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PREDICT INFANT LOW BIRTH WEIGHT (LBW) BASED ON CHARACTERISTICS OF MATERNAL

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ABSTRACT:

Purpose of the study: The purpose of this study was to predict infant low birth weight (LBW) based characteristics of Maternal

Methodology: The design of this study used analytic correlation. The population is all mothers who gave birth to low birth weight infants (LBW) in Wahidin Sudiro Husodo City General Hospital with 128 people and the sampling used was total sampling. Data was collected with medical record data instruments. Analize data with Cross Tabulation

Main Findings: The results showed the age of pregnant women, gestational age, pregnancy spacing, the age of pregnant women over 35 years and parity can be predicted as a factor causing babies born with low birth weight. The most dominant factor in the causes of LBW is 25-38 weeks' gestatio

Applications of this study: the birth of infants with low birth weight can be predicted so that it can reduce infant mortality rate (IMR).

Novelty/Originality of this study: pregnant women should always carry out regular pregnancy checks, especially for groups of pregnant women who are at high risk so that appropriate measures to prevent the birth Infants of low birth weight (LBW)

KEYWORDS: Maternal, low birth weight, predictor, parity, anemia.

INTRODUCTION:

High Infant Mortality Rate (IMR) shows the low quality of the health sector in the country (BPS, 2016). One of the infant deaths is caused by birth Low Birth Weight (LBW). In Indonesia, LBW births are actually followed by infant mortality (Hidayat, 2010). Birth of LBW continues to increase annually in developed countries such as the United States. Babies with LBW according to WHO statistical data indicators (2010) are infants weighing <2500 grams, regardless of gestational age. Infant mortality rates are caused by Low Birth Weight (LBW), Asphyxia, Pneumonia, Diarrhea, Malnutrition, and problems with breastfeeding (Windari & Fitriyanti, 2015).

WHO and UNICEF (2013) stated that there was an increase in the incidence of LBW (2009-2013 period) from 15.5% to 16% and 95.6% of that number was in developing countries. The World Health Assembly in 2012 approved the Comprehensive Implementation Plan Maternal, Infant and Young Child Nutrition by targeting a 30% reduction in LBW by 2025 (WHO, 2014). The biggest causes of AKB in Indonesia include LBW 29%, sepsis, and pneumonia 25%, asphyxia and trauma 23% (Depkes RI, 2014). Statistics show that 90% of LBW events are found in developing countries and 35 times higher than infants with birth weight more than 2500 grams. However, in the province of East Java, there was an increase in the incidence of LBW, which was 10% in 2010

to 11% in 2013 (Riskesdas, 2013). LBW that was reported in Mojokerto District that there were 537 LBWs (3.3%), 281 (3.3%) males and 256 females or 3.2% (Mojokerto District Health Office Profile, 2015).

The results of the preliminary study at Wahidin Sudiro Husodo Hospital in Mojokerto City on 28 January 2019 obtained data from 1 January - 28 January 2019 that there were 11 LBW cases. The main cause of LBW is caused by the age of the mother as many as 4 people, pregnancy age as many as 1 person, parity as many as 3 people, pregnancy distance as many as 2 people, anemia status as many as 1 person, and other diseases complications (Medical Record RSUD Wahidin Sudiro Husodo Mojokerto City.

Mother is one of the causes of LBW. Maternal factors that include nutrition during pregnancy are less, maternal age (<20 years and> 35 years), the distance of pregnancy is too close, and chronic disease. As for other risks that affect the incidence of LBW include parity, economic status, education, and employment (Sistriani, 2008). Characteristics of mothers who have an influence on the incidence of LBW are a history of labor (giving birth to SC, normal), biomedical factors (parity and gestational age), and socioeconomic (maternal education). The mother's age is closely related to the weight of the baby born. Mothers who are pregnant under the age of 20 years and above 35 years are at risk of 2-4 times higher birth weight for LBW (Ahmad, 2015). Low Birth Weight (LBW) will cause problems including hypothermia, hypoglycemia, infection or sepsis and other disorders due to the worst can cause death in infants.

Another impact of LBW is physical problems, namely chronic lung disease, disorders vision (Retinopathy) and hearing and congenital abnormalities or congenital abnormalities (Nursalam, 2013). Risk factors affecting LBW in terms of maternal factors, pregnancy, and fetal factors. Maternal factors include nutrition during pregnancy, maternal age (<20 years and> 35 years), pregnancy distance too close, and chronic illness. Other risk factors that affect the incidence of LBW include parity, economic status, education and employment of mothers (Sistriani, 2008).

Efforts to reduce low birth weight babies (LBW) include increasing periodic pregnancy checks at least 4 times during the period of pregnancy and starting from a young gestational age, pregnant women suspected of being at risk, especially factors that lead to giving birth to LBW babies should be reported quickly, monitored, and referred to more capable health services. Utilization of IEC in pregnant women includes counseling on the nutritional needs of pregnant women, fetal growth and development in the womb. Mothers should be able to plan their births during the reproductive age period (20-35 years). Support from other related sectors is needed to participate in increasing maternal knowledge and economic status of families in order to increase access to the use of antenatal care and nutritional status during pregnancy.

LITERATUR REVIEW:

According to Soetjiningsih (2009) Low Birth Weight (LBW) babies are also influenced by other factors during pregnancy, such as severe illness, pregnancy complications, malnutrition, stress conditions in pregnant women can affect fetal growth through adverse effects on their mothers, or placental growth and transport of nutrients to the fetus. Determination of pregnant women giving birth to poor output, which is generally low birth babies, especially with an even-term pregnancy (LBW) in developing countries is malnutrition during pregnancy which can be measured from the following:

1. Low weight gain
2. Low body mass index
3. Short mother's height
4. Micro nutrient deficiency

Some other determinants:

1. Pregnant women with young age
2. Suffering from malaria during pregnancy
3. Suffering from an infectious disease during pregnancy
4. Smoking (Kusharisupeni, 2007).

The size of a newborn is influenced by various factors that affect the environment of the mother and fetus. The relationship between low birth weight with morbidity and perinatal mortality has been known for a long time. However, in the past there have been different implications of birth weight related to gestational age. Babies born with a low body weight can have a body size that is appropriate for their gestational age, but are not yet ripe because they are born before the gestational age is months. Other babies born with low body weight can have a smaller body size for gestational age, even if born before or at the time of full moon (Quigley, M., & McGuire, W., 2014).

Antenatal Care is a planned program of observation, education and treatment of medicines for pregnant women, to obtain a safe and satisfying pregnancy and childbirth process. The antenatal goals are to keep the mother healthy during pregnancy, childbirth and childbirth and to have the baby born healthy, monitor the possible risks of pregnancy, and plan optimal management of high-risk pregnancies and reduce morbidity and mortality of the mother and perinatal fetus (Stephens, B. E., Walden, R. V., Gargus, R. A., Tucker, R., McKinley, L., Mance, M., ... & Vohr, B. R., 2009).

METHODS:

Design in this study using a analitic correlation based on place, time, mother's age, gestational age, parity, pregnancy distance, and anemia status. The population is all mothers who gave birth to LBW at Wahidin Sudiro Husodo Hospital Mojokerto City from January - December 2018 A total of 128 people. The sampling technique used was Total Sampling. The samples are all mothers who gave birth to LBW at Wahidin Sudiro Husodo General Hospital, Mojokerto City in January-December 2018, which were 128 people. Time of collection was carried out on March 2, 2019, until April 3, 2019, by taking patient status data in the Medical Record Room of Wahidin Sudiro Husodo Hospital, Mojokerto City. "Maternal Characteristics as Predictors for Infant Birth Low Birth Weight (LBW) in Wahidin Sudiro Husodo Hospital Mojokerto City Data is obtained from medical records because the data taken is secondary data. The analysis in this study uses Frequency, Descriptive and Mode distributions processed using SPSS 20.0 For Windows.

DISCUSSION:

1. General Data.

Characteristics of respondents based on age, gestational age, a distance of pregnancy, parity, anemia.

Table 1 Distribution of Frequency of Characteristics of Respondents in Inpatient Rooms of Wahidin Sudiro Husodo Hospital Mojokerto City in January-December 2018.

No	Type	F	(%)
1	**Age**		
	<20 years old	16	12.5
	20-35 years old	47	36.7
	>35 years old	65	50.8
	Total	**128**	**100**
2	**Pregnancy Age**		
	<20 week	4	3.1
	25-38 week	97	75.8
	>38 week	27	21.1

	Total	**128**	**100**
3	**Distance of pregnancy**	85	66.4
	<2 years	43	33.6
	>2 years		
	Total	**128**	**100**
4	**Parity**		
	1 child	41	32.0
	2-3 child	45	35.2
	>3 child	42	32.8
	Total	**128**	**100**
5	**Anemia**		
	Not anemia	79	61.7
	(normal) >11	39	30.5
	light 9-11	10	7.8
	is being 7-8		
	Total	**128**	**100**
6	**LBW**		
	1500-2500 g	84	65.6
	1500 g	38	29.7
	<1000 g	6	4.7
	Total	**128**	**100**

Based on Table 1 shows that the majority of respondents aged> 35 years as many as 65 people (50.8%). Characteristics Respondents based on gestational age showed that the majority of respondents aged 25-38 Sundays were 97 people (75.8%). Characteristics of respondents based on pregnancy distance indicate that the majority of respondents were <2 years gestational age as many as 85 people (66.4%). Characteristics Respondents based on parity show that most respondents parity 2-3 children as many as 45 people (35.2%). Characteristics Respondents based on anemia showed that the majority of respondents were not anemia (Normal) as many as 79 people (61.7%). Characteristics of Respondents based on LBW Show that most BB respondents are 1500-2500 grams, which are as many as 84 people (65.6%).

2. Special Data

a. Characteristics of Respondents Based on Cross Tabulation of Age of Mother with LBW

Table 2 Cross Tabulation Between the Age of Women with LBW As Predictors for Infant Birth Low Birth Weight (LBW) at Wahidin Sudiro Husodo Hospital in January-December 2018.

Age	**LBW**						**Total**	
	1500-2500g		**BB 1500g**		**BB <1000 g**			
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
<20 years	12	9.4	4	3.1	0	0	16	100
20-35 years	34	26.6	12	9.4	1	0.8	47	100
>35 years	38	29.7	22	17.2	5	3.9	65	100
Total	**84**	**65.6**	**38**	**29.7**	**6**	**4.7**	**128**	**100**

Based on table 2 shows that most BB respondents 1500-2500 grams with age> 35 years as many as 38 respondents (29.7%), and there were BB 1500 gram respondents with age> 35 years as many as 22 respondents (17.2%). And most BB respondents <1000 grams with age> 35 years as many as 5 respondents (3.9%).

b. Characteristics of Respondents Based on Cross-Tabulation of Parity with LBW

Table 3 Cross Tabulation Between Parity and LBW as Predictors for Infant Birth Low Birth Weight (LBW) at Wahidin Sudiro Husodo Hospital in January-December 2018.

Pregnancy Age	**LBW**						**Total**	
	1500-2500g		**1500g**		**<1000 g**			
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
>20 week	3	2.3	1	0.8	0	0	4	100
20-38 week	64	50.0	27	21.1	6	4.7	97	100
>38 week	17	13.3	10	7.8	0	0	27	100
Total	**84**	**65.6**	**38**	**29.7**	**6**	**4.7**	**128**	**100**

Based on table 3, the results showed that most BB respondents 1500-2500 grams with 25-38 weeks gestational age as many as 64 respondents (50.0%), and there were BB 1500 gram respondents with 25-38 weeks gestational age as many as 27 respondents (21.1%). And the majority of BB respondents <1000 grams with 25-38 weeks gestation were 6 respondents (4.7%).

c. Characteristics of Respondents Based on Cross Tabulation with LBW.

Table 4 Cross Tabulation Between Distance with LBW As a Predictor for Infant Birth Low Birth Weight (LBW) at Wahidin Sudiro Husodo Hospital in January-December 2018.

Distance of pregnancy	LBW						Total	
	1500-2500g		1500g		<1000g			
	F	%	F	%	F	%	F	%
<2years	54	42,2	25	19.5	6	4.7	85	100
>2years	30	23.4	13	10.2	0	0	43	100
Total	**84**	**65.5**	**38**	**29.7**	**6**	**4.7**	**128**	**100**

Based on table 4, the results showed that most BB respondents 1500-2500 grams with a pregnancy distance of <2 years were 54 respondents (42.2%), most BB respondents 1500 grams with a pregnancy distance <2 years as many as 25 respondents (19.5%). And most of the BB respondents <1000 grams with a pregnancy distance <2 years were 6 respondents (4.7%).

d. Characteristics of Respondents Based on Cross-Tabulation of Parity with LBW.

Table 5 Cross Tabulation Between Parity and Predictors for Infant Birth Low Birth Weight (LBW) at Wahidin Sudiro Husodo General Hospital in January-December 2018.

Parity	LBW						Total	
	1500-2500g		1500g		<1000g			
	F	%	F	%	F	%	F	%
1 child	31	24.2	9	7.0	1	0.8	41	100
2-3 child	30	23.4	13	10.2	2	1.6	45	100
>3 child	23	18.0	16	12.5	3	2.3	42	100
Total	**84**	**65.6**	**38**	**29.7**	**6**	**4.7**	**128**	**100**

Based on table 5 shows that the majority of BB respondents 1500-2500 grams with 1 child parity as many as 31 respondents (24.2%), and there are BB 1500 gram respondents with parity> 3 children as many as 16 respondents (12.5%). And most BB respondents <1000 grams with parity> 3 children as many as 3 respondents (2.3%).

e. Characteristics of Respondents Based on Cross Tabulation Anemia with LBW.

Table 6 Cross Tabulation Between Anemia and LBW as a Predictor for Infant Birth Low Birth Weight (LBW) at Wahidin Sudiro Husodo Hospital in January-December 2018.

Anemia	LBW						Total	
	1500-2500		1500		<1000			
	F	%	F	%	F	%	F	%
Not Anemia (Normal)>11g	52	40.6	24	18.8	3	2.3	79	100
light 9-11g	27	21.1	10	7.8	2	1.6	39	100
Is being 7-8g	5	3.9	4	3.1	1	0.8	10	100
Total	**84**	**65.6**	**38**	**29.7**	**6**	**4.7**	**128**	**100**

Based on table 6 above, 128 respondents were mostly BB respondents 1500-2500 grams with no anemia (normal)> 11 grams as many as 52 respondents (40.6%), and there were BB respondents 1500 grams with no anemia (normal)> 11 grams as many as 24 respondent (18.8%). And most BB respondents <1000 grams with no anemia (normal)> 11 grams as many as 3 respondents (2.3%).

Maternal Characteristics as Predictors for Infant Birth Low Birth Weight (LBW).

The results showed that the majority of respondents were 25-38 weeks' gestational age, which was 97 people. Based on the cross-tabulation between gestational age and LBW of 128 respondents the majority of respondents were 25-38 weeks gestational age with BB

1500-2500 grams as many as 64 respondents, and there were respondents of 25-38 weeks gestational age with BB 1500 grams as many as 27 respondents. And most respondents of 25-38 weeks' gestation with BB <1000 grams were 6 respondents.

The first trimester of pregnancy is the most prone trimester for a pregnant woman because it experiences monitoring sickness which makes a pregnant woman lazy to eat. As a result, a mother experiences a lack of nutrition that will affect the fetus she contains. The second trimester of pregnancy (gestational age 13-24) in the second trimester occurs in vital organs, the formation of the face, upper and lower extremities and the development of fetal motor movements such as sucking the thumb and holding his hand. In the second trimester, there are usually various kinds of chronic diseases and infections that can endanger the condition of the fetus they contain (Saudah, 2010). Third-trimester pregnancy (gestational age 25-38). The third trimester of pregnancy continues to grow in size, the position of the baby is on the womb door and the baby's head will go down to pelvic where the excessive size or fetal BB increase and pregnancy complications in the third trimester such as hypertension, antepartum bleeding, multiple pregnancies, feared amniotic fluid will be a complication during the delivery process (Proverawati, 2010).

Lack of a mother's experience in caring for pregnancy can affect the health of the mother and fetus pregnancy. So it can be concluded that mothers with preterm gestational age <37 weeks tend to deliver more LBW than mothers with a term gestational age. This tendency can illustrate that mothers with preterm gestational age are more at risk of experiencing LBW. So that babies born at <37 weeks of age are one of the main causes of LBW.

The results of the study showed that the majority of respondents were <2 years of pregnancy, which were 85 people. Based on cross-tabulation Distance of pregnancy with LBW from 128 respondents, the majority of respondents had a pregnancy distance <2 years with BB 1500-2500 grams as many as 54 respondents, and there were respondents of pregnancy spacing <2 years with BB 1500 grams as many as 25 respondents. And most of the respondents in pregnancy <2 years with BB <1000 grams were 6 respondents.

The distance of pregnancy less than two years can cause disturbed fetal growth, prolonged labor, and bleeding during labor because the uterus has not recovered well (Kliegmant, et al, 2007). After the delivery and previous pregnancy, the uterine wall has not returned to its fertility so it is not ready to accept the pregnancy. The risk that might be caused is the occurrence of abortion, pregnancy does not develop, and fetal development is not optimal (Yulianto, 2004). This shows that the distance of pregnancy is important to maintain the body condition of the mother in fulfilling her own health needs and the health needs of the fetus she contains. The body of a pregnant woman who is too close (less than 2 years) is not ready to get pregnant again because the mother's reproductive organs have not recovered as before, so the mother should wait to get pregnant again after 2 years or more from previous labor (Manuaba, 2010).

The results showed that the majority of respondents aged> 35 years as many as 65 respondents. Based on cross-tabulation between the age of mothers with LBW from 128 respondents most of the respondents aged> 35 years with BB 1500-2500 grams as many as 38 respondents, and there were respondents aged> 35 years with BB 1500 gram as many as 22 respondents. And most of

the respondents aged> 35 years with BB <1000 grams as many as 5 respondents.

A person's age can affect the state of pregnancy. If the woman is pregnant during reproduction, it is less likely to experience complications than women who are pregnant under the age of reproduction or over the age of reproduction (Manuaba, 2010). According to Sistriani (2008), a good age for mothers to get pregnant is 20-35 years. Pregnancy under 20 years or over 30 years is a high-risk pregnancy. Pregnancy at a young age is a risk factor because at the age of <20 years the condition of the mother is still in growth so that food intake is more used to meet the needs of the mother while pregnancies of more than 35 years reproductive organs are infertile and increase the risk for premature birth (Nurjannah, 2015) So this shows that the age of a mother> 35 years is at risk for giving birth to a baby with a lower weight because it occurs per year.

CONCLUSION:

Based on the results of the study it can be concluded that woman pregnant 25-38 weeks gestational age, the distance of pregnancy <2 years is another cause of low birth weight babies (LBW) and maternal age> 35 years can predicted infant of low birth weight babies (LBW). Parity 2-3 is another cause of low birth weight babies (LBW), Anemia, in this case, is not another cause of low birth weight baby births (LBW) because many mothers do not have anemia (Normal> 11 gr / dl), and the most dominant factor in the causes of LBW is 25-38 weeks' gestation.

LIMITATION AND STUDY FORWARD:

This research is limited to only examining predictors and is not a cause of low birth weight Infant. Subsequent research can examine the causes of babies born with low weight.

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