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Infant Growth Pattern Aged 0-6 Months in Low Birth Weight Babies with Normal Birth Weight Babies in Kendari City

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ABSTRACT
Background: This study aims to determine the differences in growth patterns of babies aged 0-6 months with a history of Low Birth Weight (LBW) and Normal Birth Weight (NBW) at the Kendari City Regional General Hospital.
Method: This type of research is observational research with a retrospective cohort research design. The sample in this study was 72 newborn babies who were divided into 2 groups, namely LBW and LBW babies. Data analysis uses non-parametric tests, namely the Maan Withney test.
Results: The results of this study stated that the growth pattern of babies aged 0-6 months with a history of low birth weight in Kendari city hospitals was mostly in the normal category. The growth pattern of babies aged 0-6 months with a history of normal birth weight at Kendari City Hospital is mostly in the normal category.
Conclusion: There is a difference in the growth pattern of LBW and LBW babies (p=0.001). There is a difference in the time to achieve normal growth. The median time to achieve normal growth for LBW babies is 5 months, while for LBW babies it is 1 month.

KEYWORDS: Infant Growth, Low Birth Weight, Normal Birth Weight

INTRODUCTION

A low birth weight baby is defined as a baby with a birth weight of less than 2500 grams, regardless of the cause and regardless of gestational age at birth of less than 37 weeks, a low birth weight baby at term if the gestational age is more than 37 weeks but experiences intrauterine growth retardation or both. both. Low birth weight babies can be differentiated as follows: a) low birth weight babies, namely babies born weighing 1500-2500 grams, b) very low birth weight babies, namely babies born weighing 1000 - 1499 grams, c) extreme low birth weight babies, namely babies weighing less than 1000 grams. LBW is the factor most associated with infant mortality (BPS, 2013).

A baby born is defined as a baby born at 37 weeks to 42 weeks of gestation with a birth weight of 2500-4000 grams. Malnutrition-prone toddlers or cases of toddlers below the red line also continue to increase. If in 2005 - 2006 the achievement rate was stable at 6%, in 2007 it was 10.3%, then in 2008 the figure below the red line (BRL) increased to 16%. We need to be wary of the increase in cases of BRL toddlers considering that this can lead to malnutrition if treatment is not carried out immediately. The case of toddlers being on BRL means they are not gaining weight due to various factors such as malnutrition and infectious diseases and this has the potential for growth disorders. On average, BRL babies are those born with low birth weight. The difference in birth weight between low birth weight babies and moderate birth weight babies will influence the growth process in weight, height and head circumference. (Abdeyazdan et al., 2016).

Knowing the difference in growth between low birth weight babies and sufficient birth weight babies is an important factor in intervention efforts to overcome growth disorders. Growth disorders are not only caused by genetic factors, but also by inadequate environmental factors, these two factors can even cause the death of children before they reach toddler age. Parenting style is also a factor that influences the continued growth of babies, such as basic health care for children by providing immunizations, exclusive breastfeeding, regular weighing of babies and treatment when sick.

According to Soetjiningsih (1995) Every child is a unique individual, because of different congenital and environmental factors, growth and achievement of developmental abilities are also different, but will still follow general standards. So criteria are needed as to how far a person is unique, whether it is still within normal limits or not. The baby's birth weight is between 2500 grams and 4300 grams at birth, increasing by around 680 grams at one month of age. Body length is around 48 cm to 53 cm at birth, increasing by 2.5 cm at one month of age. Head circumference averages 32-36 cm at birth, fontanelles are open, sutures may be

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overriding. Ages 2 to 12 months show rapid weight gain, especially during the first six months with an average growth of 0.75kg per month, weight gain of around 340 grams per month during the last month. Body length increases at an average rate of 2.5 cm per month for the first 6 months, then as high as 1.3 cm per month during the last month. Head circumference increases by 1.3 cm during the first 6 months, then by 0.6 cm per month until the end of the month. The posterior fontanelle closes completely during the 6th to 8th week (Speer et al., 2008).

According to Soetjiningsih (1995) In babies born at full term, the weight at birth will return on day 10. The weight becomes 2 times the weight at birth in babies aged 5 months, becomes 3 times the weight at birth at the age of one year, and becomes 4 times the weight the body is born at the age of 2 years. The average height at birth is 50 cm. Parental attention to children's growth and development is an important factor in preventing psychological and somatic disorders in the future. The low socio-economic status of society has a big impact on various settings, including health settings. One of the impacts of low socio-economic status in the health sector is that it affects children's health status such as malnutrition (anemia, lack of protein energy, chronic lack of energy) because their parents cannot afford nutritious food and other consequences such as an increase in infectious diseases due to Poor environmental sanitation conditions, clean living habits and the conditions mentioned above cause an increase in growth disorders.

Cunningham, FG. (2013), A fetus or newborn whose weight is significantly above or below the normal value will be at risk of death or, if successfully saved, an increase in physical and intellectual impairment. The infant mortality rate in Indonesia based on the 2002/2003 SDKI was 35 per 1000 live births, to 34 per 1000 live births (2007 SDKI). rich and poor, between regions and between socio-economic levels. The prevalence of malnutrition is also quite large among children under five, at 18.4%, consisting of undernutrition at 13% and malnutrition at 5.4%. The rate of babies born with low birth weight (LBW) is 11.5% and the prevalence of under-five children who are stunted due to long-term (chronic) malnutrition is 36.8% (Riskesdas 2007). Compared to other ASEAN countries, Indonesia's IMR is still 2-5 times higher.

RESEARCH METHODS

This type of research is an observational study with a retrospective cohort research design. Sampling was carried out using purposive sampling, that is, every baby born LBW and LBW who met the inclusion criteria would be taken as a sample until the sample size of both groups was achieved based on the calculations obtained. The population in this study were babies born at the Kendari City Hospital, Southeast Sulawesi Province in 2016, totaling 327 mothers. The sample in this study was 72 babies born who were divided into 2 groups, namely LBW and LBW babies. Case-control sample comparison 1:1 (36:36).

RESULTS

Table 1: Distribution of Birth Length of Babies at Kendari City Hospital

Baby Birth Length	Low birth weight baby		Normal birth weight baby	
	n	%	n	%
Normal	25	69,4	35	97,2
Abnormal	11	30,6	1	2,8
Total	36	100	36	100

Table 1 shows that of the 36 Low Birth Weight babies, the majority had a normal body length, as many as 25 people (69.4%), likewise, of the Normal Birth Weight babies, the majority had a normal body length, as many as 35 people (97.2%).

Table 2: Average Weight of Babies Aged 1-6 Months at Kendari City Hospital

Average Baby Weight	Low birth weight baby	Normal birth weight baby	Difference
1st month of age	2931	3775	844
2nd month of age	3880	4622	742
3rd month of age	4665	5397	732
4th month of age	5240	6006	766
5th month of age	5929	6500	571
6th month of age	6428	6875	447

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Table 2 shows that the average weight of Normal Birth Weight babies is better than Low Birth Weight babies. The average increase in birth weight of Low Birth Weight and Normal Birth Weight babies has an increasing trend every month. The difference in the average weight of Low Birth Weight babies and Normal Birth Weight babies babies has decreased every month. In month 1, the difference can be seen to be 844 grams decreasing to 447 grams in the 6th month.

Table 3: Distribution of Growth Patterns of Infants Aged 0-6 Months at Kendari City Hospital

Baby Growth Pattern	Low birth weight baby		Normal birth weight baby	
	n	%	n	%
Normal	23	63,9	34	94,4
Abnormal	13	36,1	2	5,6
Total	36	100	36	100

Table 3 shows that of the 36 Low Birth Weight babies, the majority of their growth patterns were in the normal category, as many as 23 babies (63.9%). Likewise, for Normal Birth Weight babies babies, the majority of their growth patterns were in the normal category, as many as 34 babies (94.4%).

Table 4: Differences in Baby Weight and Growth Patterns of Babies Aged 0-6 Months at Kendari City Regional General Hospital

Baby Weight	Pola Pertumbuhan				p	X^2	RR	CI 95%
	Normal		Abnormal					
	n	%	n	%				
Low birth weight baby	23	31,94	13	18,06	0,001	10,189	4,47	1,210-16,543
Normal birth weight baby	34	47,22	2	2,78				
Total	57	79,16	15	20,84				

Table 4 shows that out of 72 babies who experienced normal growth patterns, there were 57 babies (79.16%), while those who experienced abnormal growth were 15 babies (20.84%). There is a difference in the growth patterns of Low Birth Weight babies and Normal Birth Weight babies (p=0.001)

Table 5: Log Rank Analysis Results of Achieving Normal Growth Based on Birth Weight and Median Time Required to Achieve Normal Growth in Infants Aged 0-6 Months at Kendari City Regional General Hospital

Baby Weight	Events Observed	Mean	Median Time (month)
Low birth weight baby	23	4,957	5
Normal birth weight baby	34		1

The results of the study in table 5 show that there is a difference in the time to achieve normal growth. The median time to achieve normal growth in Low Birth Weight babies is 5 months, while in Normal Birth Weight babies it is 1 month.

DISCUSSION

Growth is related to changes in the size, number, size and function of cells, organs and individuals, which are measured by weight (grams, pounds, kilograms), length (cm, meters), bone age and metabolic balance (calcium and nitrogen retention in the body). (Soetjiningsih, 1995). According to (Supariasa, 2012), growth is a natural process that occurs in individuals, namely that children will gradually gain weight and height. It can be concluded that growth has an impact on physical aspects. So growth is related to the physical quantity of individual children.

In general, children have normal growth and development patterns which are the result of the interaction of many factors that affect the growth and development of children. These factors include internal factors that affect the growth and development of

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children and external factors that affect the growth and development of children, including prenatal factors such as maternal nutrition, especially in the last trimester of pregnancy, toxins/chemicals, radiation can cause abnormalities in the fetus, infections in the first and second trimesters by TORCH (Toxoplasma, Rubella, Cytomegalovirus, Herpes simplex), immunological disorders, embryonic anoxia, maternal psychology, unwanted pregnancies, and mistreatment/mental violence in pregnant women and postpartum factors. There are several stages of growth and development in childhood. According to (Soetjiningsih, 1995), The stages are as follows: prenatal period (conception-birth), postnatal period, preschool period (age 2-6 years), school period or prepuberty period, and adolescence or teenage period. Children's basic needs for growth and development are generally classified into three basic needs, namely physical-biomedical needs (nurturing), emotional/affectionate needs (asih), and the need for mental stimulation (Asah).

The results of the study stated that there were differences in the growth patterns of LBW and LBW babies. The proportion of normal growth until the age of 6 months was more common in babies with normal birth weight status and until the age of 6 months had not reached the same average weight between babies with low birth weight and babies with normal birth weight. When viewed from the aspect of the trend of average birth weight until the age of 6 months, babies with low birth weight have an average weight below the standard weight of normal birth babies.

The results of this study are in accordance with the results of previous research. (Abdeyazdan et al., 2016) examined the comparison of growth in low birth weight babies and full-term babies. This study was conducted with a retrospective cohort of 218 babies consisting of 109 LBW and 109 full-term babies. This study found a difference between the growth of LBW and BBLC where the growth of the two groups showed better growth rates in the LBW group compared to full-term babies. The results of the study (Pinelli et al., 2001) This study found that there was a statistically significant difference between LBW and BBLC neonates in weight, height, and head circumference values throughout the first two years of age, meaning that the BBLR group's values were lower than the BBLC group. Likewise, the results of the study (Gazolla et al., 2007) studied the growth of very low birth weight infants at 12 months in Southern Brazil. This study was conducted using a descriptive method with a cohort design that was measured and recorded at 40 weeks, 6 months and 12 months. Of the 100 and 93 infants followed, at 40 weeks correctedage (CA) 57.8%, at 6 months 82.2% and at 1 year 2%, in infants given breast milk and formula. The results showed that there were differences in weight, height and head circumference in infants given breast milk and formula. Here it was also found that SNAPP-II can be predicted, from the first day of life, infants have a very high rate of failure to thrive at 12 months correctedage (CA).

The results of this study are also in accordance with research conducted by (Boezen et al., 2002) The results showed that achieving normal standard weight between BBLR and BBLC babies required 22 months. To achieve normal weight between low birth weight babies and moderate birth weight babies, it takes around 2-3 years. This can be caused by the unequal start of growth between low birth weight babies and moderate birth weight babies, in addition, growth in babies under 12 months of age can be physically influenced by several factors, including; birth weight including development in the womb, pain and nutritional intake (Motta et al., 2014).

The results of the study also stated that achieving 50% of normal growth in babies with low birth weight status takes 5 months, while in babies with normal birth weight it is only achieved at the age of 1 month after birth. This shows that achieving normal growth in babies with normal birth weight tends to be faster than in babies with low birth weight. The condition associated with this condition is the early start of birth weight in babies, where in babies with low birth weight will adjust their weight for the following months with babies who have normal birth weight status.

Based on opinion (Weisglas-Kuperus et al., 2008) The achievement of weight of low birth weight babies can be in accordance with babies with sufficient birth weight, it takes about 22 months. The results of this study showed a different phenomenon when viewed from the aspect of the average rate of weight growth where in each month low birth weight babies tend to be below and the difference between low birth weight babies and sufficient birth weight babies in each month is almost the same. This condition if it continues and occurs after the age of 12 months is possible at the age of 2 years the equality of normal growth between low birth weight babies and normal birth weight babies has not been achieved. The conditions of the results of this study are in accordance with the research (Motta et al., 2014) where differences in physical growth occur in babies under 12 months of age, this can be caused by several factors, including birth weight, development in the womb, illness and nutritional intake.

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CONCLUSION

The growth pattern of infants aged 0-6 months with a history of low birth weight at Kendari City Hospital is mostly in the normal category. There is a difference in the time to achieve normal growth. The median time to achieve normal growth in LBW infants is 5 months, while in LBW infants it is 1 month.

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