



## **The Gross Motor Development of 2-4 Years Old Children ( A Case Study in Malnourished Children)**

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### **Abstract**

The economic level of a family affects the ability to provide food with balanced nutrition. Nutrition helps optimize child development. Children who are malnourished have problems in gross motor skills such as the inability of children to regulate body balance and body reactions that are less fast when receiving motor movement stimulation and poor coordination of body organs. This study aimed to describe gross motor skills, factors for malnutrition and an attempt to overcome malnutrition of 2-4 years old children in Tlogopayung, Plantugan, Kendal. This type of research was a qualitative research using descriptive method. The subjects of this study were malnourished children aged 2-4 years. The data collection technique was done by interviewing parents and observing children's development. The data were analyzed using the Miles and Huberman model, namely data reduction, data display, and conclusion drawing/verification. The results showed that malnourished children experienced obstacles in their gross motor skills as evidenced by the lack of achievement of four of the five indicators of gross motor skills in children aged 2-3 years. Malnourished children aged 3-4 years also have not been able to achieve four of the six indicators used. The motor skills that have been achieved are locomotor motor movements (moving movements). An attempt to overcome malnutrition cases are carried out by socializing the prevention of malnutrition and stunting, stunting toddler classes, providing additional food, providing motivation and direction for mothers in child care. Suggestions that can be given are the expansion of information related to the standard of child development abilities and the importance of nutrition for children to parents which can be done through improving the posyandu services and socializing the prevention of malnutrition in early childhood

### **How to cite**

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## INTRODUCTION

The family's economic level affects the ability to provide food with balanced nutrition. Families with sufficient income are able to supplement foods that contain nutrients that the body needs. The inability of families to provide adequate nutrition for early childhood creates several problems that need attention, considering that children are individuals who need adequate nutrition and nutrition to help their growth and development, such as cited in (Dewi, 2018) that nutrition plays an important role in the growth and development of early childhood that occurs very rapidly. Adequate nutrition optimized the process of child development. The intake of nutrients received by the body can help the body's defense (Anggari, 2021).

Development is defined as a condition of increasing more complex body organs function, therefore children have the gross motor skills, fine motor skills, speech (language) skills, as well as socialization and independence (Anggari, 2021). Based on the background above, gross motor development in malnourished children needs to be researched to determine the achievement of child development, as well as an effort to prevent cases of malnutrition in early childhood. According to Martha as cited in (Rezky, 2017), motor development is the ability to use body parts that involve coordination between the central nervous system and muscle nerves. Gross motor development of children is divided into two, namely gross motor and fine motor. Children's gross motor skills are grouped into three groups of movements, namely locomotor motion, non-locomotor motion and manipulative motion (Yudianto, 2011).

Locomotor motion is gross motor movements that move places such as walking, running etc. While non-locomotor motion is gross motor movements that does not move, such as pushing, lifting, walking in place and others. Manipulative motion is gross motor movements that are carried out by using a tool (Setyawan, Hadi, & Royana, 2018).

In the golden age, parents become important actors in optimizing children's growth and development (Sumanto, Astuti, Rahmadani, & Nugroho, 2020). Parents become figures in optimizing the development and growth of children starting from the applied parenting, providing adequate nutrition and adequate education to facilitate children's growth and development. In addition, according to Wiyani (2014) there are five factors that influence the gross motor development of children, namely foods, stimulus,

physical readiness, gender, and cultural factors.

Malnutrition allows interference with child development. Therefore, prevention of the negative impacts of malnutrition needs to be prioritized, as is in the 2015 SDGs (Sustainable Development Goals) which proclaimed by UNICEF, namely the fulfillment of good and balanced nutrition and health. In this golden period, children's growth and development are crucial to be optimized so that children are ready to live in the future (Al-Fariqi & Yunika, 2021). In addition, early childhood also determines future success, what children get from an early age can be a provision and life experience in adulthood. When the child is still in the womb, the food consumed by the mother becomes intake and enters the baby's stomach, so pregnant women must eat healthy and nutritional foods according to the needs of the mother and her child (Auliana, 2011).

Motor skills of children in their growth period will always be related to the learning process or in their daily life (Ananda, 2017). Therefore, children must be stimulated continuously in all aspects of their development and their nutritional needs so that their body is ready to receive the stimulation given. Early childhood should also practice developing gross motor skills to be more coordinated and develop as expected (Febrianingrumy & Diana, 2021).

Based on the data obtained by the researchers in the initial observations through the posyandu data managed by the Tlogopayung village midwife, it showed that there were 26 children aged 0-6 years in Tlogopayung Village who were malnourished. Data were obtained from records of posyandu activities carried out with the help of village midwives. Measurement of child growth is carried out using WHO charts by considering weight and height according to the child's age. The WHO chart has a checkered line as a measure of child growth. In addition, the WHO chart also has 3 kinds of colors on the lines, namely green, yellow, and red which are used as guidelines in determining the nutritional status of children. Children who are in the green line have a fulfilled nutritional status. Meanwhile, children who are on the yellow line are defined as children who are mildly malnourished. In addition, children who are in the red line are defined as children who are severely malnourished.

Children who are malnourished have problems in gross motor skills such as the inability of children to regulate body balance and body reactions that are less fast when receiving stimulation of motor movements. In addition, malnourished children also experience poor coordination of

body organs (Zulaekah, Purwanto, & Hidayati, 2014). Based on the above background, it is necessary to conduct research on gross motor development in malnourished children to determine the achievement of children's development, as well as an effort to prevent cases of malnutrition in early childhood.

This study aims to describe gross motor skills, factors of malnutrition and an attempt to overcome malnutrition in children aged 2-4 years in Tlogopayung, Plantungan, Kendal. Previously, no research has been conducted on the effect of malnutrition on early childhood development in Tlogopayung Village. Through this research, knowledge about the importance of nutrition and children's motor development can be conveyed to the community.

## RESEARCH METHODS

Based on the objectives to be achieved in this study, namely to describe the gross motor development of malnourished children and the efforts that can be made to overcome cases of malnutrition in children, this research is a qualitative descriptive study. Qualitative method is a research method to obtain in-depth and factual data, namely actual and definite data (Suryana, 2010). In qualitative research, data sources are selected purposively and are snowball sampling (Sugiyono, 2019).

The subjects of this study were malnourished children aged between 2-4 years. Based on the data that researchers found in the field, there were six children aged 2-4 years who were malnourished. The data was taken from the latest data recording conducted by posyandu cadres in April 2022. The study focused on three children who were malnourished, namely Mukhammad Setia Ramadhani, Fitri Wulandari, and Rijali Sajidin who were included in the category of severe and moderate nutritional deficiencies. Determination of research subjects was carried out by searching for data on the number of children aged 2-4 years with nutritional disorders that could be obtained through village midwives with the help of posyandu cadres at the research site.

In the field implementation, the subject of this research requires the presence of informants other than early childhood to obtain comprehensive data, namely parents. Parents play a very important role in providing information related to the children studied, where children aged 2-4 years are still not optimal to be used as sources in the interview process. Based on this statement, parents, especially the mothers of the children

studied, became the research subjects that supported the researchers in finding comprehensive information.

This research was conducted in Tlogopayung Village, Plantungan District, Kendal Regency. Tlogopayung Village has eight hamlets, one of which is Karangsari Hamlet. The research is focused on Karangsari Hamlet, which has a low level of community welfare as evidenced by houses with wooden walls, with soil floors and people making a living as farmers and laborers.

Data collection techniques were carried out by interviewing parents as the primary data source and observing the child's development as a secondary data source. Data analysis was carried out using the Miles and Huberman model, namely data reduction, data display, and conclusion drawing/verification (Sugiyono, 2019)

In order to facilitate the implementation of the research, the first step taken by the researcher was to determine the data on malnourished children aged 2-4 years in Tlogopayung Village. Determination of the data obtained with the help of the latest data which contains a list of malnourished children in posyandu managed by village midwives. Furthermore, the researchers determined the research subjects with the criteria mentioned to determine the gross motor development of children.

This study used a list of questions as guide of interview to obtain research data. Interviews were conducted in a structured manner where the researcher as the main instrument had prepared several kinds of lists of questions according to the issues raised, but they were flexible according to the conditions of the sources or informants and the needs of the researchers. Interviews were conducted as a primary data source and observation as a secondary data source. Observations were made by testing children to perform gross motor skill activities based on STPPA (Standards for Achievement of Child Development) according to their age stages. Children will show their developmental abilities. In addition, documentation during observation is needed as research evidence to support the validity of the information obtained.

The data obtained in the study must be verified to obtain valid research results. Testing the validity of this data is done by conducting a credibility test. In this study, to test the credibility of the researcher using triangulation and member check methods. Triangulation in testing the credibility of the data is done by checking the truth of the data obtained from various sources. According to (Sidiq & Moh, 2019) triangulation is

divided into three, namely source triangulation, technique triangulation, and time triangulation.

## FINDINGS

### 1. Gross Motor Development of Malnourished Children

Gross motor development in malnourished children measured based on STPPA (Standard Level of Child Development Achievement) aged 2-4 years, divided into two, namely 2-3 years old and 3-4 years old.

#### a. Malnourished children aged 2-3 years

STPPA	Child Ability
walking on tiptoe	Not yet
jump forward and backward	Not yet
throw and catch the ball	Not yet
dance to the beat	Not yet
go up and down stairs	Already

#### b. Malnourished children aged 3-4 years

STPPA	Ability
running with light objects	Already
stand on one leg	Not yet
going up and down stairs with alternating feet	Not yet
climb on the board	Already
Jump down with a height of 20 cm or below the child's knee	Not yet
imitating simple gymnastic movements	Not yet

### 2. Nutrition obtained by children

Nutrition	Explanation
Carbohydrate	fulfilled
Protein	unfulfilled
Vitamine	unfulfilled
Water	fulfilled
Fat	unfulfilled

### 3. Factors Occurrence of Malnutrition

Malnutrition in Tlogopayung Village is caused by the low income of parents and the ability of the family to provide foods with good nutrition according to the needs of the child.

### 4. An attempt of Malnutrition Countermeasures

An efforts to overcome malnutrition are carried out through stunting toddler classes, providing additional MPASI complementary foods, and mentoring mothers in caring for children.

## DISCUSSIONS

### 1. Child's Gross Motor Development

#### a. Malnourished children aged 2-3 years

Gross motor development of malnourished children aged 2-3 years in Tlogopayung Village has some delays in motor development. This is supported by the results of research conducted by Jepi Anggari (2021), children who are malnourished will be hampered by several abilities in gross motor development.

#### b. Walk on tiptoe

One out of three malnourished children in Tlogopayung Village is not yet able to walk on tiptoe. But if they just stand on tiptoe without walking, they can do it. Walking on tiptoe requires body balance, body strength and leg muscle endurance to support the child's body.



**Picture 1.** MS has not been able to walk on tiptoe



**Picture 2.** RS has been able to walk on tiptoe

## **2. Jumping forwards and backwards**

Jumping forward and backward with two legs has not been mastered by malnourished children in Tlogopayung Village. They used to doing activities jumping forward only. They have not been able to maintain balance when jumping backwards.



**Picture 3.** RS only capable to doing forward-jumping only

## **3. Throwing and catching objects**

Children are able to throw objects, yet they cannot catch light objects since they cannot coordinate their hands with their eyesight when catching objects, so that they do not hit the object. Children difficult to focus on the direction of objects that come with hand movements

## **4. Dancing to the beat**

Children have not been able to follow rhythmic movements. They tend to move the body according to their will and strength. One in three malnourished children just nod their head or move their body, hands or feet according to their willing.

## **5. Going up and down stairs by holding on**

Children are able to carry out gross motor activities, namely going up and down stairs by

holding on, even some of them are able to do it without help from others. This is influenced by the environment around the child. Karangsari village community has a house that is in an uneven area, but in the form of terraced land or like hill land so it is very common if there are stairs on the road around the house.

## **b. Malnourished Children Age 3-4 Years**

According to Rohyana & Adawiyah, (2018) the nutrition obtained by children must be sufficient and according to needs, if it is lacking it will cause problems in the child's physical growth. With physical growth disorders due to malnutrition, children will look thin and weak. This is in accordance with field data found by researchers, namely malnourished children aged 3-4 years in Tlogopayung village have obstacles in achieving their gross motor development indicators

### **1. Running with objects**

Children are capable of gross motor skills in the form of carrying light objects while running. They can already coordinate between hands, feet and eyes when carrying these light objects. This is supported by the child's habit of playing and running so that it strengthens the leg muscles and the child's body strength.

### **2. Going up and down stairs with alternating feet**

Children still need help and direction from others when going up and down stairs with alternating feet. Parents direct the child to hold on and be careful so that the child is able and brave to go up and down stairs.



**Picture 4.** FW going up and down stairs still with the help of others

### **3. Standing on one leg**

The child has not been able to stand on

one leg because he still needs the help of others to hold on and cannot maintain his balance.



**Picture 5.** FW needs his mother's help when standing on one leg

#### 4. Climbing on the board

The child is able to walk on a board or a place that is higher than the base with his balance and body strength.

#### 5. Jump with 20 cm height or below the knee

Children are still used to passing stairs or higher places with their feet alternately. have not dared to jump on two legs to a higher place.

#### 6. Imitate simple gymnastic movements

Children have not been able to imitate simple gymnastic movements. Children have not been able to regulate body movements, especially legs when imitating a movement. The movements they pay most attention to are hand movements

#### 2. Nutrients obtained by children

According to Rahmi (2019) the content of nutrients needed by the body according to nutritional science in the form of carbohydrates, iron, fat, protein, vitamins, minerals, and water. Balanced nutrition consists of several interrelated components such as carbohydrates, calories, fat, protein, vitamins, minerals and calcium. In eating food, balanced nutrition needs to be applied because it cannot just eat one or several types of food. For example, rice is a major source of calories, but poor in vitamins and minerals; vegetables and fruits are generally rich in vitamins, minerals and fiber, but poor in calories and protein; Fish is the main source of protein but few calories (Sumanto, Astuti, Rahmadani, & Nugroho, 2020).

This theory is in line with field data obtained by researchers related to nutrition obtained by malnourished children in Tlogopayung Village, namely the lack of intake of animal protein,

fat and vitamins in which these nutritional components affect children's developmental abilities.

#### a. Carbohydrate

Carbohydrate needs for children have been met properly. In a day children always eat foods that contain carbohydrates such as rice, cassava and so on. As in general, parents assume that carbohydrates are the main substance that children must consume every day in order to get enough energy for activities.

#### b. Protein

Protein needs in children have not been met. This is evidenced by the daily food consumed by children in the form of vegetables as a source of vegetable protein. To meet the needs of animal protein, children sometimes eat eggs or fish, but they are rarely met.

#### c. Mineral water

The water needs of children have been met. In a day children consume water as much as four to five glasses or the equivalent of 1000-1250 ml / day. According to the Indonesian Pediatric Association (2018), water needs in children can be measured based on age and based on the child's weight. When a child weighs less than 10 kg, the water requirement is 100 ml/kg (eg a child weighs 8 kg, the water requirement is 800 ml/day). Meanwhile, when a child weighs 10-20 kg, the water requirement is 1000 + 50 ml/kg (eg a child weighs 12 kg, the water requirement is 1100 ml/day). Likewise with field results, MS weighs 11 kg so that his water needs are 1100 ml/day or the equivalent of 4.5 glasses of star fruit. One glass of star fruit can hold as much as 250 ml of water. At the hospital, the water requirement is 900 ml/day or the equivalent of four glasses. FW has a water requirement of 1200 ml/day or the equivalent of five glasses of water a day.

#### d. Fat

The need for fat in children is still lacking as evidenced by the infrequent consumption of foods containing fat such as meat, milk, fish, types of nuts, and so on in daily life.

#### e. Vitamine

Children's vitamin needs have not been fulfilled as evidenced by information from interviews which stated that children rarely consume fruit or other vitamin supplements. Children do not like to take vitamin supplements and are rarely given fruits in everyday life. However, they are used to and like to eat vegetables to get vitamin

intake.

According to Nimas Mita Ethics (2021), some vegetables contain vitamins that are good for the body including potatoes, carrots, spinach, and green vegetables containing vitamin A; Tomatoes, sweet potatoes, and kidney beans contain vitamin E, and bananas, bean sprouts, spinach, broccoli and cabbage contain vitamin K which plays a role in maximizing growth and development and maintaining the immune system.

### 3. Factors of Malnutrition

According to Yudi Wiyani (2014) there are five factors that influence the development of children's gross motor skills, namely food factors, stimulus factors, physical readiness, gender, and cultural factors. This is in accordance with the results of research obtained by researchers regarding the causes of malnutrition cases in Tlogopayung Village. The gross motor development of malnourished children in Tlogopayung Village is influenced by nutritional intake from daily food which is still lacking, and the provision of stimulus that is less than optimal. This is in accordance with the results of research obtained by researchers regarding the causes of malnutrition cases in Tlogopayung Village. The gross motor development of malnourished children in Tlogopayung Village is influenced by nutritional intake from daily food which is still lacking, and the provision of stimulus that is less than optimal.

The factors that cause malnutrition occur directly and indirectly. Direct causative factors include inadequate food intake with nutrients and infectious diseases. The indirect factors are in the form of food supplies at home, child care and pregnant women, and lack of health services (A., Kalsum, & Sutrisno, (2016). The more and diverse foods consumed, the greater the intake of nutrients in the body (Dewantari)., 2013). This is in accordance with the results of research where malnutrition in early childhood in Tlogopayung Village is caused by the low income of parents, and the family's ability to provide food. Parents earn a living as farmers, laborers, and emping makers whose income is no more than meet basic daily needs.

#### Attempts to Combat Malnutrition

In order to enhancing public health, it is carried out by improving nutrition for individuals and communities at the age of life from the womb to old age (Iqbal, 2019). This theory is in accordance with the results of research where efforts to overcome malnutrition are carried out by village midwives and posyandu cadres by registering children who are classified as malnourished or are on the yellow and red lines based

on posyandu activities for guidance in the form of stunting classes, provision of complementary complementary foods for complementary feeding, and socialization regarding the importance of nutrition for children. In addition, efforts are made by motivating mothers to be patient with their toddlers, as well as assisting mothers in providing child care.

## CONCLUSION AND SUGGESTION

### 1. Conclusion

The conclusions of the results of this study are as follows::

Malnourished children experience difficulties in gross motor skills. Children aged 2-3 years based on five indicators of motor development only achieved one indicator, namely locomotor movement (moving places) up and down stairs. Children aged 3-4 years based on six indicators are only able to achieve two locomotor indicators, namely running with objects and climbing on a board.

a. Malnutrition in children is caused by the low income of parents, and the ability of the family to provide food.

b. Efforts or attempts to overcome malnutrition are carried out by socializing the prevention of malnutrition and stunting, stunting toddler classes, providing additional food to malnourished children, motivating mothers to be patient with their toddlers, and assisting mothers in providing additional food.

### 2. Suggestion

Knowledge of child development standards, the importance of good nutrition and posyandu services is very important to pay attention to to optimize children's growth and development.

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