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Factors Affecting The Event Low Birth Weight (LBW)

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ABSTRACT

Background: Infants with LBW a a risk faktor that has large enough contribution to perinatal death large. LBW babies can experience mental and physical disorders later in of development. Many conditions cause babies to be born with low birth weight. The main cause is premature birth, other factors are born to mothers who have health problems during pregnancy (preeclampsia, anemia, malnutrition), birth defects in babies, born to mothers with underweight, mother's age less than 17 years or more from 35 years, multiparous and twin pregnancies. Routine check-ups during pregnancy and meeting the nutritional needs of the mother are the best actions to prevent babies from being born with LBW (Setiaputri, 2021). Data from the Magelang District Health Office for 2021, showed 737 cases of LBW from 16,263 births. The Pakis Health Center is one of the areas that has high LBW cases, namely 44 out of 670 births and experienced an increase in 2022 as many as 52 (7.53%) LBW cases out of 690 birth. The purpose of this study was to determine the factors that influence the incidence of LBW in the Working Area of the Pakis Health Center.
Methods: The method used is quantitative with a retrospective approach. The sampling technique used purposive sampling with the slovin formula obtained 253 respondents. The analysis used is univariate using frequency distribution and bivariate using Spearman Rank
Results: The results showed that there was a relationship between maternal age (0.001), parity (0.015), gestational age (0.000), ANC visits (0.003), nutritional status (0.000), anemia (0.000) and preeclampsia (0.000) with the incidence of LBW.
Conclusion: Health workers are expected to improve early detection through ANC, one of which is by conducting screening so that treatment can be given earlier

Keywords: LBW;maternal,anemia, malnutrition, pregnancy

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Background. Infants with LBW are one of the risk factors that have a large enough contribution based on infant mortality, especially in the period of infants aged 0-1 month. Not only that, babies with low birth weight (LBW) experience psychological barriers and physical/bodily growth during the next growth and development age, as a result they require high supervision. Babies with low birth weight (LBW) are still a global problem because of morbidity and mortality in newborns (Atikah, 2020).

Many conditions cause babies to be born with low birth weight. The main and most common cause is premature birth, apart from that there are many other factors that can increase the risk of babies being born with underweight, namely being born to mothers who have health problems during pregnancy (for example preeclampsia, anemia and malnutrition), genetic disorders or birth defects in babies, born to mothers with underweight during pregnancy, the mother's age during pregnancy is less than 17 years or more than 35 years, multiparous pregnancies and multiple pregnancies. Routine check-ups during pregnancy and meeting the nutritional needs of mothers from the beginning of pregnancy are the most effective efforts to avoid LBW (Setiaputri, 2021).

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Based on the 2021 Indonesia Health Profile, there were 20,154 neonatal deaths and 34.5% (6,945) were caused by LBW. The birth rate was 4,443,095 and 111,719 (2.51%) were born with LBW. Central Java Statistics Agency 2021 recorded 508,062 birth rates, there were 4.37% (22,240) LBW births. The impact of having a LBW baby is impaired physical development, stunted growth and mental development which will have an impact in the future. The research location was carried out in the working area of the Pakis Health Center, Regency .Magelang The purpose of this study was to determine the factors that influence the incidence of LBW in the Working Area of the Pakis Health Center.

Methods. This study uses quantitative methods with a retrospective approach. Secondary data was obtained from the medical records of the Pakis Health Center using a checklist as a research instrument. The purposive sampling technique helps calculate a sample using the Slovin formula of 253 respondents with a population of mothers giving birth in the working area of the Pakis Health Center in 2022, namely 690 mothers giving birth. The sampling division consisted of 52 respondents with LBW mothers and 201 respondents with normal birth weight mothers.

Univariate analysis and bivariate analysis were used to process research data, including univariate analysis to find out the results of the frequency distribution and percentage of each variable. Bivariate analysis uses the Spearman rank correlation test with a significance value of 5%, that is, if the correlative statistical results show a p (sig) value <0.05, it means that there is a correlation between the two variables. The research was conducted in July 2023 and has received ethical permission on May 25 2023

Result and Discussion. On the univariate variable, the results were (1) 56 respondents (22.1%) of women of non-reproductive age and 197 of 77.9% of women of reproductive age. (2) Mothers with parity at risk were 7 respondents (2.8%) and parity not at risk were 246 respondents (97.2%). (3) There were 12 respondents (4.7%) of mothers with at-risk gestational age and 241 respondents (95.3%) of non-at-risk gestational age. (4) Mothers who visited ANC <6 times were 8 respondents (3.2%) while ANC visits ≥6 times were 245 respondents (96.8%). (5) Mothers with Cronic Energy Defisiensi (CED) nutritional status were 46 respondents (18.2%). Meanwhile, the nutritional status of mothers who were normal (not CED) was 207 respondents (81.8%). (6) Mothers with anemia as many as 29 respondents (11.5%). Meanwhile, there were 224 respondents (88.5%) who were not anemic. (7) Mothers with preeclampsia were 19 respondents (7.5%). Meanwhile, there were 234 respondents (92.5%) who did not have preeclampsia. (8) Mothers who gave birth to LBW babies were 52 respondents (20.6%). While mothers who gave birth to babies who did not have LBW were 201 respondents (79.4%). While the results of bivariate analysis are

Table 1. The relationship between Maternal Age and LBW

			LBW	Age Maternal
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.200
		Sig. (2-tailed)	.	.001
		N	253	253
	Age Maternal	*Correlation Coefficient*	.200	1.000
		Sig. (2-tailed)	.001	.
		N	253	253

Based on the table above, the p value is 0.001. The p value is less than 0.05 so statistically there is a relationship between maternal age and the incidence of LBW.

Table 2. The relationship between parity and LBW

			LBW	Parity
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.153
		Sig. (2-tailed)	.	.015
		N	253	253
	Parity	*Correlation Coefficient*	.153	1.000
		Sig. (2-tailed)	.015	.
		N	253	253

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Based on the table above, a p-value of 0.015 is obtained. The p-value is less than 0.05 so statistically there is a relationship between parity and the incidence of LBW.

Table 3. The relationship between gestational age and LBW

			LBW	Age gestasional
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.693
		Sig. (2-tailed)	.	.000
		N	253	253
	Age gestasional	*Correlation Coefficient*	.693	1.000
		Sig. (2-tailed)	.000	.
		N	253	253

Based on the table above, a p-value of 0.000 is obtained. The p-value is less than 0.05 so statistically there is a relationship between gestational age and the incidence of LBW.

Table 4. The relationship between ANC Visits and LBW

			LBW	ANC visit
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.188
		Sig. (2-tailed)	.	.003
		N	253	253
	ANC visit	*Correlation Coefficient*	.188	1.000
		Sig. (2-tailed)	.003	.
		N	253	253

Based on the table above, a p-value of 0.003 is obtained. The p-value is less than 0.05 so statistically there is a relationship between ANC visits and the incidence of Low Birth Weight Babies (LBW).

			LBW	Nutritional status
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.420
		Sig. (2-tailed)	.	.000
		N	253	253
	Nutritional status	*Correlation Coefficient*	.420	1.000
		Sig. (2-tailed)	.000	.
		N	253	253

The relationship between Nutritional Status (CED) and LBW

Based on the table above, a p-value of 0.000 is obtained. The p-value is less than 0.05 so that statistically there is a relationship between maternal nutritional status (CED) and the incidence of LBW.

			LBW	Anemia
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.431
		Sig. (2-tailed)	.	.000
		N	253	253
	Anemia	*Correlation Coefficient*	.431	1.000
		Sig. (2-tailed)	.000	.
		N	253	253

The relationship between Anemia and LBW

Based on the table above, a p-value of 0.000 is obtained. The p-value is less than 0.05 so statistically there is a relationship between anemia and the incidence of low birth weight babies (LBW).

Table 5. The relationship between preeclampsia and LBW

			LBW	Preeclampsia
Spearman's rho	LBW	*Correlation Coefficient*	1.000	.300
		Sig. (2-tailed)	.	.000
		N	253	253
	Preeclampsia	*Correlation Coefficient*	.300	1.000
		Sig. (2-tailed)	.000	.
		N	253	253

Based on the table above, the p value is 0.000. The p value is less than 0.05 so that statistically there is a relationship between preeclampsia and the incidence of LBW.

LBW babies are babies born weighing less than 2500 grams regardless of gestational age. Low birth weight babies or commonly referred to as LBW are still the main cause of death in infants in Indonesia, according to 2018 Riskesdas data (Kemenkes, 2018) the prevalence of LBW in children aged 0-59 months in Indonesia is still 6.2%, the

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prevalence of LBW tends to increasing from year to year. The causes of LBW babies are generally multifactorial, so it is sometimes difficult to take preventive measures. However, the most common cause of LBW babies is premature birth. The younger the gestational age, the greater the risk of giving birth to a LBW baby (Atikah, 2020). Other causes in general are maternal factors, fetal factors, placental factors and environmental factors. This is in line with Feris Adi's research (2020) which states that maternal age, education, parity, pregnancy interval, KPD, nutritional status and multiple pregnancies are factors associated with the incidence of LBW with a p-value of 0.000 for maternal age, 0.003 for education, 0.005 in parity, 0.003 in spacing of pregnancies, 0.001 inpremature rupture of membranes , 0.000 in nutritional status and 0.002 in multiple pregnancies.

Maternal age during pregnancy is one of the factors that can increase the risk of babies being born with underweight, especially for pregnant women with less or more reproductive age, namely 20-35 years. At that age the function of the reproductive organs is in an optimal state, while at the age of less than 20 years the condition is still in growth, so that food intake is widely used for the growth of the mother which can result in impaired fetal growth. Fetal growth disorders can increase infant mortality and morbidity (Winkjosatro, 2012). Adolescents aged less than 20 years will experience higher complications than the healthy reproductive period between 20-30 years. This situation is exacerbated when psychological, social and economic pressure (stress) makes it easier for miscarriage to occur (Manuaba, 2016). This is reinforced by Dinny Nurul's research (2021) concerning the relationship between age and Hb levels of pregnant women and LBW prevalence, obtaining a p-value of 0.001 which states that maternal age has a relationship with the incidence of LBW. The results of the study using the Spearman rank test obtained a p-value of 0.001. The p-value is less than 0.05 so statistically there is a relationship between maternal age and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center.

Parity or the number of pregnancies/ deliveries experienced by a mother affects the weight of the babies she gives birth to, this is related to the fertility of a mother's uterus and nutrition during pregnancy. Pregnancies > 5 children are often at high risk of developing LBW, this is influenced by the health of the mother's uterus, the mother's illness and inadequate nutritional intake (Manuaba, 2016). The results of the study using the Spearman rank test obtained a p-value of 0.015. The p-value is less than 0.05, which means that statistically there is a relationship between parity and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is in line with the research of Winda Wahyuni, et al (2020) which states that there is a relationship between parity and the incidence of LBW with a p-value of 0.005.

The development of the role and function of the baby's organs is in line with the mother's gestational age. The more mature the gestational age, the more perfect the development of the baby's organs, so that the baby is better prepared to survive outside the womb. The maturity of gestational age is also influenced by nutritional intake during pregnancy. At every stage of the pregnancy process, a pregnant woman needs food nutrition with different nutrient content and adapted to the development of the fetus and the condition of the mother's body. Therefore monitoring and supervising the condition of the mother at every stage of pregnancy is very necessary so that mothers and babies are born healthy (Kemenkes, 2018). Based on the results of the correlation test using the Spearman rank test, a p-value of 0.000 was obtained. The p-value is less than 0.05 so that statistically there is a relationship between gestational age and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is reinforced by

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the research of Susilowati (2019) which states that gestational age has a relationship with the incidence of LBW with a p-value of 0.004.

ANC/Antenatal Care visits are pregnancy checks. At ANC visits there is a counseling process carried out by midwives and pregnant women to solve problems (Ribkha Itha, et al, 2020). During ANC visits, there is also an important antenatal screening for midwives to monitor the health of the mother and the growth and development of the fetus. Improving and maintaining the physical, mental and social health of the mother and fetus as well as recognizing early any complications that may occur during pregnancy. Preparing for full-term delivery, safe delivery, mother and baby with minimal trauma. Preparing the mother so that the postpartum period runs normally, preparing the role of the mother and family in overcoming problems (Ribkha Itha, 2015). ANC visits have an important meaning for pregnant women so that health workers can monitor and ensure the health of the mother and the growth and development of the fetus, improve and maintain physical and mental health, recognize complications and defects early, and prepare for full-term delivery (Etti Suryani, 2020). Based on the results of the correlation test using the Spearman rank test, a p-value of 0.003 was obtained. The p-value is less than 0.05 so that Ho is rejected Ha is accepted, which means that statistically there is a relationship between ANC visits and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is reinforced by the research of Sugiyanto (2014) which shows that ANC is one of the factors that play a role in preventing LBW events, by carrying out ANC regularly, the risk of babies born with LBW is reduced. With a p-value of 0.000, it indicates that routine ANC examinations are associated with LBW events.

The nutritional status of pregnant women greatly affects the growth and development of the fetus in the womb. If the nutritional status of the mother is poor, both before pregnancy and during pregnancy it will disrupt the growth of the fetus, causing stunted growth of the fetal brain, anemia in newborns, newborns ~~are~~ prone to infection, abortion, and so on so that they have a risk of giving birth to babies with LBW. Mothers with CED experience a long-term lack of energy, even before pregnancy. Inadequate nutritional intake during embryo implantation can be fatal for fetal development in the next trimester. In fact, before and during pregnancy, the mother needs optimal nutritional intake to prepare and support the growth and development of the fetus, so ~~that~~ if the mother is malnourished, the nutritional intake given to the fetus will also be difficult to fulfill, resulting in barriers to fetal growth and birth weight. low (Kemenkes, 2018). The results of the study using the Spearman rank test obtained a p-value of 0.000. The p-value is less than 0.05 so statistically there is a relationship between the nutritional status of the mother (CED) and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is reinforced by Khairun Nisa's research (2019), with a p-value of 0.000 stating that there is a relationship between mothers whose nutritional status is CED and the incidence of LBW.

Anemia is a condition in which the blood hemoglobin (Hb) level is less than normal. Anemia during pregnancy is mostly caused by iron deficiency due to a lack of iron intake in food or reabsorption disorders. Anemia results in a decrease in the availability of oxygen to the tissues and changes the vascularization structure of the placenta which interferes with fetal growth thereby increasing the risk of premature and low birth weight births (Etti Suryani, 2020). The results of the study using the Spearman rank test obtained a p-value of 0.000. The p-value is less than 0.05 so statistically there is a relationship between anemia and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is reinforced by the research of Nurul Annisa Amiruddin, et al (2022), stating that there is a relationship

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between mothers who experience anemia and the incidence of LBW with a p-value of 0.000.

Preeclampsia is characterized by high blood pressure, namely blood pressure measured with a tensimeter > 140/90 mmHg and positive protein in the urine of pregnant women (Kemenkes, 2018). Pregnant women with preeclampsia experience decreased perfusion which causes placental blood flow to be obstructed so that fetal growth decreases and results in an increased risk of LBW and disruption of the placenta which causes the release of cytokines (a chemical substance that plays a role in the body's immunity) into the blood circulation of a pregnant woman. These cytokines cause damage to the cells in the kidney that function as blood filters. If there is damage to the cells in the kidneys, the kidneys are no longer able to retain protein and the protein becomes released into the urine. This is why women with preeclampsia can find protein in their urine (Etti Suryani, 2020). The results of the study using the Spearman rank test obtained a p-value of 0.000. The p-value is less than 0.05 so that statistically there is a relationship between preeclampsia and the incidence of Low Birth Weight Babies (LBW) in the Working Area of the Pakis Health Center. This is reinforced by the research of Elvina Sari Sinaga, et al (2019), with a p-value of 0.001 stating that there is a relationship between mothers who experience preeclampsia and the incidence of LBW

Conclusion and Suggestions. There is a relationship between maternal age (p-value 0.001), parity (p-value 0.015), gestational age (p-value 0.000), ANC visits (p-value 0.003), nutritional status (p-value 0.000), anemia (p-value 0.000) and preeclampsia (p-value 0.000) with the incidence of LBW.

It is hoped that health workers, especially midwives, can improve early detection of factors that influence the incidence of LBW through ANC, one of which is by screening pregnant women who are at risk so that treatment can be given earlier.

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