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

**Mesa Rahmi Stephani, Adang Suherman1, Syifa F Syihab1, Wulandari Putri1, Gano Sumarno1, Ricky Wibowo1**

1 Universitas Pendidikan Indonesia. Jl. Dr. Setiabudhi No. 229 Bandung, Indonesia

\*Email: mesarahmistephani@upi.edu

**Abstract.** The development of early childhood needs to be considered, considering the child is a parent investment in the future. Meeting the nutritional needs of children has an important role in achieving optimal growth and development, and is one of the determinants of achieving these needs. Nutritional status in children in the school environment often uses height and weight parameters. This study aims to determine the effect of nutritional status on early childhood on motor skills. The method used is ex-post facto in the sample of early childhood aged four to five years who have attended kindergarten with middle-level socioeconomic status. Nutritional status is known through height and weight, gross and fine motor development measured using ASQ 3rd edition. Data was processed with SPSS using the Kruskal Wallis Test analysis technique. The results show 90% of children are in the Thin category, 6.7% are in the Normal category, and 3.3% are in the obesity category. There is no influence of nutritional status on gross and fine motoric abilities in kindergarten children. The results of this study can be used as a consideration for the government to pay attention to nutritional status and motoric abilities of children, in an effort to minimize the gap between the quality of education and the various backgrounds of parents' socio-economic status.

Keywords: Nutrition Status, Motor Development, Social Economic Status (SES)

1. **Introduction**

Child growth is internationally recognized as an important indicator of nutritional status and health in populations [1]. Child growth is internationally recognized as an important indicator of nutritional status and health in populations [2][1]. These indicators are used to measure nutritional imbalance resulting in undernutrition assessed from underweight, wasting, and stunting), and overweight. Assessment nutritional status is used to determine the state of the nutritional status of children. Nutritional states based on anthropometric standards issued by Indonesian health ministry [3].

The nutritional status of an individual is generally dependent on two factors, external factors such as food safety, cultural, social, economic factors and internal factors, which include age, sex, nutrition, behavior, and physical activity and diseases of the person [4]. The prevalence of malnutrition occurring in various forms (obesity and being overweight/ underweight) in the world, particularly among adolescents and young people, is a cause for concern [5]. A child with good nutritional status will have a healthy and strong body to be able to carry out activities that support good gross and fine motor skills development. Conversely, children who are undernutrition will easily get sick and will have a weak body so they cannot do their activities well. [3].

Motor development is very important to encourage the development of other aspects, one of which is children's social development. Child's life is very close to playing. Many games require high motor skills, so the child needs to be given a moving experience that stimulates his motoric development to be skilled. Children need to have motor skills that are not lame with their peers so that they can be involved in various game activities, so that the process of social interaction can occur [6]. Adequate nutrition will support children's cognitive and physical development to be more optimal. Nutritional status had positive and significant effect on gross and fine motor skills development of children. The relationship nutritional status with gross and fine motor skills has the correlation value, 0,650 and moderate relationship level. Increasing the nutritional status greatly helps develop gross and fine motor skills development in children during their golden age. Significant effect nutritional status on gross and fine motor skills in early childhood. Moreover, there was positive relationship between nutritional status on gross and fine motor skills in early childhood. This means good nutritional status will further improve gross and fine motor skills in children [3]

1. **Method**

This research is using ex-post facto method. There were 30 kindergarten students in urban areas, (4-5 years old; 15 boys; 15 girls) with middle class parent’s social economic status. The sample is a child who is willing to participate in this study, accompanied by parental permission. Nutrition status determine through body mass index (BMI) [1] measurement was carried out using The Quetelet Formula (World Health Organization Expert Committee 1995) in which weight is divided by height in square (kg/m2). The classifications of BMI using 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 based on body mass index indicators includes Obesity, Fat, Normal, Thin, and Very Thin.[3]. Motor development measure through ASQ 3rd Edition. The collected data were analyzed using SPSS 16, with statistical significance level set at p <0.05.

1. **Result and Discussion**

Table 1 shows descriptive data of the sample. The proportion of male and female samples is balanced, 50% each. Motoric ability is divided into three categories, including very good, good, and low. Fine motoric ability in the very good category was the highest (73.3%), even though the gross motoric ability in the excellent category was the highest (76.7%), the gross motoric ability was higher than the fine motoric ability. Nutritional status is divided into four categories, including underweight, normal, overweight, and obese. As many as 90% of the nutritional status of the sample is in the underweight category (90%), while normal (6.7%) and obesity is very small (3.3%).

Table 1. Descriptive Data

|  |  |  |
| --- | --- | --- |
| Categories | | Number |
| Gender (%) | Female  Male | 50.00  50.00 |
| Fine Motor Skills (%) | Low  Good  Very Good | 13.3  13.3  73.3 |
| Gross Motor Skills (%) | Low  Good  Very Good | 3.3  20.0  76.7 |
| Nutritional status (%) | Thin  Normal  Fat  Obese | 90.00  6.7  0  3.3 |

Table 2 shows the results of the analysis of the effect of nutrition on gross and fine motor abilities through the results of the Kruskal-Wallis significance test. Significance test on nutritional status on gross motoric ability shows 0.736, but it can be seen that there is no adherence to nutritional status to gross motoric ability. Based on mean rank, gross motorbikes in thin children are better than children with normal and Obese nutritional status. Similarly, the condition of nutritional status on fine motoric ability was seen from a significance of 0.333. So, there is no effect on nutritional status on motoric abilities. Fine motoric abilities in thin children are better than children with normal and obese nutritional status. The data showed no effect of nutrition status on gross and fine motoric abilities in early childhood.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 2. Analysis Between Nutritional Status and Fine and Gross Motor Skills in Kindergarten Students   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Nutritional status | Mean Rank | N | Chi-Square | df | Asymp. Sig | | Gross Motor  Obese  Thin  Normal | 19.50  15.54  13.00 | 1  27  2 | 0.612 | 2 | 0.736 | | Fine Motor  Obese  Thin  Normal | 24.50  15.61  9.50 | 1  27  2 | 2.201 | 2 | 0.333 | | Gross Fine Motor  Obese  Thin  Normal | 18.00  15.87  9.25 | 1  27  2 | 1.163 | 2 | 0.559 | |

This research indicate that gross and fine motor skill not affected by nutrition status. In this study, motoric abilities are influenced by other factors, such as environmental factors that have the potential to influence children's motoric abilities. In social economic status in the middle class, it is still possible to provide learning facilities at home to stimulate rough and fine motoric. In children who have gone to school, gross and fine motoric is an aspect that also becomes an important part of the school curriculum, so that children are still given stimulation, according to their level of development. In the study conducted [7] was found a robust negative association between malnutrition and cognitive, communication, and motor development at 18–36 month, but found no evidence that these associations were limited to children with stunting.

Childhood obesity and gross motor skill development area, both intrinsic result (child) and extrinsic (environmental) factors namely family income. Nutritional status is closely associated with family income. Achieving good nutritional status must be supported by food consumption contain enough nutrients and safe for consumption. Children with good and healthy nutritional status are more likely to have better motor skills and have higher life expectancy and productive time. It is reasonable the food and nutrition objectives policy in Indonesia, improve the population nutritional quality, especially nutrition vulnerable groups such as children under three years old (toddlers). Therefore, attention meeting the nutritional and health adequacy increasingly important. [3].

Factors that can influence child growth include genetic potential, psychosocial stimuli, nutrition, and a safe and clean physical environment [8]. Factors that influence development psychomotor are genetic nature, mother prenatal condition, undernutrition is significant health issue among women of reproductive age [3] environmental conditions, health and nutrition, intelligence quotient, the presence of stimulation, encouragement and opportunity, parenting (demogratic, permissive, authoritarian), physical disability. Psychosocial stimulation and nutritional status had a positive and significant effect on cognitive preschool child development (9).

1. **Conclusion**

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

1. **Acknowledgment**

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.

1. **References**

[1] Mushtaq MU, Gull S, Mushtaq K, Abdullah HM, Khurshid U. Height , weight and BMI percentiles and nutritional status relative to the international growth references among Pakistani school-aged children. BMC Pediatr [Internet]. 2012;12(1):31. Available from: <http://www.biomedcentral.com/1471-2431/12/31>

[2] World Health Organization: Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. Technical Report Series No. 854. Geneva 1995.

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

[4] Upadhyay, R. & Tripathi, K.D. (2017). How can we assess the nutritional status of an individual. *J Nutr Food Sci*. *7*(640). DOI: 10.4172/2155-9600.1000640.

[5] Abedi, G., Mohamadpour, A., Rostami, F., Ahmadinia, F., & Rajabi, M. (2011). Study of consumption pattern of food and obesity of female students of Mazandaran University of Medical Sciences*. J Mazandaran Univ Med Sci*. *20*(80), 77- 80. DOI: 10.17795/jjhr-30238.

[6] Stephani, M R, Sumarno, G, Wibowo, R. [Early Childhood Motor Development and Parent Socio-economic Status](http://ejournal.upi.edu/index.php/penjas/article/view/4119-04). *Jurnal Pendidikan Jasmani dan Olahraga* Vol 4, No.1, 21-26. DOI : 10.17509/jpjo.v4i1.14466.

[7] Sudfeld CR, Charles McCoy D, Danaei G, et al. Linear growth and child development in low- and middle-income countries: a meta-analysis. Pediatrics. 2015; 135:e1266–75. [PubMed: 25847806]

[8] Black, M. M., Walker, S. P., Fernald, L. C. H., Andersen, C. T., DiGirolamo, A. M., Lu, C., … Grantham-McGregor, S. (2017). Early childhood development coming of age: science through the life course. The Lancet, 389(10064), 77-90. https://doi.org/10.1016/S0140-6736(16)31389-7

[9] 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