

## Original Article

# Factors That Influence the Event of Low Birth Weight in The Room of Peristi in Tolitoli General Hospitals

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### ABSTRACT

**Background:** Low birth weight is a public health problem because it is one of the causes of high infant mortality. Factors that can affect LBW include maternal weight, Hb and the age of the mother, which is very important to monitor the health status of children from birth. Objective To determine the factors that influence the incidence of low-birth-weight babies (LBW) in the Hospital Room at Tolitoli General Hospital.

**Methods:** The design used in the study is correlational analytic. Population is all mothers and babies. The sample size was 32 respondents using Purposive sampling techniques. Independent variables of the study were a history of pregnancies with low birth weight, maternal age, anemia. The dependent variable is LBW incidence. Data was collected using a questionnaire, then the data were analyzed using logistic regression tests with a significance level of  $\alpha \leq 0.05$ .

**Results:** The results showed that most of the respondents aged 17-25 years as many as 16 respondents (50%), weight during pregnancy 61-70 kg as many as 17 respondents (53.1%), mothers with Hb > 11 gr / dl during pregnancy as much 26 respondents (81.3%). The results of the study obtained Overall Statistics found that  $p = 0,000$  which means that the independent variables influence together on the dependent variable. If you see the value of p per variable, body weight is  $p = 0.006$ , age  $p = 0.184$ , Hb  $p = 0.000$ , so it can be concluded that the variables that affect the incidence of LBW are maternal weight and Hb during pregnancy.

**Conclusion:** LBW in infants can be caused by maternal weight and Hb or anemic conditions in the mother during pregnancy, this will cause the baby to lack nutritional and energy needs during pregnancy.

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## Introduction

Low birth weight (LBW) is a newborn with a weight <2500 grams (Ministry of Health, 2017). LBW is one indicator to see how the health status of children, so it is very important to monitor

how the health status of children from birth, whether the child is in good health status or not. LBW is a public health problem because it is one of the causes of high infant mortality (IMR). Babies are born after being conceived for approximately 40 weeks in the mother's womb. Normal weight babies at birth



babies weigh around about 2500 grams (Fitri, 2018; Hartiningrum & Fitriyah, 2018; Permana & Wijaya, 2019). One of the factors both before and during pregnancy that affect pregnancy success is the nutritional status of pregnant women. The nutritional status of pregnant women affects the birth weight and is closely related to the level of infant health and infant mortality.

WHO data says there are 15% of babies worldwide (> 20 million people) with LBW (WHO, 2017). Low birth weight babies (LBW) are currently a problem throughout the world, because they are the cause of neonatal pain and death. The prevalence of Low-Birth-Weight Babies (LBW) is estimated to be around 15% of all births in the world with a limit of 3.3% and are more common in developing countries or low socio-economics. Statistical data shows that about 90% of LBW incidence is obtained in developing countries and the mortality rate is 35 times higher than babies with birth weight more than 2500 grams. In the first semester of 2017 there were 10,294 cases or 22 infant deaths per 1,000 births. "The main causes of neonatal death are low birth weight (LBW) including prematurity, followed by asphyxia and infection (Pramita, 2017) Director General of Public Health of the Ministry of Health in 2017 states that in 2016 in Indonesia there were 5,112,269 maternity mothers assisted by health workers, in East Java there are 609,279 maternity women (Ministry of Health, 2017). The results of the preliminary study in the last 3 months are around 30 to 32 LBW in the Tolitoli Hospital Hospital Room. The results of a preliminary study of 10 LBWs have 6 mothers who have a history of previous pregnancy LBW, 2 Anemias and 2 mothers aged <20 years also have a history of childbirth with LBW, and the incidence of anemia in the mother.

Some factors in the occurrence of LBW are a history of pregnancy before giving birth to LBW, maternal age, anemia, parity, maternal height, birth distance, and mother's work. The maternal pregnancy factor is labor more than three times the risk of complications such as bleeding and infection so there is a tendency for babies born with LBW conditions (Putra, 2012). The age factor of the mother also determines the occurrence of LBW because pregnancy that occurs under the age of 20 years or over 35 years has a tendency to not meet adequate nutritional needs for fetal growth which will have an impact on infant birth weight (Atikah, 2010). Age of mother less than 20 years during pregnancy is at risk of having low birth weight 1.5-2 times greater than pregnant women aged 20-35 years. Anemia factor in pregnant women is the condition of the mother with hemoglobin (Hb) in the blood <11.0 g%. Anemia plays an important role in the occurrence of breeding babies with LBW. Low birth weight babies have short- and long-term effects on these babies with high levels of morbidity and mortality. In women who are short often found a narrow pelvis and this condition can affect the course of labor, causing low birth weight babies (Khoiriah, 2017; Puspitaningrum, 2018). A short birth distance will cause a mother to not have enough time to restore her body condition after giving birth before, so that the risk of reproductive system disruption will affect the birth weight. Working mothers tend to have a little rest so that the risk of pregnancy complications, such as placental detachment that is directly related to LBW (Haryanti et al., 2019; Novianti & Aisyah, 2018).

Based on the results of previous studies by several researchers found some risks to the incidence of LBW are Body Mass Index, weight gain, and Upper Arm Circle (Ismi Trihardiani, 2011). The results

showed that the variables associated with the incidence of LBW were a history of illness during pregnancy, namely anemia, age, birth distance, quality of antenatal care (Sistiarani, 2008). The number of factors that influence LBW is expected that health workers know the most influential factors where health workers work so they can plan their best interventions. Based on this background the researchers were interested in researching the title of the factors that influence the incidence of low-birth-weight babies (LBW) in the Hospital Room at Tolitoli General Hospital.

### Method

Design used in the study is correlational analytic. Population is all mothers and babies. The sample size was 32 respondents using Purposive sampling techniques. Independent variables of the study were a history of pregnancies with low birth weight, maternal age, anemia. The dependent variable is LBW incidence. Data was collected using a questionnaire, then the data were analyzed using tests logistic regression with a significance level of  $\alpha \leq 0.05$  (Nursalam, 2015).

### Results

Table 1. Distribution of Frequency of Characteristics of Respondents by Age in the Tolitoli General Hospital Hospital Room on 30 August-28 September 2018 (n = 32)

No	Age	Frequency	Percentage
1	17-25 years	16	50.0
2	26-35 years	10	31,3
3	36-45 years	6	18,8
<b>Total</b>		<b>32</b>	<b>100</b>

The results of the study showed that most of the respondents aged 17-25 years were 16 respondents (50%).

Table 2. Frequency Distribution Characteristics of Respondents by education in the room Peristi Tolitoli General Hospital on 30 August to 28 September 2018 (n = 32)

No	Education	Frequency	Percentage
1	Elementary	11	34.4
2	Secondary school	10	31.3
3	High school	11	34,4
<b>Total</b>		<b>32</b>	<b>100</b>

The results of the study showed that most respondents had elementary and high school education, each with 11 respondents (34.4%).

Table 3. Distribution of Frequency Characteristics of Respondents based on occupation in the Tolitoli General Hospital Hospital Room on 30 August-28 September (n = 32)

No	Job	Frequency	Percentage
1	Employee	6	18,8
2	Self Employed	7	21,9
3	Not Working	19	59,4
<b>Total</b>		<b>32</b>	<b>100</b>

The results of the study showed that at most 19 respondents did not work (59.4%).

Table 4. Frequency Distribution of Respondents by weight during pregnancy in the room Peristi Tolitoli General Hospital on 30



August to 28 September 2018 (n = 32)

No.	Pregnancy Weight	Frequency	Percentage
1	< 50 kg	2	6.3
2	51-60 kg	8	25.0
3	61-70 kg	17	53.1
4	> 71 kg	5	15.6
<b>Total</b>		<b>32</b>	<b>100</b>

The results of the study showed that most respondents had a weight at 61-70 kg of pregnancy as many as 17 respondents (53.1%) .

Table 5. Frequency Distribution of Respondents based on Hb in the Conference Room of Tolitoli General Hospital on 30 August-28 September 2018 (n = 32)

No	Hb	Frequency	Percentage
1	<11 gr / dl	6	18.8
2	> 11 gr / dl	26	81.3
<b>Total</b>		<b>32</b>	<b>100</b>

The results of the study found that most respondents had Hb> 11 gr / dl during pregnancy as many as 26 respondents (81.3%) and the least Hb <11 gr / dl as many as 6 respondents (18.8%) .

Table 6. Cross Tabulation between Education and the incidence of LBW on respondents in the Tolitoli General Hospital Hospital Room on 30 August-28 September 2018 (n = 32)

Education	LBW			
	LBW		Not LBW	
	Σ	%	Σ	%
Elementary	4	12,5	7	21,9
Secondary school	1	3,1	9	28,1
High school	3	9,4	8	25
<b>Total</b>	<b>8</b>	<b>25</b>	<b>24</b>	<b>75</b>

The results of the study showed that most respondents had junior

high school education with 9 non-LBW incidents as many as 9 respondents (28.1%).

Table 7. Cross Tabulation between Occupations and LBW incidence in respondents in the Tolitoli General Hospital Hospital Room on 30 August-28 September 2018 (n = 32)

Occupation	LBW			
	LBW		Not LBW	
	Σ	%	Σ	%
Employee	1	3,1	5	15,6
Self Employed	2	6,3	5	15,6
Not Working	5	15,6	14	43,8
<b>Total</b>	<b>8</b>	<b>25</b>	<b>24</b>	<b>75</b>

The results of the study showed that the majority of respondents did not work by having non-LBW events as many as 14 respondents (43.8%).

Table 8. Cross tabulation between ages with LBW incidence in respondents in the Tolitoli General Hospital Hospital Room on 30 August-28 September 2018 (n = 32)

Age	LBW			
	LBW		Not LBW	
	Σ	%	Σ	%
17-25 years	4	12,5	12	37,5
26-35 years	0	0	10	31,3
36-45 years	4	12,5	2	6,3
<b>Total</b>	<b>8</b>	<b>25</b>	<b>24</b>	<b>75</b>

The results of the study showed that the majority of respondents had a age of 17-25 years with 12 non-LBW events respondents (37.5%).

Table 9. Cross tabulation between body weight and LBW incidence in respondents in the Tolitoli General Hospital Hospital Room on 30 August-28 September 2018 (n = 32)



Maternal Body Weight	LBW			
	LBW		Not LBW	
	Σ	%	Σ	%
< 50 kg	2	6,3	0	0
51-60 kg	4	12,5	4	12,5
61-70 kg	1	3,1	16	50
> 71 kg	1	3,1	4	12,5
Total	8	25	24	75

The results of the study showed that most respondents had a heavy 61-70 kg body with 16 non-LBW incidence (50%).

Table 10. Cross Tabulation between Hb with LBW paa respondents in the room Peristi Tolitoli General Hospital on 30 August to 28 September 2018 (n = 32)

HB	LBW			
	LBW		Not LBW	
	Σ	%	Σ	%
< 11 gr/dl	6	18,8	0	0
> 11 gr/dl	2	6,3	24	75
Total	8	25	24	75

The results showed that most respondents had Hb> 11 gr / dl with 24 non-LBW incidents (75%).

Table 11. Statistical Test

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)
Step Constant	1,099	,408	7,242	1	,007	3,000
0						
		Score	df	Sig.		
Step Variables	LBW	7,551	1	,006		
0	Age	1,766	1	,184		
	HB	22,154	1	,000		
Overall Statistics		22,871	3	,000		

Statistical test on this new study used regression, *logistic* obtained Overall Statistics p = 0.000 which means that the independent variables affect simultaneously against dependent variable. If you see the value of p per variable obtained weight p = 0.006, age p = 0.184, Hb p = 0.000, so it can be concluded that

the variables that affect the incidence of LBW are weight

## Discussion

Based on logistic regression test Overall Statistics p = 0,000 means that the independent variable affects together on the dependent variable. If you see the value of p per variable, body weight is p = 0.006, age p = 0.184, Hb p = 0.000, so it can be concluded that the variables that affect the incidence of LBW are maternal weight and Hb during pregnancy.

Low birth weight babies (LBW) are babies with a birth weight of less than 2500 grams regardless of gestational age. Birth weight is the weight of the baby weighed within 1 hour after birth. The status of antenatal care (the frequency and quality of antenatal care, health care for pregnant women, age at the time of pregnancy) can also be at risk of giving birth to LBW (Sistiarani, 2008). Problems that are often encountered in LBW include the general condition of an unstable baby, stopping breathing, sucking and swallowing reflex co-ordination, and poor control of oral motor function, so there is a risk of malnutrition and delay in growth and development. The delay can be seen in LBW physical, such as low body weight (<2500 grams), short body length (≤ 45 cm), and small head circumference (<33 cm). This nutritional deficiency is caused by increasing growth rates, as well as increasing metabolic needs, inadequate energy reserves, imperfect physiology, or because babies are sick. Availability of digestive enzymes for carbohydrates, proteins and fats is closely related to gestation. Gastric emptying time is slower for LBW babies than for term infants. Likewise the function of sucking and swallowing is still not perfect, especially if the baby with a gestation period of less



than 34 weeks (Bansal et al., 2019; Hailu & Kebede, 2018; Kandel & Kafle, 2017).

The results showed that the incidence of LBW was influenced by maternal weight and maternal anemia. Factors from the mother included low pre-pregnancy weight, inadequate weight gain during pregnancy, malnutrition, a history of pregnancies with low birth weight, adolescence, short body, frequent pregnancy, and anemia (Hanum et al., 2014). Fetal and placental factors that can cause LBW include multiple pregnancy, hydro amnion, and congenital defects (Bansal et al., 2019; Ghosh et al., 2018; Iltaf et al., 2017). Low birth weight babies (LBW) have a high risk of mortality and morbidity in neonates. LBW is very susceptible to infection, because LBW body resistance is still low. Maturity of organ function, especially the gastrointestinal tract, greatly determines the type and method of giving nutrition to LBW. Clinical conditions are often a determining factor, whether enteral or parenteral nutrition will be given. The cause of LBW is generally multifactorial. However, the most common cause is premature birth. Premature babies must be prepared so that they can reach the stage of optimal growth and development, such as babies born enough months so that the quality of life of premature babies will be obtained optimally. One effort that can be done is to provide adequate nutritional intake for the process of growing chases in premature babies faster than term infants.

## CONCLUSION

The results of the study showed that more than half of respondents had a weight of 61-70 kg during pregnancy as many as 17 respondents (53, 1%). The results showed that most of the respondents aged 17-25 years were 16 respondents (50%). The results showed that more than half of

the respondents had Hb > 11 gr / dl during pregnancy as many as 26 respondents (81.3%). Based on Overall Statistics, it is found that  $p = 0,000$ , which means that the independent variables influence together on the dependent variable. If you see the value of  $p$  per variable, body weight is  $p = 0.006$ , age  $p = 0.184$ , Hb  $p = 0.000$ , so it can be concluded that the variables that affect the incidence of LBW are maternal weight and Hb during pregnancy.

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