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Risk Factors of Macrosomia in the Blang Bintang Community Health Center, Aceh Besar

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ABSTRACT

Macrosomia is one of the important causes of fetal and maternal morbidity and mortality. Data from the Aceh Health Office in 2018 showed that the incidence of macrosomia was 7.7%. In Aceh Besar district the prevalence of obese children was 2.9%. The purpose of this study was to determine the risk factors of macrosomia birth in the work area of Blang Bintang Community Health Center, Aceh Besar in 2018. This study used a quantitative method with an analytical survey approach with a case-control design and was retrospective. Population in this study consisted of all infants who met the inclusion and exclusion criteria. A sample of 40 infants was selected by purposive sampling. The results showed that there was a risk of pregnant mothers who suffered diabetes mellitus and a history of previous macrosomia births with the incidence of macrosomia birth. While pregnant mothers who consume junk food and parity did not have the risk of macrosomia birth.

Keywords: macrosomia; diabetes mellitus; junk food; parity; macrosomia history

INTRODUCTION

The Infant Mortality Rate (IMR) in Indonesia is still in the highest position among ASEAN countries. Based on the Indonesian Demographic and Health Survey (IDHS), the current Infant Mortality Rate (IMR) in Indonesia is 34 babies per 1000 births. One of the causes of death of newborns is macrosomia (birth weight 4000-4500 g). Indonesia has a high percentage of macrosomia births. The percentage of baby birth with weight ≥4000 g in Indonesia has reached 6.4%.[1] This figure has reached the incidence of macrosomia in the world which generally ranges from 6-10% of total births.[2] Macrosomia is one of the important causes of fetal and maternal morbidity and mortality. Mothers conceiving macrosomia fetuses are at risk of giving birth by cesarean section.[3] Lately, it has been known that macrosomia is often associated with a history of gestational diabetes mellitus and obesity in the mother. The latest data from Basic Health Research (Riskesdes) of Indonesia, it was reported an incidence of infant macrosomia of 3.7% in 2018.[4] Based on data obtained from Aceh Health Office in 2018, the incidence of macrosomia was 7.7%. For Aceh Besar in 2018, the prevalence of obese children was 2.9%. Based on preliminary studies in all work areas of health center in Aceh Besar. The most common macrosomia occurring in 2017-2018 was in the Blang Bintang community health center, Aceh Besar. It is known that the number of babies born in 2017 was 113 but seven of them suffered macrosomia.[5] In 2018 there were 126 babies born, but 13 babies were born with macrosomia. So the total number of babies from 2017-2018 data was 20 babies who have macrosomia. Based on the preliminary study, this study was conducted to determine the fact of the risk of macrosomia birth in the work area of Blang Bintang Community Health Center, Aceh Besar.

METHODS

This research was conducted in the Blang Bintang Community Health Center, Aceh Besar, in September 2018 to March 2019. This study used a the quantitative method with an analytical survey approach with a case-control design and was retrospective. Population of this study were infants who met

the inclusion and exclusion criteria. The sample size was 40 babies which were selected by purposive sampling. Data were collected using questionnaire and structured interviews, then analyzed using Chi-Square test.

RESULTS

Descriptive analysis was used to describe each variable (Table 1).

Table 1. The results of descriptive analysis

Variable	Case		Control	
	Frequency	%	Frequency	%
Diabetes melitus				
Yes	6	30	0	0
No	14	70	20	100
Total	20	100	20	100
Junk food				
Frequently	10	50	4	20
Rarely	10	50	16	80
Total	20	100	20	100
Parity				
Primipara	3	15	4	20
Multipara	17	85	16	80
Total	20	100	20	100
Marcosomia history				
Yes	14	70	0	0
No	6	30	20	100
Total	20	100	20	100

Based on table 1, it was known that in the case group, the incidence of macrosomia as many as 6 people (30%) and none in the control group (0%). In the case group, the majority of mothers who rarely consumed junk food experienced an incidence of macrosomia birth as many as 10 people (50%). While in the control group, mothers who rarely consumed junk food did not experience it, 16 people (80%) having macrosomia births. In the case group, primiparous mothers had 3 cases of macrosomia birth (15%). While in the control group there were 4 people (20%). Mothers who have a history of previous macrosomia and re-experience the incidence of macrosomia after as much as 70%, whereas mothers who have previous macrosomia history and no macrosomia afterward were 0%.

Table 2. Relation between diabetes melitus, parity, junk food and marcosomia history to marcosomia

Variable	Macrosomia				OR	p-value
	Case		Control			
	Frequency	%	Frequency	%		
Diabetes melitus						
Yes	6	30	0	0	2.429	0.020
No	14	70	20	100		
Total	20	100	20	100		
Parity						
Primipara	3	15	4	20	0.832	1.000
Multipara	17	85	16	80		
Total	20	100	20	100		
Junk food						
Frequenlty	10	50	4	20	1.857	0.097
Rarely	10	50	16	80		
Total	20	100	20	100		
Marcosomia history						
Yes	14	70	0	0		
No	6	30	20	100	4.333	0.000
Total	20	100	20	100		

Chi square test was conducted to determine the relationship between the independent variables and the dependent variable. The relationship between the independent variable and the dependent variable is indicated by the value $p < \alpha$ (0.05), the OR value> 1 and the value of 95% CI did not include the number 1.

Pregnant mothers who suffer from diabetes mellitus 2.42 times the chance to experience macrosomia compared to mothers who do not suffer diabetes mellitus. It was proven by the results of the Chi-Square Test with a confidence level of 95%, obtained a p-value of 0.020 (p <0.05), with a significant level of diabetes mellitus, which was OR of 2.42 (R >1). Pregnant mothers with high parity were 0.83 times the chance to experience macrosomia compared to mothers with low parity. The statistics test results using the Chi-Square Test at the 95% confidence level obtained a p-value of 1.000 (p >0.05). This value implied that there was no significant relationship between primiparous and multiparous mothers with the incidence of macrosomia birth. Pregnant mothers who often consume junk food are 1.85 times more likely to experience macrosomia compared to mothers who don't often consume junk food. The statistics test results using the Chi-Square Test at a 95% confidence level obtained a p-value of 0.097 (p >0.05). This value implies there is no meaningful relationship between mothers who often consume junk food with mothers who rarely consume junk food. Pregnant mothers who have a previous macrosomia history have 4.33 times the chance to experience macrosomia compared to mothers who do not have a history of macrosomia. This assumption was proven by the results of the statistical test using the Chi-Square Test at a 95% confidence level and it was obtained a p-value of 0.000 (p <0.05) with a significant level of history of macrosomia that was OR of 4.33 (R> 1).

DISCUSSION

Results of Chi square test of the four variables evaluated only two variables influenced the birth of macrosomia. These two variables were diabetes Mellitus and microsomia history. While the other two variables, junk food, and parity did not affect the incidence of macrosomia in pregnant mothers. The results showed pregnant mothers suffering from diabetes mellitus, 2.42 times had a chance to experience macrosomia compared with mothers who did not have diabetes mellitus. Statistically, it was proven by the Chi-square test with a confidence level of 95% and obtained a p-value of 0.020 (p <0.05), with a significant level of significance for diabetes mellitus, which was OR 2.42 (R> 1). The results of this study were the same as the Najafian et al (2012) study, which states that the history of diabetes mellitus has been shown to be statistically influential on the birth of macrosomia with a value of p = 0.0001.[6] Study also state that there was a significant relationship between the history of maternal diabetes mellitus and macrosomia birth. Mothers who have a history of diabetes mellitus will have a 2.5 times greater risk of giving birth to a macrosomic baby than mothers who do not have a history of diabetes mellitus with a p-value = <0.032 and OR = 2.5 (95% CI 1.0 - 6.1).[7] Diabetes mellitus is a hereditary disease that is genetic or multifactorial. the risk of people with diabetes mellitus is highest when one or both parents suffer from mellitus when compared to non-sufferers.[8] Consuming junk food has the potential to experience macrosomia. The results showed that pregnant mothers who often consume junk food were 1.85 times more likely to experience macrosomia compared to mothers who rarely consume junk food. The statistical test results using Chi-square test was known there was no risk of pregnant mothers who often consume junk food with the incidence of macrosomia birth with a p-value of 0.097 and OR of 1.85. The results showed that pregnant mothers with high parity had 0.83 times to experience macrosomia compared to mothers with low parity. The statistic test results using the Chi-Square Test at a 95% confidence level obtained a p-value of 1.000 (p> 0.05), with a significance level of parity that was OR of 0.83 (R <1). High parity allowed complication of pregnancy and childbirth. the mother who in the first pregnancy or previously gave birth to a macrosomia baby had a high chance of giving birth to a second child with the same condition in the next pregnancy.[9] Study showed there was no significant relationship between parity and macrosomia birth (p = 0.685).[10] The study conducted by Al Farsi et al (2012) states that there was no significant relationship between parity and macrosomia birth. In this study p-value = 0.61 (p> 0.05). [11] Pregnant mothers who have a history of previous macrosomia will have 4.33 times to the risk of macrosomia compared to mothers who did not have a history of macrosomia. This assumption was proven by the results of the statistical test using the Chi-Square Test at a 95% confidence level obtained a p-value of 0.000 (p <0.05), with a significant level of history of macrosomia that was OR of 4.33 (R> 1). The history of giving birth to baby macrosomia is one of the factors of the mother that can increase the risk of the fetus being born macrosomia. Mothers who are in the first or previous pregnancy give birth to macrosomia babies that have a high chance of giving birth to a second child with the same condition in the next pregnancy. mothers who have given birth to macrosomic babies have a tendency to give birth to macrosomia babies in subsequent pregnancies. [12] Babies born to mothers with diabetes risk are born with weight >4000 grams or greater, have disabilities, and die.[13]

CONCLUSION

After conducting research about risk factors for the birth of macrosomia in the Blang Bintang Community Health Center, Aceh Besar , it can be concluded that there was a risk of pregnant mothers who have diabetes mellitus with the incidence of macrosomia birth. Pregnant women with a history of giving birth to a macrosomia baby will be at higher risk of giving birth to a macrosomic baby compared to mothers who have never given birth to a macrosomia baby. Pregnant women who often consume junk food have the opportunity to experience macrosomia compared to mothers who do not often consume junk food. ome risk factors associated with fetal macrosomia include obesity, gestational diabetes mellitus, and type 2 diabetes mellitus.

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