in the planning component.

E: Evaluation

The client's response to which nursing actions have been taken.

R: Reassessment

A review is carried ont on the plan after the resnlts of the evaluation are known, whether the action plan needs to be continued, modified or discontinued.

CHAPTER 3

RESEARCH METHODS

3.1 Research Design

The researeh design used is a case study it is a stndy to explore the problem of Nursing Care (Kemenkes RI, 2019). In this case study, the title taken is Pediatric Nursing Care on Low Birth Weight (LBW) with Hypothermia Nursing Problem in the Perinatology Room of Blambangan Regional Public Hospital, Banyuwangi 2021.

3.2 Limitation Of Terms

Term boundaries are statements that explain key terms that are the focus of nursing care for low birth weight babies with hypothermia nursing problem in the Perinatology Room of Blambangan Regional Public Hospital Banyuwangi.

Term Boundary Low Birth Weight Babies (LBW) with Hypothermia.

No.	VARIABEL
1.	The definition of LBW is as a baby born weighing 2500 g. WHO classifies LBW into 3 types, namely LBW (1500–2499 grams), LBW (1000-1499 grams), LBW (< 1000 grams)
2.	The definition of hypothermia is body temperature below the normal range (PPNI, 2017).

3.3 Participants

The participants used in this case study were to compare two clients who experienced low birth weight with a gestational age of less than 37 week with hypothermia nursing problem in the Perinatology Room of Blambangan Regional Public Hospital Banyuwangi 2022.

3.4 Location And Time Of Research

1) The research location was carried out in the Perinatology Room of Blambangan Regional Public Hospital, Banyuwangi.
2) The time of the study was carried out when the client entered the hospital for a minimum of three days the intervention was carried out, if in less than three days the client had left the bospital the intervention could be done by means of home care. In this study, the research time was divided into two stages as follows:
   a. The preparation stage which includes:
      1) Preparation of Proposal: September-November 2021.
      2) Proposal seminar: November 2021.
   b. The implementation stage which includes:
      1) Permit application : May 2022
      2) Data collection : August 2022

3.5 Data Collection

1) Interview

The interview is a communication tool that enables the exchange of information, a process that results in a higher level of understanding than

is achieved by individuals alone. Nursing interviews have specific objectives including: collection of a specific data set. Anamnesis was carried out directly between the researcher and the patient's family including: client identity, chief complaint, history of current illness, past medical history, family history of illness, etc. Sources of information are from families, and other nurses. The instruments used for interviews in data collection can he in the form of writing instruments, notebooks, cameras or voice recorders.

2) Observation and Physical Examination Observation

Observatiou is a way of collecting data by direct observation of the client to look for changes or things to be investigated by physical examination including: inspection, palpation, percussion and auscultation on the client's body system which is carried out head to toe. Especially in the data that supports nursing care in infants with low birth weight who experience hypothermia.

3) Documentation Study

The documentation study was carried out by documenting the results of the diagnostic examination, the results of the evaluation of nursing care, the results of data from medical records, and the results of data from the perinatology room of Blambangan Regional Public Hospital 2022.

3.6 Data Authenticity Test

To reach a valid conclusion, the validity of the data was tested on all the data collected. The validity of this data was tested by using triangulation technique. The types of triangulation consist of data triangulation, method triangulation, source triangulation, theory triangulation, researcher triangulation. In this researcher, the technique used is source triangulation, data obtained from clients, families of clients with low birth weight and nurses. The main data of clients and families in the study was carried out by comparing and observing the development of the client's health. The main data of nurses is used to equalize perceptions between clients and nurses (Hasanah, 2017).

3.7 Data Analysis

Data analysis is a very important part of the scientific method because with analysis, the data can be given meaning and it is useful in solving researeh problems (Nursalam, 2015).

1) Data Collection Data were collected from the results of WOD (interviews, observations, documentation). The results are written in the form of field notes, and then copied in the form of transcripts (structured notes).
2) Data Reduction. The interview data collected in the form of field notes are combined in the form of transcripts and grouped into subjective and objective data, analyzed based on the results of diagnostic examinations and then compared to normal values.

3) Presentation of data can be done with tables, pictures, charts or narrative text. Confidentiality of the client is guaranteed by obscuring the identity of the client.

4) Conclusion The data are discussed and compared with the results of previous studies and theoretically with health behavior. Conclusions are drawn using the induction method. The data collected is related to the data of assessment, diagnosis, planning, action, evaluation.

3.8 Research Ethics

Researchers adhere to research ethics, which are pursued through researeh procedures and legality. Participants' consent and confidentiality are the main things that need to be considered. While conducting research, first submit ethical clearance to parties involved or not involved, so as not to violate human rights and human autonomy as research subjects. This research has obtained certificate of ethical feasibility from the Health Research Ethics Commission of the Banyuwangi School of Health Sciences with letter number: 068/01/KEPK-STIKESBWI/III/2022 which was published on 01 March 2022. This research began by carrying out various procedures related to research ethics include :

1) *Informed consent*

Before the consent form was given to participants, the researcher first explained the aims, objectives, advantages, and disadvantages of the research to be carried out.

a) Purpose

The purpose of this study was to determine the client's family knowledge on bow to prevent hypothermia, the actions to be taken if there bas been a change in hypothermia, and to explore the client's family knowledge about the possible effects of hypothermia.

b) Benefit

Some of the benefits obtained from this study are the client's family know bow to prevent hypothermia, can determine wbat actions should be taken if there has been a change in hypothermia and are able to know about the impact of bypothermia.

c) Disadvantages

This research bas no dangers and losses for the client, because it uses an interview process and there is no special treatment for the client's family. The possible disadvantage is that it only takes up the client's family time. If the client's family understands and is willing, the chent's family is asked to sign a letter of agreement to become a client, but if the client's family refuses then the researcher will not force it. If the client's family has signed the agreement then tbere are rights and obligations as a participant among them:

1) Disadvantage

After receiving an explanation (Informed consent), the client's family bas the right not to want to be a client, and if the client's family has agreed, then the client's family has the right to resign as a client, has the right to delay time if the client's family is unable

and the chent's family bas the right to refuse to be interviewed temporarily time. In addition, other rights of the client's family, namely the client's family, are entitled to compensation from the researcber for their participation as a client in the study.

2) Client's Family Obligations

The obligation of the client's family after signing the consent form is to comply with what has been determined by the researcher, for example answering all questions given by the researcber and the client's family must provide the correct answer withont being manipulated.

2) *Anonymity* (witbout name)

In order to maintain participant confidentiality, the researcher did not include the participant's full name, but tbe researcber only used initials, for example An. H to make it easier for researcbers to distinguish between clients so as to minimize errors.

3) Confidentiality (secrecy)

The confidentiality of data received from the respondents is guaranteed by the researcber. If there is a special forum, the researcher will provide data that has been obtained from interviews without giving the client's real name.

4) Respect is defined as the behavior of nurses who respect clients and families. Nurses must respect the rights of clients.

5) Autonomy.

Autonomy is related to a person's right to regulate and make their own decisions, although there are still limitations, especially related to situations and conditions, backgrounds, individnals, legal interference and existing bealth workers.

6) Beneficence (Generosity/advice)

Beneficence relates to the obligation to do well and not harm others. If the principle of generosity trumps the principle of autonomy, it is called paternalism. Paternalism is behavior based on what the health professional believes is for the good of the client, sometimes not involving the clieut's decisions.

7) Non-maleficence. This principle relates to the obligation of care not to cause harm or injury to the client.

8) *Veracity* (Honesty)

Regarding the nurse's obligation to tell the truth and not lie or deceive others.

9) *Fidelity* (loyalty)

Regarding the obligation of care to always be faithful to the agreements and responsibilities that have been made, care must keep the promises it makes to the client.

10) Justice

The principle of justice relates to the nurse's obligation to treat everyone fairly and not to take sides or be partial.