The Correlation of Education, Employment, Parental Income and Social Emotional Development with the Nutritional Status of Preschool Children Living in Flood Areas

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ABSTRACT
Nutrition is a biological factor that influences children's growth and development. In 2022, the World Health Organization stated that around 148.1 million children under five years old have a height that is not appropriate for their age or stunting, 45 million children are too thin compared to their height or wasting, and 37 million children are too heavy for their height or overweight..This study aims to determine the nutritional status of preschool children in flood areas and looking at the correlation of education, employment, parental income and children's social emotional development with the nutritional status of preschool children. The sample in this study was 114 preschool children aged 3 - 6 years who lived in flood areas. Sampling technique with cluster sampling. There are 9.6% of children who are very underweight, 29.8% are underweight, 15.8% are at risk of being overweight according to weight per age. According to height per age, there are 22% of children who are malnourished and 0.9% obese. According to BMI, there are 22.8% malnutrition and 18.4% malnutrition. There were 13.2% of children in the short category and 4.4% of very short children. There is a social emotional relationship between children and nutritional status according to BMIA. However, stunting and undernutrition or underweight are important findings in this study. These findings relevant for nursing to design and implement treatment or prevention interventions in overcoming nutritional problems in children. Future studies require surveys with larger samples and with more varied characteristics.
***Keywords**: Preschool; Nutritional Status; Stunting; Wasting*

ABSTRAK

Gizi merupakan faktor biologis yang mempengaruhi pertumbuhan dan perkembangan anak. *World Health Organization* di tahun 2022 menyatakan sekitar 148,1 juta anak di bawah lima tahun memiliki tinggi badan yang tidak sesuai usianya atau *stunting*, 45 juta anak terlalu kurus dibanding tinggi badannya atau *wasting*, dan 37 juta anak terlalu berat dibanding tinggi badannya atau *overweight*. Studi ini bertujuan untuk mengetahui gambaran status gizi anak prasekolah di daerah banjir dan melihat korelasi pendidikan, pekerjaan, pendapatan orang tua dan perkembangan sosial emosional anak dengan status gizi anak prasekolah. Sampel dalam studi ini yaitu 114 anak prasekolah berusia 3 - 6 tahun yang tinggal di daerah banjir. Teknik sampling dengan *cluster sampling*. Terdapat 9,6% anak berat badan sangat kurang, 29,8% berat badan kurang, 15,8% beresiko berat badan lebih menurut BB per usia. Menurut tinggi badan per usia terdapat 22% anak dengan gizi kurang dan buruk serta 0,9% obesitas. Menurut BMI terdapat 22,8% gizi kurang dan 18,4% gizi buruk. Terdapat anak dalam kategori pendek 13,2% dan sangat pendek 4,4%. Terdapat hubungan sosial emosional anak dengan status gizi menurut BMIA. Status gizi anak prasekolah di daerah banjir yang paling banyak dalam kategori normal. Meskipun demikian stunting dan gizi kurang atau underweight menjadi temuan penting dalam studi ini. Temuan ini dapat menjadi gambaran penting bagi keperawatan untuk merancang dan melaksanakan intervensi penanganan atau pencegahan dalam mengatasi masalah nutrisi pada anak. Studi selanjutnya dibutuhkan survei dengan sampel yang lebih besar dan dengan karakteristik yang lebih bervariasi.

Kata Kunci: Prasekolah; Status Gizi; Stunting; Wasting

INTRODUCTION

Preschool children are children aged 3-6 years who are experiencing physical and psychological growth(Afrinis, Indrawati, & Raudah, 2021). Growth and development cannot be separated from the nutritional intake consumed. According to Hidayat (2016) nutrition is a biological factor that influences children's growth and development.

Nutritional status is the condition of the body as a result of consuming food and using nutrients (Almatsier, 2010 inPantaleon, 2019). Nutritional status is an expression of a state of balance in the form of certain variables or the embodiment of nutrition in the form of certain variables. Optimal nutritional status is a balance between intake and need for nutrients (Merryana, 2014). Anthropometric indices commonly used in assessing nutritional status are the weight-for-age index or BB/U for measuring bone and muscle fat, the height-for-age index or TB/U for measuring linear growth, and the weight-for-height index or BW/ TB to differentiate whether malnutrition is chronic or acute (Supariasa, 2014 inWidyan Aisya, 2021).

World Health Organization(2022) stated that in 2022 around 148.1 million children under five years old will have low height.compared to their age or stunting, 45 million children are too thin for their height or wasting, and 37 million children are too heavy for their height or overweight.

Toddlers in Indonesia experience double nutritional problems (double burden), on the one hand they are obese, but on the other hand they experience stunting, anemia, thinness, and even malnutrition.(Effendi & Widiastuti, 2020). Research conducted bySambo et al., (2020)stated that the nutritional problems of preschool children are due to poor eating patterns, such as being lazy to eat or due to infectious diseases. Poor eating patterns can result in delayed growth and impaired development of preschool-aged children (Sediaoetama, 2018).

Malnutrition conditions will affect many organs and systems, lack of protein in children can cause disruption of muscle motor strength in carrying out activities, unbalanced nutrition and low levels will affect the growth and development of children(Hanur, 2019). Adequate nutrition is the most important thing in the growth and development period of preschool children, where nutrition will be related to the child's health and intelligence. In pre-school age children, fulfilling appropriate nutritional needs can support children's growth and development, especially in aspects of sensory-motor, cognitive, language, social emotional capacity.(Utami, Nggadjop, & Murhayati, 2018).

Education, work and family economics are factors that influence the nutritional status of preschool children. The level of parental education in caring for, educating and serving food to preschool children so that they have good eating behavior means that the child's behavior and nutrition will be good too, on the other hand, parents' ignorance regarding how to feed children and detrimental habits will be the main cause of nutritional problems in children (Nggadjo , 2017 andPutri et al., 2017). According to research by Putri et al (2017), work and family economic factors explain that the higher a person's income, the higher the level of fulfillment of daily needs including food needs.(Putri et al., 2017). Research conducted by(Indah Lusiana Ulfa, Anggari, & Nuzula, 2022)Parenting patterns influence the nutrition of preschool children, good parenting patterns will make a major contribution to growth and development so that they can reduce the incidence of malnutrition in children.

Fulfilling nutritional adequacy does not only depend on children, but also on their parents. The nutritional status of preschool children cannot be separated from the role and parenting patterns of parents. Authoritative is a parenting style that encourages children to be independent but still applies limits to the child's actions. This is in line with research by Yuniar that

the appropriate behavior for providing children with a diet so that their nutritional status is maintained is in an authoritative way.(Yuniar, Setiawati, & Fatmawati, 2021). Routine monitoring of children's nutrition and providing counseling by posyandu cadres to parents is very important in providing intensive nutrition so as to minimize malnutrition in preschool children.(Agrina, Erika, & Hasneli, 2020). Research resultRiana Pangestu (2021)The Nutrition Aware Family (Kadarzi) influences nutritional status, especially stunting, with five indicators of Kadarzi such as weighing weight, consuming a variety of foods, consuming iodized salt, exclusive breastfeeding, and providing nutritional supplements.

This study aims to determine the nutritional status of preschool children in flood areas and several factors related to children's nutritional status.

METHOD

This research is a descriptive observational study. The research respondents were 114 preschool children aged 3 - 6 years who lived in flood areas. Sampling technique with cluster sampling. Nutritional status is categorized based on weight index for age, height for age, weight for body length, and body mass index for age using WHO child growth standards. Nutritional status categories are based on z score interpretation according to WHO growth charts. Weight, height and age measurements were carried out by final semester nursing students who had received training in measuring child growth.

This research has received a letter of ethical feasibility from the Health Research Ethics Committee of the Ministry of Health Semarang Health Polytechnic with No. 0041/EA/KEPK/2023.

Univariate analysis was carried out to describe nutritional status based on z score categories, namely weight for age, weight for height, body length for age, and body mass index for age.
Bivariate analysis aims to determine the relationship between education, employment, parental income and children's social emotional development with the nutritional status of preschool children.

RESULTS

Table.1. Respondent Characteristics

Variable	Mean	Min-Max Value
Weight	13.58	8 - 23
Height	98.52	80 - 118
Age	4	3 – 6

Table 1 shows that the average body weight of respondents is 13.58 kg with a minimum body weight of 8 kg and a maximum body weight of 23 kg. The average height is 98.52 cm with a minimum of 80 cm and a maximum of 118 cm. The age variable shows the age range of preschool children.

Table.2. Frequency Distribution of Children's Nutritional Status based on Body Weight per Age(weight for age/WFA)

Z-score category	Frequency	Percentage
Very underweight	11	9.6
Underweight	34	29.8
Normal weight	51	44.7
Risk of being overweight	18	15.8
Total	114	100.0

Based on table 2, it can be seen that the nutritional status of preschool children based on body weight for age, 55.3% have abnormal nutritional status, while the remaining 44.7% are in the normal category according to body weight for age.

In table 3, this study shows that as many as 73.7% of children are in the normal category based on weight per height and as many as 20.2 havemalnutrition. Over nutrition and obesity are 4.5%. There are more weight per height categories than other nutritional status indicators.

Table. 3. Frequency Distribution of Children's Nutritional Status based on Weight for Height (WFH)

Z-score category	Frequency	Percentage
Malnutrition	2	1.8
Malnutrition	23	20.2
Good nutrition	84	73.7
At risk of overnutrition	2	1.8

Z-score category	Frequency	Percentage
More nutrition	2	1.8
Obesity	1	0.9
Total	114	100.0

Table. 4. Frequency Distribution of Children's Nutritional Status based on BMI per Age

(Body Mass Index for Age/BMIA)

Z-score category	Frequency	Percentage
Malnutrition	21	18.4
Malnutrition	26	22.8
Good nutrition	59	51.8
At risk of overnutrition	3	2.6
More nutrition	3	2.6
Obesity	2	1.8
Total	114	100.0

This research shows that 52% of children are in the good or normal nutrition category based on BMI per age, then around 38.2% of children are in the malnutrition and poor nutrition categories.

Table. 5. Frequency Distribution of Children's Nutritional Status based on Height for Age

(HA)

Z-score category	Frequency	Percentage
Very short	5	4.4
Short	15	13.2
Normal	94	82.5
Total	114	100.0

Table 5 shows the percentage of preschool children who have a height category of short and very short, 17.5%. In general, >90% of children's height based on age is still within normal limits.

Table 6 shows a significant correlation between nutritional status according to BMI and the social emotional development of children in flood areas ($p<0.05$).

Table. 6. Correlation of Education, Employment and Parental Income with Children's Nutritional Status

Variable	Nutritional status		
	WFH	Height for ages	BMIA
Father's Education	0.963	0.919	0.517
Mother's Education	0.647	0.958	0.831

Variable	Nutritional status		
	WFH	Height for ages	BMIA
Father's occupation	0.626	0.872	0.446
Mother's Job	0.944	0.599	0.474
Income	0.507	0.268	0.434
Children's social emotional development	0.104	0.576	**0.037***

Spearmen Test

DISCUSSION

Based on weight per heightit was found that 73.7% were in the normal or good category. These results are similar to the studyIndah Luasiana Ulfa, Anggari, & Nuzula, (2022)that 50.9% of preschool children have good nutritional status and 28.3% have very good nutritional status. In general, the nutritional status according to weight for height of children at preschool age is still in the good category. More than 50% are in the normal category, but what needs to be watched out for and what needs to be prevented is that preschool children still have the potential to experience abnormal nutritional status because they are still in the golden period of growth and development. Therefore, measures to prevent malnutrition in preschool children must continue to be taken.

Children's nutritional status is related to parents' parenting patterns. Apart from that, several factors that influence the nutritional status of preschool children include maternal knowledge, maternal occupation, and family income (Khair, Rahayu, & Muhsinin, 2021). A mother's adequate knowledge about children's nutritional intake will encourage mothers to provide nutritious food for their children, educate their children to adopt correct eating behavior, calculate their children's calories well and even try to provide food supplements for their children.Working mothers have less time to care for their children than non-working mothers, so this will affect the quality of child care and thus affect the child's nutritional status.(Khair et al., 2021). If income is high, there will be more food consumption that is rich in nutritional intake for the family and vice versa. In this study, no significant correlation was found between education, employment and parental income and the nutritional status of preschool children in flood areas. This proves that nutritional status is influenced by many factors that are not analyzed in research, such as parenting patterns, certain cultures, certain diseases suffered and so on.

This study proves that the social emotional development of preschool children has a significant correlation with the child's nutritional status. The development of preschool children has a significant relationship with the child's nutritional status because good nutritional status can support optimal brain nerve function(Sari, 2018). Children's social emotional development influences eating behavior and mood when eating, so this can inhibit children's food intake. Nutrition promotion strategies are a good technique to optimize cognitive development in preschool children in Nepal(Sharma, Budhathoki, Maharjan, & Singh, 2023).

Based on BMI per age, it was found that more than 50% of children's nutritional status was normal. These findings are similar to studies in NigeriaOlatosi et al., (2022)that 71.8% of children have normal nutritional status based on BMI and 20.7% are in the malnourished and poor nutrition category. Surveys in Nigeria show that 83% are normal, 6% are malnourished, 10% of children are in the overweight and obese categories based on weight per height. According to the SSGI in 2022, the percentage of wasting (malnutrition and malnutrition) in Indonesia will increase by 0.6% and underweight will also increase by 0.1%. Nigeria is one of the developed countries in Africa, but at the international level Indonesia and Nigeria are both developing countries. The survey results for these two countries show several similarities in the description of nutritional status, the percentage of the normal category still dominates.

The short and very short body categories were 17.5% in this study. The results of the Indonesian Nutritional Status Survey (2022) showed that the percentage of edits in Pekalongan City was 23.1% and increased in 2023 to 28.3% (Pekalongan City Health Service). This figure is above the average percentage in Central Java, namely 20.8% . The SSGI results show that there is a decrease in the stunting rate from 2021 to 2022 by 2.4%. There was a decrease in the stunting rate by 6.4% from 2013 to 2018 (Riskesdas, 2018). Even though the trend of stunting rates tends to decrease every year, Indonesia still has a big responsibility to achieve the target rate of reducing stunting by 2024 from 21.6% to 14% target (SSGI, 2022).

The overall percentage of nutritional status in this study was in the normal category (44.7% - 82.5%). This picture is obtained from healthy children who do not experience health problems or growth and development disorders, because if a child experiences certain diseases and even has to be hospitalized, it is possible that the picture of nutritional status is influenced by many things. A study to look at the

nutritional status of children under 5 years of age who were treated in hospital found a high rate of malnutrition, 35.8% were malnourished and 41% experienced stunting in Hawassa.(Hjellbakk, Hailemariam, Reta, & Engebretsen, 2022). This condition is associated with low dietary diversity, dietary patterns, high morbidity rates, poor nutrition, and extreme poverty. Research in Nepal found that the nutritional status of preschool children based on height per age was 44.1% in the normal category, weight per age was 45.1% normal, and based on BMI 57.1% normal(Sharma et al., 2023). There are 30% of autistic children aged 2-10 years in Brazil in the stunting category and suffering from severe symptoms and there are 25% of children who are underweight and have severe symptoms(Costa et al., 2022).

Obesity is the rarest finding in preschool children. No more than 2% of children are obese. In accordance with the results of nutritional surveys in Indonesia and WHO, the highest percentage of children with obesity is not preschool children. This finding is the same as Costa et al's (2022) study which found that only 3% of preschool children were overnourished, while there was no obesity. Obesity is the rarest category for preschool children.

*Stunting*and wasting is an indicator of malnutrition in children. This research does not analyze the correlation between stunting and wasting children. StudiesKragel, Merz, Flood, & Haven (2020)in Guatemala, it shows that 65.6% of children under the age of 5 experience stunting and malnutrition. As many as 17.2% of children are stunted and 11% were wasted in Somalia and the risk of stunting will increase if there is infection or inflammation and iron deficiency.(Donkor et al., 2022). Future studies can analyze the two phenomena, namely wasting and stunting, which have the same causes in each stage of a child's growth and development. Future studies can see whether the impact of the disaster has had an impact on children's nutritional status.

In a small scope, the problem of nutritional status of preschool children remains a priority for promotive and preventive actions. Preschool children are entering the active consumer period, meaning that children will eat what they like but they cannot yet sort out what is good to consume(Afrinis et al., 2021). The developmental stages of preschool children will receive food from whatever is provided by their parents(Sambo et al., 2020). Picky Eating is one of the risks of preschool children experiencing poor nutritional status, this is in accordance with research conducted by(Hardianti, Dieny, & Wijayanti, 2018)where children who

consume less varied food intake generally reject vegetables and fruit/protein-rich foods tend to have lower Z-Score values than non-picky eaters. Other research on picky eaters also revealed that picky eater behavior in children affects nutritional needs, tends to be low in fiber, protein, vitamins and minerals.(Widyan Aisya, 2021).

QualityAn individual's life can be seen from his health. Preschool children need essential nutrients such as protein, fat, carbohydrates, minerals, vitamins and water consumed in balanced amounts. Health problems can occur at all ages, especially toddlers because their immune system is still in the process of development (Anggraeni, Toby, & Rasmada, 2021). Therefore, handling, promotive and preventive measures must continue to be carried out to prevent problems with nutritional status in children.

CONCLUSION

The nutritional status of preschool children in flood areas is mostly in the normal category. The percentage of overnutrition and obesity is almost rare. However, stunting and undernutrition or underweight are important findings in this study. Social emotional development is related to the nutritional status of preschool children. These findings can be an important

illustration for nursing to design and implement treatment or prevention interventions in overcoming nutritional problems in children.

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