

The relationship of parent's nutrition knowledge level and teacher's food parenting on nutritional status of pre-school aged children

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ABSTRACT

Introduction: Early age is the golden age period of growth and development of children. Therefore, it is necessary to monitor the fulfillment of children's nutritional needs based on the quantity and quality of good nutrition. This study aims to examine the relationship between the level of parental knowledge and the teacher's feeding pattern on the nutritional status of early childhood at the Jungle School Nature Kindergarten, Sekaran, Gunungpati District, Semarang City.

Methods: The total sampling technique conducted this analytic observational study with a cross-sectional design by 24 parents of kindergarten students and 11 teachers or caregivers. The parents' knowledge and teachers' feeding parenting styles were obtained from the interviews. The assessment of the nutritional status of kindergarten students was using indicators of WAZ, HAZ, and BAZ. All research subjects had normal nutritional status based on indicators of WAZ and HAZ.

Results: Based on BAZ indicators, as many as 12.5% of students have underweight nutritional status, and 87.5% have normal nutritional status. The results of the association test showed that the level of parental knowledge ($p=0.533$; 0.845 ; and 0.372) and eating patterns by teachers in schools ($p=0.770$; 0.896 ; and 0.597) were not significantly related to the nutritional status of early childhood (WAZ, HAZ, and BAZ).

Conclusions: Parents with a good level of knowledge do not necessarily have nutritional problems.

Keywords: early childhood, nutritional status, knowledge, feeding parenting.

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INTRODUCTION

Early age, often referred to as pre-school age (age 2-5 years), is the golden age of growth and development of children. During this period, special attention needs to be paid to fulfilling children's nutritional needs following the needs and better nutritional quality than adults. Judging from the health aspect, pre-school-age children have a higher risk of experiencing nutritional and health problems than school-age children (6-12 years). The growth and development of gold are irreversible and cannot be repaired at the next stage of the period.^{1,2} Therefore, fulfilling nutritional needs following good quality and quantity will affect the quality of human resources in the future.^{3,4}

Basic Health Research (2018) noted that 17.7% of children under five were

underweight, 10.2% were wasting, 30.8% were stunted, and 8% were overweight. This condition shows that Indonesia faces multiple nutritional problems (under and overnutrition), where these problems are often found in early childhood.⁵ A child's growth will be linear with its development, so that nutritional problems that arise at an early age will undoubtedly cause disturbances in child development.⁶ Several studies in early childhood have shown that nutritional status has a significant impact on gross motor, fine motor, communication, and language development, as well as children's cognitive.⁷⁻¹⁰

Factors that affect the nutritional status of children under five can be caused directly or indirectly. The factors that can directly cause are food intake and a history of certain infections or pathologies

in children. Research conducted in the working area of Pematang Kabau Public Health Center, Air Hitam District, Sarolangun Jambi Regency, showed that there was a significant relationship between energy and protein intake and a history of infectious disease with the nutritional status of children under five ($p=0.001$; 0.001 ; and 0.007).¹¹ Factors that are indirect causes are food security, parenting, and health and environmental services. Research conducted on 100 mothers of under-five nutrition in the working area of the Batam City Health Center in 2018 showed the results that there was a significant relationship between parenting patterns and the nutritional status of children under five ($p = 0.009$), where most of the toddlers received democratic parenting.^{12,13}

Jungle School Nature Kindergarten is a

formal and legal early childhood education institution located on Jl. Pete Raya, Sekaran, Gunungpati District, Semarang City, Central Java. Educational facilities at this school include formal education for early childhood in the early childhood playgroup class and kindergarten. In addition, this school also has daycare facilities for children aged less than three years, which are open every Monday-Friday from 7 a.m; to 5 p.m. As the name implies, the concept of the learning curriculum applied at the Jungle School Nature Kindergarten is active children's learning where the learning process is carried out both indoors and outdoors. The learning system at Jungle School Nature Kindergarten requires students to be more active, creative, and freer to explore their surroundings. The learning object used is the natural environment, so that during the teaching and learning process, students and teachers can interact physically with nature. The Jungle School Nature Kindergarten students consist of 10 kindergarten students, four playgroup students, and ten children in daycare. As for the availability of facilitators at the Jungle School Nature Kindergarten, as many as 11 people facilitate both daycare, playgroup, and kindergarten students. This study aims to examine the relationship between the level of parental knowledge and the teacher's parenting style on the nutritional status of early childhood at the Jungle School Nature Kindergarten, Sekaran, Gunungpati District, Semarang City.

METHODS

This research is an analytic observational study using a cross-sectional design conducted on guardians or parents of playgroup and kindergarten students at the Jungle School Nature Kindergarten, Sekaran, Gunungpati District, Semarang City. The subjects in this study were the parents of playgroup and kindergarten students at the Jungle School Nature Kindergarten, Sekaran, Gunungpati District, Semarang City. There were 24 parents as research subjects using a total sampling technique, consisting of four parents of playgroup students, ten parents of kindergarten students, and ten parents of children in daycare. There were 11

teachers and caregivers who were the research subjects.¹⁴

Determination of Nutrition Knowledge Level

The knowledge level assessment is carried out to assess the level of knowledge of parents of students about good nutrition for early childhood. The data on the level of nutritional knowledge were obtained using an online questionnaire. The questionnaire consists of 20 questions, where each question has a score (score 1 for a correct answer and a score of 0 for an incorrect answer). The answers to all the questions were then added up and categorized into three categories, namely the lack of knowledge (score < 60%); sufficient knowledge (score 60-75%); and good knowledge (score 76-100%).¹⁵

Assessment of Eating Parenting Pattern

The assessment of eating parenting patterns was carried out to assess the behavior and attitudes of eating parenting by teachers and early childhood caregivers obtained from an online questionnaire. The questionnaire consists of 20 questions, where each question must be answered by research subjects using a Likert scale of 1 to 4 (1 = strongly disagree; 4 = strongly agree). All scores were then calculated and categorized into three categories, namely poor feeding parenting (score <60%), adequate feeding parenting (score 60-79.9%), and good feeding parenting (score > 80%).¹⁶

Determination of Nutritional Status

The nutritional status of playgroup and kindergarten students at the Jungle School Nature Kindergarten was determined using indicators of nutritional status of WAZ (weight for age z-score), HAZ (height for age z-score), and BAZ (Body Mass Index for age z-score). BMI is calculated based on weight (kg) divided by measuring height (m) squared. They were weighing using a digital scale Honor with an accuracy of 0.1 kg and using a digital stature meter GEA with an accuracy of 0.1 cm to measure height. The weight, height, and BMI results will then be adjusted based on the standard parameter of the subject's age and assessed based on the

Z-score (SD). The Z-score values were then categorized into 5 groups, namely very thin (< -3SD); thin (> -3SD to < -2SD); normal (> -2SD to 1 SD); fat (> 1SD to 2SD); and obesity (> 2SD).¹⁷

Data Analysis

The analysis of research data was using SPSS 25.0 for Windows. The data on the characteristics of the research subjects, including age, weight, height, nutritional status (WAZ, HAZ, and BAZ), level of parental nutrition knowledge, and teacher feeding patterns, were analyzed descriptively and presented in the table. The relationship between parents' nutritional knowledge level and teacher's feeding pattern on nutritional status was analyzed using the Spearman's Correlation test with a 95% confidence level ($\alpha=0.05$).

RESULT

The subjects in this study were parents of students and teachers and caregivers at Jungle School Nature Kindergarten, Semarang, each with 24 parents/guardians and 11 teachers and caregivers. 16.7% are parents of playgroup students, 41.7% are parents of kindergarten students, and 41.7% are parents of students in daycare. A total of 41.7% were female students, and 58.3% were male students. The students who are the subjects of this study have an age range of 1-6 years. It is also known that most of the parents (fathers and mothers) of students have studied at the strata 1 level. In addition, most of the parents (father and mother) work as private employees. Based on the study results obtained data, most students' parents already have good nutritional knowledge. Unfortunately, most teachers and caregivers in schools still have an adequate diet (Table 1).

The indicators used in assessing the nutritional status of children use three indicators, namely BAZ, HAZ, and BAZ. The WAZ indicator can describe the condition of the child's nutritional status acutely, while the HAZ indicator can show the chronic or long-term condition of the child's nutritional status. In comparison, the BAZ indicator can be used to describe the nutritional status of children both in the short term (acute) and long term (chronic).¹⁷

Based on the measurement of the nutritional status of students, it was found that all research subjects had normal nutritional status based on indicators of WAZ and HAZ. Meanwhile, based on BAZ indicators, as many as 12.5% of students

have underweight nutritional status, and 87.5% have normal nutritional status. The result of data analysis using the Spearman Range Test correlation test showed that the level of parental nutrition knowledge was not significantly related to the nutritional

status of early childhood both for indicators of WAZ ($p=0.553$), HAZ ($p=0.845$), and BAZ ($p=0.372$). It can also be seen that the pattern of feeding parenting by teachers in schools shows an insignificant relationship to the nutritional status of early childhood both for indicators of WAZ ($p=0.770$), HAZ ($p=0.896$), and BAZ ($p=0.597$).

Table 1. Levels of Parents' Nutrition Knowledge and Teacher's Dietary Parenting Patterns at the Alam Jungle School, Semarang.

Characteristics	Nutritional Status (BAZ)			
	Normal (-2 SD to 1 SD)		Thin (> -3 SD to < -2 SD)	
	n	%	n	%
Gender				
Man	12	50	2	8.3
Woman	9	37.5	1	4.2
Class				
daycare	9	37.5	1	4.2
playgroup	3	12.5	1	4.2
kindergarten	9	37.5	1	4.2
Child Nutritional Status				
BAZ				
Normal	21	87.5	3	12.5
HAZ				
Normal	21	87.5	3	12.5
Father's Education				
High school/equivalent	5	20.8	0	0
Bachelor's	13	54.2	2	8.3
Magister's	3	12.5	1	4.2
Mother's Education				
High school/equivalent	4	16.7	0	0
Bachelor's	12	50.0	1	4.2
Magister's	5	20.8	2	8.3
Father's occupation				
civil servant	2	8.3	0	0
Private sector employee	12	50.0	0	0
Teacher/Lecturer	3	12.5	2	8.3
BUMN employees	2	8.3	0	0
entrepreneur	1	4.2	1	4.2
No/Not yet Working	1	4.2	0	0
Mother's Job				
civil servant	2	8.3	0	0
Private sector employee	10	41.7	1	4.2
Teacher/Lecturer	4	16.7	2	8.3
Doctor	1	4.2	0	0
entrepreneur	2	8.3	0	0
Housewife	2	8.3	0	0
Parent's Nutritional Knowledge Level (#)				
Less (<60%)	1	4.2	0	0
Enough (60-75%)	4	16.7	0	0
Good (76-100%)	16	66.7	3	12.5
Teacher Feeding Parenting (#)				
Enough (60-79%)	5	40.9	0	0
Good (80-100%)	5	40.9	1	9.2

Notes:

The number of parents of students is 24 people

The number of students is 24 people

The number of teachers and caregivers is 11 people

(#) Statistical test using Spearman's Correlation Test with a significance level of $p < 0.05$ ($p=0.372$; and $p=0.597$)

DISCUSSION

Based on the results of the measurement of nutritional status using indicators of WAZ and HAZ, there are still 4.2% of children whose nutritional status is normal, but the level of knowledge of their parents is lacking. However, when viewed based on indicators of nutritional status BAZ, it turns out that there are 12.5% of children whose nutritional status is thin even though their parents have a good level of nutrition knowledge. This condition means that although parents' knowledge about child nutrition is still lacking, it does not necessarily mean that their children have nutritional problems. Meanwhile, parents with good nutrition knowledge are not necessarily free from nutritional problems. In this case, they have normal nutritional status. The results of this study are in line with research conducted on 90 children aged 1-3 years in the village of Mopusi, Lolayan District, Bolaang Mongondow Induk Regency, North Sulawesi, which showed that there was no significant relationship between nutritional status (BMI-for-age) and (height-for-age) with knowledge of maternal nutrition ($p=0.113$).¹⁸ Knowledge of parents, especially mothers, will influence the mother's decision to determine children's food choices. So that, the better the knowledge of parents about the types of food ingredients and good food processing techniques, the better the variety of food given to children. Research conducted on 40 children under five from mothers of bamboo artisans in Kebonsari Village, Borobudur District, Magelang Regency, showed no significant relationship between feeding patterns and the nutritional status of toddlers ($p = 0.123$).¹⁹

Another study conducted on 74 mothers of children under five in Lampa Village, Duampanua District, Pinrang Regency showed results that were in line

Table 2. Characteristics of Research Subjects.

Characteristics	Average \pm SD (n=24)	95%CI	
		Min	Max
Age (years)	4.38 \pm 1.394	1.20	6.30
Weight (kg)	16.25 \pm 2.709	12.00	21.20
Height (cm)	105.10 \pm 7.524	94.00	114.50
Body Mass Index (BMI) (kg/m ²)	14.62 \pm 1.024	12.55	16.38
Nutritional Status (SD)			
WAZ (Weight-for-age)	-0.47 \pm 0.692	-1.56	0.44
HAZ (Height-for-age)	-0.10 \pm 0.966	-1.86	1.42
BAZ (BMI-for-age)	-0.59 \pm 0.862	-2.34	0.68

with this study, where parenting patterns were not related to the nutritional status of children under five ($p = 0.463$). The parenting pattern of eating by parents at home is associated with parental nutrition knowledge. Lack of parental nutrition knowledge can impact the role of parents, especially mothers, in the preparation and selection of food ingredients for the family meal menu. In addition, the mother's low knowledge of nutrition can also have an impact on child care. The better the level of knowledge of parents, especially mothers, it will further increase the mother's ability to process food and provide good feeding to children.²⁰

Based on the results of data analysis, it can also be seen that the pattern of feeding by teachers in schools shows an insignificant relationship to the nutritional status of early childhood. This result can be related to the length of time students interact with teachers and caregivers at school. Early childhood learning group students and kindergarten students only interacted with teachers and caregivers during breakfast and lunch hours. Most of the students had already returned to their respective homes during lunchtime. This condition means that students spend more time eating with their parents at home so that the feeding pattern of teachers or caregivers in schools does not have a significant influence in determining the choice of foodstuffs for early childhood. Indirectly, the less intensive interaction between caregivers or teachers with students during meal times at school will certainly not affect the nutritional status of early childhood.

The factors that influence the caregiver's eating pattern are the level of education and the child's age. The older the child is (>12 months), the caregiver or parent will give the child the freedom to choose their

food, but the caregiver or parent still has control over what their child will eat.^{21,22}

The limitation of this study is that it has not analyzed and researched more deeply on other determinant factors that can affect the nutritional status of early childhood, which is carried out retrospectively to describe the determinants better more clearly. Therefore, further research is needed that examines more deeply and comprehensively on this matter.

CONCLUSION

It can be concluded that the level of knowledge of parents and teacher feeding patterns at school are not significantly related to the nutritional status of early childhood (WAZ, HAZ, and BAZ) at the Jungle School Nature Kindergarten, Sekaran, Gunungpati District, Semarang City. Parents with a good level of knowledge do not necessarily have children with nutritional problems. On the contrary, parents with a low level of knowledge do not necessarily have children with good nutritional status. There is a need for a more in-depth and comprehensive study of other determinant factors that can affect the nutritional status of early childhood, which is carried out retrospectively to describe the determinants better more clearly.

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DISCLOSURE

Author Contribution

Conceptualization, Y.L. and E.F.; methodology, Y.L.; software, N.A.; validation, F.K. and A.S.; formal analysis, E.F.; investigation, N.A.; resources, N.A.; data curation, E.F.; writing—original draft preparation, Y.L.; writing—review and editing, W.A.; visualization, Y.L.; supervision, F.K.; project administration, A.S.; funding acquisition, Y.L. and W.A.

Conflict Of Interest

The authors declare that there is no conflict of interest from this research.

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Ethical Consideration

The Ethical Clearance was obtained from the Ministry of Health of Republic Indonesia (Ethical Clearance (EC) no. LB.02.01/2/KE.351/2020) and the Food and Drug Advisory Agency (approval no. R-RG.01.06.1.3.05.20.156).

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