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Relationship Between Family Income, Mother's Age During Pregnancy and Low Birth Weight (LBW)

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ABSTRACT

Low birth weight (LBW) is still a major problem in developing countries including Indonesia. The prevalence of LBW tends to decrease from 2013-2018, from 8.6% to 6.51%. Therefore, it is necessary to analyze the relationship between maternal age at pregnancy and household income with the incidence of low birth weight. The type of the study was analytic observational with quantitative method. The population in this study were all mothers who had children aged 6-24 months who resided in West Aceh District and met the inclusion and exclusion criteria by means of simple random sampling. The dependent variable of this study was LB W while the independent variables were maternal age during pregnancy and family income. The risk tendency for each variable was seen using the OR (odds ratio) value which used a Confidence Interval of 95%. The results showed that there was a significant relationship (p=0.049) between the two variables. The amount of household income influences the quality of the mother's health and nutrition intake during pregnancy impacts the weight and health of the child born.

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Introduction

The World Health Organization estimates that 2.7 million neonatal deaths out of 20 million births worldwide and around 15% -20% are babies with low birth weight (WHO, 2016). Low Birth Weight (LBW) is still a major problem in developing countries including Indonesia. The proportion of low-weight babies (<2500 grams) in Indonesia has increased, from 5.7 in 2013 to 6.2 in 2018 (Kemenkes, 2018).

Low Birth Weight is a description of which a baby's birth weight is less than 2500 grams and has a mortality rate 20 times greater than that of a normal born baby (UNICEF 2008).LBW is a description of the health of mothers and babies during the life cycle. Infants with a history of LBW have complex health problems such as growth retardation which will result in stunting and in adults have the possibility of suffering from degenerative diseases such as hypertension, diabetes mellitus, heart and cardiovascular (WHO, 2004).Low birth weight babies also contribute to infant mortality, disability, stunted growth and cognitive development (Pinontoan, 2013).

Low birth weight is caused by many factors, Smitten (2011) divides the causes of low birth weight into three factors, namely the fetus, placenta and maternal. Memoni (2017) said the risk factors for low-birth-weight babies were the sex of the baby, premature birth, mother's age, delivery method, number of births, risky pregnancies, mother's education, mother's place of residence. The age of pregnant women also affects the occurrence of low birth weight babies, because pregnant women in their teens still need energy for their growth and development, causing a decrease in food supply for the fetus (Gibbs et al., 2012).Maternal age during pregnancy affects the readiness of the reproductive organs for pregnancy. The optimal age for women to get pregnant is 20-35 years (Manuaba, 2012). Socioeconomic status also affects the occurrence of LBW. Mother's age Babies born with low economic status are at risk of being born with LBW (Halu, 2019).Household income will indirectly affect the incidence of LBW because generally low household income will have lower food intake both in quality and quantity which will result in the low nutritional status of the pregnant woman.

Aceh Province has a prevalence of LBW that is higher than the national prevalence of 6,51%. The prevalence of LBW tends to decrease from 2013-2018, from 8.6% to 6.51%. West Aceh is one of the districts in Aceh province. Low birth weight in Aceh Barat from 2017-2020 has increased from 1.48% to 2.99% (Aceh Barat, 2020). Low birth weight is very synonymous with child health.

According to the studies and surveys, it is necessary to analyze the relationship between maternal age at pregnancy and household income with the incidence of low birth weight.

Method

The type of the study was analytic observational with quantitative method. The research design is cross sectional, which studies the relationship between the independent variable and the dependent variable, where the measurement of the two variables is carried out at the same time. The dependent variable of this study was LBW while the independent variables were maternal age during pregnancy and family income. The population in this study were all mothers who had children aged 6-24 months who resided in West Aceh District and met the inclusion and exclusion criteria. The inclusion criteria are willing to be included in this study by signing or thumbprint on the informed consent, single birth, if the family has more than one child aged 6-24 months then the youngest child will be selected. The exclusion criteria were children suffering from physical disabilities, severe diseases (cancer, kidney, heart, lung) and medically declared chronic infectious diseases. This resulted in a sample size of 212 people.

The sampling was carried out in several stages, as follows:

a. The first stage of sampling was conducted by randomly selecting 4 health centers from 13 health centers in West Aceh District.
b. The second stage after the health center is obtained, the next step is to determine the number of samples for each health center and taken based on the proportion so that the total sample is 212 children. Selection of samples in each selected health center based on inclusion and exclusion criteria by means of simple random sampling.
c. Prior to sample selection, the doctor at the selected health center first asked if the mother was willing to meet directly with the researcher if she was not willing to do so by telephone or through the health center doctor.

The statistical analysis used was the chi-square test with a significance level of <0.05. Then the risk tendency for each variable was seen using the OR (odds ratio) value which used a Confidence Interval of 95%.

Results

According to the results of this study, most of the children were born with normal weight, namely 174 (82.1%) with family income mostly in the high category 55.2%. The age of the mother at delivery is mostly included in the adult category and is a reproductively healthy productive age mother (20-35 years) which is 91.5%.

Table 2 describes the relationship (p value) and risk factors (odds ratio) between the independent variables (family income and maternal age at pregnancy) and the dependent variable (LBW). The results of the relationship between household income and LBW showed that there was a significant relationship (p=0.049) between the two variables. Mothers with low household income are at risk of giving birth to LBW babies 2.2 times than mothers with high household income.

Table 1. The characteristics of subjects

Variables	N	%
Birth Weigth		
LBW	38	17,9
Normal	174	82,1
Household Income		
Low	95	44,8
High	117	55,2
Age at Pregnancy		
Teenagers	18	8,5
Adults	194	91,5

Table 2. Cross-tabulation

Variabel	Normal	LBW	Total	p	OR	95% Conf. Interval
Household Income						
High	102 (58,6%)	15 (39,5%)	117(55,2%)	0,049	2,172	1,060-
Low	72 (41,4%)	23 (60,5%)	95 (44,8%)			4,449
Age at Pregnancy						
Adults	161 (92,5%)	33(86,8%)	194 (91,2%)	0,330	1,876	0,626-
Teenagers	13(7,5%)	5(13,2%)	18 (8,5%)			5,622

Discussion

According to the results of this study, Mothers with low household income are at risk of giving birth to LBW babies 2.2 times than mothers with high household income. Research by Widiyastuti (2009) also showed that mothers whose nutritional intake was poor before pregnancy and during pregnancy had a risk of 3.2 times giving birth to babies with low birth weight (p value = 0.04) and could cause obstacles to fetal brain growth. The level of household income affects the family's purchasing power to meet the family's nutrient intake needs. The amount of income affects the quality of maternal health and nutrition during pregnancy. In addition, families with low economic status tend to live in poor and inadequate home environment and facilities and are factors that affect maternal and family health. Household income will indirectly affect the incidence of LBW because generally mothers with low family income will have lower food intake both in quality and quantity which will result in the low nutritional status of the pregnant woman.

The study shows that there is no relationship between age at pregnancy and LBW (p value = 0.330). This result is in line with research conducted by Fajriana (2018) that there is no significant relationship between the age of pregnant women and the occurrence of LBW (p=0.052). Different with the research by Aras (2013) with the literature review method concluded that pregnancy at extreme ages (<20 years or >40 years) is a risk factor for preterm birth and LBW, but racial and socio-economic differences are confounding factors between maternal age during pregnancy and reduced baby weight at birth. Pregnancy that is too young causes the biological development of the pelvis and the condition of the mother's uterus (BKKBN, 2007).
Nurahwati et.al (2017) said indirect association between family income and LBW incidence which is affected by factors of nutritional status and HB concentration or anemia gravidarum during pregnancy. Another study, Family income plays role in the LBW incidences, it is supported by several other studies such as a study by Rahman, et al (2016), low economy status is likely to suffer from anemia 2.6 times bigger compares to mother with moderate economy status.

Conclusion

There is a significant relationship between household income and LBW. The amount of household income influences the quality of the mother's health and nutrition intake during pregnancy impacts the weight and health of the child born. There was no significant relationship between maternal age during pregnancy and LBW because most of the mothers in this study were adults.

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Local governments to be able to open job vacancies or provide capital assistance for small businesses to increase family income. Another researcher who wants to conduct similar research to study more in again those factors can be at risk low birth weight.

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