



## RESEARCH ARTICLE

## Diet and Nutritional Status of Pre-School Children in Indonesian

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ARTICLE INFO	ABSTRACT
Received: May 19, 2024	Nutritional inadequacies for pre-school children can lead to problems related to nutritional status. One of the factors that can influenced is a poor-quality diet. The aims of this study were to determine the diet and nutritional status of pre-school children. Method of this research uses descriptive analytic with purposive sampling technique. The number of samples in this study were 179 parents who had of pre-school children in the Barebbo Public Health Center, Indonesian. This study instrument used a questionnaire on children's diet and classification of nutritional status, namely height-for-age and weight-for-height. Assessment of children's diet using a questionnaire and classification of nutritional status based on the Indonesian Ministry of Health. Measurements of weight was achieved with the digital scales and height measured on the microtoise. Data were presented in frequency distributions of demographic characteristics, diet, nutritional status, and cross tabulations. The results showed that the diet of pre-school children was high-quality diet (69.8%), a balance-quality diet (24%), and moderate-quality diet (6.2%). The classification of nutritional status based on height-for-age was height according to age (84.4%), stunted (10.1%) and severely stunted (2.2%). Weight-for-height was weight-for-height according to age (82.1%), wasted (10.1%) and severely wasted (2.8%). Pre-school children with moderate-quality diet were severely stunted (9.1%) and stunted (9.1%). The conclusion is that pre-school children have a nutritional status according to age, based on height-for-age and weight-for-height and have a high-quality diet. Therefore, it is important for nurses to provide diet quality according to age education to parents and routine monthly monitoring of pre-school children nutritional status at the public health center.
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### INTRODUCTION

Unbalanced nutritional intake for pre-school children can cause problems related to nutritional status and even death. According to WHO (World Health Organization), 45% children under 5 of age die from severely wasted (World Health Organization, 2021). The prevalence of nutritional status problems in children continues to increased. Based on WHO (2019), the number of children under 5 years of age suffering from stunting is 148.9 million and the incidence of wasting in children under 5 years of age is 49.5 million, then the number of children under 5 years of age who are overweight is 40 million (WHO, 2019). An increased in cases in 2020 obtained more increase than 149 million children under 5 years of age estimated to be stunted and 45 million children with severely wasted (WHO, 2021).

The nutritional status of children in Indonesian is also one of the problems that the government is still focusing on. Based on the results of The Indonesian Nutrition Status Study (2021), the national stunting rate has decreased by 1.6%. In 2019 it was (27.7%) and decreased in 2021 to (24.4%). Meanwhile, based on the Indonesian Health Survey (2021), children under 5 years of age with severely stunted and stunting

were (5.7%) and (15.8%). Most of the 34 provinces showed a decrease compared to 2019 and only 5 provinces showed an increased. The area of prevalence achievement is below 20% but still does not meet the target of the Medium Term Development Plan (2024) of 14% (Indonesian of Ministry of Health, 2021). In South Sulawesi, the prevalence of children under 5 of age with severely stunted and stunting nutritional status assessment is (6.7%) and (20.7%). In Bone Regency, especially Barebbo Public Health Center, in 2017 there were 9 stunted children under 5 of age, increasing in 2018 to 92 and in 2019 to 76 children under 5 of age (South Sulawesi Health Office, 2019). This can be caused by several factors.

Factors causing nutritional problems are maternal education, household income, maternal nutritional status, age of the child, availability of sanitation facilities at home, number of family members, birth order in the family, birth weight of the child, breastfeeding and parenting practices, cooking location and fuel used, gender, and socioeconomic status (Ali, 2021). Parents are responsible for childcare including meeting nutritional needs with a good diet for child growth and development (Pristiya and Rinowanda, 2019). Diet is one of the factors that affect the nutritional status of children. Based on WHO (2021) there is an increased in food insecurity and severely wasted in children. In 2020, 149 million children experienced stunted growth due to poor diet. Problems related to the nutritional status of pre-school children are closely related to poor diet. Mothers who do not know nutrition can make mistakes in choosing food and how to feed their pre-school children (Pristiya and Rinowanda, 2019). Based on the results of research by Mamahit et al. (2019) on the diet of pre-school children at the Melogwane Health Centre, Talaud Islands, it was found that most pre-school children had a good nutritional status assessment with a good diet. Therefore, pre-school children must have a good diet because it is interrelated with nutritional status.

Pre-school children is the age of 3-5 years and is a period called *The Golden Age*. The Golden Age is a golden age, where all the advantages or privileges possessed at this time will not be repeated a second time. That is why this period is often referred to as the defining period for the next life (Potter and Perry, 2020). Almost 50% of pre-school children die from severely waste and stunted, which is the leading cause of death (WHO, 2021). Pre-school children is a golden period to determine the quality of human resources in terms of intelligence and physical growth so that this must be supported by good nutritional status (Margawati and Astuti, 2018). Based on this phenomenon, this study aims to determine the diet and nutritional status of pre-school children.

## MATERIALS AND METHODS

This research method used a analytical descriptive quantitative study with purposive sampling technique. This study was conducted in the Barebbo Public Health Center, Bone Regency, The South Sulawesi, Indonesian on 2024 with a total sample of 179 mothers who have children 3-5 years of age who live in working area in Barebbo Public Health Center. The inclusion criteria in this study were mothers who were agreed to become respondents, visit and participate in activities related to nutrition by public health center or were willing to do home visits or early childhood. Meanwhile, the exclusion criteria were mothers who leave the activity from children 3-5 years of age. Before conducting research, researchers provide informed consent to respect, protect and maintain the confidentiality of information and privacy of respondents. Primary data collection assessed children's nutritional status using a child diet questionnaire and nutritional status classification, especially height-for-age and weight-for-height. Weight was measured using of digital scales and body height using microtoise. Data were presented in frequency distributions of demographic characteristics, diet, nutritional status, and cross-tabulations between variables.

## RESULTS

**Table 1: Characteristics of Parents and Pre-School Children (n=179)**

Respondent Characteristics	f	%	Mean±(SD)	Min-Max
Mothers				
Age (years old)			33.69 ± 6.879	20-50
Religion	179	100.0		

Respondent Characteristics	f	%	Mean±(SD)	Min-Max
Islam				
Last Education				
Out of school	2	1.1		
Elementary School	63	35.2		
Junior High School	37	20.7		
Senior High School	57	31.8		
Univercity	20	11.2		
Occupation				
Housewife	157	87.7		
Farmers	7	3.9		
Civil Servants	5	2.8		
Daily labourers	2	1.1		
Others	8	4.5		
Household Income				
Minimum wage	170	95.0		
Wage	5	2.8		
Maximum wage	3	1.7		
Children				
Age (month)	179	100.0	4.41 ± 0.826	3-5
Gender				
Boy	85	47.5		
Girls	94	52.5		

Table 1 shows that the average age of mothers was 33.69 years old. The majority of mothers' occupation was housewife (87.7%). In addition, less than half of the mothers had primary school education (35.2%). The majority of mothers had an household income below the minimum wage (95.0%). In pre-school children, more than half were girls, with an average age of 4.41 years.

**Table 2: Pre-School Children's Diet (n=179)**

Diet Quality	f	%
High-quality diet	125	69.8
Balance-quality diet	43	24.0
Moderate-quality diet	11	6.1
Total	179	100

Table 2 shows the results of the dietary pattern category of pre-school children aged, most of the dietary quality of children is high-quality diet (69.8%), balance-quality diet (24.0%), and moderate-quality diet (6.1%).

**Table: 3 The Nutritional Status of Pre-School Children Based on Height-for-age and Weight for-height (n=179)**

Variable	f	%
Height-for-age		
Severely stunted	4	2.2
Stunted	18	10.1
Height according to age	151	84.4
High	6	3.4
Total	179	100
Weight-for-height		
Severely wasted	5	2.8
Wasted	18	10.1
Weight-for-height according to age	147	82.1

Variable	f	%
Possible risk of overweight	2	1.1
Overweight	4	2.2
Obese	3	1.7
Total	179	100

Table 3 shows the assessment of nutritional status based on height-for-age that most respondents were normal (84.4%), severely stunted (2.2%) and stunted (10.1%). Meanwhile, based on the weight-for-height shows that most of them are normal (82.1%), an overweight (1.1%), wasted (10.1%), severely wasted (2.8%), and an obesity (1.7%).

**Table 4: Cross-tabulation Pre-School Children's Diet and Nutritional Status Based on Height-for-age (n=179)**

Diet quality	Nutritional Status Based on height-for-age			
	Severely stunted	Stunted	Diet and nutritional according to age	High
High-quality diet	2 (1.6%)	11 (8.8%)	107 (85.6%)	5 (4.0%)
Balance-quality diet	1 (2.3%)	6 (14.0%)	35 (81.4%)	1 (2.3%)
Moderate-quality diet	1 (9.1%)	1 (9.1%)	9 (81.8%)	0

Table 4 shows that most children had a diet and nutritional according to age assessment with high-quality diet (85.6%). Meanwhile, pre-school children with a stunted (8.8%) with balance-diet quality, and pre-school children who have a severely stunted (1.6%) with a high-quality diet.

**Table 5: Cross-tabulation Pre-School Children's Diet and Nutritional Status Based on Weight-for-Height (n=179)**

Diet Quality	Nutritional Status Based on Weight-for-Height					
	Severely wasted	Wasted	Weight-for-height according to age	Possible risk of overweight	Overweight	Obese
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
High-quality diet	3 (2.4%)	10 (8.0%)	104(83.2%)	2(1.6%)	4 (3.2%)	2 (1.6%)
Balance-quality diet	2(4.7%)	6(14.0%)	34(79.1%)	0	0	1 (2.3%)
Moderate-quality diet	0	2(182%)	9(81.8%)	0	0	0

Table 5 shows that according to the weight-for-height, most of the respondents had Weight-for-height according to age with a high-quality diet. Some of the respondents had an assessment of severely wasted, wasted and obese nutritional status with high-quality diet.

## DISCUSSION

The results of this study showed that more than half of the respondents were girls. Indonesian Ministry of Health (2022) shows that gender is one of the factors that influenced child growth. This is in line with research by Nurmayanti et al. (2023) that both boys and girls pre-school children have the same risk of stunting. Each child needs different nutritional intake between individuals depending on the child's age range, gender and weight (Thamaria, 2017) this is also influenced by one factor, namely the pre-school children's diet.

The diet of pre-school children in the working area of the Barebbo Public Health Center mostly has a high-quality of children's diet. This is because most mothers have implemented a balanced portion consisting of 3 aspects, namely food types, meal schedules and meal portions. Most pre-school children always consume rice, eggs and fish at meals while chicken or beef is rarely consumed at meals. In addition, pre-school children also rarely consume multivitamin supplements as an immune system. Mothers sometimes accustomed children to consume 8 glasses of drinks per day. In the aspect of meal schedules, it was found that most mothers always accustomed their children to eating three times a day. The last aspect regarding the portion of children's meals is that most pre-school children always consume varied meals and mothers pay attention to the nutritional content of the food eaten by pre-school children such as carbohydrates, protein, vegetables and vitamins. This is in line with Mulyana and Eko (2022) that there is a significant relationship between diet and the incidence of obese in pre-school children.

In addition, the assessment of nutritional status based on the height-for-age shows that most pre-school children have height according to age. This is in line with Fabiano et al. (2021) that infants and children under 5 years of age have better nutritional status as a consequence of better nutrition from birth. This is also supported by Laila et al. (2022) that there is a relationship between knowledge, attitude, parenting patterns of mothers with the nutritional status of according to age of pre-school children in the Martapura Public Health Center. But in this study to, there were still nutritional status problems, namely stunting as many as 18 children. In Sari and Ratnawati (2018) that it is important to evaluate nutritional status and identify problems related to child nutrition early on because it can have a long-term impact on children's health in the future. While the assessment of nutritional status based on the weight-for-height shows weight-for-height according to age, one of which is due to most pre-school children eating three times a day and applying balanced portions. This is in line with Gigir (2019) that the nutritional status of pre-school children in Tiwoho Village is mostly weight-for-height according to age.

In addition, based on the results of cross tabulation of diet and nutritional status based on height-for-age, it shows that most pre-school children have height according to age with high-quality diet because mothers apply balanced portions of food and provide varied foods to pre-school children and get used to eating 3 times a day. This is in line with (Fabiano et al., 2021), that most diets are of balance-quality diet with pre-school children who have nutritional status according to age. This is because balance-quality diet is caused by parents who teach good eating habits from an early age and their children's needs are regulated. A total of 11 pre-school children in this study with the category of stunting had high-quality diet, it can be caused by other factors such as poor parenting behaviour including insufficient food intake (Rahmi, 2020). The food intake of stunted children is dominated by energy source foods and low intake of vegetables, fruit and milk. Stunting children have a lower intake of green vegetables, vegetables and fruit sources of vitamin A, other vegetables, eggs, nuts, and milk when compared to pre-school children with nutritional status according to age (Sari and Ratnawati, 2018).

Meanwhile, based on the results of cross tabulation of diet with nutritional status based on weight-for-height, it is found that less than half of pre-school children have nutritional status according to age with a high-quality diet, this is because pre-school children always eat varied foods with balanced portions and pay attention to the nutritional content in the foods that children eat. A small proportion of pre-school children have overweight and obese but have a weight-for-height according to age. This is supported by Maranhão et al. (2018) that the assessment of nutritional status at risk of overweight and obese can occur even with a balanced diet due to one factor, namely the transfer of nutrients directly occurs in pre-school children who do not get the right intake.

## **CONCLUSIONS**

Pre-school children living in the working area of Barebbo Public Health Center have a nutritional status according to age, based on height-for-age and weight-for-height and have a high-quality diet. However, there are still some problems related to nutritional status in pre-school children. Therefore, it is important for nurses to provide diet quality according to age education to parents and routine monthly monitoring of pre-school children nutritional status at the public health center.

## Authors' Contributions

KAE conceived the idea, designed the project and wrote the manuscript; WD participated in the design of the study and helped in writing the manuscript; NF statistical analysis and helped in writing the manuscript.

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