



Children's Nutrition Status and Motor Development in Middle Class Parents Social Economy Status (SES)

Mesa Rahmi Stephani, Adang Suherman, Syifa F Syihab, Wulandari Putri, Gano Sumarno, Ricky Wibowo
Universitas Pendidikan Indonesia, Indonesia

Article Info

Article History:

Received : January 2021

Revised : February 2021

Accepted : March 2021

Available Online : May 2021

Keywords:

nutrition status, motor development,
social economic status.

Abstract

Early childhood development needs to be considered, considering that a child is a parent's investment in the future. Therefore, meeting the nutritional needs of children has a vital role in achieving optimal growth and development. Nutritional status in children in the school environment is often measured by height and weight parameters. This study aims to determine the effect of nutritional status on motor skills in early childhood. The method used was a cross-sectional study. The samples were early childhood children aged four to five years who have attended kindergarten with middle-level socio-economic status. Nutritional status was known through height and weight, while gross and fine motor development was measured using ASQ 3rd edition. Data were processed by SPSS using the Kruskal Wallis Test analysis technique. The results show that 90% of children were in the underweight category, 6.7% were in the Normal weight category, and 3.3% were in the obese category. There is no influence of nutritional status on gross and fine motoric abilities in kindergarten children. The results of this study can be a consideration for the government to pay attention to nutritional status and children's motor abilities to minimize the gap between the quality of education and the various backgrounds of parents' socio-economic status.

INTRODUCTION

Child growth is internationally known as a vital indicator of nutritional status and health in populations (Mushtaq, et al., 2012; Mushtaq, et al., 2012; WHO, 1995). These indicators measure nutritional imbalance resulting in undernutrition assessed from underweight, stunting, wasting and, and overweight. Nutritional status assessment is used to determine the state of the nutritional status of children. Nutritional states are based on anthropometric standards issued by the Indonesian health ministry (Zulkarnaen, 2019). An individual's nutritional status is generally dependent on external factors such as food safety, social, cultural, economic factors, and internal factors, which include age, sex, nutrition, physical activity and behavior, and diseases of the person (Upadhyay & Tripathi, 2017). The prevalence of malnutrition occurring in various forms (being overweight/underweight and obesity) worldwide, particularly among adolescents and young people, needs a concern (Abaedi, et al., 2011). A child with good nutritional status will have a strong and healthy body to carry out activities that support good gross and fine motor skills development. Conversely, undernutrition children will have a weak body and will easily get sick; thus, they cannot do their activities well (Zulkarnaen, 2019).

Motor development is an essential aspect to encourage the development of other aspects, one of which is children's social development. A child's life is highly close to playing. Many games demand high motor skills, so the child needs a lot of moving experience to stimulate their motor development to be skilled. Children need to have motor skills that are equal to their peers to be involved in various game activities. Thus the social interaction process can occur (Stephani et al., 2019). Adequate nutrition will support children's cognitive and physical development to be more optimal. Nutritional status had a positive and significant effect on fine and gross motor skills development of children. The relationship between nutritional status and gross and fine motor skills has a correlation value,

0,650 and in moderate relationship level. Increasing the nutritional status significantly helps develop children's gross and fine motor skills during their golden age. Nutritional status has a significant effect on gross and fine motor skills in early childhood. Moreover, there was a positive relationship between nutritional status and gross and fine motor skills in early childhood. This means that good nutritional status will further improve children's fine and gross motor skills (Zulkarnaen, 2019).

METHOD

This research used the ex-post-facto method. This study included 30 kindergarten students in urban areas (53.8 ± 3.8 months; 15 boys; 15 girls) with middle-class parents' social-economic status. The samples were the children who were willing to participate in this study, accompanied by parental permission.

Nutrition status was determined through body mass index (BMI) measurement carried out using The Quetelet Formula (World Health Organization Expert Committee 1995; Mushtaq et al., 2012), in which weight is divided by height in the square (kg/m^2). The classifications of BMI used WHO standard (Very thin $< -3,0$ SD; Thin $-3,0$ SD to $< -2,0$ SD; Normal $-2,0$ SD to $2,0$ SD; Fat $> 2,0$ SD to $3,0$; Obese > 3). Nutritional status was based on body mass index indicators, including Obesity, Fat, Normal, Thin, and Very Thin (Zulkarnaen, 2019). Motor development was measured through ASQ 3rd Edition (Squires et al., 2009).

In a kindergarten setting, children performed gross and fine motor skill tests. They were observed by trained data collectors. The collected data were analyzed using SPSS 16, with a statistical significance level set at $p < 0.05$.

RESULT AND DISCUSSION

Table 1 shows descriptive data of the sample. The proportion of male and female samples was balanced, 50% each. Motor ability was divided into three categories, including

very good, good, and low. The highest fine motor ability was in the very good category (73.3%). Meanwhile, in the gross motoric ability, the excellent category was the highest (76.7%). Thus, the gross motor ability was higher than the fine motor ability. Nutritional status was divided into four categories, including underweight, normal, overweight, and obese. The result shows that 90% of the nutritional status of the sample was in the underweight category (90%), while the normal (6.7%) and obesity categories were very small (3.3%).

Table 1. Descriptive Data

Categories		Number	Percentage (%)
Gender	Female	15	50.00
	Male	15	50.00
Fine Motor Skills	Low	4	13.3
	Good	4	13.3
	Very Good	22	73.3
Gross Motor Skills	Low	1	3.3
	Good	6	20.0
	Very Good	23	76.7
Nutritional status	Underweight	27	90.00
	Normal	2	6.7
	Fat	0	0
	Obese	1	3.3

Table 2. Analysis between Nutritional Status and Fine and Gross Motor Skills in Kinder-

Nutritional status	Mean Rank	N	Chi-Square	df	Asym p. Sig
Gross Motor			0.612	2	0.736
Obese	19.50	1			
Thin	15.54	27			
Normal	13.00	2			
Fine Motor			2.201	2	0.333
Obese	24.50	1			
Thin	15.61	27			
Normal	9.50	2			
Gross Fine Motor			1.163	2	0.559
Obese	18.00	1			
Obese	15.87	27			
Thin	9.25	2			
Normal					

Table 2 shows the analysis results of the nutrition effect on gross and fine motor abilities from the Kruskal-Wallis significance test

results. Significance test of nutritional status on gross motor ability showed 0.736. However, it can be seen that there was no adherence to nutritional status to gross motor ability. Based on mean rank, gross motor skills in thin children were better than children with normal and obese nutritional status. Similarly, the effect of nutritional status on fine motoric ability was seen from a significance of 0.333. Therefore, there was no effect of nutritional status on motor abilities. Fine motoric abilities in thin children were better than children with normal and obese nutritional status. Thus, the data showed no effect of nutritional status on gross and fine motor abilities in early childhood.

This research indicates that gross and fine motor skills are not affected by nutritional status. In this study, motor abilities were influenced by other factors, such as environmental factors that might have the potential to influence children's motor abilities. In the middle-class social and economic status, it is possible to provide learning facilities at home to stimulate gross and fine motor abilities. In children who have attended school, gross and fine motor skills are also important parts of the school curriculum so that children are given stimulation according to their level of development. A study found a robust negative association between malnutrition and communication, cognitive, and motor development at 18–36 months children, but it found no evidence that these associations were limited to children with stunting (Sudfeld et al., 2015).

Childhood obesity and gross motor skill development result from intrinsic factors (the child) and extrinsic factors (environmental), namely family income. Nutritional status is closely associated with family income. Therefore, achieving good nutritional status should be supported by food consumption containing adequate nutrients and safe consumption. Children with good and healthy nutritional status are more likely to have better motor skills, higher productive time, and life expectancy. Therefore, it is reasonable that Indonesia's food and nutrition objectives policy could improve the popu-

lation's nutritional quality, especially the nutrition of the vulnerable groups such as children under three years old (toddlers). Therefore, the concern to meet health and nutritional adequacy is critical (Zulkarnaen, 2019).

Factors that could influence a child's growth include genetic potential, nutrition, psychosocial stimuli, and a clean and safe physical environment (Black et al., 2017). Factors that could influence psychomotor development are genetic nature and mother prenatal condition, where undernutrition becomes a significant health issue among women of reproductive age (Zulkarnaen, 2019), environmental conditions, health and nutrition, the presence of stimulation, encouragement, and opportunity, intelligence quotient, parenting (permissive, democratic, authoritarian), and physical disability. Nutritional status and psychosocial stimulation had a significant and positive effect on the cognitive development of preschool children (Warsito et al., 2012).

CONCLUSION

This study shows that the motor ability of kindergarten pupils is not only influenced by nutritional status but also by environmental conditions, such as school and residence environment, that helped provide stimulation for fine and gross motor development for learners. Genetic linkage, which is naturally derived from the parents, became one of the factors that can have an effect on children to be active.

ACKNOWLEDGEMENT

This research was funded by the Institute for Research and Society Service (LPPM) UPI. Thank you to all research team who have supported the implementation of this research.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

REFERENCE

- Abedi, G. H., Mohamadpour, R. A., Rostami, F., Ahmadiania, F., & Rajabi, M. (2011). Study of consumption pattern of food and obesity of female students of Mazandaran University of Medical Sciences. *Journal of Mazandaran University of Medical Sciences*, 20(80), 77-80.
- Black, M. M., Walker, S. P., Fernald, L. C., Andersen, C. T., DiGirolamo, A. M., Lu, C., ... & Devercelli, A. E. (2017). Early childhood development coming of age: science through the life course. *The Lancet*, 389(10064), 77-90.
- Mushtaq, M. U., Gull, S., Mushtaq, K., Abdullah, H. M., Khurshid, U., Shahid, U., ... & Akram, J. (2012). Height, weight and BMI percentiles and nutritional status relative to the international growth references among Pakistani school-aged children. *BMC pediatrics*, 12(1), 31. <http://www.biomedcentral.com/1471-2431/12/31>
- Stephani, M. R., Sumarno, G., & Wibowo, R. (2018). Early Childhood Motor Development and Parent Socio-economic Status. *Jurnal Pendidikan Jasmani dan Olahraga*, 4(1), 21-26.
- Sudfeld, C. R., McCoy, D. C., Danaei, G., Fink, G., Ezzati, M., Andrews, K. G., & Fawzi, W. W. (2015). Linear growth and child development in low-and middle-income countries: a meta-analysis. *Pediatrics*, 135(5), e1266-e1275.
- Squires, J., Bricker, D. D., & Twombly, E. (2009). *Ages & stages questionnaires*. Baltimore, MD, USA:: Paul H. Brookes.
- Upadhyay, R., & Tripathi, K. D. (2017). How can we assess the nutritional status of an individual. *J Nutr Food Sci*, 7(640), 2.
- Warsito, O., Khomsan, A., Hernawati, N., & Anwar, F. (2012). Relationship between nutritional status, psychosocial stimulation, and cognitive development in preschool children in Indonesia. *Nutrition research and practice*, 6(5), 451-457. <https://doi.org/10.4162/nrp.2012.6.5.451>

World Health Organization. (1995). The use and interpretation of anthropometry. *WHO technical report series*, 854(9).

Zulkarnaen. (2019)The Influence of Nutritional Status on Gross and Fine Motor Skills Development in Early Childhood. *Asian Soc Sci* [Internet]. Vol 15(5):75–82. Available from: <https://doi.org/10.5539/ass.v15n5p75>