

Analysis of Parenting Patterns and Parental Feeding Practices and Their Impact on the Nutritional Status of School-Aged Children

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ABSTRACT

Background: School-aged children need adequate nutritional intake to support growth and development towards adolescence. Effective parenting patterns and feeding practices help reduce the risk of nutritional disorders and support the development and growth of school-aged children. The research aims to identify the relationship between parenting styles and parental feeding practices on the nutritional status of school-aged children.

Methods: The study was conducted at two elementary schools in the Banyumas District consisting of 85 students and parents. Measuring the parenting patterns using the Parenting Style and Dimensions Questionnaire (PSDQ) and parental feeding practices with Comprehensive Feeding Practice Questionnaire (CFPQ). Children nutritional status assess using the Body Mass Index for Age (BMI/A) assessment. The data was analyzed using the Spearman Rank test.

Results: Normal student nutritional status was 74.1% and authoritative parenting 74.1%. Majority parents are restricting to control body weight 15.38 %. There is no significant relationship between parenting style and nutritional status ($p=0.223$). The significant relationship between parental feeding practices and the nutritional status of school-age children in the environmental dimension ($p=0.005$), food as a gift ($p=0.003$), modeling dimension ($p=0.004$) and the dimension of restrictions to control body weight ($p=0.001$).

Conclusion: Parental feeding practices play a crucial role in improving the nutritional status of school-aged children, serving as a key factor in supporting their health and optimal growth.

Keywords: School-age children; Parenting styles; Parental feeding practices; Nutritional status

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INTRODUCTION

Malnutrition remains a global public health challenge, especially in low- and middle-income countries. The phenomenon of the double burden of malnutrition, where undernutrition and overnutrition occur simultaneously in a community, is increasing. The World Health Organization (WHO) reports that around 1.8 billion children aged 6-12 years worldwide face multiple nutritional challenges, with 90% of them living in low- and middle-income countries, such as in Sub-Saharan Africa, Southeast Asia and the Pacific. However, most research on malnutrition still focuses on the under-five age group, while malnutrition trends in children above the age of five, particularly the primary school age group, are often overlooked (1).

In Indonesia, the results of *Riskesdas* a community-based research (2018) show that children aged 5 to 12 years face various nutritional problems, with the prevalence of anemia reaching 26.8%, stunting 23.6%, pre-obesity 10.8%, and obesity 9.2%. The main factors contributing to malnutrition in school children are low energy intake and micronutrient deficiencies in the daily diet, which are exacerbated by infectious diseases and imbalances in nutritional adequacy. In addition, the lifestyles and eating habits of school-age children are often irregular due to busy daily activities, which can hinder their optimal growth and development (2).

The Banyumas District Health Profile highlights that primary school-aged children are a group that needs special attention in health programs, considering that they account for approximately 24% of the total population and have a high risk of various health problems. Their presence in an organized education system, both in public primary schools and madrasah, makes them a strategic group for health interventions. Therefore, local government efforts in providing standardized health services, including nutritional status assessment in the school environment, are very important to support optimal child development (3).

Although various studies have addressed the prevalence of malnutrition and its influencing factors, few studies have highlighted how parenting and feeding practices contribute to the nutritional status of school-age children. In fact, parenting plays a key role in ensuring that children receive adequate nutrition (4). Various studies have shown that family parenting can influence eating habits, hygiene and parent-child

interactions, which in turn impact children's nutritional status (5). However, there are still not many studies that specifically explore the relationship between parenting, feeding habits and nutritional status of school-age children in the local context, especially in Indonesia.

This study aims to identify the influence of parenting and feeding practices on the nutritional status of school-age children. By understanding the relationship between these factors, this study is expected to provide a basis for developing more effective family-based intervention strategies to improve the nutritional status of school-age children.

METHODS

A quantitative approach with an observational analytic method through a cross-sectional design to explore the relationship between parenting patterns, parental feeding practices, and the nutritional status of school-age children. The population in this study consisted of 85 students and their parents from grades 1, 2, and 3. To ensure the validity of the measurement instrument, an initial validation test was conducted involving 30 parents. The validity test results showed that 34 out of 49 items in the Comprehensive Feeding Practices Questionnaire (CFPQ) and 23 out of 31 items in the Parenting Styles & Dimensions Questionnaire (PSDQ) met the validity criteria, making them suitable for use in this study to assess feeding practices and parenting patterns.

Data were collected through structured questionnaires and anthropometric measurements. The dependent variable in this study was the nutritional status of school-age children, while the independent variables included parenting and parental feeding practices. The instruments used included:

1. CFPQ, to evaluate various feeding practices by parents.
2. PSDQ, to assess parental parenting.
3. Anthropometric tools, including calibrated scales and stadiometers, to measure weight and height to determine children's nutritional status.

Data analysis was conducted using descriptive statistics to summarize participant characteristics, as well as bivariate analysis to examine the relationship between parenting patterns, parental feeding practices, and nutritional status of school-age children. The Spearman Rank correlation test

was used to determine significant relationships with a significance level of $p < 0.05$.

This research has passed the ethical test and received approval from the Health Research Ethics Commission of University Muhammadiyah of Purwokerto number KEPK/UMP/80/I/2024 on January 30, 2024. All research procedures were conducted in accordance with the principles of research ethics, including the principles of beneficence, non-maleficence, autonomy, and justice, as well as ensuring the protection of the rights, welfare, and confidentiality of research participants' data. Prior to data collection, all participants and/or their guardians were given a research information sheet and signed an informed consent form as a form of informed consent to participate in this study.

RESULTS

Table 1 shows the distribution of Body Mass Index (BMI) based on gender and parenting patterns. Overall, the majority of individuals were in the normal BMI category, which amounted to 74.1% of the total 85 respondents.

Based on gender, males tended to have a higher proportion in the overweight (14.0%) and obese (7.0%) categories, compared to females who had rates of 9.0% for overweight and 4.8% for obesity. In contrast, the proportion of underweight individuals was higher in females (7.1%) than males (2.3%). There were no cases of malnutrition in females, while 7.0% of malnourished individuals were found in males. From these results, it can be concluded that men are more prone to overweight and obesity, while women are more likely to be underweight.

Table 1: Distribution of BMI Categories by Gender and Parenting Style (N=85)

Characteristics	BMI					Total n (%)
	Malnutrition n (%)	Underweight n (%)	Normal n (%)	Overweight n (%)	Obesity n (%)	
Gender						
Male	3 (7.0)	1 (2.3)	30 (69.8)	6 (14.0)	3 (7.0)	43 (100)
Female	0 (0.0)	3 (7.1)	33 (78.6)	4 (9.0)	2 (4.8)	42 (100)
Parenting						
Authoritative	2 (3.2)	3 (4.8)	44 (68.9)	9 (14.3)	5 (7.9)	63 (100)
Authoritarian	1 (11.1)	1 (11.1)	7 (77.8)	0 (0.0)	0 (0.0)	9 (100)
Permissive	0 (0.0)	0 (0.0)	12 (92.3)	1 (7.7)	0 (0.0)	13 (100)
Total	3 (3.5)	4 (4.7)	63 (74.1)	10 (11.8)	5 (5.9)	85 (100)

Viewed by parenting pattern, the majority of children raised with authoritative parenting (63 respondents) were in the normal weight category (69.8%). The percentage of children with malnutrition (3.2%) and underweight (4.8%) was relatively low, while 14.3% were overweight and 7.9% were obese. This suggests that authoritative parenting tends to produce balance in children's nutritional status.

In the group with authoritarian parenting (9 respondents), 77.8% were in the normal category, but the proportion of malnourished and underweight children was quite high (11.1% each). There were no cases of overweight or obesity in this group, indicating that stricter parenting may contribute to tighter dietary control, but may also increase the risk of malnutrition.

Meanwhile, children raised with permissive parenting (13 respondents) showed the highest rate in the normal category (92.3%), with only 7.7%

being overweight and no cases of malnutrition, underweight or obesity. This indicates that while permissive parenting allows for flexibility in diet, the results still support a normal weight balance.

Overall, the BMI distribution showed that most individuals had a balanced nutritional status. Males were more likely to be overweight and obese, while females had a higher tendency towards being underweight. In terms of parenting patterns, authoritative parenting appears to provide the best balance in nutritional status, while authoritarian parenting potentially increases the risk of undernutrition, and permissive parenting tends to result in a higher proportion of normal weight children.

The students experience significant growth in height and weight during this period, so it is very important to monitor their nutritional status. If their nutritional intake is inadequate, various nutritional status problems can arise. Having good nutritional status is something that parents

hope for because it affects intelligence, health, immunity, productivity, and can help prevent various chronic diseases and premature death (6).

Parenting style, it is explained that children still need supervision to meet basic needs such as food, and the nutritional condition of children is also correlated with the parenting style applied by their parents. According to Baumrind, there are three parenting styles: permissive, authoritarian and authoritative (5).

Table 2 shows that parents generally apply feeding practices with 12 dimensions. The most commonly used practice was found in restrictions to control weight, with an average of 15.38%,

where this dimension ranked highest in the moderate category. In second place in the same category, which is teaching about nutrition with an average of 13.23%, followed by food balance and variety at 12.42%, and healthy eating behavior modeling practices at 11.98%. In the third position, child control, parental involvement in the eating process, eating environment, and food monitoring have lower percentages, with averages of 9.98%, 9.84%, 9.42%, and 8.29% respectively. Meanwhile, the practice of feeding with the lowest percentage is food restriction for health, averaging 7.54%, followed by pressure to eat at 7.20%, emotional regulation at 5.89%, and using food as a reward at 5.56%.

Table 2: Frequency distribution of parental feeding practices for students (N=85)

No.	Variable	Mean ± SD
1.	Child control	9.98 ± 1.91
2.	Emotion regulation	5.89 ± 2.23
3.	Balance and variation	12.42 ± 1.80
4.	Environment	9.42 ± 1.03
5.	Food as a gift	5.56 ± 2.10
6.	Involvement	9.84 ± 2.91
7.	Modeling	11.98 ± 2.17
8.	Monitor	8.29 ± 1.54
9.	Pressure	7.20 ± 1.58
10.	Restriction for health	7.54 ± 2.05
11.	Restriction to control weight	15.38 ± 6.71
12.	Teaching about nutrition	13.23 ± 2.29

Table 3 shows that the data analysis indicates no relationship between parenting patterns and the incidence of undernutrition status among students, with a *p*-value of 0.223 (*p*<0.05) and *r*=-0.134. Researchers noted that there are several supporting factors related to parenting patterns, such as the caregiver's level of education in relation to the child's nutritional quality. Next, in the variable of parental feeding practices, there is a significant relationship in all four dimensions with the nutritional status of students, namely the environmental dimension with a *p*-value of 0.005, the dimension of food as a reward with a *p*-value of 0.003, followed by the modeling dimension with a *p*-value of 0.004, and the restriction dimension to control children's weight with a *p*-value of 0.001.

DISCUSSION

Nutritional status assessment conduct to identify nutritional problems within a community. The students were assessed using anthropometric measurement of body weight (BW) and height

(HT). After the measurement process, the data is calculated to produce classifications based on the Body Mass Index by Age (BMI/A) according to the guidelines outlined in the Indonesian Minister of Health Regulation Number 2 (2020) concerning child anthropometric standards (7).

This research in line Muchtar study where the majority of measurements and assessments of nutritional status fall into the following categories: 85.7% normal weight, 9.5% underweight and 4.7% obese (8). From the previous explanation, it is clear that regularly assessing the nutritional status of school-aged children is very important to detect potential nutritional problems. The nutritional health of school-aged children affects their ability to grow and develop, especially since they are still undergoing this process at this age. From the previous explanation, it is clear that regularly assessing the nutritional status of school-aged children is very important to detect potential nutritional problems (9).

Table 3: Spearman Rank Test on the Relationship between Parenting Styles and Parental Feeding Practices with Nutritional Status (N=85)

Variable	Nutritional Status	
	Correlation Coefficient (r)	p-value
Parenting styles	-0.134	0.223
Parental Feeding Practices		
a. Child control	0.051	0.644
b. Emotional regulation	0.071	0.518
c. Balance and variation	0.160	0.142
d. Environment	0.229	0.005*
e. Food as a gift	0.319	0.003*
f. Involvement	0.207	0.058
g. Modeling	0.310	0.004*
h. Monitoring	0.236	0.029
i. Pressure	-0.015	0.890
j. Restriction for health	0.004	0.973
k. Restrictions to control weight	0.354	0.001*
l. Teaching about nutrition	0.051	0.644

*Significant ($p < 0.05$)

The development and growth of a child are greatly influenced of parenting style. Future success is linked to parents who encourage and help their children in a good way. Parenting styles can vary, and each can lead to children behaving in different ways (10). This research is in line with Suratman, who found that parents most often use an authoritative parenting style, which is 79.5%; an authoritarian parenting style at 40.4% and a permissive parenting style at 28.8% (5). Meanwhile, the majority of parents (79.5%) grades 1, 2, and 3, apply an authoritative parenting style. The development and growth of children are influenced by the parenting styles applied by their parents. In terms of providing food for their children, good parenting often enhances their nutritional health, while poor parenting can have the opposite effect.

There are several direct and indirect variables that affect nutritional status. Indirect influences include food production, culture, environmental hygiene, consumption of different foods and infectious diseases; while direct factors include parental feeding practices. Especially for school-aged children, eating habits are very important to encourage their growth and development. Therefore, good feeding practices must be introduced and followed by parents from the beginning. Parental practices and actions are included in this procedure to ensure that children receive the complete nutrition necessary for their development (11). This research is in line with Abdilah study where the research shows that parental feeding practices generally use the environmental dimension (12). This dimension relates to the availability of healthy food provided

by parents at home or within the family environment. In addition, another dimension that falls into a lower percentage is the dimension of emotion regulation, where this dimension shows the use of food by parents as a way to regulate their child's emotions, with the belief that providing food can effectively manage the child's emotions. When it is known that parents are very important in giving sufficient attention to their children, especially in terms of their nutritional condition, researchers note that parental feeding habits are also very significant. The results of this study indicate that there are several issues with the feeding practices carried out by parents. These issues include the practice of giving sweet food as rewards to children to manage their behavior, lack of supervision when choosing food, parents' tendency to grant children's requests without considering the nutritional value of those requests and sometimes forcing children to eat when they do not want to eat.

This research is consistent with Hasrul study, which gives a result of $r = -2.041$ (13). Because the p -value of 0.51 is greater than 0.05, it can be concluded that, parental upbringing does not significantly affect nutritional status. This study shows that the mother's level of education significantly affects the child's BMI z-score, which includes aspects such as the perception of the child's weight, parental attention, and the parent's approach to feed the child. The study found that mothers with a high school education tend to apply less good feeding practices to their children. Meanwhile, mothers with higher education are more aware of the importance of nutrition for the child's health and able to understand that the

child's weight is a risk factor for future health problems and tend to maintain good parenting practices to support the maintenance of a healthy weight in their children.

Next, in the variable of parental feeding practices, there is a significant relationship in all four dimensions with the nutritional status of 3rd dan 4th students, including the environmental dimension with a p -value of 0.005, the dimension of food as a reward with a p -value of 0.003, the modeling dimension with a p -value of 0.004 and the restriction dimension to control children's weight with a p -value of 0.001. The eating habits of parents and the nutritional status of first, second and third-grade students in both elementary schools are strongly correlated, according to these findings. This indicates that the likelihood of school-aged children achieving good or normal nutritional status increases with the number of proper feeding practices provided by their parents.

This research is in line with Almatiser, it was found that all three dimensions of parental feeding practices show a relationship between feeding practices and the nutritional status of children (15). The results found three dimensions that were the same in the dimension of food as a reward (p -value=0.002), the modeling dimension (p -value=0.001) and the results of the restriction dimension for controlling weight (p -value=0.003). This research is in contrast to previous studies that it has a strong correlation with children's BMI z-scores, which is different from the research conducted on the same dimensions, which found that children's perceived weight has a relationship of $r=0.399$ with parental feeding practices, the dimension of pressure to eat $r=0.403$, the dimension of monitoring with $r=0.322$, the dimension of attention related to teaching children about nutrition $r=0.345$, the dimension of food restriction for children's health $r=0.341$ (16).

In line with previous research conducted by Nowicka the results of parental feeding practices with the monitoring dimension having a p -value of 0.56, the child emotion control dimension with a p -value of 0.72, and the balance and variety dimension with a p -value of 0.84, where none of these three dimensions are related to the child's weight status (17). In the study, it was found that there are problematic factors, most of which include parental perception of weight and child perception of weight. Children who receive food as a gift or a sign of affection from their parents may overeat. This is because children usually prefer sweet and delicious foods over healthy and

nutrient-dense foods. Children can overeat if they receive gifts like sweets or snacks because the food given as gifts is more appealing than the nutritious food they need. This can lead to unhealthy eating habits in children and stunted growth (18).

Based on this, can observe that although parents should think more about the aspect of using food as a reward for their children, knowledge also plays an important role in this matter. Therefore, parents should think twice before giving food as a reward to prevent undesirable outcomes in their children, such as unhealthy food or deficiencies in essential nutrients for healthy growth and development. In the modeling dimension, especially parents who are responsible for setting an example by consuming healthy food, it is very important in shaping children's healthy eating behavior. Responsible parents have a strong influence and serve as role models for their children in choosing food that is good for their health. Further explanation from the researcher mentions that in the dimension of restriction to control weight, responsible parents are expected to participate in efforts to limit excessive food consumption to maintain the child's weight, as consuming excessive food does not necessarily contain good nutritional value to influence the nutritional status of school-aged children.

CONCLUSION

Parenting and feeding practices have an influence on the nutritional status of school-age children. This study shows that although parenting directly does not always have a significant relationship with nutritional status, other factors such as mother's education level, family eating habits, and the way parents feed their children play an important role in determining children's nutritional status. Children who receive authoritative parenting tend to have better nutritional status than those raised with permissive or authoritarian parenting. This is due to better supervision of food choices and parental attention to children's nutritional needs. In addition, feeding practices also play a significant role, where dimensions such as the eating environment, the use of food as a reward, role modeling in healthy food consumption, and food restriction for weight control have a close relationship with children's nutritional status.

There are several problems with parental feeding practices, including the habit of giving sweets as a reward, lack of supervision of the types of food children consumes, and the tendency of parents to fulfill children's requests without considering the

nutritional value of the food. These factors can contribute to nutritional imbalances, both in the form of under- and overweight. Education level of parents plays a significant role in determining good feeding practices. Mothers with higher levels of education tend to better understand the importance of a healthy diet and have a better awareness of the health risks associated with children's weight. Thus, interventions aimed at improving children's nutritional status should involve educating parents, especially in terms of proper feeding and establishing healthy eating habits from an early age.

These findings provide a basis for developing family-based intervention strategies to improve the nutritional status of school-age children. By understanding the relationship between parenting, feeding practices and children's nutritional status, interventions can focus on increasing parents' awareness of the importance of healthy food choices, implementing better parenting practices and establishing eating habits that support optimal growth and development.

ETHICAL MATTERS

Ethical approval and consent have been obtained from the Health Research Ethics Committee of Universitas Muhammadiyah Purwokerto, number KEPK/UMP/37/80/I/2024, dated January 30, 2024.

CONFLICT OF INTEREST

The author states that there are no conflicts of interest

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AUTHOR CONTRIBUTIONS

AA: contribute to the conceptualization, study

design, and data collection.

DP: responsible for data analysis, interpretation, and manuscript writing. All authors reviewed and approved the final version of the manuscript.

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