

## **Factors Affecting Low Birth Weight During the 2020-2021 Pandemic Period at the Yogyakarta City Regional General Hospital**

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### **Abstract**

Background: Coronavirus Disease 2019 (COVID-19) is a new type of disease that has never been identified in humans before. COVID-19 can be transmitted from human to human through coughing/sneezing droplets. People most at risk of contracting this disease are people who have close contact with COVID-19 patients, including those caring for COVID-19 patients (RI Ministry of Health, 2020). Low Birth Weight (LBW) is a baby born weighing the same or less than 2500 grams (WHO, 2014). Low birth weight newborns have a higher risk of death in the first 28 days of life. (Jornayvaz, 2016). This study aims to determine what factors can influence the incidence of LBW in Yogyakarta City Hospital. Based on the results of a preliminary study at the Yogyakarta City Hospital in January-December 2020, data on LBW babies were 43. While the data obtained in 2021 in January-December LBW data is 48 babies. Research Method: this research is a quantitative analytical descriptive study with a cross sectional approach. This research was conducted at the Yogyakarta City Hospital. The population in this study were all pregnant women who gave birth to LBW babies. Determination of the sample using a total sample of 72 people. Results: the results of the study showed the age of the mother the majority of respondents were aged 20-29 years as many as 37 respondents (51.4%), mother's last education, the majority were high school as many as 38 respondents (52.8%), mother's occupation as housewife as many as 30 respondents (41.7%), mother parity highest G1 33 respondents (45.8%), the sex of the baby, the majority of whom were female, 41 respondents (56.8%), the most gestational age <37 weeks, 43 respondents (59.7%), anemia in pregnant women > 11 gr (51.4%), Most pregnancies <2 years apart were 41 respondents 56.9%, and the causes of LBW and LBW were most common in KPD by 24 (33.3%). Conclusion: the results of the study show that of the 9 factors, there are 6 factors that influence the incidence of LBW, namely education, occupation, sex of the baby, anemia, disease and pregnancy complications.

**Keywords:** Covid-19, LBW, Age, Education, Occupation, Parity, Gender, Gestational Age, Anemia, Distance of Pregnancy, Complications of Pregnancy.



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### **INTRODUCTION**

Coronavirus Disease 2019 (COVID-19) is a new type of disease that has never been previously identified in humans. The virus that causes COVID-19 is called Sars-CoV-2. Corona virus is a zoonotic (transmitted between animals and humans). Meanwhile, the animals that are the source of transmission of COVID-19 are still unknown. Based on scientific evidence, COVID-19 can be transmitted from human to human through coughing/sneezing droplets. People most at risk of contracting this disease are people who have close contact with COVID-19 patients, including those caring for COVID-19 patients (RI Ministry of Health, 2020). The Indonesian government has taken many steps and policies to overcome this pandemic problem. One of the initial steps taken by the government is to socialize the Social Distancing movement to the community. This step aims to break the chain of transmission of the COVID-19 pandemic because this step requires people to maintain a safe distance from other humans of at least 2 meters, not to make direct contact with other people and avoid mass gatherings (Buana, 2020).

Indonesia has also called for PSBB (Large-Scale Social Restrictions), such as in an area suspected of being infected with COVID-19 in such a way as to prevent the possibility of spreading the virus. PSBB regulates closing schools and workplaces; religious activity; activities in public places or facilities; social and cultural activities; modes of transportation, as well as restrictions on other activities specifically related to aspects of defense (RI Ministry of Health, 2020) Indonesia has also called for PSBB (Large-Scale Social Restrictions), such as in an area suspected of being infected with COVID-19 in such a way as to prevent the possibility of spreading the virus. PSBB regulates closing schools and workplaces; religious activity; activities in public places or facilities; social and cultural activities; modes of transportation, as well as restrictions on other activities specifically related to aspects of defense (RI Ministry of Health, 2020) Indonesia has also called for PSBB (Large-Scale Social Restrictions), such as in an area suspected of being infected with COVID-19 in such a way as to prevent the possibility of spreading the virus. PSBB regulates closing schools and workplaces; religious activity; activities in public places or facilities; social and cultural activities; modes of transportation, as well as restrictions on other activities specifically related to aspects of defense (RI Ministry of Health, 2020).

The knowledge factor during pregnancy can also affect the incidence of LBW, this is due to the effects of the pandemic and mother's knowledge. This must be seriously considered by pregnant women to know the importance of knowledge in preventing the occurrence of Low Birth Weight (LBW). The incidence of babies born with low birth weight is a serious problem, because it affects the high morbidity and mortality of infants. Babies born with low birth weight are at risk of experiencing obstacles in growth and development, and can cause death. The risk of death for babies with low birth weight (LBW) is higher than babies born with normal weight or more than 2500 grams, several studies have shown that age and parity affect the incidence of LBW, which can occur in full-term or premature infants. LBW will become a global public health problem, both in the short and long term (UNICEF, 2017).

World Health Assembly (WHA) targets a 30% reduction in the incidence of LBW by 2025. This will result in a relative reduction of 3.9% per year between 2012-2025. Therefore, to reduce neonatal and perinatal mortality and morbidity, it is very important to have accurate prevalence data in the population and LBW risk factors that can be used as planning patterns of special care for the prevention and management of LBW infants (WHO, 2014). Low birth weight newborns have a higher risk of death in the first 28 days of life. Babies with a history of LBW who are able to survive in the future will be at risk of experiencing growth and development disorders, low IQ, suffering from chronic diseases and diabetes mellitus (Jornayvaz, 2016)

The highest cause of IMR is the condition of low birth weight (LBW) with a total of 7,150 deaths or 35.3%. According to the results of the Indonesian Demographic Health Survey or IDHS in 2017, the number of IMR was 24 per 1,000 live births. It is hoped that the IMR will continue to decrease through interventions that can support child survival aimed at reducing the IMR to 16 per 1000 live births in 2024 (RI Ministry of Health, 2020).

The global prevalence of LBW in the world is 15.5% (about 20 million cases) where 95% of them come from developing countries. Based on DIY 2020 low birth weight data with prevalence of LBW DIY 2015-2020 of districts with the number of LBW cases in cities Yogyakarta in 2015: 6.45%; 2016: 5.47%; 2017: 5.16%; 2018: 6.64%; 2019: 6.08%; 2020: 6.93%. In 2020 and 2021 the LBW rate in the city of Yogyakarta will reach 8.2%, this is said to be high compared to 2019 which was 6.8%. Whereas visits to pregnant women in 2020 and 2021 for KI of 100% and K4 96.4% for the national target of KI 40% this has been said to be good while K4 is the national target of 90% (City Health Office 2020-2021).

Yogyakarta City Hospital is a type B hospital, Yogyakarta City Hospital is designated as a COVID-19 Referral Hospital through Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/169/2020 concerning Designation of Referral Hospitals for the Management of Certain Emerging Infectious Diseases. Having data on the incidence of LBW as many as 155 mothers who gave birth to LBW was 43.9%. Mothers who gave birth at the age of 35 years by 31%. Mothers with parity 1 or  $\geq 4$  were 50.3%. Maternity mothers who gave birth to their second child or more were 86 out of 155 mothers and 14% of mothers with birth spacing gave birth to LBW by 43.9% of 155 mothers in Yogyakarta City Hospital in 2016. From the results of the preliminary study conducted and obtained those data the method used observational analytic with cross sectional design with a total sample of 155 mothers giving birth at Yogyakarta City Hospital. Data obtained from the results of a preliminary study at the Yogyakarta City Hospital in January-December 2020 data on LBW babies as many as 43. While the data obtained in 2021 in January-December LBW data is 48 babies.

The research objective is to know whether educational factors during pregnancy can affect the incidence of LBW. Knowing whether the factors of the mother's work during pregnancy can affect the incidence of LBW. Knowing whether the factor of maternal age during pregnancy can affect the incidence of LBW. Knowing whether the factor of gestational age during pregnancy can affect the incidence of LBW. Knowing whether HB levels during pregnancy can affect the incidence of LBW. Knowing whether parity factors during pregnancy can affect the incidence of LBW. Knowing whether the factor of pregnancy spacing during pregnancy can affect the incidence of LBW. Knowing whether the sex of the baby during pregnancy can affect the incidence of LBW. Knowing whether complications and diseases during pregnancy can affect the incidence of LBW.

## **Theoretical Basis**

### **Low Birth Weight Babies**

Low Birth Weight Babies (LBW) are babies born with less weight <2500gr at birth without any growth period during pregnancy (Sholeh, 2014). LBW can be caused by premature labor (delivery before 37 weeks of gestation), appropriate weight for gestational age (SMK), or because babies whose weight is different from small for gestational age (KMK), or both (WHO, 2011).

1. Classification of LBW according to (Tando, 2016) there are several ways of grouping them, namely the classification of LBW according to life expectancy:
  - a. Low Birth Weight Babies (LBW) birth weight 1500-2500 gr
  - b. Very Low Birth Weight Babies (BBLSR) birth weight 1000-1500 gr
  - c. Infants with Extreme Low Birth Weight (BBLER) birth weight 1000 gr
2. The characteristics of low birth weight babies are as follows:
  - a. Gestational age less than 37 weeks.
  - b. Body weight <2500 grams.
  - c. Body length in infants less than 46 cm, head circumference less than 33 cm, chest circumference less than 30 cm.
  - d. Lanugo hair or fine hair that grows on the body of the fetus while still in the womb and can disappear after the baby is born
  - e. The cartilage of the auricle is not fully developed.
  - f. Shiny heels, smooth soles.
  - g. The genitalia have not been fully formed as in baby girls, the labia minora have not been closed from the labia majora, and the clitoris is still protruding, in baby boys the testicles have not descended into the scrotum.

- h. Weak muscle tone results in the baby's movements not being active.
  - i. Verniks caseosa is a protective layer on the baby's skin that is similar to fat or cheese, this is usually absent or small (Proverawati and Ismawati, 2012).
3. Factors causing LBW
- a. Mother Factor. Factors originating from the mother there are several causes that occur in LBW including:
    - 1) Age of Pregnant Women. The age of a mother is generally very related to the female reproductive organs. The reproductive age that can be said to be healthy and safe is the age of 20-35 years). Pregnancy that occurs at the age of less than 20 or over 35 years has a risk of not fulfilling good nutritional needs for fetal growth which will have an impact on low birth weight babies. Mothers aged less than 20 years at the time of pregnancy have a risk of developing LBW 1.5-2 times greater than pregnant women aged 20-35 years. Maternal age during pregnancy affects the condition of the mother's pregnancy because in addition to being related to the maturity of the reproductive organs, it is also related to psychological conditions, especially readiness to accept pregnancy (Trihardiani, 2011). Mother's age is very much a cause of maturity in every decision to do something that refers to every experience. A person's age is very influential in seeing behavior, because the older he is, then the more responsible, more orderly, more moral, more devoted from a young age (Notoatmodjo, 2013). The age of readiness for pregnancy for a woman should not be too young and not too old because pregnant women who are less than 20 years and more than 35 years will have a high risk of giving birth. A woman's readiness to get pregnant must be ready physically, emotionally, psychologically, socially and economically (Ruswana, 2010).
    - 2) Parity. Parity is the number of fetuses weighing more than or equal to 500 grams who have been born alive or dead. If the body weight is not known then the gestational age is used, which is 24 weeks. In general, LBW increases with increasing maternal parity. The risk for LBW is high in the first parity then decreases in the second or third parity, then increases again in the fourth parity (Siantury, 2007).
    - 3) Nutritional status. Nutritional status is a condition of the level of adequacy and use of nutrients or more that affect one's health. A person's nutritional status is essentially the result of a balance between the consumption of nutrients and the needs of that person. The nutritional status of women is one of the factors that must be considered. Low nutritional status can result in low physical quality and affect reproductive efficiency. The higher a person's nutritional status, the better his physical condition, so that it indirectly affects reproductive efficiency (Almatsier, 2011). In pregnant women whose nutritional status is less can be measured from the examination of the upper arm circumference (Lila). Upper arm circumference (Lila) in pregnant women is a nutritional assessment in pregnant women. Lila's measurement is used to find out whether the mother has CED or not. Lila's normal threshold is  $\geq 23.5$  cm and if Lila is  $< 23.5$  cm then the woman experiences CED (Infodatin, 2016). KEK in pregnant women can affect the growth process of the fetus and can cause miscarriage, abortion, stillbirth, neonatal death, congenital defects, anemia in infants, intrapartum asphyxia, birth with low birth weight (LBW) (Proverawati, et al. 2010). The nutritional problems that are often experienced by pregnant women are Chronic Energy Deficiency and Nutritional Anemia which can inhibit the growth of the fetus, causing the risk of Low Birth Weight Babies. Half of KEK pregnant women experience deficits in energy and protein intake, providing additional food that focuses on macro and micro nutrients for

pregnant women is very much needed in the context of preventing low birth weight babies and short toddlers (Stunting) (Ministry of Health RI, 2018).

- 4) gestational age. Maternal gestational age is the deadline for pregnant women, which is calculated from the first day of the last menstrual period (HPHT). Mother's gestational age generally lasts 40 weeks or 9 months 10 days. Gestational age can be said to be mature or full-term if the range is 37-42 weeks, if 42 weeks is called post-maturity or serotonin (Albugis, 2008). In a study conducted by Darmayanti, et al (2010), stated that gestational age is at risk of 12.7 times giving birth to LBW compared to 37-42 weeks of gestation. In addition, in a study conducted by Sutan (2014) stated that gestational age <37 weeks had a 2.42 times risk of causing LBW.
- 5) Disease. Diseases present in pregnancy consist of a history of chronic diseases such as hypertension, heart disease, diabetes mellitus, liver disease, kidney disease and infectious diseases such as congenital malaria, venereal disease, bladder, TORCH infection. TORCH infection (Toxoplasma, Rubella, Cytomegalovirus, Herpes Simplek) namely toxoplasma which can cause anemia in babies which causes IUGR (stunted growth which will result in LBW babies, rubella can cause babies to experience severe disorders in the heart, eyes, ears, IUGR and IUFD (Intra Uterin Fetal Death) or the death of a baby in the womb (Prawirohardjo, 2014). Another cause that can occur is hormonal imbalance in pregnant women. Apart from causing a miscarriage after a large pregnancy,
- 6) Work. Occupation related to socioeconomic status and physical activity of pregnant women. Limited socio-economic status will affect limitations in obtaining adequate antenatal care, fulfillment of nutrition, while pregnant women who work tend to get tired quickly because their physical activity increases because they have jobs outside the home. Ferrer's research (2009) states that premature and low birth weight births can occur in women who work continuously during pregnancy, especially if the work requires physical work or a long time. This situation can affect the growth and development as well as the well-being of the fetus they contain.
- 7) Education. Someone who has higher education has the possibility of knowledge about health is also high, because it is easier to obtain information obtained about health than those with low education. The level of education is a factor underlying decision making. The higher the mother's education, the more capable she will be to make decisions that health services during pregnancy can prevent disturbances as early as possible for the mother and her fetus. Education is also very closely related to the level of mother's knowledge about pregnancy care and nutrition during pregnancy (Simarmata, 2010). In women who are less educated, it is considered that they are less able to live a healthy life towards themselves and they have a bad risk of pregnancy. Mothers with relatively high levels of education (more than high school) have a lower probability of giving birth to LBW babies than mothers with low levels of education (Festy, 2010).
- 8) Anemia. Mother Physiologically pregnant women experience blood dilution (hemodilution) caused by the increased need for blood supply for the fetus they contain. It is said to have anemia if the Hb level of pregnant women is less than 11 gr/dl (Manuaba, 2010). Most of the causes of anemia in pregnant women are iron deficiency which is needed for the formation of hemoglobin. Iron nutritional anemia occurs due to insufficient iron nutrients absorbed from daily food for the formation of red blood cells, causing an imbalance between intake and excretion of iron in the body. This can cause the distribution of oxygen to the tissues to decrease which will reduce tissue

metabolism so that fetal growth will be hampered and result in low birth weight (Trihardiani, 2011).

- 9) Pregnancy spacing. According to recommendations issued by the Family Planning Coordinating Board (BKKBN) short birth spacing will result in a mother not having enough time to recover after giving birth before. In the 2015 study Ridwan said that the spacing of pregnancies had a strong relationship with the incidence of LBW, where mothers with pregnancies less than 2 years apart had a risk factor of 1.91 times giving birth to LBW babies compared to mothers with pregnancies more than 2 years apart.

## **RESEARCH METHODS**

This type of research uses descriptive analytic method, which is a method that functions to describe or provide an overview of an object under study through data or samples that have been collected as they are without conducting analysis to make general conclusions. This study uses a cross-sectional approach, because the independent variables and dependent variables or cases that occur in the research object are measured or collected simultaneously (at the same time) (Sugiyono, 2013). This research was carried out in April - June 2023 at the Yogyakarta City Hospital. The population is the entire research subject to be studied (Notoatmodjo, 2012). The population in this study is all data on pregnant women who gave birth to LBW babies as many as 72 people at Yogyakarta City Hospital in 2020-2021. Researchers took a sample of all pregnant women who gave birth using a non-probability sampling technique with the Total Sample method. Where the non-probability sampling technique is a sampling method where all objects or elements in the population do not have the same opportunity to be selected as a sample. The total sample method is a sampling technique where the number of samples is the same as the population. The sample used in this study were all pregnant women who gave birth to 72 LBW babies at Yogyakarta City Hospital in 2020-2021.

### **Research Variable**

1. Independent Variable (Free). The independent variable is the variable that influences or causes the change or the emergence of the dependent (bound) variable (Sugiyono, 2016). The independent variable in this study is Maternal Age, Parity, Nutritional Status, Gestational Age, Disease, Occupation, Education, Anemia, Pregnancy interval.
2. Dependent Variable (Bound). The dependent variable or dependent variable is the variable that is affected or becomes the result, because of the independent variables (Sugiyono, 2016). The dependent variable in this study was the incidence of LBW at Yogyakarta City Hospital.

### **Research Tools and Materials**

Research tools and materials to make data relevant to research objectives, the researchers used data collection instruments using data on pregnant women and low birth weight babies in medical records. A checklist or checklist is a guide in observation that contains aspects that can be observed, observers or observers put check marks or checks to determine whether something is present or not based on their observations (Sanjaya, 2013). The checklist sheet used in this study contains data on education, maternal age, gestational age, parity, occupation, disease, anemia, low birth weight.

### **Data Processing Methods**

In this study, data processing was carried out using statistical software. According to Notoatmodjo (2012), data processing includes:

1. Editing. Results from the field must be edited first. In general, editing is an activity for checking and repairing. If there are incomplete data, if possible it is necessary to re-collect data to complete the data. But if this is not possible, then the incomplete data is processed or included in the "missing data" processing.
2. coding. After the data has been edited or edited, "coding" or "coding" is then carried out, namely changing the data in the form of sentences or letters into numeric or numeral data for further inclusion in work tables to facilitate reading.
3. Data Entry. Data in the form of "codes" (numbers or letters) are entered into computer programs or "software". In this process, accuracy is demanded from the person doing this "data entry". If there is no bias, even if only entering data. One of the software programs used is the SPSS for window program.
4. Scoring. Scoring is assessment of data by giving a score on questions related to the actions of respondents. This is intended to give weight to each answer, thus facilitating calculations.
5. Tabulating. The process of grouping similar answers and adding up carefully and regularly. After the answers have been collected, group the same answers by adding them up. At this stage, the data obtained for each variable is presented in the form of a frequency distribution in tabular form.
6. Cleaning. When all data from each data source or respondent has been entered, it needs to be checked again to see the possibility of code errors, incompleteness, and so on, then corrections or corrections are made. This process is called data cleaning (data cleaning).

## **RESULTS AND DISCUSSION**

### **Description of Research Locations**

Yogyakarta City Hospital or better known as Jogja Hospital is a hospital owned by the Yogyakarta City Government which is located on the south side of Yogyakarta City. The Yogyakarta City General Hospital was established on a land area of more than 27,000m<sup>2</sup> with a building area of more than 16,000m<sup>2</sup> which greatly supports the application of the concept of a beautiful and comfortable hospital. Since the early days of the pandemic, Jogja Hospital has been appointed as a referral hospital for COVID-19, and is improving according to the dynamics and demands for health services for COVID-19. The services provided at Yogyakarta City Hospital refer to a patient-focused service orientation (Patient Center Care) by prioritizing patient safety (Patient Safety). Patient care needs are served in an integrated manner by several care-giving professionals (doctors, nurses, midwives, nutritionists, pharmacists, physiotherapists and others). The services provided are emergency, outpatient, inpatient, radiology, pharmacy and laboratory services. Yogyakarta City Hospital is supported by qualified and competent human resources in their fields of 681 people, including: 16 Structural Officers, 47 Specialist Doctors, 3 Specialist Dentists, 1 Dentist, 16 General Practitioners, 1 Clinical Psychology person, 230 people Nursing staff, 22 midwives, 116 other health workers, and 185 staff. This research was conducted at Yogyakarta City Hospital, Jl. Ki Ageng Pemanahan No.1-6, Sorosutan, Kec. Umbulharjo, City of Yogyakarta, Special Region of Yogyakarta 55162. Yogyakarta City Hospital is supported by qualified and competent human resources in their fields of 681 people, including: 16 Structural Officers, 47 Specialist Doctors, 3 Specialist Dentists, 1 Dentist, 16 General Practitioners, 1 Clinical Psychology person, 230 people Nursing staff, 22 midwives, 116 other health workers, and 185 staff. This research was conducted at Yogyakarta City Hospital, Jl. Ki Ageng Pemanahan No.1-6, Sorosutan, Kec. Umbulharjo, City of Yogyakarta, Special Region of Yogyakarta 55162. Yogyakarta City Hospital is supported by qualified and competent human resources in their fields of 681 people, including: 16 Structural Officers, 47 Specialist Doctors, 3 Specialist Dentists, 1 Dentist, 16 General Practitioners, 1

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### **Age**

Based on the results of the study, there were 35 respondents in the age range of 20-29 years and as many as 10 respondents aged 30-35 years experiencing LBW events. The results of the data analysis concluded that  $P=0.161$  with this value means that there is no significant relationship between age and the incidence of LBW. According to Manuaba, (2013) in a healthy reproductive period it is known that the safe age for pregnancy and childbirth is 20-35 years. The number of mothers aged <20 years who gave birth to LBW babies was 7 respondents and the number of mothers aged > 35 years was 16 respondents. According to Dechemey, (2007) the age of the mother during pregnancy is closely related to the physiological and psychological abilities of the body. This happens because the age of pregnant women who are <20 years old is still at the adolescent level so that nutrition for growth is good physically, mental and reproductive organs are still very much needed, so if a woman is pregnant at that age there are many possible complications that can occur, one of which is LBW. The next risky age classification is pregnant women > 35 years. Women of this age are at risk for giving birth to LBW babies caused by decreased function of the reproductive organs, besides that the risk of experiencing hypertension, obesity and IUGR also increases.

According to Golestam, (2013) maternal age is one of the main factors associated with Small gestational age-SGA or what is called KMK (small for gestational age) and this is related to LBW due to decreased factors in organ function which can affect growth and development. fetus in the womb. This study is in line with Astuti, (2015) which stated that mothers aged <20 years were 9.7% and >35 years were 25.0 who were at risk during pregnancy and gave birth to babies who had LBW compared to mothers who were >20-35 years with the aim value  $p = 0.161$ .

From the results of the data analysis it was shown that there is a relationship between having an age that is at risk due to lackmother's understanding of the appropriate age range for pregnancy. The number of mothers who gave birth at an age that was not at risk was found to be higher than the number of respondents who gave birth at an age at risk. During the COVID-19 pandemic, pregnant women received less special attention, especially at risky ages during pregnancy and what needs to be prepared both physically and psychologically for mothers to prevent LBW events from occurring. In addition, it was also caused by mothers who married at a young age at the age of <18 years by 9.7%. While the age of mothers over 35 years is 25.0%. Pregnant women over 35 years of age are at risk of experiencing diseases that can affect pregnancy such as hypertension which affects the work function of the mother's heart during pregnancy.

### **Education**

Based on the results of the study, it was found that as many as 52 with P-value (0.029) had last high school education and experienced LBW events, which means that there was a significant relationship between education and LBW events. In a previous study conducted by Paezal et al., (2020) stated that the reason for pregnancy in adolescents was 19% of adolescents



wanted to prove their maturity, 55% of other adolescents did not understand the risks and did not understand pregnancy that might occur, and the rest were due to gender-related perceptions. Wrong. On average, pregnant women who give birth at city hospitals have the final level of education is high school, the education level of pregnant women is very influential in understanding the knowledge obtained. In general, the higher a person's education, the better knowledge about pregnancy and childbirth. The results of the study indicate that the respondent's education is good, in accordance with the government's recommendations which require 12 years of study (Kemendikbud., 2013).

From the results of data analysis it was shown that there was a connection with education and lack of knowledge that could cause LBW events so that understanding related to pregnancies at risk for the birth of babies with LBW events was still very high at this research location, it can be concluded that the higher the education and knowledge of a pregnant woman the smaller the number of a woman to experience birth with LBW. Especially during the COVID-19 pandemic, everyone was asked to carry out activities at home, this resulted in minimal interaction with the community, especially with health workers, so knowledge about pregnancy was limited and mothers were expected to understand sophistication in using social media.

### **Work**

The research data shows that the majority of the respondents' occupations are housewives and the results of the analysis between work and the incidence of LBW are related, namely at a P-value of 0.018 there is a significant relationship between work and the incidence of LBW. According to Medfort, et al (2011) said that there was a significant relationship between LBW births and gestational age, maternal hypertension, preeclampsia, and working conditions. Occupation also has an effect on the socio-economic and on the incidence of LBW, even though indirectly at a low economy it will make it difficult for pregnant women to meet the needs of the baby, especially in terms of nutritional problems/nutrition given to the fetus (Manuaba, 2010).

The results of the data analysis show that there is a relationship between work and the incidence of LBW, mothers who work as IRT are quite at risk for their pregnancies, especially pregnant women who do housework continuously so that it can cause premature birth, this can be caused by psychological or physical work of the mother heavy. In addition, in unstable family economic conditions, it can cause LBW due to insufficient fulfillment of nutritional intake that must be met by pregnant women, especially during the COVID-19 pandemic. Pregnant women who have an unstable family economy increasingly make mothers less fulfilling nutrition and lack of attention from health workers regarding the fulfillment of good nutrition during pregnancy in order to prevent the occurrence of LBW.

### **Parity**

The results of this study obtained a P-value of 0.029 or as many as 36 respondents who had parity G1 and experienced LBW events, which meant that there was a significant relationship between parity and LBW events. In a study conducted by Mochamad and Astridya (2013) stated that the number of parity mothers who are insecure is 1-> 3 children, where this has a 1.13 times the risk compared to mothers who have parity 2 or 3 for LBW. The results of this study are in line with research by Stiani (2011) which states that mothers who have parity at risk (1 and >3 are at risk of giving birth to LBW babies 2.2 times when compared to mothers who have parity not at risk.

According to Endriana, et al (2012) said that parity one is not safe, parity 2-3 is safe for pregnancy and childbirth and parity more than 3 is not safe. Because babies with low birth

weight often occur at parity above five because at this time there has been a decline in the function of the reproductive organs. High parity will have an impact on the emergence of various health problems for both mothers and babies born. This is in line with research that found that as many as 50.0% of mothers gave birth to LBW babies in their first pregnancy. The results of the analysis that has been done show that the datarisky parity is caused by there are still mothers who have 1 child and more than 3 people and a lack of knowledge in families and pregnant women in realizing that with the current developments with many children it will cause fetal growth disturbances resulting in giving birth to babies with low birth weight and bleeding during labor because the uterus is already weak, besides that the nutrition that the mother distributes to the fetus is lacking. During the COVID-19 pandemic, pregnant women had limited access to leaving the house and had difficulty interacting with health workers, so mothers who had complications, especially during their first pregnancy, could cause a high incidence of LBW. Lack of concern about knowledge about the number of at-risk pregnancies and the number of safe and unsafe pregnancies in pregnant women.

### **Gender of Baby**

The results of this study showed that the P-value was 0.032 or as many as 44 respondents had female babies and experienced LBW events, which means that there was a significant relationship between the baby's sex and LBW events. This is because during pregnancy the baby's weight for women is smaller than for baby boys so that they have a greater risk of LBW events, therefore they need more attention during pregnancy. (Mochamad., 2013). The results of the data analysis found that there was a relationship between the incidence of LBW and the sex in this baby related to the fulfillment of nutrition obtained by the mother.

### **Gestational Age**

The results of this study showed that the P-value was 0.033 and the results of 46 respondents had a gestational age <37 and experienced LBW events, which means that there was a significant relationship between gestational age and LBW events. Where pregnant women whose gestational age <37 weeks are vulnerable in giving birth to LBW babies. Manuaba (2013) said that pregnancy lasts 40 weeks, with the calculation that 1 month equals 28 days. A term fetus has a full term sign, which is born at 38 to 42 weeks of gestation. This research is in line with the theory which states that the baby's weight increases according to gestational age can affect the incidence of LBW due to the less perfect growth of the body's organs such as circulation disorders, retroplacental and malnutrition or nutrition that can affect birth weight. So it can be concluded that gestational age is a factor causing the incidence of LBW (Manuaba, 2015). The results of the analysis obtained from the data show that there is a relationship between gestational age and the incidence of LBW, gestational age is very influential on the incidence of LBW because if a pregnant woman gives birth to her baby at a preterm gestational age it can cause the baby to have congenital diseases when she grows up. This must be taken seriously because it will have an impact on the fetus and pregnant women.

### **Anemia**

The data from this study showed that there was a P-value of 0.029 or as many as 37 respondents had anemia > 11 g and experienced LBW events, which meant that there was a significant relationship between anemia and LBW events. Anemia in pregnancy tends to increase the incidence of LBW, this can occur because anemia increases the rate of prematurity and retards fetal growth. During pregnancy, women need more nutritional intake compared to women who are not pregnant, considering that pregnant women must provide adequate nutrition for the fetus (Waryana, 2010). The supply of nutrients to the growing fetus depends

on the amount of blood flowing to the placenta and the nutrients it transports. Manuaba (2010). Anemia during pregnancy can cause adverse effects on the mother and the baby to be born. anemia can reduce the supply of oxygen to the mother's metabolism because hemoglobin functions to bind oxygen (Prawirohardjo, 2014). Prevention of anemia in pregnant women is by providing adequate health education about LBW to pregnant women, besides that they can also carry out surveillance by routine ANC by monitoring babies from the womb who have experienced intrauterine growth retardation. (Solehati et al., 2018). Based on the data obtained, the results show that there is a relationship between the incidence of anemia and besides that, you can also carry out supervision by means of ANC routinely by monitoring babies from the womb who have experienced intrauterine growth retardation. (Solehati et al., 2018). Based on the data obtained, the results show that there is a relationship between the incidence of anemia and besides that, you can also carry out supervision by means of ANC routinely by monitoring babies from the womb who have experienced intrauterine growth retardation. (Solehati et al., 2018). Based on the data obtained, the results show that there is a relationship between the incidence of anemia and the incidence of LBW is because during pregnancy the mother really needs nutrient intake, in this case the mother's lack of nutrient intake during pregnancy so that the mother does not pay attention to the food she consumes, does not balance protein, carbohydrates, vegetables so that blood sugar levels become low and less attention is paid to pregnant women are predisposed to deficiency anemia in pregnant women. It is also caused by a lack of nutrients needed by the fetus while in the womb so that the fetus is born with a weight below normal. In addition, during the COVID-19 pandemic, mothers lack knowledge about pregnancy complications, even though the mother does not experience anemia but there are other complications that are obtained during pregnancy, this can cause LBW.

### **Disease and Complications (KPD)**

The results obtained in this study were at a P-value of 0.000 or as many as 24 respondents had causes and complications during pregnancy, namely PROM and experienced LBW events, which means that there is a significant relationship between causes and LBW events. This is in line with research conducted by Nugroho (2014) which states that KPD has an effect on the incidence of LBW in labor at 34-36 weeks' gestation with a prevalence ratio = 29.07. Factors that cause KPD are infections in pregnancy and other factors from KPD, namely an incompetent cervix, history of previous KPD, parity, maternal age and multiple pregnancies. KPD is a direct complication in pregnancy that interferes with maternal health and fetal growth so that there can be an increased risk of LBW births. KPD can also cause oligohydramnios which will suppress the umbilical cord resulting in asphyxia and hypoxia in the fetus and can hinder nutrition to the fetus and disrupt its growth (Manuaba, 2010). Based on the results of the analysis, it was found that there was a relationship between complications and the disease suffered by the mother during pregnancy, namely KPD complications. In this study, pregnant women did not know how to personal hygiene and how to clean their genital area properly and correctly. or hit and the presence of bacteria is found in vaginal discharge, besides that, the lack of awareness of pregnant women when they find vaginal discharge and consider it as normal, as well as pregnant women who do not participate in counseling activities for pregnant women so that pregnant women lack knowledge because they do not receive counseling or education during pregnancy from health workers, especially during the COVID-19 pandemic which is done online causes mothers to lack information about the counseling schedule being carried out. These things can trigger the occurrence of KPD so that babies are born prematurely even with less than average weight.

### **Pregnancy Distance**

The data for this study obtained a P-value of 0.735 or as many as 40 respondents had an interval of <2 years and experienced LBW events, which means that there was no significant relationship between the interval of pregnancies and the incidence of LBW. This research is in line with research conducted by Eka Mustika, (2013) based on his research, it was found that mothers whose pregnancies were <2 years apart had a 1.414 times greater risk of giving birth to babies with low birth weight. The distance between pregnancies is very influential The health of pregnant women and the fetus so that a woman needs 2-3 years to fully recover and be ready to get pregnant again. Pregnancy that is too close together indicates that the uterus is not ready to become a place for embryo implantation so that if pregnancy occurs, growth will also not be optimal. Based on the results of the analysis, it was found that there was no relationship between the spacing of these pregnancies, it can be said that the reproductive organs in a good pregnant woman are > 2 years to be able to get pregnant again so that a more optimal pregnancy can be obtained thereby reducing the risk of LBW, mothers who are breastfeeding and then pregnant again can affect the amount of nutrition and is optimal in fulfilling exclusive breastfeeding in previous children.

### **CONCLUSION**

Education has a significant relationship with the incidence of LBW because education has results (P-value = 0.029). The mother's occupation as housewife has a significant relationship with the incidence of LBW because work has results (P-value = 0.018). Maternal age has no significant relationship with the incidence of LBW because age has the result (P-value = 0.161). Gestational age <37 weeks had a significant relationship with the incidence of LBW because gestational age had the result (P-value = 0.033). HB levels > 11 there is a significant relationship with the incidence of LBW because it is based on the results of the value (P-value = 0.029). GI parity in the mother has a significant relationship with the incidence of LBW because of the value (P-value = 0.029). The interval between pregnancies <2 years has a significant relationship with the incidence of LBW because the interval between pregnancies has results (P-value = 0.735). The sex of a female baby has a significant relationship with the incidence of LBW because it is based on the result value (P-value = 0.032). Pregnancy complications have a significant relationship with the incidence of LBW because it is based on the result value (P-value = 0.000). Of the 9 factors that influence the incidence of LBW, there are 6 factors associated with the incidence of LBW, namely education, occupation, gender, gestational age, anemia, disease and pregnancy complications. Age and gestational spacing did not have a significant relationship with the incidence of LBW because age had an outcome (P=0.161), while gestational spacing had an outcome (P=0.735). Pregnancy complications have a significant relationship with the incidence of LBW because it is based on the result value (P-value = 0.000). Of the 9 factors that influence the incidence of LBW, there are 6 factors associated with the incidence of LBW, namely education, occupation, gender, gestational age, anemia, disease and pregnancy complications. Age and gestational spacing did not have a significant relationship with the incidence of LBW because age had an outcome (P=0.161), while gestational spacing had an outcome (P=0.735). Pregnancy complications have a significant relationship with the incidence of LBW because it is based on the result value (P-value = 0.000). Of the 9 factors that influence the incidence of LBW, there are 6 factors associated with the incidence of LBW, namely education, occupation, gender, gestational age, anemia, disease and pregnancy complications. Age and gestational spacing did not have a significant relationship with the incidence of LBW because age had an outcome (P=0.161), while gestational spacing had an outcome (P=0.735).

Suggestions for Institutions, It is hoped that this can become a reference or reading material for students and increase knowledge about the incidence of LBW. It is hoped that the Yogyakarta City Regional General Hospital can carry out Joint Efforts for at-risk pregnant women so that LBW incidents can be prevented, such as increasing the ability of health workers to identify factors that influence LBW events so as to form awareness for mothers to take care of their pregnancy. For future researchers, it is hoped that this data will serve as initial data for future researchers in conducting research on different topics and can be developed.

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