

RELATIONSHIP BETWEEN MATERNAL AND OBSTETRIC FACTORS WITH LOW BIRTH WEIGHT EVENTS IN NEWBORNS IN REGIONAL GENERAL HOSPITAL DR. PIRNGADI MEDAN

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ABSTRACT

Background: Cases of Low Birth Weight babies (LBW) are a health problem that is found in many countries, especially in developing and lagging countries. The causes of LBW babies are multifactorial, one of which is maternal and obstetric. The purpose of this study was to determine the relationship between maternal and obstetric factors with the incidence of LBW.

Materials and Methods: This study was a case control study design. The study was conducted at the Regional General Hospital dr. Pirngadi Medan with 190 babies born in the year 2018 (130 LBW babies, 59 babies of normal weight). Samples were obtained as many as 68 divided into 34 case groups and 34 control groups. Factors such as lack of iron supplementation (anemia), history of LBW at previous labor, history of hypertension in pregnancy (preeclampsia, eclampsia), placenta previa, placental abruption. Data were analyzed using Chi-square test, and multiple logistic regression test.

Result: The study showed that factors related to LBW incidence in newborns were ? maternal anemia ($p = 0.032$), history of LBW at previous delivery ($p = 0.014$), and placenta praevia ($p = 0.027$). Unrelated factors were history of hypertension in pregnancy ($p = 1.124$), placental abruption ($p = 0.241$). The most dominant factor associated with the incidence of LBW is the history of LBW at previous deliveries (PR = 4.35), meaning that mothers who have a history of previous deliveries of LBW babies have a 4.3 times higher chance than mothers who do not have a history of LBW at previous deliveries. Conclusion: LBW is associated with anemia, a history of LBW at previous labor, and placenta previa. Health workers must routinely educate mothers at ANC to prevent LBW babies.

Conclusion: The conclusion of this study that of the factors associated with the incidence of LBW in newborns is anemia, a history of LBW in previous labor, and placenta previa. While the history of hypertension and placental abruption does not show a real relationship.

Keywords: Maternal and obstetric factors, Low Birth Weight, Newborns

1.0 Introduction

Reports from the World Health Organization (WHO), globally around 13 million babies are born before the mother's gestational age reaches 37 weeks. The incidence rate is high and occurs among middle and low income countries. As many as 16 million teenage girls give birth each year. Babies born to young mothers have counted 11 percent worldwide and 95 percent in developing countries. Newborns of teenage mothers are also more likely to experience Low Birth Weight (LBW), and also have long-term risks or effects. Every year in developing countries more than 20 million Low Birth Weight (LBW) babies are born. Incidence of LBW ranges from 6 percent to 18 percent worldwide with sub-Saharan Africa accounting for 13 percent to 15 percent (Bililign, Legesse, & Akibu, 2018).

In South Asia, the magnitude of LBW problems is far more than in developed countries. Asia has the highest prevalence of LBW compared to developed countries and some developing countries (Africa). In India, data from several studies conclude that the prevalence of LBW is 32.8 percent and 33 percent of LBW births are premature (Mandal, 2018). LBW incidents in seven Southeast Asian countries ranged from 7-21 percent, with incidents in Indonesia 7 percent (still above Vietnam 5 percent), but far better compared to Burma 9 percent, Timor Leste 10 percent, Cambodia 11 percent, Laos 15 percent and Philippine 21 percent (Kumalasari, Tjekyan, & Zulkarnain, 2018).

Based on data from Basic Health Research in 2018, it shows that the proportion of birth weight less than 2500 grams (LBW) of 6.2 percent. Indonesia's National Medium-Term Development Plan for the reduction target of LBW in 2019 is 8 percent. This percentage shows that the reduction in LBW in Indonesia has been achieved, and the figure is also lower than the National Research and Development Agency's data in the Indonesian Health Profile in 2013, indicating that the percentage of LBW events nationwide was 10.2 percent. The highest LBW incidence rate at the provincial level was in Central Sulawesi Province at 8.9 percent and the lowest was Jambi Province at 2.6 percent (Kemenkes RI, 2018).

Based on data from the Central Statistics Agency of North Sumatra Province that newborn babies in 2017 were 291,363 babies, the number of LBW were 1,250 babies (0.43 percent), malnourished babies as many as 1,781 infants and 1,347 infants received care. Based on these data it is also known that the highest number of babies experiencing LBW is Regency of Deli Serdang with 234 babies while some districts have no LBW babies (0) namely South Tapanuli Regency, South Nias, and Tebing Tinggi City (BPS Sumut, 2018).

Low birth weight in newborns is caused by many factors such as premature birth, namely gestational age at birth, generally under 37 weeks of gestation or small babies for gestational age and slow prenatal growth rates or a combination of both (Gogoi, 2018). LBW is a strong predictor for measuring body weight in the next phase because babies with LBW rarely reach normal weight measurements in childhood. Studies in the Indian population reveal that the causes of LBW are diverse: maternal infections, low nutritional intake, higher nutritional losses, increased nutritional needs during pregnancy (Mandal, 2018). Aside from that, LBW babies can also be caused by maternal factors such as young or old pregnancy, number of children or parity, pregnancy distance less than 2 years, maternal education and socioeconomic level, can also be caused by nutritional status or nutritional status of mothers

during pregnancy , low hemoglobin levels or the occurrence of anemia, pregnant women experiencing or suffering from heart disease, have a history of previous LBW delivery, multiple pregnancy (gamelli), incomplete ANC visit (Prawirohardjo, 2012).

This study will empirically examine the risk factors for LBW infants at Regional General Hospital Dr. Pirngadi Medan based on the results of the study (Bililign et al., 2018) one of them is maternal and other obstetric factors including anemia, history of LBW, history of hypertension, placenta previa, and placental abruption.

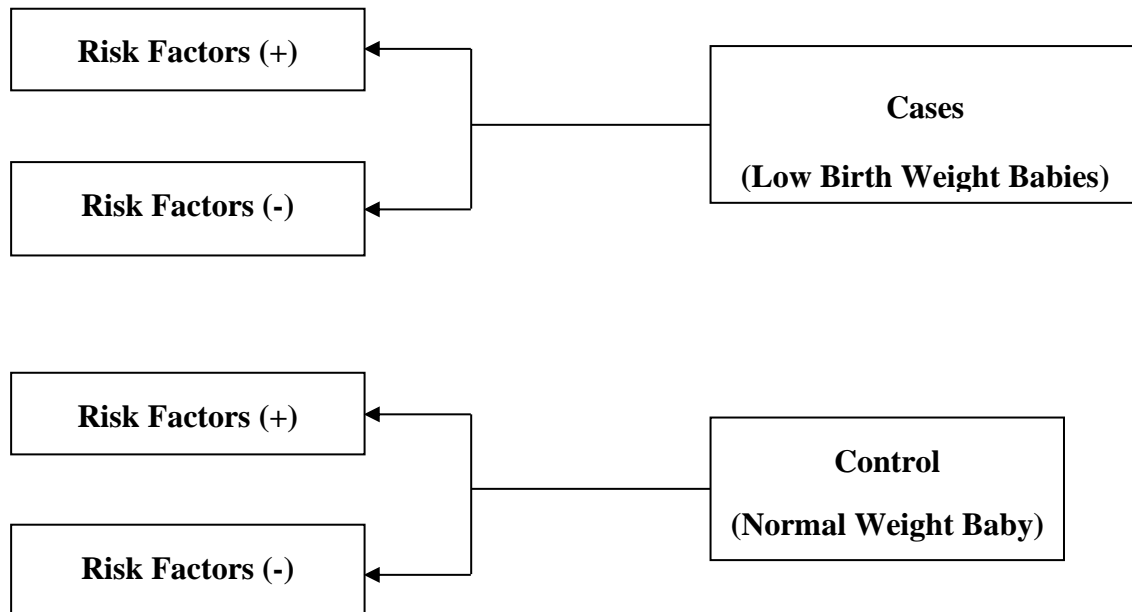
Regional General Hospital Dr. Pirngadi Medan is a hospital belonging to the Medan City government. Based on data from the medical records section of the Regional General Hospital Dr. Pirngadi Medan that the number of deliveries in 2017 was 311 people and those in 2018 decreased to 190 people. Data on the number of babies experiencing LBW during the last 2 years is in 2017 as many as 126 babies and in 2018 as many as 131 babies. The increase was caused by many factors, one of which was because the Regional General Hospital Dr. Pirngadi Medan is a referral hospital so that many community health centers or maternity clinics do referral cases of LBW to the Regional General Hospital Dr. Pirngadi Medan. The problem in this study is what factors are associated with the incidence of LBW in newborns at the Regional General Hospital Dr. Pirngadi Medan is seen from other maternal and obstetric factors.

2.0 Materials and Methods

This type of research is an observational analytic study with case control design. The location of this study in the Regional General Hospital Dr. Pirngadi Medan. This research was conducted in June 2019. The population in this study infants born in 2018 were divided into 2 groups. The case group was 34 out of 131 infants and the control group was 34 out of 59 infants. The sampling technique is systematic random sampling. Data collection in this study using secondary data from inpatient medical records. Data were tested univariately and bivariately with chi-square test, and multivariate with multiple logistic regression tests at 95% confidence level ($\alpha=0,05$).

This study will choose infants who experience low birth weight at the Regional General Hospital dr. Pirngadi Medan as a group of cases and babies born with normal weight as a control group based on risk factors (+) and risk factors (-).

The case control design in this study is described as follows :



3.0 Result

3.1 The relationship between ANC visits and LBW events

Based on the results of the study the relationship of ANC visits with LBW events showed that respondents who gave birth to LBW babies the majority of ANC visits <4 times as many as 32 people (47.1%). Respondents who gave birth to normal babies the majority of ANC visits > 4 times as many as 24 people (35.3%).

Statistical test results using the chi-square test obtained p-value <0.05 means that there is a significant relationship between ANC visits with the incidence of LBW at the General Hospital Dr. Pirngadi Medan in 2018. The value of OR = 38,400 shows that mothers who visited ANC less than four times (incomplete) had a 38.4 times higher chance of giving birth to LBW babies compared to mothers who did complete visits (more or equal to four ANC visits). Based on the results of a complete statistical calculation can be seen in the following table :

Table 4.8.

The Relationship between ANC Visit and LBW Event at RSUD Dr. Pirngadi Medan in 2018

No	ANC Visit	The incidence of LBW				Total		p-value	OR
		LBW		Normal		N	%		
		n	%	N	%				
1	<4 times	32	47,1	10	14,7	42	61,8	0,000	38,400
2	≥4 times	2	2,9	24	35,3	26	38,2		
	Total	34	50,0	34	50,0	68	100,0		

3.2 Relationship of childbirth history with LBW events

Based on the results of research on the relationship with LBW showed that respondents who received LBW babies based on most of the information gathering before their time, each amounted to 17 people (25.0%). There were 33 respondents (48.5%) who were born in normal babies.

Statistical test results using the chi-square test obtained p-value <0.05 means that there is a significant relationship between the history of childbirth with the incidence of LBW in Dr. General Hospital Pirngadi Medan in 2018. The value of OR = 33,000 shows that mothers who had a history of LBW before giving birth have a chance to give birth to LBW babies by 33 times higher compared to mothers who had no prior LBW birth history. Based on the results of a complete statistical calculation can be seen in the following table :

Table 4.10.

The Relationship Between Childbirth History and LBW Events in RSUD Dr. Pirngadi Medan in 2018

No	Childbirth History	The incidence of LBW				Total		p-value	OR
		LBW		Normal		N	%		
		n	%	n	%				
1	Yes	17	25,0	1	1,5	18	26,5	0,000	33,000
2	No	17	25,0	33	48,5	50	73,5		
Total		34	50,0	34	50,0	68	100,0		

3.3 The relationship between anemia and LBW incidence

Based on the research results of the relationship of anemia with LBW events showed that the majority of respondents who gave birth to LBW infants had anemia (hemoglobin less than 11 gr / dL) as many as 18 people (26.5%). The majority of respondents who gave birth to normal babies did not have anemia (hemoglobin more than 11 gr / dL) as many as 25 people (36.8%).

Statistical test results using the chi-square test obtained p-value <0.05 meaning that there is a significant relationship between anemia with the incidence of LBW in Dr. General Hospital Pirngadi Medan in 2018. The value of OR = 3.125 shows that mothers who had anemia during pregnancy had the opportunity to give birth to LBW babies by 3.1 times higher than mothers who did not have anemia during pregnancy. Based on the results of a complete statistical calculation can be seen in the following table :

Table 4.9.
The Relationship between Anemia and LBW at RSUD Dr. Pirngadi Medan in 2018

No	Anemia	The incidence of LBW				Total		<i>p</i> -value	OR
		LBW		Normal		N	%		
		n	%	n	%				
1	Hb < 11 gr/dL	18	26,5	9	13,2	27	39,7	0,047	3,125
2	Hb ≥ 11 gr/dL	16	23,5	25	36,8	41	60,3		
	Total	34	50,0	34	50,0	68	100,0		

4.0 Discussion

The birth weight of a baby reflects the results of the development in the womb and the adequacy of the baby's nutrition at birth. Babies are said to have low birth weight or LBW if they weigh less than 2500 grams (less than 2.5 kilograms). Low birth weight not only affects the baby's condition at birth but also health and even the survival of the baby. In general, babies born prematurely or less than 37 weeks of gestation have lower birth weight than normal babies. According to Prawirohardjo that LBW can be caused by maternal factors such as young or old pregnancy, number of children or parity, pregnancy distance less than two years, level of education and socioeconomic mother, can also be caused by nutritional status or nutritional status of mothers during pregnancy, hemoglobin levels low or occurrence of anemia, pregnant women experiencing or suffering from heart disease, have a history of previous LBW delivery, multiple pregnancy (gamelli), incomplete antenatal care visits (Prawirohardjo, 2012). This study found that the variables that influence the incidence of LBW in the Regional General Hospital dr. Pirngadi Medan in 2018 was an antenatal care visit, anemia, and a history of childbirth

5.0 Conclusion and recommendation

The conclusion of this study that of the factors associated with the incidence of LBW in newborns is anemia, a history of LBW in previous labor, and placenta previa. While the history of hypertension and placental abruption does not show a real relationship.

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Declaration

The authors declare that this article is our original work and has never been published before..

Authors contribution

Author 1 : Research concepts and designs, preparing research proposals, collecting data, analyzing data and writing manuscripts

Author 2 : Research concepts and designs, supervising the research process, actively involved in data analysis, reviewing manuscripts and final editing.

Author 3 : Research concepts and designs, supervising the research process, actively involved in data analysis, reviewing manuscripts and final editing.

Author 4 : Supervising research, review manuscripts

Author 5 : Supervising research, review manuscripts

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