http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal Eduhealt, Volume 14, No. 03 2023
ISSN. 2808-4608

The Relationship Between Maternal Age And The Incidence Of Low Birth Weight Babies

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ARTICLE INFO

Keywords:
Low Birth Weight, Mother's Age, Education.

ABSTRACT

The Riau Province health profile (2020) shows that the biggest cause of neonatal death is low birth weight babies (LBW). This is supported by national data (RISKESDAS 2019). One of the factors considered to be contributing to the high prevalence of low birth weight babies in Indonesia is the age of the mother. The purpose of the study : To determine the relationship between maternal age and the incidence of low birth weight in pregnant women at Selasih Pangkalan Kerinci Regional Hospital, Pelalawan District, Riau. Method: This an analytic research with a cross-sectional design. Samples were taken using a non-probability consecutive sampling from medical record in 2020-2021 . The number of respondents obtained was 93 and a chi square test was carried out. Results : Respondents who were <21 years of age experienced the most low birth weight events, namely 19 people (20.4%). Respondents aged 21-34 years showed that as many as 17 respondents (18.2%) experienced low birth weight. Respondents who were >35 years old showed that 22 people or 23.6% experienced low birth weight. Based on Chi-Square Tests, a relationship was found between maternal age and low birth weight babies with a p-value of 0.003 (p value <0.05). The results of the study from 93 research samples found that 58 mothers (62.4%) gave birth to babies with low birth weight and 35 mothers (37.6%) did not. Conclusion: A significant relationship was found between age of pregnant women and the incidence of low birth weight babies at Selasih Pangkalan Kerinci Regional Hospital.

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1. INTRODUCTION

According to the Indonesian Ministry of Health (Kemeskes RI) in the 2020 health profile, one of the factors impacting the increase in Maternal Mortality Rate is the following four factors: being too young to give birth, under the age of 21, being too old to give birth, above the age of 35, having births too closely spaced, less than 3 years apart, and having too many children, more than 2. The percentage of maternal deaths in women giving birth under 20 years old and above 35 years old is 33% of all maternal deaths [1].

Based on data from the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) from 2009-2013, it was found that 16% of baby births worldwide resulted in Low Birth Weight (LBW) [2]. This breaks down to 13% in Africa, 9% in the Americas, 28% in Asia, and 9% in Indonesia. The incidence of LBW in Indonesia varies significantly from one region to another, ranging from 9% to 30%. A study in seven multi-center regions found the LBW rate to be in the range of 2.1% to 17.2% [3]. Nationally, according to RISKESDAS 2019, LBW is the leading cause of infant mortality. Based on reports from 25 provinces to the Directorate of Community Nutrition, in 2019, 111,827 newborn babies (3.4%) were reported to have Low Birth Weight (LBW). Furthermore, according to the results of RISKESDAS 2018, among 56.6% of recorded birth weights for toddlers, 6.2% were born with Low Birth Weight (LBW).

Therefore, the prevalence of Low Birth Weight (LBW) babies in Indonesia remains high due to several risk factors, such as maternal age, parity, low arm circumference, gestational age less than 37

weeks, and complications during pregnancy. These risk factors should be of particular concern when evaluating the condition of the pregnant mother, so that if there is a risk, mothers can be educated as early as possible on how to manage and maintain their pregnancy to prevent the occurrence of Low Birth Weight (LBW).

This study aims to determine the relationship between maternal age and the occurrence of Low Birth Weight (LBW). It is hoped that women's understanding of the risks of Low Birth Weight (LBW) can be increased. The purpose of this research is to determine the relationship between maternal age and the occurrence of Low Birth Weight (LBW) in pregnant mothers at Selasih Pangkalan Kerinci Regional Hospital, Pelalawan District, Riau.

2. METHOD

The research design is an analytic study with a cross-sectional design [4]. This study was conducted at Selasih Pangkalan Kerinci Regional General Hospital. The target population of the study is all pregnant women of all ages, while the accessible population for this study is all delivering mothers at the Regional General Hospital. The research sample consists of delivering mothers who meet the inclusion criteria and are recorded in the medical records of the Regional General Hospital, Selasih Pangkalan Kerinci. The data used in this study are sample data derived from the delivery records at the Regional General Hospital during the period of 2020-2021.

Univariate analysis in this study aims to describe the characteristics of the research subjects. Univariate data (age, occupation, parity, birth weight of the baby, nutritional status, gestational age at delivery, smoking history, medical history, pregnancy status, BPJS or non-BPJS patient) will be presented in the form of tables (frequency, percentage, and total).

Bivariate analysis aims to test the relationship between independent variables and dependent variables. Bivariate data will be analyzed using the chi-square statistical test [5]. The results of the chi-square statistical test are considered significant when ρ value < 0.05, indicating a significant relationship between pregnancy in mothers under 21 years old and the occurrence of low birth weight. The results are considered not significant if the analysis shows ρ value > 0.05, meaning there is no relationship between pregnancy in mothers under 21 years old and the occurrence of low birth weight. Bivariate data will be presented in the form of a 2x2 table to obtain the prevalence ratio obtained from the analysis of the relationship between pregnancy in mothers under 21 years old and the occurrence of low birth weight.

3. RESULTS AND DISCUSSION

Maternity Education

Table 1. Distribution of respondents based on the Education of Maternity Mothers at Selasih Pangkalan Kerinci Hospital in 2020-2021

Education	Amount (N)	Percentage (%)
< Junior High School	40	43.01
> Senior High School	53	56.9
Total	93	100.0%

Representation of the educational backgrounds of maternity mothers who were respondents in a study conducted at Selasih Pangkalan Kerinci Hospital during the years 2020 and 2021. This table aims to present information on the diversity of educational levels among the maternity mothers who participated in the study.

Maternity Age

Table 2. Distribution of respondents based on mother's age at Selasih Pangkalan Kerinci Hospital in 2020-2021

Age	Amount (N)	Percentage (%)
<21 Years	24	25.8
21-34 Years	40	43.0
>35 Years	29	31.2
Total	93	100.0%

Visually presenting the age distribution of mothers who were respondents in a study conducted at Selasih Pangkalan Kerinci Hospital during the years 2020 and 2021. This table aims to provide information about the age demographics of the maternity mothers who participated in the study.

BBLR Events

Table 3. Distribution of respondents based on the incidence of low birth weight babies at Selasih Pangkalan Kerinci Hospital in 2020-2021.

BBLR Events	Amount (N)	Percentage (%)
BBLR	58	62.4
Not BBLR	35	37.6
Total	93	100.0%

Relationship between Mother's Education and Low Birth Weight

Table 4. Cross distribution of the relationship between the Education of Maternity Mothers and the Incidence of Low Birth Weight in Selasih Pangkalan Kerinci Hospital in 2020-2021

Education	Incidence of Low Birth Weight Babies				Total	P-Value
	BBLR		Not BBLR			
	F	%	F	%		
No school	0	0.0%	1	1.1%	1 (100.0%)	
Elementary school	12	12.9%	7	7.5%	19 (100.0%)	0.349
Junior High School	14	15.1%	6	6.5%	20 (100.0%)	
Senior High School	29	31.2%	15	16.1%	44 (100.0%)	
Diploma	2	2.2%	0	0.0%	2 (100.0%)	0.017
bachelor	1	1.1%	6	6.5%	7 (100.0%)	
Total	58		35		93 (100.0%)	

Relationship between Maternal Age and Low Birth Weight Incidence at Selasih Pangkalan Kerinci Hospital in 2020-2021

Table 5. Cross distribution of the relationship between maternal age and the incidence of low birth weight babies at Selasih Pangkalan Kerinci Hospital in 2020-2021

Age	Incidence of Low Birth Weight Babies				Total	P-Value
	BBLR		Not BBLR			
	N	%	N	%		
<21 Years	19	79.2%	5	20.8%	24 (100.0%)	0.003
21 – 34 Years	17	42.5%	23	57.5%	40 (100.0%)	
>35 Years	22	75.9%	7	24.1%	29 (100.0%)	
Total	58	62.4%	35	37.6%	93 (100.0%)	

Distribution of respondents

The age of the mothers in this study is the length of time a person has been measured in units of time from birth to the delivery date [6]. The age of the mother is a significant risk factor associated with low birth weight. The research results show that the average age of pregnant mothers who became respondents in this study is between 21-34 years, totaling 40 respondents (43.0%). Furthermore, mothers aged >=35 years accounted for 29 respondents (31.2%), and mothers aged <21 years accounted for 24 individuals (25.8%). Referring to the first marriage age for Indonesian women, which is 15-49 years, data from the Indonesian Demographic and Health Survey (SKDI) in 2021 revealed that 17.40% of women marry before the age of 20, while 80.62% marry at the age of 20 or older.

More than ninety percent of the samples work as housewives (91.4%). In 2021, data from the Central Statistics Agency (BPS) of Indonesia showed that women who were part of the workforce had a larger number (1,115,614 individuals) compared to those who were homemakers (1,026,050) in

Riau. However, this contradicts the data on housewives' distribution in this study, which may be due to the limited sample size and the study being conducted in only one place.

Regarding health insurance coverage, 84.9% of the women in the study had health insurance, while 15.1% did not have health insurance [7]. This aligns with data from the Indonesian Family Planning and Population Census, issued by the National Population and Family Planning Agency (BKKBN), which reported that 75.42% of women had health insurance in the Pangkalan Kerinci area, while 24.58% did not.

Occurrence of Low Birth Weight

Low birth weight (LBW) is internationally defined as a birth weight of less than 2500 grams. [8] birth weight refers to the weight of the fetus or newborn obtained immediately after birth, ideally measured within the first hour of life before significant postnatal weight loss occurs. The first factor that affects low birth weight is the age of the mother. Pregnant women under the age of 21 and over the age of 35 have several pregnancy risks. Pregnancies at age <20 years tend to have increased blood pressure, and fetal growth may be inhibited. Unhealthy reproductive ages for women are under 20 years and over 35 years [9]. The second factor that affects low birth weight is parity, which refers to the number of children born to a mother, whether live births or fetal deaths.

Primigravida and grand multipara were the most common parities among the samples, accounting for 55.9%, and multigravida accounted for 44%. The third factor is gestational age less than 37 weeks. Studies in Italy, Iran, and Tanzania have shown a significant relationship between gestational age and birth weight. The fourth factor is the history of smoking and exposure to cigarette smoke during pregnancy, which has a negative effect on fetal growth and development due to the chemicals it contains. Smoking during pregnancy can lead to vasoconstriction, resulting in reduced oxygen supply to the fetus. The fifth factor is the mother's education, which indirectly relates to lower socioeconomic status, delayed prenatal care initiation, and less than recommended consultations.

Results of the study show that 58 respondents or 62.4% experienced low birth weight, while 35 respondents or 37.6% did not experience it. This indicates that, on average, respondents in this study experienced low birth weight. Pregnant mothers in this study were dominated by those under 21 years old and over 35 years old, totaling 53 respondents. Meanwhile, 40 respondents were in the age range of 21-34 years. This suggests that pregnant mothers in this study had a risk of experiencing low birth weight. [10] the mother's age can pose a high risk of pregnancy complications, miscarriages, and giving birth to low birth weight babies, especially for those under 20 years old and over 35 years old.

Relationship between Mother's Age and Incidence of Low Birth Weight

Statistical analysis in this study was conducted using the chi-square test. Based on the bivariate analysis of the relationship between the mother's age and the incidence of low birth weight, it was found that respondents under the age of 21 had the highest incidence of low birth weight, with 19 individuals or 79.2%, and 5 respondents (20.8%) did not experience low birth weight. Respondents aged 21-34 years showed that 17 respondents (42.5%) experienced low birth weight, while 23 respondents (57.5%) did not. Respondents aged >=35 years indicated that 22 individuals or 75.9% experienced low birth weight, and 7 respondents (24.1%) did not experience it.

Based on the results of the statistical test, a p-value of 0.002 (p-value < 0.05) was obtained, indicating that the research hypothesis is accepted, meaning that there is a relationship between the mother's age and the occurrence of low birth weight. The research results show that respondents under the age of 21 experienced the highest incidence of low birth weight, with 19 respondents (79.2%). Respondents aged >=35 years also had a significant number of cases of low birth weight, with 22 respondents (75.9%). This indicates that pregnant mothers aged <21 years and >=35 years are at risk of giving birth to low birth weight babies.

Relationship between Mother's Education and Incidence of Low Birth Weight

Based on the respondents' education level, a higher number of them experienced low birth weight, with 58 respondents (62.4%), compared to those who did not experience it, with 35 respondents (37.6%). The majority of cases of low birth weight occurred among mothers with an education level of SMA (Senior High School), totaling 29 respondents (65.9%). The statistical test using the Chi-Square Tests showed a p-value of 0.349 (p-value > 0.05) for the education level of not attending school-Junior High School, indicating no significant relationship with the incidence of low

birth weight [11]. However, for the education level of SMA-Bachelor's degree, the p-value was 0.017 (p-value < 0.05), suggesting a significant relationship between SMA-Bachelor's degree education level of the mother and the incidence of low birth weight.

4. CONCLUSION

Based on the research conducted by the researcher on the relationship between the mother's age and the incidence of low birth weight among mothers giving birth at Rumah Sakit Daerah Selasih Pangkalan Kerinci using the medical records from January 2020 to December 2021, the following conclusions were drawn: 1. Out of 93 research samples, 58 (62.4%) mothers gave birth to babies with low birth weight, while 35 (37.6%) mothers did not. 2. This study found a significant relationship between the age of pregnant mothers and the occurrence of low birth weight at Rumah Sakit Daerah Selasih Pangkalan Kerinci. Regular prenatal care (Ante Natal Care) is essential for pregnant mothers to undergo screening to assess their health and the health of the fetus. And then, the future studies can use other methods, such as cohort studies, with larger sample sizes. Studies should not be limited to a single location. For healthcare workers and related institutions it is recommended that healthcare workers and related institutions serve as sources of information and provide proper education to pregnant women or couples planning for pregnancy. And last, this research can provide a deeper understanding of the relationship between the mother's age and the occurrence of low birth weight, contributing to the knowledge of students.

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