

Literature Review: The Relationship Between The Nutritional Status Of Pregnant Women And The Incidence Of LBW (Low Birth Weight) Infant

Devita Catur Puspitasari¹, Almer Daffa Agradinata Hamzah¹, Luluk Jamila¹,
Widya Nilandita²

¹*Departement of Nutrition, Faculty Psychology and Health, UIN Sunan Ampel Surabaya*

²*Environmental Engineering Study Program, UIN Sunan Ampel Surabaya*

widya.nilandita@uinsby.ac.id

Keywords: Maternal nutritional status, LBW, Indonesia

Abstract: LBW is a condition in which babies are born with low and less than normal weight which affects the IMR caused by various factors that are still a problem in developing countries, including Indonesia. The purpose of this study was to examine the relationship between the nutritional status of pregnant women with LBW with high IMR, as well as the factors that cause LBW and diseases that accompany LBW. The methodology used in this paper is a literature review in various relevant international and national journals as reference material for research activities using binding Google Scholar journals and articles for 2018-2022, and the keywords entered in the search are [Relationship of maternal nutritional status with low birth weight. in Indonesia] and access up to 10 journals according to the criteria. The result of this research is that the nutritional status of pregnant women is very influential on LBW. The cause of the occurrence of LBW from various factors, ranging from maternal, fetal, environmental, gestational age, and placental factors. It can be concluded that LBW is still a big problem today, especially in developing countries, and must be resolved immediately so that it does not continue to the next generation. So, pregnant women must maintain their diet and life so that their nutritional status is good and there is no risk of low birth weight during pregnancy.

1 INTRODUCTION

One of the measures used to assess the health status of the population is the Infant Mortality Rate (IMR). IMR is the most important indicator to assess the health status of children. In addition, IMR is also a manifestation of public health. The biggest cause of death for most babies is problems in newborns aged 0 to 28 days. These newborn problems include asphyxia (shortness of breath at birth), low birth weight (LBW), and infection. Low birth weight or LBW is still a problem in the world, especially in developing countries. More than 20 million babies worldwide (15.5 of all births) are born with low birth weights, 95% of whom are in developing countries (Mitra, 2014).

WHO defines LBW as newborns weighing less than 2,500 grams. LBW is a global health problem with long-term and short-term effects. Common short-term effects of LBW include hypothermia, hypoglycemia, and breastfeeding problems. This is because LBW babies have less body fat, an immature cooling system, and weaker sucking and swallowing reflexes. As a result, underweight infants have an 8-fold higher risk of neonatal death than normal-weight infants due to an increased risk of systemic instability problems (Proverawati & Ismawati, 2010).

According to data from WHO 2018, the prevalence of LBW is still high. The prevalence of low birth weight (LBW) infants is estimated to be 21% of all births worldwide, with a borderline value of 4.5% – more than 40% in developing countries and 42.7%

in Asia (worldwide) (WHO, 2018). According to WHO data, the IMR in 2019 was 49 per 1,000 live births (WHO, 2019). According to the 2020 Indonesian Health Facts data, there were 28,158 under-five deaths, of which 72.0% (20,266 deaths) occurred in the neonatal period. Of all reported neonatal deaths, 72.0% (20,266 deaths) occurred between 0 and 28 days of age. On the other hand, 19.1% (5,386 deaths) occurred between 29 days and 11 months, and 9.9% (2,506 deaths) occurred between 12 months and 59 months (Aswan, 2021). According to WHO estimates that 4 million infants under 1 month of age died in 2019. In addition, 98% of these neonatal deaths occur in developing countries. Of the 3.3 million neonatal deaths, the largest proportion occurs in the first few weeks of life. The number of cases of LBW infants in 2018 was 6.2% of cases (Riskesdas, 2018).

LBW is caused by various factors, including fetal, maternal, and placental factors, and LBW can be caused by a combination of these three factors (Singh, G., Chouhan, R. and Sidhu, K. (2009). Several other factors such as: the nutritional status mother, gestational age, history of anemia, history of childbirth, occupation, medical history, socioeconomic factors, diseases directly related to pregnancy, such as antepartum bleeding, physical and psychological trauma, diabetes, nutritional anemia, premature babies (<20 years), deficiency Chronic Energy (KEK), and have a smoking habit (Mitra, 2014).

The nutritional status of the fetus is determined by the nutritional status of the mother before pregnancy and the nutritional status of the mother during pregnancy, socioeconomic conditions, health status, maternal nutrition, and reproductive function. The better a person's nutritional status, the better his physical condition, which indirectly affects his fertility (Almatsier, 2011).

Mothers who are malnourished often do not function optimally, thus affecting the fetus they contain. If the nutritional status of the mother before and during pregnancy is normal, and the fetus in the womb, with proper physical and nutritional conditions, is likely to give birth to a baby with a normal and healthy weight. (Arisman, 2009).

In general, pregnant women with healthy and normal reproductive systems experience fewer illnesses and give birth to larger and healthier babies. Chronic malnutrition as a child causes

stunted growth. Mothers with this condition, especially mothers who suffer from anemia, give birth to babies with low birth weight, have low vitality, and have a high mortality rate (Almatsier, 2011).

There are several ways to assess the nutritional status of pregnant women, such as monitoring weight gain during pregnancy, measuring the upper protective layer (LILA), and measuring HB levels (Saimin, 2008). Changes in body weight before pregnancy and changes in gestational weight are important clinical parameters to predict low birth weight babies. Women with low pre-pregnancy weight, low pre-pregnancy weight gain, or insufficient pre-pregnancy weight gain are more likely to have low birth weight babies. Weight gain during pregnancy significantly affects the number of fetuses growing in the womb. Pregnant women who are malnourished before conception can gain weight during pregnancy which can affect the birth weight of their babies. The increase includes an increase in fetal components: fetal growth, placenta, and amniotic fluid. This weight gain is also used to monitor fetal growth. In the third trimester, the weight gain of a lean mother should be 12.5-18 kg. Even for mothers who are classified as obese, 10 kg is enough.

The purpose of the importance of assessing the relationship between the nutritional status of pregnant women to LBW with high IMR, as well as the factors that cause LBW and diseases that accompany LBW

2 METHODS

The methodology used in this paper is a literature review of various relevant international and national journals. The literature review is a description of findings, theories, and previous research materials obtained from research results to be used as reference material for research activities to develop a clear frame of mind from the formulation of research questions. In the article search, the author uses a filter, namely the type of article in research articles only, and uses Google Scholar bindings for 2018-2022, and the keywords entered in the search are [Relationship of maternal nutritional status with LBW in Indonesia] and access up to 10 journals according to the criteria.

3 RESULTS

which are the main part of the research articles so there is no need to make comments or discussions.

The results are the part that contains the results of the research, to be precise the results of data analysis

No	Writer	Year	Name , Volume, Number	Article Title	Method	Research result
1	M. Asrul Wahyudi	2022		Prediction Model Of Low Birth Weight Events In Urban And Rural Areas In Indonesia (Data Analysis Of Riskesdas 2018)	Multivariate analysis	the number of bblr in the village is more than in the city
2	Betalia, Intan Mutiara Putri, S.ST., M. Keb , Rosmita Nuzuliana, S.ST., M. Keb	2020		Maternal Factors Associated with the Incidence of Low Birth Weight (LBW)	Literature review	That age has a relationship with the occurrence of weight Low birth (LBW).
3	Sari A Wahyuni S	2021	Midwifery Journal , volume 1, no 3 (131-134)	The Relationship Of Maternal Age With The Incidence Of Low Birth Weight (LBW)	Analytical survey	That the maternity mothers who experienced a risky age at the Mayjend HM Ryacudu Hospital were 300 mothers giving birth (46.15%), it was found that 95 mothers who gave birth experienced low birth weight (14.62%)
4	Febrianti R	2019	Scientia journal (2019) volume 8, no 1(464-469)	Risk Factors Affecting The Incidence Of Low Birth Weight (Lbw) In Rsup Dr. M. Djamil Padang	Descriptive research	The results of the study regarding risk factors for placental abnormalities, there were only abnormalities in the form of placenta previa as much as 5.63%, 2 babies in the LBW category and 2 babies in the LBW category. The results of this study indicate that most of the mothers who gave birth to low birth weight babies at Dr M Padang Hospital in 2019 were in the non-risk age range (20-35 years).
5	Gledys Tirsa Lengkong, Fima LFG Langi, Jimmy Posangi	2020	Journal of Public Health (2020) volume 9 no 4	Factors Related To Infant Death In Indonesia	Quantitative	The results showed that there was no relationship between the child's age, gender, twins, mother's age, mother's education, place of residence, wealth index, and access to health facilities with infant mortality in Indonesia. There is a relationship between baby's weight at birth, ANC examination, maternal employment status, health costs and infant mortality in Indonesia.

6	Nilfar Ruaida, Octovina Soumokil	2018	JKT (2018) Volume 9 No 2	The relationship between the status of pregnant women and LBW stunting in toddlers at the Tawiri Health Center in Ambon City	Retrospective observation	The risk of stunting in toddlers is 4.85 times greater in mothers who experience CED during pregnancy and there is a statistically significant relationship . The risk of the incidence of LBW in infants is 5.93 times greater in mothers who experience CED during pregnancy and there is a statistically significant relationship . The risk of stunting was 29.39 times greater in children born with LBW and there was a statistically significant relationship.
7	Nurmela Setia Ningsih, Betty Yosephin Simanjuntak, Miratul Haya	2021	Journal of Health (2021) Volume 12 No 2	Energy Intake, Macro Nutrients and Weight Gain of Pregnant Women	Analytical Research	Energy and macronutrients have a relationship with weight gain of pregnant women in the catin couple group who have received 1000 HPK education. It is expected that pregnant women will be able to control their body weight during pregnancy and apply the knowledge that has been obtained through education at catin in Kaua, Bengkulu City.
8	Jianti Fina Lestari, Risa Etika, Pudji Lestari	2020	Journal Volume 4 No 1	Maternal Risk Factors Of Low Birth Weight (LBW)	SYSTEMATIC REVIEW	That there are maternal risk factors that play a significant role in the birth of babies with LBW, among others, maternal age, parity, low upper arm circumference, hemoglobin levels less than 11 g/dL, after < 37 weeks of pregnancy, and complications during pregnancy
9	Elisa Murti Puspitaningrum	2018	Scientia Journal Vol. 7 No. December 2	Relationship Of Nutritional Status Of Pregnant Mothers With The Event Of Low Birth Weight (Lbw) In Rsia Annisa, Jambi City	Analytical descriptive	The results showed that the majority of respondents who experienced CED had LBW babies, as many as 26 respondents (65.0%) and respondents who did not experience SEZ mostly did not give birth to LBW babies, as many as 28 respondents (63.3%).
10	Asfarina Puspanagara, Yulia Nur Khayati	2021	Journal of Holistics and Health Sciences Vol. 3, No. 1	Relationship of Maternal Nutritional Status with Birth Weight Incidence Low (Bblr)	Analytical descriptive	The results showed that there was a relationship between nutritional status and the incidence of LBW, with a p value of 0.000 (<0.05), the results obtained OR = 16,684 meaning that mothers who had poor nutritional status had a 16 times higher risk of having babies with LBW.

4 DISCUSSIONS

The results of M. Asrul Wahyudi's research show that the number of BBLr in the village is more than in the city. The results of research by Betalia, Intan Mutiara Putri, and Nuzuliana show that age has a relationship with the occurrence of weight Low birth (LBW). The results of Sari A Wahyuni S's research showed that 300 mothers gave birth who experienced a risky age at the RSD Mayjend HM Ryacudu (46.15%), and it was found that 95 mothers who gave birth experienced low birth weight (14.62%). The results of Febrianti R's study in the city of Padang showed that regarding the risk factors for placental abnormalities, there were only abnormalities in the form of placenta previa as much as 5.63%, 2 babies in the LBW category and 2 babies in the LBW category. The results of this study indicate that most of the mothers who gave birth to low birth weight babies at Dr. M Padang Hospital in 2019 were in the non-risk age range (20-35 years).

The results of research by Gladys Tirsia Lengkong, Fima L.F.G Langi, and Jimmy Posangi show that there is no relationship between child age, sex, twins, mother's age, mother's education, place of residence, wealth index, and access to health facilities with infant mortality in Indonesia. There is a relationship between a baby's weight at birth, ANC examination, maternal employment status, health costs, and infant mortality in Indonesia. The results of research by Nilfar Ruaida and Octovina Soumokil in Ambon city show that the risk of stunting in toddlers is 4.85 times greater in mothers who experience CED during pregnancy and there is a statistically significant relationship, the risk of LBW incidence in toddlers is 5.93 times greater in mothers who experienced CED during pregnancy and there was a statistically significant relationship. The risk of stunting was 29.39 times greater in children born with LBW and there was a statistically significant relationship.

The results of research by Nurmela Setia Ningsih, Betty Yosephin Simanjuntak, and Miratul Haya in the city of Bengkulu showed that energy and macronutrients had a relationship with weight gain of pregnant women in the dating couple group who had received 1000 HPK education. It is expected that pregnant women will be able to control their body weight during pregnancy and apply the

knowledge that has been obtained through education in Kaua, Bengkulu City.

The results of research by Jianti Fina Lestari, Risa Etika, and Pudji Lestari that there are maternal risk factors that play a significant role in the birth of babies with low birth weight, among others, maternal age, parity, low upper arm circumference, hemoglobin levels less than 11 g/dL, after < 37 weeks of pregnancy, and complications during pregnancy. The results of Elisa Murti Puspitaningrum's research in the city of Jambi showed that the majority of respondents who experienced SEZ had LBW babies, as many as 26 respondents (65.0%) and respondents who did not experience SEZ mostly did not give birth to LBW babies, as many as 28 respondents (63.3%). The results of research by Asfarina Puspanagara and Yulia Nur Khayati show that there is a relationship between nutritional status and the incidence of LBW, with a p-value of 0.000 (<0.05), the results obtained OR = 16,684 meaning that mothers who have poor nutritional status have 16 times more risk high incidence of babies with LBW.

The results of the data that have been collected, it was found that some subjects had a pattern of low birth weight caused by many factors, including maternal factors, namely parity, mother's education, mother's occupation, birth spacing, disease history, passive smoking mother, maternal age at delivery, lack of nutritional intake of pregnant women, unwanted pregnancies, quality of examination (ANC) and completeness of consumption of blood-added tablets (TTD) during pregnancy, environmental factors (socioeconomic level), placental factors, fetus, and gestational age. LBW cases are higher and more common in mothers who live in rural areas (5.8%) than in urban areas (5.1%). Determinants of the incidence of LBW in urban areas there is a relationship between the mother's occupation, ANC examination visits, social level economy, and gestational age with the incidence of LBW. Then the determinants of the incidence of LBW in rural areas are related between maternal age, pregnancy status, socioeconomic level, and gestational age with the incidence of LBW. The dominant factor for the incidence of LBW in urban areas in Indonesia is Indonesia is a gestational age that is not enough months.

Low birth weight or low birth weight is still a problem in the world, especially in developing countries. Low birth weight babies have various

risks later in life. This condition is caused mostly by maternal factors during pregnancy. Low birth weight will continue into the next period if IUGR is not corrected. IUGR is malnutrition before pregnancy and during pregnancy coupled with poor health status with the presence of comorbidities in pregnancy. This repair is very important and is carried out during 1000 days of life starting from pregnancy until the child is two years old to be the focus of attention which is a golden period called the "Window of Opportunity". Research during pregnancy is very important to avoid a problem. so during pregnancy, the mother can check her health condition with health workers at least 4 times during pregnancy. This low birth weight disease involves the life cycle to adulthood. Therefore, the government issued a policy of 1000 HPK starting from pregnancy until the age of two years. In this period, improvement of nutrition and health is prioritized to break the chain of LBW problems.

LBW is generally caused by a lack of nutrition and nutrition from the mother to the fetus. Maternal age is very influential on the incidence of LBW. The optimal reproductive age or a very safe age for the process of pregnancy and childbirth is between the ages of 21-35 years. Pregnant women aged less than 20 years and more than 35 years are at risk of experiencing LBW. Due to the age below 20 years, the development of the reproductive organs is not optimal, emotional maturity, and physiological functions are not optimal, and psychology is not yet mature enough to respond to pregnancy so experience complications in their pregnancy and are at risk of giving birth to premature babies because the uterus is not fully developed (not yet optimal).). Age over 35 years, physiological and reproductive functions decline, which can result in abnormal fetal development at risk of pregnancy complications such as degenerative diseases, hypertension in pregnancy, pelvic bone abnormalities, and weak uterine contractions.

This study shows that the number of premature and days matured LBW babies is almost the same. The incidence of LBW is based on several factors, including the risk factor for parity due to thinning of the mother's reproduction due to frequent childbirth, the higher the parity of the mother, the lower the quality of the endometrium. Repeated pregnancies will affect nutrition (the amount of nutrients is reduced compared to previous pregnancies). Then the risk factors for congenital abnormalities, being male, and having multiple

gestations. Then the socio-economic status of the mother, pregnant women must take care of themselves in their environment, such as being away from cigarette smoke, not stressed, and others. Many premature LBW are born to mothers who have anemia, on the other hand, premature LBW is born to mothers who are not anemic. The risk factors for placental abnormalities are many of the fathers of premature LBW babies. Placental abnormalities such as placenta previa, placental abruption, and PROM are associated with antepartum bleeding, preterm abnormalities, and fetal growth failure, and can lead to complications such as preeclampsia.

Among the variables analyzed, only the birth weight of the baby, frequency of antenatal check-ups, whether or not the mother worked, and health costs were found to be associated with infant mortality. Infants weighing more than 2500 grams according to the analysis had a very large reduction of $1 - 0.13 = 0.82$ or 82% to die compared to babies with birth weights less than that. Infants whose mothers had 4 or more ANC pregnancies also experienced a decrease of about $1 - 0.27 = 0.73$ or 73% to die compared to infants whose mothers received fewer ANC examinations. Infant age does not affect infant mortality, as well as the sex of the baby, male or female, and the area of residence in rural or urban areas, as well as twins. Mothers with an age range of 15-19, 20-34, and 35-49 dit affected infant mortality. Infant mortality is also not affected by mothers who do not take formal education or mothers who take formal education. Working or not working on the contrary increases infant mortality. The increase is almost 2 times for working mothers compared to non-working mothers. The results of the analysis show that there is no relationship between the family wealth index in the top, middle, upper, middle, lower middle and lowest categories with infant mortality, as well as access to health facilities don't affect infant mortality. The incidence of infant mortality is related to health costs, if health costs are affordable, infant mortality will decrease by $1 - 0.46 = 0.54$ or 54% compared to if health costs are not affordable..

Weight gain during pregnancy is very important to determine the health of the fetus and the nutritional status of the baby to be born. How to increase the weight of pregnant women should not be arbitrary, the need for energy substances such as protein, carbohydrates, and fat must also be appropriate. Because there is a significant relationship between

the level of energy consumption and weight gain in pregnant women. The size of body weight must also be maintained, it should not be less or more. Generally, it adds 5-12 Kg of body weight before pregnancy. If it is less or more it will also have an impact on the birth process and also on babies.

Maternal risk factors that contribute to the incidence of LBW are maternal age, this is associated with fertility, mothers aged <20 years and >34 years are at risk of developing LBW, because young mothers have an undeveloped endometrial condition, while at the age of more than 35 years the condition the endometrium becomes less fertile, parity due to the presence of scar tissue due to previous pregnancy and childbirth so that the placental attachment is inadequate which causes the delivery of nutrients from the mother to the fetus to be hampered, low upper arm circumference: A low LILA size indicates a condition of unfulfilled energy needs, lack of energy Chronic conditions cause pregnant women to not have adequate reserves of nutrients to meet physiological needs during pregnancy, hemoglobin levels <11gr/DL: A pregnant woman who has Hb levels <11 gr% or anemia will result in a lack of blood supply to the body so that the distribution of nutrients mother to fetus becomes excited weeks that will disrupt the growth and development of the fetus and give birth to LBW, gestational age less than 37 weeks: because growth at <37 weeks of the fetus has not reached optimal growth and development time, complications during pregnancy because it is an indication of a disturbance during pregnancy that has an impact on negative not only for the mother but also for the fetus.

Nutritional status is the state of the level of adequacy and use of nutrients or more that affect a person's health. LILA measures the measurement of the nutritional status of pregnant women. LILA is relatively more stable to determine the risk of CED in pregnant women. if the nutritional status is less or pregnant women experience KEK also causes LBW babies. LBW is a newborn with a birth weight of fewer than 2500 grams (up to 2499 grams). If you have LBW, the baby will be susceptible to disease. LBW is a serious problem, in addition to attacking the growth of children, it also attacks the intelligence of the brain. The incidence of LBW is influenced by many factors, such as maternal factors, fetal factors, and environmental factors.

Pregnant women who have poor nutrition good very take affect their pregnancy and cause babies born later affected by LBW. because the mother who is pregnant must smartly arrange nutrition and not only eat haphazardly important whole, but also manage to eat nutrition for the fetus. L pestle things that have risk the biggest give birth to babies with weight born low ie (LILA) size circle ith above. Factors detrimental when measuring LILA in less than normal pregnancies and BMI that is not normal is stunting in infants and babies born experiencing LBW. Then other things that cause low birth weight are:/ parity. Parity relates to high parity LBW above 5 times causes to happen setback function on tools reproduction.

Anemia of pregnant women (folic acid deficiency) Neurocognition (Sulhub, et al., 2000) Folic acid deficiency during pregnancy causes erythrocyte nuclear maturation problems as seen in red blood cells in the shape and size of abnormal megaloblast anemia conditions, and also sabotage of folic acid metabolism. cause interference with DNA replication. Willis (1931) hemoglobin in. pregnant women affects fetal growth. Folic acid plays an important role in fetal growth and plays a role in the formation of hemoglobin and fetal brain development. Pregnant women who consume folic acid in vitamin B12 are very helpful in stabilizing the body (Juanda, et al., 2011). Folic acid has a positive effect on pregnancy and folic acid is said to be a blood-doubling alternative in pregnant women.

Chronic energy deficiency is often experienced and occurs in women or commonly called women of childbearing age (WUS) with the age of 15-45 years and this continues until pregnancy. (Ancrì, G. Morse, E H. Clarke, 1977). Parity is one of the factors that cause CED in pregnant women. Parity with grande multipara has a high probability of giving birth to babies with low birth weight (Bobak, 2012). The results of the study (Abugis, 2008) show that pregnant women who have a parity of more than 4 people are more at risk of CED compared to mothers who have a parity of fewer than 4 people. In addition to parity, age also affects the occurrence of SEZ, namely age less than 20 years.

Malnutrition is an unhealthy condition caused by not eating enough for a certain period (Winarto, 1990). According to Armelia & Sri Muljati (1991), a lack of both quality and quantity of food can cause poor nutritional status. Children who are not

fed properly have weakened immune systems and are more susceptible to infection. Children who suffer from PEM, especially at a severe level (malnutrition), experience impaired physical growth and intellectual development, decreased resistance to disease, increased morbidity, and a much higher risk of death. five-fold higher relative risk (RR) mortality rate, 4.6-fold with moderate PEM, and 2.4-fold with mild PEM.

The intake of macronutrients, namely carbohydrates, had a significant effect on the baby's birth weight (p-value <0.05). Similarly, weight gain during pregnancy is affected by carbohydrate intake. Mothers with daily carbohydrate intakes are three times less likely to give birth to babies with low body weight than mothers with high carbohydrate intakes (Bianchi, Mariotti, Verger, & Huneau, 2016). Carbohydrates play an important role in cell expansion during the hypertrophic process that affects the baby's weight gain, especially in the third trimester of pregnancy, and carbohydrates can also provide almost 60% of the energy needs of pregnant women. If carbohydrate intake can meet energy needs, it will help the formation of the placenta, fetal growth, blood vessels, fat accumulation, and changes in body metabolism (Shiell, et al., 2001).

Pregnant women lack adequate amounts of micronutrients (vitamin A, vitamin C, vitamin B6, calcium, zinc), except for vitamin B9 and iron. The causes of SEZ in pregnant women are also caused by low intake of vegetables, fruit, and foods that are low in iron sources, low intake of pills during pregnancy, and mild blood supplements. Anemia (Kusumawati, Indah. Indarto, dono). Hanim, 2016).

5 CONCLUSIONS

LBW is still a serious problem today, especially in developing countries. This LBW causes slow growth of infants and their development into adulthood, in addition, LBW babies will cause the baby to be susceptible to disease and even death. A large number of factors are caused by maternal factors either before pregnancy or during pregnancy. Therefore, a mother must maintain her health by regulating her diet or lifestyle. And also have to frequently check her pregnancy either during or

at the time of delivery. If this problem is not resolved, it will always be resolved. appeared to the next generations.

6 REFERENCES

- Asfarina Puspanagara, & Yulia Nur Khayati. 2021. The Relationship of Maternal Nutritional Status with the Incidence of Low Birth Weight (LWB). *Journal of Holistics and Health Science* , 3 (1), 42–50. <https://doi.org/10.35473/jhhs.v3i1.67>
- By, D. (nd). (LBW): *Literature review* . 15.
- Kusumawati, D. E., Nurwidiyanti, N., & Hafid, F. 2022. Gambaran Asupan Makanan dan Status Gizi pada Ibu Hamil di Huntara Kelurahan Petobo Kota Palu: Overview of Food Intake and Nutritional Status of Pregnant in the Temporary Shelter, Petobo Village, Palu City. *Jurnal Bidan Cerdas*, 4(1), 25–31. <https://doi.org/10.33860/jbc.v4i1.915>
- Lengkong, GT. 2020. *Factors Related To Infant Death In Indonesia* . 9 (4), 7.
- Lestari, JF, Ethics, R., & Lestari, P. 2021. Maternal Risk Factors Of Low Birth Weight (Lbw): Systematic Review. *Indonesian Midwifery and Health Sciences Journal* , 4 (1), 73–81. <https://doi.org/10.20473/imhsj.v4i1.2020.73-81>
- Mahayana, SAS, Chundrayetti, E., & Yulistini, Y. 2015. Risk Factors Affecting the Incidence of Low Birth Weight at Dr. RSUP. M. Djamil Padang. *Andalas Health Journal* , 4 (3). <https://doi.org/10.25077/jka.v4i3.345>
- Ningsih, NS, Simanjuntak, BY, & Haya, M. 2021. Energy Intake, Macro Nutrients and Weight Gain of Pregnant Women. *Journal of Health* , 12 (2), 156. <https://doi.org/10.26630/jk.v12i2.2177>
- Nengsi, S. 2017. Hubungan Penyakit Infeksi Dengan Status Gizi Balita Di Wilayah Kerja Puskesmas Anreapi Kabupaten Polewali Mandar. *Jurnal Kesehatan Masyarakat*, 3(1), 14.
- Puspitaningrum, EM. 2018. *Relationship Of Nutritional Status Of Pregnant Mothers With The Event Of Low Birth Weight (Lbw) In Rsia Annisa, JAMBI CITY, 2018* . 7 (2), 7.
- Sari, AK, & Wahyuni, S. 2021. Relationship Of Mother's Age Of Delivery With The Event Of Low Birth Weight (Lbw) Infants. . . *September* , 1 , 4.