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CAUSATIVE FACTOR OF LOW BIRTH WEIGHT (LBW) BABIES IN BANDUNG CITY HOSPITAL

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ABSTRACT

The LBW mortality rate reaches 15 to 20% in the world. the proportion of infant deaths originating from the age of 0-28 days (Neonatal) was 84.63% or 3.32/1000 live births and and body weight < 2500 grams reached 6.3%, while the proportion of babies born weighing < 2500 grams with body length < 48 cm in Indonesia reached 4.0% and in West Java reached 4.2%. The purpose of this study was to determine the factors that cause babies born with low birth weight. The type of research used by researchers is a descriptive survey research method using a retrospective study design using medical record register data for newborns who have been treated. The population in this study were all low-birth-weight babies in the last year at Bandung City Hospital, using secondary data at the medical record installation section in the last year as many as 543 babies. The sample in this study is secondary data from babies born with LBW as many as 85 respondents. The sampling technique is probability sampling using a random sampling method using register data from medical records. The analysis in this study uses univariate analysis to see the frequency distribution of each sub-variable. The results of the study occurred in multipara parity, namely 46 (54.1%), gestational age at risk, namely 47 (55.3%), maternal age at risk, namely 46 (54.1%), twin births, namely 19 (22.4%) of the 85 respondents, pregnancies without placenta previa were 77 (90.6%). The results of this study indicate that the factor of gestational age is the highest that causes LBW babies to be born. It is recommended that efforts be made to reduce the number of LBW babies born by optimizing preventive efforts, health workers are required to provide health education about the causes of LBW.

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1. INTRODUCTION

Mortality rate is an outcome indicator of health development. The death rate can describe how high the degree of public health in an area. The Infant Mortality Rate (IMR) or Infant Mortality Rate (IMR) is used to reflect the state of health in a society, because newborn babies are very sensitive to the environmental conditions where the baby's parents live and are very closely related to the social status of the baby's parents. The infant mortality rate is a sensitive benchmark of all intervention efforts made by the government, especially in the health sector, especially those related to perinatal and neonatal newborns (World Health Organization, 2022).

One of the contributors to infant mortality is LBW. LBW itself is much influenced by various factors, one of which is a factor maternal. Maternal factors have an influence on the birth weight of the baby because while in the womb, the fetus gets the necessities for survival from its mother, so that the mother's own condition affects the growth and development of the fetus. Maternal factors include the age of the mother at the time of pregnancy, parity status of the mother, namely the number or number of children born, and a history of pregnancy with LBW mothers (Wahyuni, 2021). Neonatal with complications are neonates with diseases and/or disorders that can cause disability and/or death, such as asphyxia, jaundice, hypothermia, tetanus neonatorum, infection/sepsis, birth trauma, low birth weight.

Newborn weight is used to diagnose normal babies and low birth weight (World Health Organization, 2022). Low birth weight (LBW) is a newborn whose weight at birth is less than 2500 grams. Perinatal mortality in LBW babies is 8 times greater than normal babies, an indicator of a nation's health status is still seen from the high or low infant and child mortality rates. This study was conducted considering that the infant mortality rate is still high in Indonesia, out of 56.6% of toddlers who have birth weight records < 2500 reached 9% and West Java Province reached 6.3%. This is supported by previous research from Mahayana et al (2015) related to factors affecting Low Birth Weight showing the results that in accordance with the indicators of achieving the Millennium Development Goals target IV, namely reducing child mortality, it is necessary to make efforts to reduce the rate of LBW in the future, one of which is by monitoring the factors that influence LBW. Thus, research on the factors that cause babies born with low birth weight needs to continue to be carried out in order to achieve a reduced rate of newborn mortality. LBW are at risk for problems with the body's systems due to unstable body conditions. The prognosis will be worse if the body weight is getting lower, death is often caused by neonatal complications such as asphyxia, aspiration, pneumonia, intra-cranial bleeding, hypoglycemia, if the baby is alive there will be nerve damage, speech disorders, low level of intelligence (Kusumawati, 2017).

This prognosis also depends on socioeconomic conditions, parental education and care during pregnancy, childbirth and postnatal. In addition, LBW babies can experience mental and physical disorders at a later age of development so that they require high maintenance costs (Agbozo, 2016). Based on data from the World Health Organization, at this time LBW is considered the main cause of infant mortality an estimated 15% to 20% of births worldwide are LBW representing more than 20 million babies, of which occur in Southeast Asia by 15%.

The Ministry of Health has made various efforts, including by issuing a Decree of the Minister of Health of the Republic of Indonesia Number HK 02.02/Menkes/52/2015 concerning the Strategic Plan of the Ministry of Health for 2015-2019 which aims to improve public health

status where one of the indicators is a decrease in the percentage of LBW from 10.2% to 8%. Data in Indonesia, out of 56.6% of toddlers with a birth weight record <2500, it reached 9% and West Java Province reached 6.3%. Profile Data from the West Java Provincial Health Office (2016) the proportion of infant deaths in 2016 was 3.93/1000 live births, the proportion of infant deaths from the age of 0-28 days (Neonatal) was 84.63% or 3.32/1000 births alive and and body weight < 2500 grams reached 6.3%. Based on data from the Central Statistics Agency for West Java Province, Bandung City (2015) the number of live births with low birth weight was 939 cases of LBW, Bandung Regency 838 LBW cases and West Bandung Regency reached 532 LBW cases.

According to Alonso (2010) the factors that play a role in the occurrence of LBW are maternal factors including maternal age, parity, gestational age, gestation interval, employment status, anemia, smoking, consumption of alcoholic beverages, malnutrition, drugs, and disease. Fetal factors include congenital abnormalities, radiation or toxic substances, infections and chromosomes. Placental factors include twin pregnancies, placenta previa, placental abruption and placental dysfunction. Indrasari (2012) Research Results from 192 respondents who experienced low birth weight 96 respondents (50%), who had age at risk as many as 41 respondents (21.4%), who had risk parity factors as many as 117 respondents (60.9%), who 42 respondents (21.9%) had risk factors for maternal disease, 43 respondents (22.4%) had risky twin pregnancy factors.

Formulation of the problem

Based on this problem, the research formulation can be determined, namely what factors cause low birth weight babies (LBW) in Bandung City Hospital.

Research purposes

Knowing the causes of low birth weight babies (LBW) from maternal factors and placental factors.

Benefits of research

Results of this study can add information about the factors that cause babies with LBW so that they can be used to improve preventive efforts by professional colleagues, especially for nurses so they can provide services to prevent LBW.

2. METHOD

This research is a descriptive study with a retrospective study design where data collection uses secondary data from medical records with justification of the birth weight of babies born 1500-2499 grams who have been treated in the perinatology room. The research procedure begins with identifying the number of babies born with a birth weight of 1500-2499 grams, the researcher collects the number of samples according to the established inclusion criteria, then the researcher checks the factors that cause babies to be born with a birth weight of 1500-2499 grams from each respondent. Data analysis used in this study was univariate analysis to see the frequency distribution of each sub-variable of factors causing babies born 1500-2499 grams.

This research has received approval from the health research ethics commission of the Poltekkes Kemenkes Bandung, No.04/KEPK/III2019.

Population and Sample

The population in this study were 543 babies with low birth weight. The sample selection was based on the Slovin formula so that the sample size was 85 respondents with the characteristics of low birth weight (LBW), namely babies born weighing 1500-2499 grams. The sampling technique in this study used a simple random sample of all babies born weighing 1500-2499 grams from a population of 543 LBW babies and were treated.

3. INSTRUMENT

Researchers obtained secondary data from the Medical Record using a check list instrument is a list to "check" which contains the name of the subject and several factors of low birth weight. Validity test results 0.348 and reliability 0.751.

4. RESULTS

Research on the Factors Causing Low Birth Weight Babies at Bandung City Hospital was carried out on April 18-20 2019. The study was conducted on 85 samples using register data from medical records.

The results of this study were analyzed using a univariate analysis approach, namely to describe the frequency distribution of factors causing low birth weight (LBW) babies.

The data obtained regarding the factors causing low birth weight (LBW) babies at the Bandung City General Hospital were then analyzed using univariate analysis to obtain an overview of the frequency distribution.

Table 1. Frequency Distribution of Factors Causing Low Birth Weight (LBW) based on Parity, Gestational age, and Age of the Mother in Bandung City Hospital

	Frequency (f)	Percentage (%)
Parity		
Primipara	30	35,3%
Multipara	46	54,1%
Grandemultipara	9	10,6%
Total	85	100%
Gestational age		
Risky	47	55,3%
No risk	38	44,7%
Total	85	100%
Mother age		
Risky	46	54,1%
No risk	39	45,9%
Total	85	100%

Based on table 1, from a total of 85 samples of babies born with Low Birth Weight (LBW), most of the causes of LBW babies were in multipara parity 46 (54.1%) respondents, 47 (55.3%) respondents at risky gestational age and 46 (54.1%) respondents with maternal age are at risk of giving birth to LBW babies.

Table 2. Frequency Distribution of Factors Causing Low Birth Weight (LBW) based on Twin Birth and Placenta Previa in Bandung City Hospital

	Frequency (f)	Percentage (%)
Twin Birth		
Risky	19	22,4%
No risk	66	77,6%
Total	85	100%
Plasenta Previa		
Yes	8	9,4%
No	77	90,6%
Total	85	100%

Based on table 2, out of a total of 85 samples of babies born with babies with low birth weight (LBW), there were mostly 66 (77.6%) respondents with twin births who were not at risk of LBW and 77 (90.6%) respondents mothers with LBW babies do not experience Placenta Previa.

5. DISCUSSION

The results of the study on the parity factor showed that the number of multipara births was greater than that of primiparas, while randemultiparas showed a smaller number. This has not statistically shown a significant number, but from the results of this study there may be other factors as a cause of LBW, not just from mutlipara.

Manuaba's theory statet that high parity pregnancy causes a decrease in the flexibility (elasticity) of tissues that have been repeatedly stretched by pregnancy so that it tends to cause abnormalities in the location or growth abnormalities of the placenta and fetal growth resulting in low birth weight babies (LBW). This can affect the supply of nutrition from mother to fetus and the higher the parity, the higher the risk of giving birth to LBW. Research by Fall (2015) states that repeated pregnancies will cause damage to the walls of the uterine blood vessels. This will affect nutrition to the fetus in the next pregnancy, besides that it can cause uterine atony. Mothers who have been pregnant and given birth to children ≥ 3 times are often found to have a disturbed state of maternal health which can cause LBW births, there is slack in the uterine wall which can cause tears in the uterine wall. The risk of parity 1 can be handled with better obstetric care, while the risk in high parity can be reduced or prevented by family planning. Furthermore, research by Darmawati (2023) said that mothers with high parity (giving birth ≥ 3 times) tend to experience complications in pregnancy which ultimately affect the outcome of labor. The mother has physically regressed to undergo pregnancy. High parity is a vulnerable parity because of the incidence of obstetric pathology that comes from high parity, including preeclampsia, bleeding, antenatal and uterine atony. Meanwhile, Wahyuningrum's research (2016) states that there is a significant relationship between parity and the incidence of low birth weight where multiparous parity has a higher risk of LBW. In line with the results of Goisis's research (2017) showed that the percentage of mothers with parity ≥ 3 who gave birth to LBW babies (31.8%) was greater than mothers who had parity < 2 who gave birth to normal weight babies (11.4%). Furthermore, Riska's research (2013) showed that LBW was higher in multiparous mothers (55.8%) than primiparous (44.2% %).

The risk of perinatal death is higher occurs in old primiparous women (35-39 years) and is increasing again in women aged ≥ 40 years (Klemmetti, et al 2013). Giving birth to LBW babies at multipara parity has the risk of causing various health problems for both the mother and the

baby being born. There is a decline in the function of the reproductive organs because repeated pregnancies will cause damage to the walls of the uterine blood vessels, causing disruption of fetal nutrition and eventually disrupting fetal growth. High parity will reduce the health of the mother, so it is necessary to be prepared to carry out pregnancy and childbirth with good health, adequate nutritional intake affects the mother in pregnancy and childbirth, the presence of adequate and regular Fe tablet supplements affects the health of the mother.

The gestational age factor indicates that gestational age < 37 weeks is at risk for LBW, this does not statistically show a significant number, but from the results of this study there may be other factors as a cause of LBW, not just gestational age. Fall, C. H. D. et al. (2015). Maternal age > 35 years is at higher risk experiencing births with LBW than mothers who are in reproductive age, this is because mothers are more susceptible to degenerative diseases (Kusumawati, 2017).

Pregnant women with an age range of 35-39 years to experience stillbirth, low birth weight babies, and premature birth in high-income countries. (Ngowa, et al 2013; Lake , 2019). Research by Goisis et al., (2017) states that pregnancy complications and health problems increase with increasing maternal age because older mothers are at risk of facing more health problems both before pregnancy and during pregnancy which can impact on the condition of the fetus compared to women of reproductive age.

Manuaba explains that pregnancy in women aged > 35 years will be at risk of complications and complications during childbirth. Whereas young mothers who are still in their teens, aged 12-18 years, are also at risk for complications and complications during childbirth, this is due to the biological immaturity of the reproductive organs so that they are not ready to accept pregnancy, besides that during pregnancy the nutritional needs of the mother with the fetus requires more than usual (Setiati, 2017).

Manuaba state that preterm gestational age (<37 weeks) results in less optimal fetal growth and development. Babies born at <37 weeks can interfere with the formation of subcutaneous fat deposits so that babies are at risk of having a birth weight of less than 2,500 grams. Likewise, the function of the respiratory organs is not optimal so that LBW babies are at high risk of death. Setiati and Rahayu's research (2017) states that there is none there is a significant relationship between the history of LBW mothers giving birth to LBW events, this is because the experience that has been experienced by the mother can be used as a lesson so that in the next delivery the LBW event does not happen again.

Mahayana (2015) preterm delivery will affect organ function due to less gestational age. In general, preterm babies are caused by the inability of the uterus to hold the fetus, disturbances during pregnancy, the release of the placenta faster than time or stimulation that facilitates the occurrence of uterine contractions before term so that the risk of giving birth to LBW increases.

The results of this study are in accordance with Jumhati (2018) with the highest gestational age, namely 82 (98.8%) of 97 respondents <37 weeks of gestation. Reflita (2011) of 158 respondents showed gestational age <37 weeks, all of whom had low birth weight.

Babies born with a gestational age of less than 37 weeks are at risk for experiencing LBW due to poor growth due to impaired placental circulation and malnutrition/nutrition, the baby's weight should be normal but because it was born earlier than it should, so the weight is less than it should. The risk of gestational age < 37 weeks affects the incidence of LBW.

The maternal age factor has not statistically shown a significant number, but from the results of this study there may be other factors as a cause of LBW, not just maternal age.

The theory put forward by Pantiawati (2010) is that the mother's age is less than 20 years, the condition of the uterus and pelvis of the mother has not grown perfectly, so it is likely that she will have difficulties in childbirth, namely experiencing bleeding before or after the baby is born. Mothers who are pregnant at the age of more than 35 years will experienced many difficulties because at that age the mother got sick easily, the uterine organs decreased in function and the birth canal became stiffer so that labor jams and bleeding easily occurred.

According to Prawirohardjo (2020) the age of mothers who are safe for pregnancy and childbirth are mothers aged more than 20 years and less than 35 years because they are considered to have prepared physically, emotionally, psychologically, socially and economically. Manuaba (2012) mothers aged <20 years and <35 years are at great risk of giving birth to babies with low birth weight. Manuaba (2012) pregnancies at an old age > 35 years are at risk of complications and complications during childbirth, whereas at a young age due to biological immaturity of the mother, namely the reproductive organs are not ready and there is competition for the nutritional needs of the mother and the fetus, because the mother is still in her teens.

The results of this study are in accordance with several studies that have been conducted by Sujianti (2018) as many as 29 (32.6%) aged mothers (< 20 years and > 35 years) are at risk of giving birth to LBW. Haryanto (2017) The results showed that the percentage of mothers aged <20 or >35 years who gave birth to LBW babies (40.9%) was greater than those aged <20 or > 35 years who gave birth to babies with normal weight (20.5%).

Judging from the large number of mothers' ages that causes babies born with LBW babies aged less than 20 years and more than 35 years, this may be because those aged < 20 years are still in a period of immature reproductive organ growth, at risk because the reproductive organs are immature to pregnant, tend to be emotionally unstable, at the age of over 35 years the uterus is infertile and increases the possibility of suffering from abnormalities, which can have an impact on the health of the mother as well as the development and growth of the fetus.

The results of a research survey on twin births show that the risk rate is smaller than those who are not at risk. It is possible that in this study there are other factors that cause twin births.

The results of this study are in accordance with Maryunani's theory (2013) that excessive stretching in multiple pregnancies causes decreased blood circulation of the placenta so that the increase in fetal weight becomes smaller, in twin pregnancies the weight of one fetus is on average 1000 grams lighter than that of a single pregnancy fetus. Multiple pregnancies can pose a higher risk of health problems for both mother and baby. Multiple pregnancies can increase the incidence of LBW. Sulistiawati (2013) stated that one of the reasons for the start of labor was due to the theory of uterine distension, namely the uterus has the ability to stretch within certain limits, after passing certain limits, contractions eventually occur so that labor begins. For example, in multiple pregnancies, contractions often occur because the uterus is stretched by the size of the multiple fetus, so that pregnancies experience early labor. The weight of the fetus in multiple pregnancies is lighter than that of the fetus in singleton pregnancies at the same gestational age, until 30 weeks of gestation the weight gain is smaller, perhaps because excessive stretching causes reduced blood circulation to the placenta. Madriwati said that the weight of each child in multiple pregnancies is

smaller than the average, in general, the weight of the fetus is around 700-1000 from a single pregnancy.

The results of this study are in accordance with Suliatoryorini (2015) LBW babies born with twins are fewer than non-twin LBW babies (3.0%). Khoiriyah (2018) most of the mothers were not having multiple pregnancies with 548 of 589 cases (93.0%). Seeing from the theory and research results above that twin pregnancies do not always give birth to babies with low birth weight, maybe this can be caused by other causes of low birth weight. divided in half for each fetus so that the supply of nutrients is divided. And it can be caused due to genetic factors that have a history of twin pregnancies because certain families will tend to give birth to twins.

The results of a research survey on placenta previa showed that the risk rate was smaller than those who were not at risk. It was possible that in this study there were other factors that caused LBW. According to Purwoastuti and Elisabeth (2015) Placenta previa is an abnormally located placenta, namely in the lower uterine segment so that it can cover part or all of the opening of the birth canal. This will have adverse effects, one of which is LBW. Detachment of the edge of the placenta is accompanied by bleeding and the formation of scar tissue, thereby increasing the risk of antepartum bleeding if bleeding occurs. This causes a high incidence of prematurity with LBW. However, placenta previa is not always LBW, it is influenced by other factors such as gestational age and parity. Wiknjasastro (2015) placenta previa plays an important role in fetal development and placental failure can result in impaired fetal growth and fetal weight, placenta previa occurs due to stretching of the blood coagulum in the cervix, progesterone levels fall so that his and hypoxia can occur which will trigger the occurrence of LBW due to partial or complete detachment of the placenta so that the supply of nutrients from mother to baby is disrupted which can cause LBW.

Seeing from the theory above that placenta previa does not always result in LBW, but this is accompanied by other factors that may be caused by maternal age and parity. Placenta previa can be a factor in the occurrence of LBW which is caused by the detachment of part of the placenta from its attachments and the position of the umbilical cord that does not match the location of the blood vessels in the placenta can result in disruption of placental blood flow to the fetus so that fetal growth is hampered and causes LBW. The placenta does not function properly, causing disruption of oxygen circulation in the placenta. The results of this study are in accordance with Yunniarti, S (2013) of 146 respondents with LBW mothers, 31 (21.2%) experienced placenta previa, as many as 123 respondents with LBW mothers, 12 (9.8%) experienced placenta previa.

6. CONCLUSIONS AND SUGGESTIONS

The conclusion in this study is that there are two factors that cause low birth weight including the mother's factor is multiparous parity, risky gestational age and risky maternal age. While the baby factor is twin birth and pregnancy without placenta previa. The implication for nursing is to increase preventive efforts for the community to prevent the occurrence of low birth weight babies.

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