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THE RELATIONSHIP BETWEEN PARITY ANDMACROSOMIA BIRTH IN THE DISTRICT OF ACEH BESAR

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Abstract

Introduction: According to the IDHS 2012, the Infant Mortality Rate (IMR) in Indonesia was 34 per 1000 births. Macrosomia is defined as birth weight >4000 g or babies larger than normal. Macrosomia is an important cause of fetal morbidity and mortality. According to the Indonesian Basic Health Research 2018, the incidence of macrosomia birth in Indonesia was 3.7 %, in Aceh Province in 2018 was 7.7%, and the prevalence of obese children in the district of Aceh Besar was 2.9%. This study aims to analyze the relationship between the parity of mother and macrosomia birth in Puskesmas Blang Bintang, the district of Aceh Besar.

Methods: This study was an analytic survey study with a case-control design. It was conducted in Puskesmas Blang Bintang's work area, in the Aceh Besar district, from September 2018 to March 2019, with a total sample of 40 infants divided into two groups. Data analysis used univariate and bivariate analysis using Chi-Square Test (x) with a 95% confidence interval.

Result: There was no significant relationship between the parity of mothers,s and macrosomia births.

Conclusion: The number of mothers parity did not impact macrosomia birth.

Keywords: *Macrosomia birth, parity, District of Aceh Besar*

Introduction

The term macrosomia is used to describe babies who are larger than normal. Birth weight 4000 gr is a benchmark often used to define macrosomia [1]. Infant birth weight is an important indicator in estimating the level of maturity and the baby's survival ability. The baby's birth weight depends on the pregnancy's length and the fetus's growth rate. Researchers often use birth weight as a measure of mortality risk. The incidence of low birth weight infants in a population is usually considered the main health indicator in pregnant women and their fetuses, but the health implications of macrosomic infants have received less attention.[2]

Macrosomia is an important cause of maternal and fetal morbidity and mortality. Mothers who contain macrosomic fetuses are at risk for giving birth by *caesarean section*. In *vaginal delivery* (normal delivery), mothers who give birth to macrosomic babies can experience labor complications such as *postpartum* hemorrhage, laceration of the birth canal, and *postpartum* endometritis. Macrosomic babies born through normal delivery are at high risk of developing *shoulder dystocia*. The occurrence of *shoulder dystocia* can cause injuries to the fetus, such as the *brachial plexus* and *humerus fractures.* [3]

The maternal mortality rate reaches 228/1000 live births in Indonesia, which is still relatively high, as well as the infant mortality rate, which is 34/1000 live births. Even when compared to countries in Southeast Asia, Indonesia's situation is still below that of Singapore, Malaysia, and Brunei; on par with the Philippines, Thailand, and Vietnam and slightly better than Myanmar, Laos, and Cambodia.[4]

The *Infant Mortality Rate* (IMR) in Indonesia is the highest in any ASEAN country. Based on the *Indonesian Demographic and Health Survey* (IDHS), Indonesia's Infant Mortality Rate (IMR) is now 34 babies per 1000 births. When detailed, 156,700 babies die per year, or 430 babies die per day. Some of the causes of death of newborns (neonates) are mostly caused by emergencies and complications during the neonate, such as low birth weight (LBW) infants,

macrosomia (birth weight 4000-4500 grams), neonatal asphyxia, postpartum distress syndrome, hyperbilirubinemia, neonatal sepsis, birth trauma, and congenital birth.[5]

The latest data from the Basic Health Research (Riskesdes) in 2018 in Indonesia reported that the incidence of macrosomia in infants was 3.7%. The highest prevalence was found in Northern European and North Atlantic countries, where babies weighing more than 4000 grams comprised about 20%, and 4-5% weighed more than 4500 grams. This prevalence appears to be increasing in all countries except the United States.[4]

In Aceh n 2018, based on data obtained from the health department, the incidence of macrosomia was 7.7%. In Aceh Besar in 2018, the prevalence of obese children was 2.9%. based on a preliminary study from all Puskesmas Aceh Besar working areas, the most macrosomia incidence in 2017-2018 was in the area of Puskesmas Blang Bintang, Aceh Besar.

The research of Lu et al. (2011) in China found that large for gestational age (LGA) babies continued to increase from 13.72% in 1994 to 18.08% in 2005, then relatively stabled in 2012-2015. This incidence was related to maternal weight during pregnancy, maternal age, maternal height, and maternal education, but these factors did not fully explain the increasing trend.

Factors that affect macrosomia include mothers who suffer from diabetes mellitus, frequent consumption of junk food (fast food), multiparous pregnancy, and history of macrosomia delivery. Babies born with more than normal birth weight have long-term effects on the baby's health. Macrosomic infants are at risk of developing hypertension, obesity, glucose intolerance, and cardiovascular disease in the future, which is a very serious problem because it is one of the leading causes of morbidity and mortality in society.[6]

The risk of health problems that macrosomic infants in adult life can experience will indirectly increase the economic burden in their lives. Economic losses are caused by the loss of productive time due to illness and the costs incurred for treatment. A person who is sick for several days cannot perform activities such as work, school, play, and daily tasks. The additional costs incurred for treatment will also affect the economic balance in the family, so that it can worsen the household economy and the long-term effect can reduce the quality of human resources in the future.[3]

As for what often happens in the field, the problem of macrosomia is still not getting enough attention from the public or the health workers themselves. The incidence of LBW infants is considered the main indicator of health problems. Even though both are equally at risk of causing morbidity and mortality in mothers and babies, one of the causes is unwittingly due to the habits of the mother or her own family, who are still lacking in overcoming the risk factors that can cause the baby to experience macrosomia.

The results of a preliminary study conducted by researchers at Puskesmas Blang Bintang in Aceh Besar showed that the number of babies born in 2017 was 113. Those born with macrosomia were seven babies. In 2018, it was known that 126 babies were born, but 13 babies were born with macrosomia. So, in the total number of babies from 2017-2018, 20 babies had macrosomia.

The study aims to analyze the relationship between the parity of mother and macrosomia birth in Puskesmas Blang Bintang, the district Aceh Besar, in 2018.

Method

This study was an *analytic survey* study with a case-control design. The independent variable in this study was the mother's parity, and the dependent variable was *macrosomia* birth. The parity variable was defined as the state of giving birth to a child, either alive or dead, which was calculated in terms of the number of births with a nominal measuring scale and the results of a primiparous if giving birth to the first child and multiparous if giving birth to the second child or more. Birth variables with macrosomia were defined as babies born with a body weight above 4 kilograms with a nominal measuring scale. The measurement results were there if the child was born with macrosomia and not if the birth was not macrosomic.

The population in this study were mothers who gave birth in the work area of Puskesmas Blang Bintang, Aceh Besar. The sample in the case group was 20 mothers who gave birth to a baby weighing more than 4000 grams. Sampling in the case group used a *consecutive sampling* technique; namely, the subjects selected were all those who were recorded to meet the inclusion and exclusion criteria of the researcher. Meanwhile, in the control group, the samples were 20 mothers who gave birth to babies weighing 2500-4000 grams. Sampling in the control group used a *random sampling* technique; the selected subject gave the same opportunity for each population element. The total number of samples was 40 infants with a ratio of 1:1 (case: control).

The data collection technique used structured interviews. Both groups asked the same questions. Data analysis using univariate and bivariate analysis was carried out to determine the relationship between the variables studied using the chi-square test and Fisher's *exact test* with a value of = 0.05 and CI (*Confidence Interval*) 95%.

Results

1. Univariate Analysis
   Table 1 shows that most mothers in the case group were multiparity (85%) and 16 mothers (80%) in the control group were multiparity.

Table 1 Distribution Frequency the Parity of the Mother's

Variable	Case		Control	
	f	%	F	%
Parity				
- Primiparous	3	15	4	20
- Multiparous	17	85	16	80
Total	20	100	20	100

2. Bivariate Analysis

The bivariate analysis results regarding the relationship between parity and macrosomia birth in the case group showed that 17 (85%) multiparous mothers gave birth to macrosomia babies and 16 (80%) in the control group. The Chi-Square test results show P Value = 1.000 (> 0.05), with OR 0,832. This means that there was no relationship between parity and macrosomia birth.

Table 2 The Relationship between Parity and Macrosomia Birth

Variable	Macrosomia				OR	p-value
	Case		Control			
	f	%	f	%		
Parity						
Primiparous	3	15,0	4	20,0	0,832	1,000
Multiparous	17	85,0	16	80,0		
Total	20	100	20	100		

Discussion

This study did not follow a study conducted by Melani (2016), who assumed that multiparous was one of the risk factors for macrosomia births in infants. There were also other differences in the research by Wahyuningrum et al. (2016) regarding the relationship between parity and macrosomia birth weight at Wahidin Sudiro Husodo Hospital in Mojokerto (Indonesia). This study found that there was a relationship between parity and macrosomic birth.

This study is also not accordance with the theory put forward that parity is very influential on the results of conception. High parity is riskier than low parity. It can be seen that at high parity, there are many complications in pregnancy due to frequent delivery. The increase in the baby's weight is caused by the uterine space that is getting bigger than before and the secretion of nutrients that the body absorbs more quickly. The uterus that gives birth to more than one baby undergoes changes and elasticity. The more children give birth, the more elastic the uterus and the larger its size. This is what makes it very possible for mothers with high parity to be at risk of giving birth to macrosomic babies.[6]

Based on the discussion, the researcher assumed that parity was not risky. However, the study's results showed no risk between mothers with high parity because pregnant women are now diligently checking their pregnancies with health workers. There is also various information from midwives, doctors, and the internet that mothers can guide, so the possibilities that mothers will experience can be overcome as early as possible. This can be one factor that prevents research from occurring at risk.

Conclusion

There was no relationship between parity and macrosomia birth in the work area of the Puskesmas Blang Bintang, the District of Aceh Besar. Macrosomia birth is not influenced by maternal parity (primiparous or multiparous).

Conflict of Interest

There is no conflict of interest between the author and the institution

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Authors' Contribution

All the steps of research conducted by the researcher

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