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ANALYSIS OF THE EFFECT OF TYPE OF WORK AND DURATION OF WORK AMONG PREGNANT WOMEN ON THE INCIDENCE OF LOW BIRTH WEIGHT

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ABSTRACT

Background: The Length of work is the period or the length of time that the workforce works in a place. The period starts from when a pregnant woman starts to work as an employee in a company until a certain period. Pregnant women who work too hard will spend a lot of energy and fatigue if not balanced with balanced food consumption and sufficient rest, then the nutritional needs of the fetus are not met properly, so that the weight in baby to be born has a small weight. Objective: Analyze the type of work and length of work of the mother during her pregnancy on the incidence of Low Birth Weight (LBW) at the UPTD Ma'u Health Center, Ma'u District, Nias Regency. Method: The research design used is a case-control study. In the case-control study, subject identification (cases) is carried out. Thus, there is a case group, namely mothers who gave birth to LBW babies, and a control group, namely mothers who gave birth to babies with normal weight at the Ma'u Health Center. The number of samples is 60 respondents, consisting of 30 respondents who gave birth to LBW babies and 30 respondents who gave birth to non-LBW babies. Univariate data analysis and bivariate analysis with chi-square test and linear regression test analysis. Results: Linear regression test f value count = 3.719 with a significance level of 0.030 <0.05, which means there is a real relationship with the presence of independent variables. When viewed from the significance value, there is a significant relationship between the type of work and the length of work on the incidence of LBW. Conclusion: a significant relationship between the type of work and length of work on the incidence of LBW.

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1. INTRODUCTION

One of the diseases that is currently a Public Health problem is LBW (Low Birth Weight). The World Health Organization (WHO) defines low birth weight (LBW) as a portion born weighing less than 2500 grams. LBW continues to be a significant Public Health problem globally due to its short-term and long-term effects on Health (Pristya, T., Novitasari, A., and Hutami, 2020). The case of Low Birth Weight (LBW) It is a global health issue that has received attention.

Serious attention from the government is needed because it is one of the causes of death in the perinatal group (Wahyuhidayada & Apriliani, 2023)

One of the targets of the Sustainable Development Goals (SDGs) is to ensure healthy lives and promote well-being for all people at all ages. Including ending infant mortality and preventable deaths, by reducing the Neonatal Mortality Rate (NAR) to 12 per 1,000 KH by 2030. According to the UNICEF data report, the Infant Mortality Rate (IMR) in Indonesia in 2019 was 20.24 per 1,000 live births. The causes include perinatal disorders and babies with Low Birth Weight (LBW) (Fatimah, S. and Yuliani, 2019). Pregnant women who work too hard will spend a lot of energy and fatigue if not balanced with balanced food consumption and sufficient rest, so the nutritional needs of the fetus are not met properly, so that the weight of the baby to be born is small, most LBW babies are born to mothers who do heavy physical work during their pregnancy at risk of 1.48 times giving birth to babies with LBW (Paulus, 2019). LBW babies have a lower chance of survival and are more susceptible to disease until they are adults (Riyanti & Sipayung, 2018). LBW tends to experience cognitive development disorders, mental retardation, and is more susceptible to infections that can cause pain or even death (Murti, 2018) Another impact that appears in adults who have a history of LBW is the risk of suffering from degenerative diseases that can cause economic burdens for individuals and society. (Handayani, F., Fitriani, H. and Lestari, 2019)

Pregnant working mothers who can rest during the day are more likely to give birth to babies with normal birth weight than those who cannot rest during the day, so low family income and working mothers are at risk.

For LBW-SGA. Mothers' work in transportation, food preparation services, and factory work is a risk factor for LBW-SGA, where mothers who work hard during pregnancy tend to give birth to LBW. (Paulus, 2019)

Indonesia's LBW percentage reached 10.2%, meaning that one in ten babies in Indonesia is born with LBW, considering that this figure was obtained from documentation or records owned by household members, such as Maternal and Child Health books and Healthy Menu Cards, while the number of babies who do not have birth weight records is much higher. (Pristya, T., Novitasari, A. and Hutami, 2020)

Based on interviews with 10 pregnant women who were examined at the UPTD Ma'u Health Center, 8 of them said that they were still working as farm laborers and also working in factories. 2 of them were housewives. Based on the results of an initial survey conducted by researchers at the UPTD Ma'u Health Center, the prevalence of LBW cases every month was high, based on this, researchers were interested in conducting further research related to the analysis of the type of work and length of work of pregnant women on the incidence of Low Birth Weight (LBW) at the UPTD Ma'u Health Center, Ma'u District, Nias Regency.

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2. METHODE

The research design used was a case-control study. In the case-control study, subject identification (cases) was carried out. Thus, there was a case group, namely, mothers who gave birth to LBW babies, and a control group, namely, mothers who gave birth to babies with normal weight at the Ma'u Health Center. This study was conducted at the Ma'u Health Center. The number of samples was 60 respondents, consisting of 30 respondents who gave birth.

To LBW babies and 30 respondents who gave birth to non-LBW babies, with the following inclusion criteria Mothers who give birth normally, live babies and LBW babies, Mothers who are willing to be respondents, Mothers who do not suffer from chronic diseases such as TB, diabetes, etc., Mothers who give birth to babies who are examined at the UPTD Ma'u Health Center, Ma'u District, Nias Regency. The instrument used a checklist and the medical records of respondents at the health center.

Univariate data analysis and bivariate analysis with chi-square test and linear regression test analysis with SPSS. This study has obtained permission from KEPK STIKES Guna Bangsa Yogyakarta with number 030/KEPK/VIII/2024.

3. RESULTS AND DISCUSSION

This study involved 60 respondents who were divided into two groups, namely the case group, namely mothers who gave birth to babies with LBW, totaling 30 respondents, and the control group of mothers who gave birth to babies with normal weight, totaling 30 respondents. Of the 33 sample respondents who were willing to be respondents, 30 people and 3 people were not willing because some had moved house and could not be contacted.

Table 1: Distribution of types of work in the case group and control group.

Type of work	Group			
	Case		Control	
	n	%	n	%
Heavy	15	50	6	20
Currently	6	20	18	60
Light	9	30	6	20
Total	30	100	30	100

Based on table 1 shows that in the case group, most of the respondents have heavy work types, namely 15 respondents (50%). In the control group, most of the respondents have medium work types, namely 18 respondents or 60%. These data show that the case group faces more challenges from heavy work, which may affect the condition of the respondents' pregnancy compared to the control group, which is more in lighter work types.

Table 2: Distribution of length of service in the intervention group and control group.

Length of working	Group			
	Case		Control	
	n	%	n	%
6-8 hours	9	30	19	63.3
>8 hours	21	70	11	36.7
Total	30	100	30	100

Based on Table 2, it shows that in the case group, most respondents worked >8 hours, namely 21 respondents (70%). In the control group, most respondents worked 6-8 hours, namely 19 respondents or 63.3%. These data indicate that the case group faces more challenges from working hours >8 hours, which may affect the condition of the respondents' pregnancy compared to the control group, which is mostly in lighter types of work.

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Type of work related to LBW incidence.

Table 3: Results of the chi-square test of the type of work variable on the incidence of LBW

Type of work	LBW Incident				
	LBW	No LBW	Total	Value	Sig
Heavy	15	6	21	10,457	.005
Currently	6	18	24		
Light	9	6	15		
Total	30	30	60		

Based on Table 3 shows that the type of work variable is associated with the incidence of LBW. Most respondents who gave birth to LBW reported heavy work, specifically 15 respondents. Based on the results of data analysis with the chi-square test, a significance value of 0.005 was obtained. Based on this value, because the p value <0.05, it can be concluded that Ha is accepted, namely, there is a relationship between the type of work and the incidence of LBW. These data explain that heavy work tends to be associated with an increased risk of LBW. This indicates that work with a heavy workload may affect the health of the mother during pregnancy, which can have an impact on the baby's birth weight.

Based on the results of the study, it can be interpreted that in the type of work variable on the incidence of LBW, most respondents who gave birth to LBW had heavy work, namely 15 respondents. Based on the results of data analysis with the chi-square test, a significance value of 0.005 was obtained. Based on this value, because the p value <0.05, it can be concluded that Ha is accepted, namely, there is a relationship between the type of work and the incidence of LBW.

The results of the study are supported by research. (Roifa et al., 2023) From the cross-tabulation process, shown that pregnant women who have heavy jobs tend to experience more cases of abortion or LBW. Of the 30 respondents with heavy jobs, 29 people (96.7%) experienced abortion, while 1 person (3.3%) did not experience abortion. This shows that the more pregnant women with heavy jobs, the higher the likelihood of abortion or LBW. This finding is supported by the analysis using the chi-square test, which produces a calculated X^2 value of 19.591, greater than the X^2 table value of 2.60. In addition, the Asympt. Sig. (2-sided) value of 0.000, which is less than 0.05, indicates that H0 is rejected and H1 is accepted.

Mothers who do heavy physical work, such as farming, have a higher risk of giving birth to babies with low birth weight (LBW) (Sundani, 2020). Mothers who have the opportunity to rest during the day tend to give birth to babies with normal birth weight. Mothers who work hard during pregnancy are more likely to give birth to babies with low birth weight, and of the group of babies with LBW, 80% of them are included in the low birth weight category due to malnutrition. (Paulus, 2019)

The researcher's opinion is that the type of pregnant mother's job can affect the risk of having a baby with low birth weight (LBW). Jobs that involve heavy physical work or unhealthy work environments can increase the risk of LBW. For example, mothers who work in agriculture, construction, or other jobs that require heavy physical labor tend to face a higher risk. These jobs often involve intense physical activity, exposure to chemicals, or stress that can affect the health of the mother and fetus. Research shows that mothers who do heavy work during pregnancy are more likely to give birth to babies with low birth weight. This may be due to a number of factors, including physical exhaustion, nutritional deficiencies,

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or prolonged stress that can affect fetal growth. Conversely, jobs that are relatively less physically demanding jobs, such as administrative work or jobs that allow mothers to sit and rest regularly, may have a lower risk of LBW. Research also shows that mothers who have enough rest time, such as a nap, are more likely to give birth to babies with normal birth weight.

Type of work related to LBW incidence.

Table 4: Results of the chi-square test of the variable length of service on the incidence of LBW

Length of working	LBW Incident				
	LBW	No LBW	Total	Value	Sig
6-8 hours	9	19	28	6,696	.010
>8 hours	21	11	32		
Total	30	30	60		

Based on table 4, it shows that in the variable of length of work on the incidence of LBW, most respondents who gave birth to LBW had a working period of >8 hours, namely 21 respondents. Based on the results of data analysis with the chi-square test, a significance value of 0.01 was obtained. Based on this value, because the p value <0.05, it can be concluded that Ha is accepted, namely, there is a relationship between the length of work and the incidence of LBW. These data explain that long working hours tend to be related to an increased risk of LBW. This indicates that work with long working hours may affect the health of the mother during pregnancy, which can have an impact on the baby's birth weight.

Based on the results of the study, it can be interpreted that the variable of length of work on the incidence of LBW is that most respondents who gave birth to LBW had a length of work of>8 hours, namely 21 respondents. Based on the results of data analysis with the chi-square test, a significance value of 0.01 was obtained.

Based on this value, because the p value <0.05, it can be concluded that Ha is accepted, namely, there is a relationship between the length of work and the incidence of LBW.

The results of this study are supported by research by (Putri et al., 2021) This shows that 70.6% of pregnant women who experience abortion or LBW come from the working group, while 29.4% come from the unemployed group. Most pregnant women who work, in addition to acting as housewives, experience a heavy workload. They are often involved in intense physical activities, such as lifting agricultural products and walking to the fields, which, although not too far away, require strength and time for about 6-7 hours every day from morning to evening. As a result, these pregnant women experience fatigue due to a lack of rest time.

Maternal and child health issues related to health culture are still very concerning. The existence of an obligation to continue working hard until close to the time of delivery can endanger the health of the mother and her fetus. The daily activities of pregnant women that are not reduced, coupled with various food restrictions that must be adhered to, can have a negative impact on the mother's health and inhibit the growth and development of the fetus in her womb (Paulus, 2019)

The researcher's opinion is that the length of work or duration of work during pregnancy can affect the risk of babies being born with low birth weight (LBW). Research shows that pregnant women who work for long periods or with heavy work schedules tend to face a higher risk of LBW. Several mechanisms that may explain this relationship include fatigue, stress, and negative effects on maternal and fetal health.

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Working for long hours can cause significant physical and emotional fatigue. Fatigue can affect sleep quality, nutrient intake, and hormone balance, all of which play an important role in fetal health. Continued stress due to long working hours can disrupt blood flow to the placenta, potentially affecting fetal growth and increasing the risk of LBW.

Analysis of job type and length of work on the incidence of LBW

Table 5 Linear regression test analysis of the type of work and the length of work of pregnant women on the incidence of low birth weight

Model	-2 Log Likelihood	Mean-Square	df	f	Sig.
Regression	1,731	.866	2	3,719	0.030
Residual	13,269	.233	57		

Based on Table 5, it can be found that the calculated F value = 3.719 with a significance level of 0.030 <0.05, which means that there is a real relationship with the independent variable. When viewed from the significance value, there is a significant relationship between the type of work and the length of work on the incidence of LBW. Differences in the type of work and length of work can affect the risk of LBW. The significance value shows that the combination of these variables is statistically related to an increased likelihood of LBW, indicating that these factors must be considered in efforts to prevent LBW.

Based on the results of the study, the calculated F value = 3.719 with a significance level of 0.030 <0.05, which means that there is a real relationship with the existence of independent variables. When viewed from the significance value, there is a significant relationship between the type of work and the length of work on the incidence of LBW.

Research shows that both the type and length of work significantly impact the risk of low birth weight (LBW). These two factors interact with each other, affecting maternal health and fetal development. The type of work can influence the risk of LBW through various mechanisms. Mothers who work in fields requiring heavy physical activity, such as agriculture or construction, face a higher risk of fatigue and physical stress. This fatigue can adversely affect maternal health and fetal growth, increasing the risk of LBW.

Heavy work often involves exposure to unhealthy environmental conditions, such as chemicals or extreme temperatures, which can contribute to pregnancy problems.

The researcher's opinion is that working for long hours can cause physical and emotional fatigue. This fatigue can reduce sleep quality and nutritional intake, and increase stress that affects the health of the mother and fetus, thereby increasing the risk of LBW. Pregnant women who work for long periods of time may have difficulty getting adequate prenatal care. Limited time for regular visits to the doctor or getting good nutrition can affect fetal development and increase the risk of LBW. The type of work and the length of work can worsen the risk of LBW. For example, mothers who work in heavy physical work and have long working hours may experience the cumulative impact of physical fatigue, stress, and exposure to environmental risks. This can increase the likelihood of LBW compared to mothers who work in lighter jobs or with shorter working hours.

This study has limitations, including the limitations of the research location. The researcher's limitations did not include environmental and social factors that can affect the risk of LBW, such as the level of social support, access to health services, and the quality of the work environment.

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4. CONCLUSION

The results of the study showed that there was a relationship between the type of work and the incidence of LBW. The significance value shows that the combination of these variables is statistically related to an increased likelihood of LBW, indicating that these factors should be considered in efforts to prevent LBW. It is recommended to provide special counseling and support for pregnant women working in high-risk environments related to LBW, such as arranging rest periods and reducing workload. For Research Sites, it is recommended to build partnerships with various industrial sectors to obtain more representative data on the type of work and length of work, and to cooperate or provide explanations to husbands of pregnant women about the various risks of heavy work. It is recommended for other researchers to develop methodologies that can handle variability in the type of work and length of work, as well as confounding factors that may affect the results.

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