



RESEARCH ARTICLE

The influence of parental eating patterns on the nutritional status of Manado city children aged 6-24 months

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ABSTRACT

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Parental eating habits have a positive effect on children's nutritional health. Numerous studies have examined children's eating patterns; however, few studies have examined the association between parental eating patterns based on the dimensions of demandingness and responsiveness in children and the nutritional status of 6- to 24-month-old children. This study aimed to examine the relationship between parental dietary habits and the nutritional status of children aged 6–24 months in Manado City. The research employed a quantitative approach with a cross-sectional design in the working area of the Ranomut Health Center, which included six neighborhoods from three villages: Paal 2, Ranomut, and Perkamil. This village was chosen because it has the highest concentration of children under the age of five in the Ranomut Health Center's service area. In this study, 96 samples were selected using the method of purposive sampling based on the criteria established by the researcher. The instrument used was the validated and reliable Feeding Practices and Structure Questionnaire for Infants, followed by data analysis using the Spearman rank test. The respondents' parental eating styles were authoritarian (31.3%), permissive (27.1%), democratic (20%), and negligent (20%). The nutritional status of children under the age of five was 26% malnourished and 74% well-nourished. The Spearman rank test resulted in a *p*-value of 0.674. This can be attributed to other factors, such as family composition and age-inappropriate food portions.

1. Introduction

Poor nutrition, undernutrition, and overnutrition constitute the triple burden of malnutrition, which Indonesia is currently experiencing. Beginning between 0 and 2 years of age, the golden period is a crucial period of development. During this time, children undergo rapid growth and maturation that will determine their adult health (Pakar Gizi Indonesia, 2016). Nutritional deficiencies in children can increase their susceptibility to infectious diseases, impede their physical and mental development, and contribute to

the rise in child morbidity and mortality. According to World Health Organization (WHO) guidelines, the nutritional status of children under the age of five can be determined using three indices: body weight for age (BB/U), height for age (TB/U), and weight for height (BB/TB). According to basic health research, 3.9% of children aged 0–23 months have poor nutrition, 13.8% have undernutrition, and 2.2% have good nutrition (2). Manado City has a malnutrition rate of 14.7% and an overnutrition rate of 8%, according to Nutrition Status Monitoring data. North Sulawesi Province is included in the category of areas with acute and chronic nutrition

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problems, and Manado City has a malnutrition rate of 14.7% and an overnutrition rate of 8% (Kemenkes RI, 2017).

The nutritional status of children is affected by both direct and indirect causes. Direct causes include dietary intake and infectious diseases, while indirect causes include child behaviour and upbringing. The low parenting rate is influenced by low education levels, poverty, and food availability (Stevens *et al.*, 2016). Several causes of malnutrition in children under 5 years old in Indonesia are typically economic factors, a lack of parental knowledge, and an inability to provide nutritious food. The incidence of malnutrition increased by a factor of 0.2 in families with low levels of education and by a factor of 0.1 in families with limited parenting knowledge, including feeding (Hidayat and Prasetyo, 2018). The ability of mothers to access media information about family-appropriate feeding practises is closely related to their level of knowledge (Setorglo *et al.*, 2019).

The relationship between parents and children is crucial because it influences children's growth and development. Good parenting practises, including feeding practises, are closely associated with their children's body mass index (BMI); this is because parents are agents of change for their children, choosing either healthy or unhealthy foods for them (Larsen *et al.*, 2015). In 2012, only 58.2% of children aged 6–23 months received food from four or more food groups, indicating that nearly half of all Indonesian children do not receive the nutrition they require during the first two years of their lives to grow and develop optimally, thus becoming a reference for the problem of ensuring adequate nutrition in children (Kementerian PPN/Bappenas, 2019).

Parenting patterns are categorised based on the dimensions of demand (demandness) and reaction (responsiveness); demands are a way for parents to exert control over their children, while reactions are a way for parents to pay attention to and accept their children's needs (Shloim *et al.*, 2015). Parenting styles are categorised as authoritative, authoritarian, permissive, and uninvolved. Positively involved parents in feeding practises are closely related to their children's nutritional status because they pay attention to the availability of food and its nutritional content without pressuring their children to eat. Parenting in this context relates to the democratic eating pattern: providing children with opportunities to improve their eating behaviour in the future (Vollmer, 2019).

Control over eating (controlling excessive eating), encouragement to eat (encouraging children to eat a variety of foods), and instrumental feeding are the four types of feeding styles that are closely related

to parenting (using food as a gift). and emotional feeding (providing food to help the child cope with their emotions). Because parents have access to healthier food alternatives, parents who encourage their children to eat can reduce their children's consumption of unhealthy foods (Gibson *et al.*, 2010). Other studies mention the authoritative type of feeding by allowing children to choose the type of food they like, which causes children to be more likely to dislike vegetables that they believe do not have a flavour they enjoy (Vollmer, 2019). Controlling or restricting children's food intake is associated with an increased prevalence of BMI, whereas children who are compelled to eat are likely to have a lower BMI (Lo *et al.*, 2015).

Numerous studies have examined the factors that could affect the nutritional status of children within the context of research on the nutritional status of children. Other studies also examine the relationship between feeding patterns and children's nutritional status, but in this study, parenting was only examined in terms of the time, frequency, texture, and type of complementary feeding practises. A systematic review study examining feeding patterns, parenting patterns, and nutritional status has also been conducted, but the participants in this study were children older than 2 years (Shloim *et al.*, 2015), so it did not meet the criteria for our study.

In Indonesia, studies on parental eating patterns have been conducted, but these studies merely focused on the picture in the stunting focus areas, which were unrelated to children's nutritional status (Pebriani *et al.*, 2021). In order to address the issue, researchers in Manado City wish to examine the effect of parenting style on the nutritional status of children aged 6 to 24 months.

2. Materials and Methods

2.1. Research design

The type of this study was quantitative through a cross sectional study design which was carried out in the working area of the Ranomut Health Center with 6 neighborhoods from 3 villages, namely Paal 2, Ranomut, and Perkamil villages. The selection of this village was based on the ratio of the largest number of children in the working area of the Ranomut Health Center. The time of data collection for respondents was carried out in September-November 2021 using a purposive sampling technique with the criteria determined by the researcher.

2.2. Data Sources

In this study, the calculation of the number of samples used the Slovin formula with a sample of 96 mothers of children aged 6-24 months in the working area of the Ranomut Health Center and respondents

Table 1. Frequency Distribution of Respondents Characteristics

Characteristics	Frequency	Percentage (%)
Mothers' Age		
Productive (19-35 y.o)	80	83,3
Not Productive (≥ 35 y.o)	16	16,7
Mothers' Education		
High (Senior, high school or College)	64	66,7
Low (elementary school or junior high school)	32	33,3
Mothers' Occupation		
Employed	21	21,9
Unemployed	75	78,1
Toddlers' Age		
0-1 years old	75	78,1
1-2 years old	21	21,9
Toddlers' Nutrition Status		
Good Nutrition (-2 SD until 2SD)	71	26
Less Nutrition (Less than -2SD)	25	74

* Source : Primary data processing 2021

Table 2. The quadrant of parenting eating patterns classification based on responsiveness and demanding

	High Demanding	Low Demanding
High Responsiveness	Democratic	Permissive
Low Responsiveness	Authoritarian	Abandonment

Classification	Definition
High Responsiveness	$R \geq \text{Mean}$
Low Responsiveness	$R \leq \text{Mean}$
High Demanding	$D \geq \text{Mean}$
Low Demanding	$D \leq \text{Mean}$

who were willing to sign the informed consent and fill out the questionnaire included in one of the inclusion criteria, while the exclusion criteria in this study namely mothers whose toddlers are sick or have congenital abnormalities, children aged 6-24 months who do not live with their biological mothers.

The instrument used in this study was the The Feeding Practices and Structure Questionnaire for infant which contains questions related to the practice and structure of feeding by mothers of children aged 6-24 months which have been validated and used in other similar studies (Jansen *et al.*, 2021). The classification of questions in this questionnaire was divided into two, i.e. responsiveness and demanding variables to determine the type of parenting eating patterns which

are divided into 4 namely Democratic, Authoritarian, Permissive and Uninvolved which is classified by the tipe of eating patterns of the parents.

Sources of data in this study in the form of primary data obtained through filling out questionnaires by researchers and research assistants at the Ranomut Health Center with door to door visits and collecting respondents at cadres' homes by paying attention to health protocols and secondary data obtained from the Manado City Health Office, Ranomut Health Center, posyandu cadres and KIA books owned by respondents.

2.3. Data Analysis

Data analysis was processed using the SPSS (Statistical Product and Service Solution) for windows version 25 program for univariate and bivariate analysis. Bivariate analysis used in this study using Spearman rank correlation analysis.

3. Results

3.1 Characteristics of Respondents

Table 1 depicts the majority of respondents was in mothers at productive age category (19-35 years

Table 3. Analysis of the relationship parental eating patterns and nutritional status of toddlers

Eating Care Pattern	Toddlers' Nutrition Status				Total	%
	Less Nutrition		Good Nutrition			
	F	%	f	%		
Democratic	4	4,2	16	16,7	20	20,8
Authoritarian	9	9,4	21	21,9	30	31,3
Permissive	6	6,3	20	20,8	26	27,1
Abandonment	6	6,3	14	14,6	20	20,8
Total	25	26	71	74	96	100

Test of Spearman Rank $p = 0,674$; $r = -0,043$

* Source : Primary data processing 2021

old) with 66.7% having a history of higher education (senior high school or college) and work as housewives
 Responding to the data analysis, the table above shows that.

3.2 Parental Eating Pattern

The parental eating pattern given by parents to toddlers is determined based on two dimensions, namely responsiveness and demandingness. The answer of each respondent is determined by the scores of the two dimensions separately, then the mean is calculated. Parenting eating patterns are classified based on this quadrant using the mean calculation (Table 2).

The Relationship between parental eating pattern and nutritional status

Table 3 shows the most parenting eating pattern among the respondents is authoritarian (31.3%) which is mostly found in the toddlers group of good nutritional status 21.9%. Based on the analysis of the data by spearman rank with the provision that H0 will be rejected if < 0.05, while the results of the analysis show a significance value of $p = 0.674$ so that H0 is accepted because $0.674 > 0.05$. The value cannot be concluded because the analysis of the relationship shows that eating parenting does not affect the nutritional status of children aged 6-24 months in the working area of the Ranomut Health Center.

4. Discussion

Parenting is a practise applied by parents, particularly mothers, to their children that encompasses behaviour, style, and age-appropriate eating situations so that children receive adequate nutrition and develop normally. This circumstance is dependent on parental care and nurturing during feeding (Midu *et al.*, 2021).

On the basis of the demandingness and responsiveness dimensions, the dimensions of eating and parenting are evaluated. The demandingness dimension describes a type of food-related parenting characterised by controlling, demanding, and supervising children. This type is comprised of several

subtypes, including choosing food and monitoring children's eating behaviour (monitoring), limiting food with the goal of controlling body weight (restriction), limiting food portions (pressure to eat), and encouraging and demanding children to eat (encouragement and demand) (child control).

The responsiveness dimension is a type of parenting that involves the parents' warmth and efficacy. This type is subdivided into the following categories: children imitating parental eating styles (modelling), regulating children's emotions while eating (emotion regulation), teaching children about nutrition and health through food (teaching about nutrition), and giving children food as a gift. (food as a reward); involving children in food selection (involvement); promoting variety and balance in children's diets (encourage balance and variety);

Authoritarian parenting is characterised by high expectations and low responsiveness, whereas permissive parenting is characterised by low expectations and high responsiveness. Respondents established a regular eating schedule for their children, but they did not create a pleasant eating environment, causing children to feel pressured to finish their food despite their ability to do so. This is consistent with previous research that demonstrates a link between permissive or authoritarian parenting and eating disorders in children, as it forces them to consume foods they refuse (Nicklaus, 2016).

Unconscious eating habits make it difficult for children to distinguish between hunger and satiety; for instance, parents may take their children on an afternoon walk around the house while feeding them. They will continue to open their mouths because they are not concentrating, so the mother's portion does not correspond to the toddler's portion. When feeding their children, mothers only consider portion size, so that their children finish their food at every meal. This is consistent with the findings of the research, which indicate that the mother's focus on the child's weight after birth has a significant impact on her feeding strategy (Kavurma *et al.*, 2018). In contrast, a survey of 75 American parents with children averaging 2 years

old revealed that 57% of them require their children to finish their meal on a plate (Fries *et al.*, 2019).

The study also revealed that toddlers' eating activities cannot be separated from their use of electronic devices or television. This is due to a mother's concern if her child does not want to eat during mealtimes, causing her to develop eating disorder-causing behaviours. 61% of families studied in Minneapolis-St. Paul have the habit of using electronic devices during meals, according to research (Berge *et al.*, 2014). A child who cannot recognise his hunger cannot demonstrate his hunger response, and he eats until he is full, so that the amount of food he consumes does not correspond to his age. This compels mothers to continue performing numerous tasks to ensure that their children's nutritional needs are met. This practise not only affects children's eating behaviour, but also their psychology, causing eating trauma because children are not provided with a pleasant eating environment. The authoritarian pattern demonstrates control and obedience without the child's participation. Parents establish their own standards and punish children who violate them. Parents and children have a distant relationship, which causes children to lack confidence in their abilities. Children's lack of self-awareness and distaste for certain activities, such as eating, make communication difficult.

The low responsiveness dimension of respondents can also be observed in how mothers react when their children refuse to finish their food. Whether it's the allure of sweets or a walk, Mother continues to offer spending money. In a study conducted in daycare, it was found that the same thing occurred with the eating habits of toddlers' caregivers, i.e., they used food to control their emotions by 96.5%. When the child was angry or sad, food was given to help alleviate their emotions. While caregivers use food as a reward or incentive for 97.6% of their activities, they also entice children to spend 85.9% of their food on other foods by promising them (Fallon *et al.*, 2018). Giving children food as a reward encourages them to eat not because it satisfies their nutritional needs, but to receive a reward. In contrast to research conducted in the United States, it was observed that 75 parents gave non-food rewards to their children when they finished eating; for example, children could go for a walk when their food ran out (Fries *et al.*, 2019). Other research demonstrated that giving children rewards, whether or not they are in the form of food, does not increase their food intake (Kavurma *et al.*, 2018).

Parents play a significant role in shaping children's eating habits, as their parental responsibilities include providing food, encouraging their children to eat, and serving as strong dietary role models. Parenting plays an essential role in a child's psychological self-

regulation. A mother who respects her child's decisions increases her child's sense of self-efficacy (Bernier *et al.*, 2010). Multiple studies have discovered that children's appetites and eating regulation skills are shaped not only by genetics but also by their environments (Wood, 2018). This study found that parental eating habits had no effect on the nutritional status of children under the age of five. In accordance with previous research, democratic and authoritarian parenting styles are unrelated to children's BMI, so they do not affect their nutritional status, particularly in large families (Taylor, 2012). Another study found no correlation between democratic and authoritarian parenting styles and the prevalence of overweight and normal weight children (Style *et al.*, 2019). In contrast to other findings, it demonstrates that Hispanic children with permissive parents are at a greater risk for obesity (Hughes *et al.*, 2011). There is a correlation between eating parenting and children's weight; parents with democratic parenting have a greater influence on their children's weight than parents with authoritarian parenting, despite the fact that both parenting styles have high demands; however, differences in responsiveness result in different eating behaviours (Nicklaus, 2016). Controlling or restricting children's food intake is associated with a higher prevalence of BMI, whereas forcing children to eat is associated with a lower prevalence of BMI (Lo *et al.*, 2015).

The relationship between parental eating habits and the interaction between parents and children during the eating process is strong. In democratic eating patterns, children are encouraged to consume healthy foods through negotiation and rational use. This diet is linked to children with a low body mass index (Style *et al.*, 2019). There was no correlation between democratic eating parenting and the nutritional status of infants aged 6 to 24 months in this study due to the lack of adherence to the correct food selection and composition. The mothers' understanding of foods that provide complete nutrition has not been fully developed. In a study, a good feeding pattern in terms of selecting the type of food and the nutritional content of the food, as well as providing a regular schedule, had an effect on the nutritional status of toddlers (Purwani *et al.*, 2013). Compared to authoritarian eating parenting, democratic eating parenting results in a higher quality diet due to differences in eating atmosphere (Tung and Yeh, 2014).

This study lacks family characteristics such as number of children, income, family type, and history of exclusive breastfeeding or bottle feeding since birth, so it is impossible to explore other causes related to other social factors that influence parental eating patterns. This is consistent with other findings that indicate families, particularly parents, can influence children's

eating habits now and in the future. In addition, the absence of an investigation into the composition of food through food recall prevented this study from gaining a comprehensive understanding of the quality and quantity of food.

5. Conclusions

Parental eating pattern, with both demanding and responsive dimensions, was not the most important factor in improving the nutritional status of children under the age of five. However, it is expected that parents will take into account parenting eating patterns with high responsiveness in order to become role models for fostering appropriate eating patterns in toddlers. As evidenced by other studies that support this hypothesis, the selection of parental eating patterns in determining the toddler's diet and the fact that it still allows children to choose the type and menu of food is due to the balanced type. This is due to the responsiveness with which parenting can encourage children's independence so that they can eat without coercion, encourage children to regulate how much food enters their bodies, and regulate children's ability to control their emotions when eating. This study suggests that more research be conducted on the role of parenting styles in determining a toddler's food menu while allowing the child to choose the food type and menu.

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