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## Development Of Motor Ability In Children With Low Birth Weight History In Mamuju District

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### Abstract

Improving the quality of Human Resources (HR) through stimulation of growth and development in children aged under two years (0-24 months), needs to be a priority concern of parents / caregivers considering this period is called the "golden age" or golden period, because brain development is very fast at two year old baby / BADUTA. Low Birth Weight (LBW) infants are at risk of growth and development disorders if LBW treatment and stimulation of development are not optimal and continuous. The research objective was to determine the development of Baduta motor skills with a history of LBW in the Regency. Descriptive research with the Cross Sectional Study approach. The study population was all Baduta with a history of LBW in Mamuju District, Mamuju District. The sample of this study was Baduta who had a history of low birth weight birth and lived in Mamuju District. the number of samples is 28 million, using the KPSP Pre Sining Development Questionnaire (KPSP) measuring gross motor development and fine motor development. The results showed that there were still 11 baduta (39.3%) unable to do gross motor skills and 5 baduta (17.9%) unable to do fine motor skills.

**Keywords: Gross and fine motor skills; Low birth weight**

### INTRODUCTION

Improving the quality of Human Resources (HR) through stimulation of growth and development in children aged under two years (0-24 months), needs to be a priority concern of parents / caregivers considering this period is called the "golden age" or golden period. The baduta period is said to be the golden period because the development of the brains of baduta children was very fast.

Maximum child brain development when parents provide optimal development stimulus to the child according to the child's age, adequate nutrition (since in the womb, exclusive breastfeeding and MP ASI), and

appropriate care. Solihin, Anwar, & Sukandar(2013) states the factors related to gross motor development, fine motor skills and cognitive development in pre-school children are the nutritional status of children under five, long attend PAUD, and parenting care. This is in line with the research results of Song et al(2018) which states improving the nutritional status of rural pregnant women in Malaysia reduces the risk of babies born with low birth weight, and Oudgenoeg-Paz et al(2017) research that says that the quality of motor development and cognitive development is influenced by the effects of early-year interactions on Low Birth Weight Babies.

Low Birth Weight Babies (LBW) are at risk of experiencing health problems in their teens and adults.

This is according to the results of Wibowo (2019) research stating that LBW infants are more likely to have type 2 diabetes, kidney disease, and cardiac abnormalities as a teenager. Besides that, Nazi et al(2012) said LBW babies are more vulnerable to developmental difficulties.

Delay in children's development will affect the next stages of development. This needs to be done early detection of development in children so that early intervention can be done before it becomes a developmental problem. The results of a systematic review and meta-analysis of studies from South Asia revealed that children born with LBW, especially with birth weights <2000 g, had substantial cognitive and motor impairments compared to children of normal weight. Early childhood development interventions must place emphasis on children with LBW (Upadhyay et al., 2019).

The Indonesian Ministry of Health has issued a means to monitor growth and development that is simple, the Pre-Screening Development Questionnaire (KPSP). Monitoring efforts are carried out to find as early as possible growth and development deviations and to follow up on parents' complaints regarding the growth and development problems of the babies and toddlers (Ministry of Health Republic of Indonesia, 2014).

According to Chamidah, birth weight is one of the factors that influence development. About 10-15% of low birth weight babies have problematic stages of development, and babies born with very low birth weight have a 3-4 times greater risk of developing stages than normal born babies(Chamidah, 2009). Scharf et al(2017) study of 950 children with LBW birth in America found a link between a child's LBW birth history and delayed motor development. BBRL is a child born with body weight <2.5 kg. Around 16% of children are born in the world with LBW and 90% of these children come from poor and developing countries(World Health

Organization, 2014). The percentage of low birth weight babies in Indonesia is around 10.2 percent and continues to increase every year.

Likewise, research conducted by Rahayu and Sofyaningsih in Tangerang City, they found that babies with low birth weight have a risk of developmental problems until the age of two million years and at risk of developmental problems, at the age of the first 5 years of life, especially if not given an optimal stimulus according to their age . Therefore, early detection of impaired development of motor skills, verbal, and social must be done routinely and continuously, especially at the age of Baduta so that appropriate handling can be done (Yuliani, Putra, & Wandiani, 2015)

Many studies related to infant motor development with a history of LBW, but not yet done at the age of 0-24 months (baduta). Based on family health reports from the Mamuju Regency Health Office, in 2014 the number of live births was recorded at 4,595 babies with LBW infants reaching 1.91% or 81 babies. In 2015 there was a significant increase in the number of LBW infants to reach 2.1% (114 infants) from 5,505 live births, and in 2016 the increase continued to reach 2.5% (129 LBW infants) from 5,323 live births. While data on the development of BBLR history members using SDIDTK evaluations have not been reported in the working area of the Mamuju District Health Office ( Ministry of Health Republic of Indonesia, 2017). This study aims to identify the description of the development of motor skills in the Baduta history of LBW in Mamuju Regency using the Pre Development Screening (KPSP) questionnaire instrument at the age of 0-24 months compiled by the Ministry of Health.

## **METHOD**

This study received an ethics approval recommendation from the Makassar Health Polytechnic, Number 137 / KEPK-PTKMKS / II / 2019 dated 28

February 2019. This type of descriptive research with the Cross Sectional Study method approach where researchers see an overview of the development of motor skills in Baduta with a history of LBW conducted on LBW history one time measurement. All Baduta with a history of low birth weight in Mamuju District, Mamuju District are the population. The research sample was Baduta with a history of birth with low birth weight residing in Mamuju District, Mamuju Regency. Using non-probability sampling techniques and accidental sampling approach of 28 baduta.

The research instrument used was a questionnaire using a checklist that is the Pre Development Screening questionnaire at the age of 0-24 months to measure motor

skills in children (Ministry of Health Republic of Indonesia, 2014). Data obtained from observations of child development and interviews with parents or caregivers when visiting Posyandu in Mamuju sub-district, Mamuju district, and home visits if respondents are willing and data from posyandu register books in Mamuju sub-district, Binanga and Puskesmas sub-districts, and hospitals Mamuju district area. Data processing is done by tabulating data manually and then the data is processed using a computer. Before the data is processed systematically steps are first performed such as editing, coding and tabulating data.

## RESULT AND DISCUSSION

**Table 1 Frequency Distribution of Respondents**

<b>Category</b>	<b>n</b>	<b>%</b>
<b>Profession</b>		
Civil servants	5	17.9
Housewife	19	67.9
Entrepreneur	2	7.1
Trader	2	7.1
<b>Education</b>		
Bachelor	2	7.1
Diploma	1	3.6
Senior High School	9	32.1
Junior high school	7	25.0
Primary School	7	25.0
No School	2	7.1
<b>Sex</b>		
Male	10	35.7
Female	18	64.3
<b>Total</b>	<b>28</b>	<b>100.0</b>

Based on table 1 above the average occupation of parents with LBW is 67.9% housewives, 17.9% private civil servants and 7.1% respectively traders. The average education level of respondents was high school graduates 32.1%, junior and elementary school graduates

respectively 25%, bachelor and non-school graduates respectively 7.1%, and diplomas 3.6%. While based on gender, girls are bigger than boys, which is 64.3% while boys are 35.7%.

**Table 2 is descriptive based on mother's age (years), child's age (months) Child's height (cm) and child's weight (kg)**

Variable	Mean	Maks	Min
Mother's age (years)	29.4	41.0	18.0
Age of child (month)	10.2	21.0	1.0
Child's height (cm)	66.4	75.0	49.0
child's weight (kg)	6.7	9.1	4.0

Based on table 2 the average age of the mother affects the gross motoric development of the child by 29.4 years, the average age of the child is 10.2 months, the

average height of the child is 66.4 cm and the child's weight is 6.7 kg.

**Table 3 Frequency Distribution of Baduta Motor Development**

Motor Development	n	%
<b>Gross Motor</b>		
Appropriate	17	60.7
Inappropriate	11	39.3
<b>Fine Motor</b>		
Appropriate	23	82.1
Inappropriate	5	17.9
<b>Total</b>	<b>28</b>	<b>100.0</b>

Table 3 explains that 17 children with LBW history were able to do gross motor skills (in accordance) with 60.7% while the remaining 39.3% were not able to do gross motorcycles (inappropriate), while in 23 children

with LBW history were able to do fine motor (appropriate) that is equal to 82.1% and 5 children are unable to do fine motoric for 17.9% (not suitable).

**Table 4 Distribution of Motor Development by Gender of Children**

Sex	Gross Motor						Fine Motor					
	Appropriate		Inappropriate		Total		Appropriate		Inappropriate		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Male	7	70,0	3	30,0	10	100	9	90	1	10	10	100
Female	10	55,6	8	44,4	18	100	14	77,8	4	22,2	18	100

Based on table 4 above shows that the gross motor development group of male respondents appropriate category 7 people (70%) and inappropriate 3 people (30%), while in the group of female respondents obtained appropriate categories of 10 people (55.6%) and

inappropriate for 8 people (44.4%). For monitoring fine motor development in male respondents the appropriate category was 9 people (90%) and not appropriate was 1 people (10%) (Ministry of Health Republic of Indonesia, 2014)

Based on the results of research that has been done, it is known that female baduta more experience LBW compared to male baduta that is equal to 64.3% while male baduta is 35.7%. This condition can be caused by physiologically male masses are more than females. So that the tendency for baby girls to experience LBW is greater than for baby girls. As explained by Amory, et al (2004) that the tendency for boys to be heavier may be due to the influence of androgen hormones, differences in fetal maternal antigens due to the adrogen hormone play a role in growth.

The results obtained are in line with research by Kumalasari et al (2018) of 310 babies born with LBW at Muhammad Hoesain Hospital in Palembang. It was found that more female babies were born with LBW, 162 babies (52.3%) compared to boys, 148 babies (47.7%).

The development of baduta with a history of LBW can be seen from the development of gross motoric which is mostly in the age-appropriate category of 17 baduta (60.7%), and in the inappropriate category is 11 baduta (39.3%). While the most fine motor development in the appropriate category is according to the age of 23 baduta (82.1%) and in the inappropriate category is 5 baduta (17.9%). Based on sex, it is known from 10 male maltuta, 7 baduta (70%) of whom have gross motor development according to age, and 9 baduta (90%) of them have fine motor development according to age. Whereas 10 out of 18 female baduta women have appropriate gross motor development, and 14 out of 18 female female blinds have fine motor development according to their age.

Based on the data above, most of the baduta underwent gross and fine motor development according to age. This shows that the baduta with a history of LBW in Mamuju sub-district did not influence the further development. This is not in line with the research of Scharf, Stroustrup, Conaway, & Deboer(2017) of 950 children with LBW births in the United States stating that

LBW birth history is associated with delayed motor development in children.

Generally, LBW can cause complications in the future for the baby. One of the long term complications caused by LBW is growth problem (Scharf et al., 2017). In addition, low birth weight babies are generally strongly associated with growth and development, especially in catching up to early growth. Growth that is left behind from normal will cause children to become stunted (Rosyidah & Mahmudiono, 2018)

The difference in the results obtained from previous studies can be influenced by several other factors including the average social status and economic ability of families in Mamuju that have increased so that families are able to provide adequate nutrition to the baduta who experience LBW to support growth and development. 80% of the household heads of respondents have an above average income and are sufficient for the needs of family members including the family member. Even the level of income of parents has an impact on the status of children (Rosyidah & Mahmudiono, 2018).

Based on our observations in the field when researching, this is also supported by the role of cadres to remind mothers / caregivers of children when visiting the posyandu to give exclusive breastfeeding if their children are <6 months old and remind mothers / caregivers who have / bring children in posyandu aged > 6 months to keep giving ASI and MP ASI as well as always delivering the child's visit schedule at the next Posyandu, so that the knowledge and activeness of parents / caregivers increases. Several factors can cause differences in the development of baduta who have a history of LBW that can not be separated from factors such as family conditions, age, sex, environment, nutrition, breastfeeding and parenting provided by parents (Solovieva, Rojas, & Reyes-meza, 2016).

The good knowledge of the family about child development is basically influenced by the level of education the family has. Research data shows that 42.8% of family education level is good enough. This is certainly a good supporter of growth and development even though with a history of LBW though. This is supported by the explanation of Daynia (2012) that a high level of family education facilitates the absorption of messages and explanations related to the use of health facilities and infrastructure, stimulation of child growth and development, and the best education for children compared to families with low education (Ballot, Potterton, Chirwa, Hilburn, & Cooper, 2012).

However, looking at data on gross motor development in respondents who are not age-appropriate, as many as 11 million, it is found that developmental lags are generally experienced by baduta. The developmental lags include not being able to sit, and not being able to support the body when standing. Whereas in the 5 million who experience non-development of fine motor development, there are disadvantages such as not being able to clamp certain objects, write, or observe certain objects that are given. This is in accordance with Nazi research that says babies with low birth weight risk experiencing abnormalities of nerves, reflexes, and coordination so that development is not optimal resulting in the movement of hands and other body organs (Huang, Huang, Chen, & Lin, 2012).

In addition, the results of this study also identified disturbances in the stages of gross motor and fine motor development. After separating from the assessment of the results of the data obtained, that of 8 baduta who experienced the development of fine motor skills according to age, it was not in line with the development of ability gross motor. Of the 8 badutas have not been able to do some combination of movements such as lifting the head 450 or upright when facedown, unable to support

the head when awakened from sleep, unable to maintain sitting alone for 60 seconds, and have not been able to stand alone without holding for 30 seconds. The nature of the delay in gross motor development varies with each million, depending on the stage of development according to age. The results obtained indicate that gross motor development can experience delays even though the fine motor aspects have been fulfilled. Motor skills are very dependent on muscular and neurological conditions. Baduta movement is the result of coordination of various body organs through the control of the child's brain. Therefore, on this problem, researchers assume that the existence of delayed gross motor development can be sourced from the development of the baduta muscle that is not optimal. Thus, baduta is not able to maintain body position or make enough movement from the results of the muscle work activities.

These results are in line with the explanation of Sujiono, et al (2014) that the brain always translates every information received, then the results of the translation of information in the form of children's activities. occur under brain control.

Gender, nutrition, and parent / caregiver stimulation affect the child's growth and development. If the parent / caregiver provides appropriate stimulation, adequate nutrition, gender support, then the child's growth and development is optimal (Khoiriyah, 2013).

Children with LBW history really need special attention, especially in the toddler age period. Toddler age occurs between 1 to 3 years. This age is a golden period in children because at this time children will very quickly learn new things. Success in mastering development tasks at the age of toddler requires a strong foundation during the growth period and requires guidance from others, especially parents. Giving a low stimulation and the level of welfare that is less at home will cause the child's growth and development to be disrupted and for children

with a history of LBW will be at greater risk. In line with the research of Supratti(2018) parents' stimulation affects the child's development.

Observation of development continuously using Child Development Card or Child and Mother Health children's book. to facilitate early detection of development. This is the basis for providing early action when problems are found related to child development.

## CONCLUSION

The development of baduta gross motor skills with a history of LBW in Mamuju sub-district is 39.3% who are unable to perform gross motor movements according to age. Meanwhile, the description of the development of fine motor Baduta with a history of LBW in Mamuju sub-district was 17.9% unable to perform fine motor movements according to age.

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