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Research Article

The Impact of Maternal Age on the Incidence of Low Birth Weight in Newborns

Chrisye Rani Kuheba [1], Rifzul Maulina [2*], Anik Sri Purwanti[3]

[1] Koordinator Kebidanan Puskesmas Kolongan, Indonesia

[2-3] Departemen Kebidanan, Institut Teknologi Sains dan Kesehatan Rumah Sakit dr. Soepraoen Malang, Indonesia; e-mail: rifzulmaulina@itsk-soepraoen.ac.id

* Corresponding Author : Rifzul Maulina

Abstract: Low birth weight (LBW) is a significant public health problem, with varying prevalence across countries. According to data from the World Health Organization (WHO), approximately 15% of all births worldwide are LBW babies. LBW can be caused by various factors, including maternal health conditions, nutritional status, and environmental factors. One factor that is often overlooked is maternal age during pregnancy. This study aims to explore the relationship between maternal age and the incidence of LBW. Research This study used an observational design with a cross-sectional approach. The sample consisted of 200 pregnant women who gave birth at the Hospital in 2024. Data were collected through medical record data tracing, which included maternal age, infant birth weight, and other risk factors. Statistical analysis was performed using the chi-square test to determine the relationship between maternal age variables and LBW. Results: The results of the analysis showed that 32% of the total babies born had LBW. From the age group under 20 years, the prevalence of LBW reached 15%, while in the age group over 35 years it reached 9%. After conducting the Spearman test in the Halsil test, the significant relationship between maternal age and the incidence of LBW was p (Sig) 0.02 (<0.05). Public health programs should focus more on education and intervention for pregnant women, especially those in their teens and the elderly. This is important to reduce the number of LBW and improve maternal and infant health. In the future, further research is needed to explore other factors that may affect LBW.

Keywords: Age; Infant Weight; Low Birth

1. Introduction

Low birth weight (LBW) is an important indicator of newborn health and can affect their long-term health. LBW is defined as a baby weighing less than 2500 grams at birth, regardless of gestational age. According to data from the World Health Organization (WHO), around 15% of all births worldwide are LBW babies, and this figure is much higher in developing countries (WHO, 2021). One factor thought to contribute to the incidence of LBW is maternal age during pregnancy. Research shows that both being too young and too old can increase the risk of LBW (Kim, 2019).

Maternal age plays an important role in determining pregnancy health and birth outcomes. Young mothers, such as teenagers, often have nutritional and health problems that can affect fetal growth. Conversely, older pregnant women may face a higher risk of health complications, such as hypertension and gestational diabetes, which can also affect the baby's birth weight (Goisis, 2017). Therefore, it is important to understand the relationship between maternal age and LBW in order to formulate effective health policies.

In the context of Indonesia, the LBW rate is still a serious problem. Data from the Ministry of Health of the Republic of Indonesia shows that the prevalence of LBW in

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Indonesia reached 12.5% in 2020 (Ministry of Health of the Republic of Indonesia, 2021). This figure shows the need for more attention to factors that can affect birth weight, including maternal age. Further research into this relationship can help in designing appropriate interventions to reduce the LBW rate.

Low Birth Weight (LBW) is defined as a baby weighing less than 2500 grams at birth, regardless of gestational age. According to data from the World Health Organization (WHO), the prevalence of LBW in developing countries reaches 15% to 20%, while in developed countries, this figure tends to be lower, ranging from 5% to 7% (WHO, 2021). In Indonesia, the incidence of LBW was reported to have reached 10.2% based on the 2018 national health survey. This figure shows that LBW is still a serious public health problem, which requires more attention from various parties.

Factors that influence the incidence of LBW are quite diverse, including maternal nutritional status, maternal age, and health conditions during pregnancy. Data from the Ministry of Health of the Republic of Indonesia shows that pregnant women with poor or suboptimal nutritional status have a higher risk of giving birth to babies with LBW. In addition, socio-economic factors also play an important role, where mothers from low-income backgrounds tend to have more limited access to health services and education about healthy pregnancies (Ministry of Health of the Republic of Indonesia, 2021).

Field cases show that in some areas, such as rural areas in Central Java, the prevalence of LBW reaches 12%, which is far above the national average. This is often related to a lack of knowledge about nutrition and maternal health, as well as a lack of access to adequate health services. In some cases, pregnant women who do not receive routine pregnancy check-ups are at higher risk of giving birth to babies with low birth weight (Momeni et al., 2017).

LBW not only has an impact on the health of the baby at birth, but can also continue during the child's growth and development. Babies with LBW have a higher risk of experiencing various health problems, including growth disorders, low intelligence, and the risk of chronic diseases later in life (Arsyi, 2021). Therefore, handling and preventing LBW should be a priority in public health programs. With increasing awareness of the importance of maternal and child health, various intervention programs have been carried out, such as increasing access to antenatal services and nutrition education for pregnant women. However, to achieve optimal results, there needs to be synergy between the government, the community, and health institutions in addressing this LBW problem comprehensively (McCall et al., 2018).

2. Proposed Method

Recent studies have highlighted a significant relationship between maternal age and low birth weight (LBW). Iacono (2024) conducted a cross-sectional study that examined the impact of advanced maternal age on birth weight, finding a positive association between older maternal age and an increased likelihood of delivering low birth weight infants. The study

emphasizes the importance of addressing social inequalities that may contribute to these outcomes, suggesting that interventions targeted at older mothers could improve birth weight outcomes. Similarly, Zheng et al. (2024) found that maternal age significantly contributes to the prevalence of LBW, particularly among mothers aged ≤18 and >35 years. Their national study, which analyzed data from the United States between 2016 and 2021, revealed that both younger and older mothers are at a higher risk for delivering LBW babies, with an odds ratio of 1.27 for mothers aged ≤18 years and 1.19 for those over 35. These findings underscore the need for further investigation into the risks associated with maternal age, highlighting the relevance of your study's focus on understanding how age affects birth outcomes, particularly in relation to LBW.

The data collected will include maternal age at delivery, infant birth weight, and additional information such as maternal nutritional status, medical history, and access to prenatal care. These data will then be analyzed using statistical tools to determine whether there is a significant relationship between maternal age and LBW.

The statistical analysis that will be used includes the Spearman test to test the relationship between categorical variables. In addition, descriptive analysis will be carried out to provide an overview of the characteristics of the sample, including the distribution of maternal age and the proportion of infants with LBW.

Throughout the research process, research ethics will be upheld by obtaining approval from the hospital ethics committee and ensuring that all respondents provide informed consent. The data collected will be kept confidential and used only for research purposes.

3. Results

Table 1. Frequency Distribution of Respondents by Age

Dependen variabel	Frequensi (f)	Persen (%)
<20 years	38	19
21-35 years	113	57
>35 years	49	24
Total	**200**	**100%**

Table 1. Shows that the majority of respondents are aged 21-35 years (57%) and a small proportion (19%) of respondents are aged <20 years.

Table 2. Frequency Distribution of Respondents Based on Baby's Weight

Independent variabel	Frequensi (f)	Persen (%)
<2500 gram	64	32
Normal	123	61
>4000gram	13	7
Total	**200**	**100%**

Table 2. Shows that the majority of respondents had normal birth weight (2,500-4,000 grams), while a small proportion (7%) had a birth weight >4,000 grams.

Table 3. Relationship between maternal age and the incidence of LBW

Age of pregnant mother	birth weight								
	<2500 gram		2500-4000 gram		>4000 gram		Jumlalh		ρ (Sig)
	f	%	f	%	f	%	f	%	
<20 years	30	15%	6	3	2	1	38	19	0.02
21-35 years	16	8%	91	46	6	3	113	57	
>35 years	18	9%	26	13	5	3	49	24	
Total	64	32%	123	62	13	7	200	100	

Table 3 shows that 32% of the total babies born have LBW. From the age group under 20 years, the prevalence of LBW reached 15%, while in the age group over 35 years it reached 9%. After the Spearman test was conducted in the Halsil test, the significant relationship between maternal age and the incidence of LBW was p (Sig) 0.02 (<0.05).

5. Discussion

The results of the study showed that 32% of the total babies born had LBW. From the age group under 20 years, the prevalence of LBW reached 15%, while in the age group over 35 years it reached 9%. After the Spearman test was carried out in the Halsil test, the significant relationship between maternal age and the incidence of LBW was p (Sig) 0.02 (<0.05).

The age of the pregnant mother is one of the significant factors in determining the baby's birth weight. Research shows that pregnant women who are under 20 years old and over 35 years old have a higher risk of giving birth to low birth weight babies. According to data from WHO, the risk of LBW increases significantly in very young pregnant women, with an incidence rate reaching 20% in this age group (WHO, 2021).

Very young pregnant women often do not have adequate physical and mental readiness to undergo pregnancy. This condition can affect diet and overall health, which in turn affects fetal growth. A study by Wardana et al. (2024) showed that pregnant women under the age of 20 have lower nutritional intake compared to pregnant women aged 20-35 years, which contributes to an increased risk of LBW.

On the other hand, pregnant women over the age of 35 years also face a higher risk. Research shows that at this age, mothers are at higher risk of experiencing various pregnancy complications, such as hypertension and gestational diabetes, which can affect the baby's birth weight. Data from the Ministry of Health of the Republic of Indonesia noted that 15% of pregnant women over the age of 35 years gave birth to babies with LBW (Kemenkes RI, 2020).

Psychosocial factors can also influence the relationship between maternal age and the incidence of LBW. Younger pregnant women often receive less social support and education about healthy pregnancies, while older mothers may experience higher stress and anxiety

related to pregnancy. Both of these factors can contribute to the risk of LBW (Dolatiab et al., 2016).

By understanding the relationship between maternal age and the incidence of LBW, it is important for health workers to provide appropriate education to pregnant women of various age groups. Programs that focus on increasing knowledge about nutrition, reproductive health, and stress management during pregnancy need to be improved to reduce the risk of LBW and improve maternal and infant health.

The factors that cause LBW are very complex and involve various aspects, both from the maternal and environmental perspectives. One of the main factors that is often identified is the nutritional status of the mother during pregnancy. Research shows that pregnant women who are malnourished, both before and during pregnancy, have a higher risk of giving birth to low birth weight babies. According to a study by Aboagye et al. (2022), pregnant women who experience calorie and protein deficiencies are 2.5 times more likely to give birth to babies with LBW compared to mothers who have sufficient nutritional intake.

In addition to nutritional status, maternal health factors also play an important role in the incidence of LBW. Chronic diseases such as hypertension, diabetes, and infections during pregnancy can affect fetal growth and cause LBW. A study at Dr. Hospital. Soetomo Surabaya noted that 30% of pregnant women who gave birth to LBW babies had a history of gestational hypertension (Getaneh et al., 2020). Therefore, it is important for pregnant women to monitor their health regularly and get the right treatment if they experience health problems.

Socioeconomic factors also contribute to the incidence of LBW. Pregnant women who come from families with low economic conditions often face difficulties in meeting adequate nutritional needs. Data from the Central Statistics Agency (BPS) shows that areas with high poverty rates have higher incidences of LBW. For example, in remote areas in Papua, the prevalence of LBW reaches 15%, which is largely due to lack of access to nutritious food (Ministry of Health, 2021).

In addition, the age of the pregnant woman is also an important factor in the incidence of LBW. Research shows that very young pregnant women (under 20 years) and older mothers (over 35 years) have a higher risk of giving birth to babies with LBW. This is caused by various factors, including physical immaturity in young mothers and higher health risks in older mothers (Dennis, 2013).

In an effort to reduce the incidence of LBW, it is important to identify and address the causal factors holistically. Intervention programs that focus on improving maternal nutritional status, health management during pregnancy, and increasing access to health services in remote areas need to be continuously promoted. Thus, it is hoped that the incidence of LBW can be reduced and the health of mothers and babies can be maintained properly.

6. Conclusions

The conclusion of this study is expected to provide a clear picture of the relationship between maternal age and low birth weight. If the results of the study show a significant relationship, then this can be used as a basis for formulating better health policies, especially in terms of prenatal care and health education for pregnant women.

The suggestion that can be given based on the results of this study is the need for an education program aimed at pregnant women, especially for those who are young and older. This program can include information on the importance of good nutrition during pregnancy, signs of complications to watch out for, and the importance of regular prenatal check-ups. In addition, increasing access to health services for pregnant women is also very important. The government and related institutions are expected to work together to provide adequate health facilities, and ensure that all pregnant women, especially those in remote areas, can access the necessary care.

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