

Analysis of Macro Nutrient Intake in Toddlers at The Risk of Wasting (Case Study of Picky Eater in Toddlers in The Working Area Puskesmas Rawat Inap Cempaka)

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ABSTRACT

Wasting is a form of malnutrition that reflects a child's weight being too thin for his height, marked by a BB/TB z-score less than -2 Standard Deviation (SD) for wasting and a BB/TB z-score less than -3 SD for severe wasting. Quantitative study with Case Control design. The sample consisted of 35 children in the case group and 35 children in the control group. Intake of macronutrient intake with recall 1 x 24 hours 3 times. The picky eater variable was measured using the Child Eating Behavior Questionnaire (CEBQ). Analysis used Descriptive Test Univariate analysis, Biivariate Chi-Square Analysis and multivariate analysis using Logistic Regression. There was relationships between nutritional status (0.001), intake of carbohydrates (0.001), protein (0.016), fat (0.014), and behavior (0.002) with the incidence of picky eaters. Logistic Regression Test with Exp (B) valued respectively carbohydrate intake and protein intake. Logistic Regression Test with Exp (B) values respectively carbohydrate intake and protein intake. The conclusion of this study shows the relationship between the nutritional status of toddlers, intake of carbohydrates, protein, fat and behavior with the incidence of picky eaters.

Keywords: Wasting, picky eater, malnutrition

INTRODUCTION

Wasting is a form of malnutrition that reflects a child's weight being too thin for his height, marked by a z-score for weight/height less than -2 Standard Deviation (SD) for wasting and a z-score for weight/height less than -3 SD for severe wasting (Ministry of Health of the Republic of Indonesia, 2020). The United Nations Children's Fund (UNICEF) stated that from 2000 to 2018 there was a percentage of wasting in 2018 of 7.3% wasting and 2.4% severe wasting or a total of 49 million wasting and 17 million wasting. Based on the results of the 2018 Basic Health Research (RISKESDAS) there was a decrease in wasting (thin under fives) from 12.12% in 2013 to 10.19% in 2018. Indonesia is still in the high category (10%-<15%). Indonesia's under-five wasting data for 2000 and 2017 are still in the high category along with other countries including Mauritania, Sudan, South Sudan, Ethiopia, Kenya, Somalia, Yemen, India, Pakistan and Bhutan. The low- and middle-

income countries that saw a decline in the prevalence of big wasting from 2000 and 2017 are Algeria, Uzbekistan and Egypt. Despite experiencing a decline nationally, there has been an uneven decline within countries including Indonesia, Ethiopia, Nigeria and Kenya.¹

The results of the 2017 Nutritional Status Monitoring (PSG), the nutritional status of toddlers aged 0-59 months based on the BB/U index shows that South Kalimantan is at 4.6% in the category of malnutrition above the national rate of 3.8% and the category of undernutrition is 16.4% above the national rate of 14%. The percentage of very underweight children aged 0-59 months is 2.4% below the national rate of 2.8% but the percentage in the underweight category is 7.8% above the national rate of 6.7%. Nutritional status based on the BB/TB index in the high-risk (thin) group category, although it shows a decrease from 22.8% in 2016 to 20.6% in 2017, the number of children under five who are at risk of being thin

is still quite high,² therefore efforts Prevention of under fives must be done not only to deal with under fives who are already thin, but also to prevent toddlers who are at risk of being underweight from falling to become very underweight, so that interventions are started to be carried out on under fives under five. Malnutrition including wasting is influenced by direct factors, one of which is inadequate food intake.³

Apart from that, meeting food needs is also influenced by the behavior of picky eaters in children because parents are neglectful in giving complementary foods (Alfiyah et al. 2022). According to Rufaida & Lestari (2018, pp. 56-57) picky eater behavior can be influenced by parenting styles, mother-child interactions, parental eating behavior, exclusive breastfeeding, timely complementary feeding, and children's psychological and physical conditions. The results of the research by Wijayanti and Rosalina (2018) showed that 25 (54.3%) children with picky eaters had a thin nutritional status and as many as 21 children (45.7%) other picky eaters had normal nutritional status. Meanwhile, 13 children (24.5%) who were picky eaters were found to have thin nutritional status and 40 children (75.5%) who had normal nutritional status. Optimum nutritional intake has not been fulfilled, and various other risk factors that can cause wasting, based on this background a study was conducted to determine macronutrient intake in toddlers at risk of wasting with picky eater behavior.⁴

Picky eating/eater or commonly known as fussy, faddy or choosy eating is a problem that often occurs in children which is characterized by refusal to eat, restrictions on various foods, especially vegetables and fruits, and a feeling of reluctance to try new foods (neophobia).⁵ The causes of picky eaters include illness in children and parenting styles. Loss of appetite in children can occur due to impaired digestive tract function, acute or chronic infectious diseases such as tuberculosis, food allergies or intestinal worms. Diseases in children can be seen from the process of eating. Meanwhile, family parenting pattern determines children's eating behavior. The parenting style practiced by parents towards children greatly influences the values that are owned by the family. Parenting is an attitude that is applied to children by giving affection, providing food, clothing, education, and health care for children. Children will imitate the habits of their parents, so that the parenting style adopted by parents greatly influences the growth and development of children.⁶ Parenting style is related to behavior.

One of the factors that influence the behavior and attitudes of mothers in choosing what to eat for toddlers is knowledge about nutrition. Mother's knowledge about nutrition is influenced by various factors, including age, income, education, and employment.⁷

The results of the 2017 Nutritional Status Monitoring (PSG), the nutritional status of toddlers aged 0-59 months based on the BB/U Index shows that South Kalimantan is at 4.6% in the category of malnutrition above 3.8% and the category of undernutrition is 16.4 % above the national figure of 14%. The percentage of very underweight toddlers aged 0-59 months is 2.4% below the national rate of 2.8% but the percentage in the underweight category is 7.8% above the national rate of 6.7%. Nutritional status based on the BB/TB index in the category of high risk (thin) groups, although it shows a decrease from 22.8% in 2016 to 20.6% in 2017, the number of children under five who are at risk of being underweight is still quite high, therefore efforts also to prevent toddlers who are at risk of being thin from falling into thin, so that interventions are started to be carried out on toddlers at risk of being thin. Malnutrition including wasting is influenced by direct factors, one of which is inadequate food intake (UNICEF, 2015). Apart from that, meeting food needs is also influenced by the behavior of picky eaters because parents are neglectful in giving complementary foods.¹ According to Rufaida & Lestari (2018, pp. 56-57) picky eater behavior can be influenced by parenting styles, mother-child interactions, parental eating behavior, exclusive breastfeeding, timely complementary feeding, and children's psychological and physical conditions. The results of the research by Wijayanti and Rosalina (2018) showed that 25 (54.3%) children with picky eaters had a thin nutritional status and as many as 21 children (45.7%) other picky eaters had normal nutritional status. Meanwhile, 13 children (24.5%) who were picky eaters were found to have thin nutritional status and 40 children (75.5%) who had normal nutritional status.

METHOD

This research is a Quantitative study with a Case Control design which will be conducted in the Work Area of the Cempaka Health Center in July - December 2022. The total population in this study was 78 toddlers. The research sample was determined based on criteria, namely all children with malnutrition status aged 24-59 months recorded in the Cempaka Health Center register book and the control criteria for all children with normal nutritional status aged 24-59 months and recorded in the Cempaka

Health Center register book. So the sample in this study namely 35 samples for the case group and 35 samples for the control group with a ratio of 1:1. The sampling technique is by Simple Random Sampling to obtain 35 samples from 36 samples. The amount of data consists of primary data obtained from the recapitulation of the number of wastage incidents in the Work Area of the Guntung Payung Health Center and secondary data from the results of filling out the Questionnaire List of Respondent Characteristics questions and the results of filling in the 1x24 hour Food Recall sheet adopted from the 2017 Dental Status Monitoring (PSG) questionnaire.

The research instrument consisted of a list of questions created by the researcher. The list of questions used to collect data related to risk factors for wasteful incidents, namely questions made related to the education level of the father, mother's education, father's occupation, mother's occupation, parental income, number of children and parenting style. The next instrument is using the Food Recall Sheet adopted from the PSG Questionnaire¹ and the Food Models Book or Food Photo Book from the Center for Applied Health Technology and Clinical Epidemiology Health Research and Development Agency, Ministry of Health, Indonesia² to determine the level of consumption of macronutrients under five.

In this study, filling out the questionnaire was carried out guided by the prospective researcher, namely by means of 1 x 24 hour Food Recall or asking again what food the child (respondent) had consumed the day before and being asked 3 times in different time frames,

namely 2 days later after the first meeting and 3 days later after the second meeting.⁶ In question, give prospective researchers a display of the Food Ingredients Book/Food Model Book to ensure the accuracy of the ingredients used and the amount of food or drink consumed. Then after that the filling material related to the adequacy level of energy and protein is calculated using the Nutrisurvey Software application. The picky eater variable was measured using the Child Eating Behavior Questionnaire (CEBQ). The stages of data processing consist of editing, coding, processing and cleaning and are analyzed using Descriptive Analysis to describe the characteristics of the variables studied (factors related to the case and comparison for each of the variables studied). Data was tabulated based on the number and proportion of each variable and Bivariate Statistical Analysis using Chi-square with a 95% confidence level ($\alpha = 0.05$) to determine the significant relationship between the independent variables and the dependent variable. Then the Odd Ratio (OR) value is calculated to find out how much the risk factors are related between the case group and the control group while multivariate analysis uses Logistic Regression

RESULT AND DISCUSSION

The distribution of respondents based on table 1 can be seen that based on normal nutritional status it occurs in the control group and the most wasting nutritional status in the case group.

Table 1. Frequency Distribution of Respondent Characteristics (Toddlers)

Characteristics	Case Group		Control Group		Total	%
	n	%	n	%		
Gender						
Man	11	42.3	15	57.7	26	100
Woman	24	54.5	20	45.5	44	100
Age						
24-47 months	27	48.2	29	51.8	56	100
48-59 months	8	57.1	6	42.9	14	100
Number of siblings						
There isn't any	17	53.1	15	46.9	32	100
≤ 2	8	42.1	11	57.9	19	100
> 2	10	52.6	9	47.4	19	100
Total	35	50	35	50	70	100

Source: Primary Data, 2022

Table 1 shows that the distribution of respondents by sex in the control group and the majority of cases were female. The majority of

respondents in the control and case groups were aged 24-47 months, the results of the descriptive analysis also showed that the

minimum age of respondents was 24 months and the maximum age of respondents was 59 months with an average age of 37 months. Distribution The number of siblings in the case and control groups was the majority in the category of no siblings, namely 32 respondents.

Based on the results of the study, the characteristics of the respondent's parents were obtained based on father's education, mother's education, father's income and mother's income which can be seen in the table below:

Table 2. Frequency Distribution of Parental Characteristics

Characteristics	Case Group		Control Group		Total	%
	n	%	n	%		
Father's Education						
No school	0	0	0	0	0	100
SD	3	8.6	6	17.1	9	100
Junior High School	6	17.1	12	34.3	18	100
Senior High School	18	51.4	10	28.6	28	100
DIV/S1	8	22.9	7	20.0	15	100
Mother's Education						
No school	0	0	3	8.6	3	100
SD	0	0	7	20.0	7	100
Junior High School	5	14.3	12	34.3	17	100
Senior High School	25	71.4	11	31.4	36	100
DIV/S1	5	14.3	2	5.7	7	100
Father's income						
Low (<UMP)	19	54.3	28	80.0	47	100
Height (>UMP)	16	45.7	7	20.0	23	100
Mother's income						
Low (<UMP)	15	42.9	8	22.9	23	100
Height (>UMP)	20	57.1	27	77.1	42	100
Total	35	50	35	50	75	100

Table 3. Frequency Distribution of Children's Nutritional Status

Nutritional status	Case Group		Control Group		Total	%
	n	%	n	%		
Normal	24	68.6	10	28.6	34	100
Wasting	11	31.4	25	71.4	36	100
Total	35	50	35	50	70	100

Source: Primary Data, 2022

The results showed that the majority of the nutritional status of the control group was in the normal nutritional status category (68.6 %). While the majority of the case group was in the wasting nutritional status category (71.4 %). Based on the results of the Chi-Square test, the p-value = 0.001 (p <0.05) which means that there is a significant relationship between the nutritional status of toddlers and picky eaters in toddlers with an Odd Ratio (OR) of 5.455, which means that the nutritional status of toddlers

5.455 times more at risk of causing picky eaters in toddlers.

The results of this study are in line with the research⁹, there is a relationship between picky eater behavior and nutritional status in pre-school-age children. According to Nutritional status is a picture of a person's condition as a result of consumption, use and absorption of food. The state of the child's nutritional status is influenced by eating habits that are applied daily in the family.¹⁰ Nutritional

status is influenced by two factors, namely food consumption and health. Food consumption is influenced by nutrients in food, family feeding programs, eating habits, health maintenance, family purchasing power, physical environment.¹¹

Diet in preschool children plays an important role in the growth process in preschool children, because food contains lots

of nutrients. Nutrients have a close relationship with health and intelligence as well as the growth and development of children. If the diet is not achieved properly in preschool children, the growth period will be disrupted. So that it can cause thin, short bodies, and even malnutrition can occur in preschool aged children.¹³

Table 5. Cross tabulation between nutritional status and cases of picky eaters in toddlers

Nutritional Status of Toddlers	Case Group		Control Group		Σ	%	p-values	OR
	n	%	n	%				
Normal	24	68.6	10	28.6	34	100	0.001	5.455
Wasting	11	31.4	25	71.4	36	100		
TOTAL	35	50	35	50	70	100		

Based on Table 6, it shows the nutritional status of toddlers in the control group is in the category of normal nutritional status. Case group with wasting nutritional status category. Based on the results of the Chi-Square test, the p-value = 0.001 (p <0.05) which means that there is a significant relationship between the nutritional status of toddlers and picky eaters in toddlers with an Odd Ratio (OR) of 5.455, which means that the nutritional status of toddlers 5.455 times more at risk of causing picky eaters in toddlers. Based on Table 7, it shows that the macro-carbohydrate nutrient intake variable in the control group is in the good category. While the case group is in the less category. Based on the results of the Chi-Square test, the p-value = 0.001 (p <0.05) which means that there is a significant relationship between carbohydrate intake and picky eater cases in toddlers with an Odd Ratio (OR) of 6.303 which means that carbohydrate intake is 6.303 times more at risk of causing picky eater in

toddlers. Variable intake of protein macronutrients in the control group was in the good category. While the case group is in the less category. Based on the results of the Chi-Square test, the p-value = 0.016 (p <0.05) which means that there is a significant relationship between carbohydrate intake and picky eater cases in toddlers with an Odd Ratio (OR) value of 3.750, which means that carbohydrate intake is 3.750 times more at risk of causing picky eater in toddlers. Variable intake of fat macronutrients in the control group is in the good category. While the case group is in the less category. Based on the results of the Chi-Square test, the p-value = 0.014 (p <0.05) which means that there is a significant relationship between fat intake and picky eater cases in toddlers with an Odd Ratio (OR) of 4.008, which means that carbohydrate intake is 4.008 times more at risk of causing picky eater in toddlers.

Table 6. Cross-tabulation between Macronutrient Intake and Picky Eater Cases in Toddlers

Intake of Macro Nutrients	Case Group		Control Group		Σ	%	p-values	OR
	n	%	n	%				
Carbohydrate								
Good	24	72.7	9	27.3	33	100	0.001	6.303
Not enough	11	29.7	26	70.3	37	100		
Proteins								
Good	21	67.7	10	32.3	31	100	0.016	3.750
Not enough	14	35.9	25	64.1	39	100		
Fat								
Good	19	70.4	8	29.8	27	100	0.014	4.008
Not enough	16	37.2	27	62.8	43	100		
TOTAL	35	50	35	50	70	100		

Based on Table 7, it shows that the macro-carbohydrate nutrient intake variable in

the control group is in the good category. While the case group is in the less category. Based

on the results of the Chi-Square test, the p-value = 0.001 (p <0.05) which means that there is a significant relationship between carbohydrate intake and picky eater cases in

toddlers with an Odd Ratio (OR) of 6.303 which means that carbohydrate intake is 6.303 times more at risk of causing picky eater in toddlers.

Table 7. Cross Tabulation between Toddler Eating Behavior and Picky Eater Cases in Toddlers

Toddler Eating Behavior	Case Group		Control Group		Σ	%	p-values	OR
	n	%	n	%				
FR (Food Responsiveness)								
Wasting Risk	18	36.7	31	63.3	49	100	0.002	0.137
Obesity Risk	17	81	4	19	21	100		
EOE (Emotional Overeating)								
Wasting Risk	18	34	35	66	53	100	0.000	0.340
Obesity Risk	17	100	0	0	17	100		
EOF (Enjoyment of Food)								
Wasting Risk	16	34	31	66	47	100	0.000	0.109
Obesity Risk	19	82.6	4	17.4	23	100		
DD (Desire of Drink)								
Wasting Risk	19	35.2	35	64.8	54	100	0.000	0.352
Obesity Risk	16	100	0	0	16	100		
SR (Satiety Responsiveness)								
Wasting Risk	16	45.7	32	91.4	48	100	0.000	0.079
Obesity Risk	19	54.3	3	8.6	22	100		
SE (Slowness in Eating)								
Wasting Risk	18	51.4	31	88.6	49	100	0.001	0.137
Obesity Risk	17	48.6	4	11.4	21	100		
EUE (Emotional Under Eating)								
Wasting Risk	19	54.3	35	100	44	100	0.000	0.352
Obesity Risk	16	16	0	0	16	100		
FF (Food Business)								
Wasting Risk	18	51.4	35	100	53	100	0.000	0.340
Obesity Risk	17	48.6	0	0	17	100		
TOTAL	35	50	35	50	70	100		

Variable intake of protein macronutrients in the control group was in the good category. While the case group is in the less category. Based on the results of the Chi-Square test, the p-value = 0.016 (p <0.05) which means that there is a significant relationship between carbohydrate intake and picky eater cases in toddlers with an Odd Ratio (OR) value of 3.750, which means that carbohydrate intake is 3.750 times more at risk of causing picky eater in

toddlers. Variable intake of fat macronutrients in the control group is in the good category. While the case group is in the less category. Based on the results of the Chi-Square test, the p-value = 0.014 (p <0.05) which means that there is a significant relationship between fat intake and picky eater cases in toddlers with an Odd Ratio (OR) of 4.008, which means that carbohydrate intake is 4.008 times more at risk of causing picky eater in toddlers. Picky eating

behavior occurs when children reach the age of 2 to 3 years (Utami, 2016). The preschool group also tends to experience a decrease in appetite (Adriani and Wirjatmadi, 2012). According to eating problems in children are more associated with reduced food intake, so that nutritional needs are not met which results in nutritional deficiencies (malnutrition).¹⁴

Measurement of picky eating behavior or not by using the Child's Eating Behavior Questionnaire (CEBQ) questionnaire. This questionnaire consists of 35 questions divided into 8 subcategories, namely Food responsiveness (FR), Emotional over-eating (EOE), Enjoyment of food (EF), Desire to drink (DD), Satiety Responsiveness (SR), Slowness in eating (SE), Emotional under-eating (SUE), and Food fussiness (FF). A child is said to be picky eating if the total score for the Food fussiness (FF) subcategory is more than Food responsiveness (FR).¹⁷ Various factors can affect the picky food in children. This factor is a complex interaction between genetic factors and environmental factors which can be classified into several groups, namely (a) genetic (affecting behavioral characteristics, neurobiological and psychological effects), (b) prenatal (sensory experience in utero; maternal nutrition), (c) early postnatal experience (formula feeding; weaning practices), (d) family diet (food choices, food portions), (e) family environment (social, economic, number of siblings).¹⁵

Based on Table 8, it shows that the eating behavior variable for toddlers on the FR (Food Responsiveness) subscale in the case and control groups is in the wasting risk category and based on the results of the Chi-Square test the p-value = 0.002 ($p < 0.05$) which means there is a significant relationship between the eating behavior of toddlers on the FR (Food Responsiveness) subscale and the case of picky eaters in toddlers with an Odd Ratio (OR) value of 0.137 which means that FR (Food Responsiveness) is 0.137 times more at risk of causing picky eaters in toddlers.

The eating behavior variable of the EOE (Emotional Over-eating) subscale in the case and control groups is in the wasting risk category and based on the results of the Chi-Square test the p-value = 0.000 ($p < 0.05$) which means there is a significant relationship between eating behavior of toddlers on the EOE (Emotional Over-eating) subscale with picky eater cases in toddlers with an Odd Ratio (OR) value of 0.340 which means that EOE (Emotional Over-eating) is 0.340 times more at risk of causing picky eaters in toddlers. The eating behavior variable under the EOF

(Enjoyment of Food) subscale in the control group is in the obesity risk category, while the case group is in the wasting risk category and based on the results of the Chi-Square test p-value = 0.000 ($p < 0.05$) which has This means that there is a significant relationship between the eating behavior of toddlers on the EOF (Enjoyment of Food) subscale and the case of picky eaters in toddlers with an Odd Ratio (OR) value of 0.109, which means that EOF (Enjoyment of Food) is 0.109 times more at risk of causing picky eaters in toddlers.

The eating behavior variable under the DD (Desire of Drink) subscale in the case and control group is in the wasting risk category and based on the results of the Chi-Square test the p-value = 0.000 ($p < 0.05$) which means there is a significant relationship between behavior eat toddlers DD (Desire of Drink) subscale with picky eater cases in toddlers with an Odd Ratio (OR) value of 0.352, which means that DD (Desire of Drink) is 0.352 times more at risk of causing picky eaters in toddlers. The SE (Slowness in Eating) subscale eating behavior variable in the control group is in the obesity risk category, while the case group is in the wasting risk category and based on the results of the Chi-Square test p-value = 0.000 ($p < 0.05$) which has means that there is a significant relationship between the eating behavior of toddlers on the SE subscale (Slowness in Eating) with the case of picky eaters in toddlers with an Odd Ratio (OR) value of 0.076, which means that SR (Satiety Responsiveness) is 0.076 times more at risk of causing picky eaters in toddlers.

The eating behavior variable of the EUE subscale (Emotional Under-Eating) in the case and control groups is in the wasting risk category and based on the results of the Chi-Square test the p-value = 0.000 ($p < 0.05$) which means there is a significant relationship between eating behavior of toddlers on the EUE (Emotional Under-Eating) subscale with picky eater cases in toddlers with an Odd Ratio (OR) value of 0.352, which means that EUE (Emotional Under-Eating) is 0.352 times more at risk of causing picky eaters in toddlers. The eating behavior variable under the FF (Food Business) subscale in the case and control groups is in the wasting risk category and based on the results of the Chi-Square test the p-value = 0.000 ($p < 0.05$) which means there is a significant relationship between eating behavior toddlers on the FF (Food Business) subscale with cases of picky eater in toddlers with an Odd Ratio (OR) value of 0.340, which means that FF (Food Business) is 0.340 times more at risk of causing picky eaters in toddlers.

Picky eating behavior consumes less

quantity of fruits and vegetables and in some cases, other types of food such as fish and meat. Picky eating can lead to deficiencies or deficiencies of certain nutrients, for example vitamins, magnesium (Mg), iron (Fe), and other micronutrients which can cause children's growth to be disrupted and result in the risk of malnutrition. Picky eater behavior makes it difficult for children to accept food. Children become fussy when given food that is not according to their wishes, so that children do

not enjoy the food served.¹⁵ However, this research is not in line with the research which states that there is no relationship between picky eating behavior and nutritional status with weight-for-age nutritional status.¹⁶ Picky eater behavior is indeed normal behavior that usually occurs in children, especially in groups of children aged 3-5 years, but picky eater behavior does not often create health or social problems.²⁰

Table 9. Results of Selection Modeling of Binary Logistic Regression Analysis

No	Variable	B	SE	Wald	df	sign	Exp (B)
1	Nutritional Status of Toddlers	1696	0.522	10.558	1	0.001	3.538
2	Carbohydrate Intake	1841	0.531	12.013	1	0.001	6.303
3	Protein Intake	1.322	0.509	6.744	1	0.009	3.750
4	Fat Intake	1.388	0.526	6.953	1	0.008	4.008
5	FR (Food Responsiveness)	-1.991	0.630	9.990	1	0.002	0.137
6	EOE (Emotional Overeating)	-21.868	9,748	0.000	1	0.998	0.000
7	EOF (Enjoyment of Food)	-2.220	0.630	12.397	1	0.000	0.109
8	DD (Desire of Drink)	2.154	0.602	12.789	1	0.000	8.615
9	SR (Satiety Responsiveness)	-2.539	0.693	13.438	1	0.000	0.079
10	SE (Slowness in Eating)	-1.991	0.630	9.990	1	0.002	0.137
11	EUE (Emotional Under-Eating)	-21.814	1,084	0.000	1	0.998	0.000
12	FF (Food Business)	2.752	0.602	0.889	1	0.998	8.615

Source: Primary Data Selection Result of Binary Logistic Regression Analysis Modeling

The results of the Binary Logistic Regression analysis test in Table 9 show that what meets the modeling requirements is a significant value <0.25, namely nutritional status, carbohydrate intake, protein intake, fat intake, FR (Food Responsiveness), EOF (Enjoyment of Food), DD (Desire of Drink), SR (Satiety Responsiveness) and SE (Slowness in Eating). At the age of 0-48 months, the average baby's weight increases by 0.23 kg and adds 1 cm in height each month. Whereas at preschool age they only gain 2 kg in weight and 7 cm in height per year. This decrease is caused by a decrease in appetite and intake. This condition is considered normal at preschool age, but if the condition is deficient in long-term intake, it will interfere with the growth and development of children. With the behavior of choosing food and avoiding food by individuals, it is likely that children with this behavior experience a deficiency or excess of nutritional intake.²¹

About 22.87% of children with picky eater behavior have Z-score values for weight for age (BB/A), height for age (TB/A) and weight for height (BB/TB) lower than children who do not picky eaters.²¹ Most of the respondents have Picky eating behavior which is quite risky. Children who often choose food will experience health problems. The results of Kutbi's research

found that children with higher levels of picky eating exhibit unhealthy dietary behaviors. Feeding difficulties in children at high risk of becoming malnourished with age. This can be identified and followed up early through measuring the nutritional status of children with eating difficulties in order to avoid one of the complications, namely malnutrition.²²

According to the Indonesian Pediatrician Association picky eaters mean that children want to eat various types of food, both familiar and unknown, but refuse to consume in sufficient quantities. In addition to insufficient amounts, picky eaters are also related to the taste and texture of food. Even though they are picky eaters, picky eaters still want to eat at least one type of food from each group of carbohydrates, protein, vegetables/fruits and milk.²³ There are 71.4 % picky eating toddlers with wasting nutritional status . The results of this study also show that children who have picky eating are related to intake of carbohydrates, protein and fat. Picky eater children tend to eat less vegetables, fruit, fish and rice. However, they do consume milk, biscuits, wafers, meatballs, nuggets, chicken and fried foods. Low intake of vegetables and fruit that are high in vitamins and minerals can cause individuals not to meet daily

micronutrient needs Consumption of milk is very important for calcium, but excess drinking of milk can cause a decrease in appetite and intake of other foods. Most of the foods that are high in fiber and carbohydrates tend to be little consumed. Internal factors that influence children not to like these foods are due to the texture which makes it difficult for children to chew. Children's dislike of color, taste and sensitivity to food and external factors include the type of food consumed by children which can be influenced by the environment. also enjoy a varied diet.²⁸

CONCLUSION

The conclusion of this study shows the relationship between the nutritional status of toddlers, intake of carbohydrates, protein, fat and behavior with the incidence of picky eaters. The results of the Binary Logistic Regression analysis test namely nutritional status, carbohydrate intake, protein intake, fat intake, FR (Food Responsiveness), EOF (Enjoyment of Food), DD (Desire of Drink), SR (Satiety Responsiveness) and SE (Slowness in Eating). Logistic Regression Test with Exp (B) values respectively carbohydrate intake and protein intake.

REFERENCES

1. Hardiansyah, Supariasa. *Penilaian Status Gizi*. Jakarta: ECG; 2017.
2. Setyaningrum. *Penentuan Fraksi Aktif Ekstrak Temulawak (Curcuma Zanthorrhiza) sebagai Antioksidan*. Bogor. Fakultas Matematika Dan Ilmu Pengetahuan Alam; 2018.
3. Par'i, HM, Wiyono S, Harjatmo TP. *Bahan Ajar Gizi Penilaian Status Gizi*. (Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan; 2017.
4. ACS. *MODULE 2. Nutrition Assessment and Classification*. Nutr. Assessment, Couns. Support; 2016.
5. Unicef, World Health Organization & The World Bank. *Joint Child Malnutrition Estimates: Levels and Trends in Child Malnutrition*. 35; 2018.
6. Pusat Data dan Informasi Kementerian Kesehatan RI. *Situasi Gizi di Indonesia*; 2016.
7. Kementerian Kesehatan RI. *Panduan Penyelenggaraan Pemberian Makanan Tambahan Pemulihan Bagi Balita Gizi Kurang (Bantuan Operasional Kesehatan)*. Ditjen Bina Gizi dan Kesehat. Ibu dan Anak Kementeri. *Kesehat. RI* 1–40; 2015.
8. Republik Indonesia. *Pedoman Perencanaan Program Gerakan Nasional Percepatan Perbaikan Gizi Dalam Rangka Seribu Hari Pertama Kehidupan*; 2013.
9. Kementerian Sosial RI. *Modul Kesehatan dan Gizi*. Progr. Kel. Harapan Kementeri. Sos. RI 1–117; 2018.
10. DeBoer MD. et al. *Early Childhood Growth Failure and The Developmental Origins of Adult Disease: Do Enteric Infections and Malnutrition Increase Risk for The Metabolic Syndrome?* *Nutr. Rev.* 2012; 70: 642–53.
11. Bentian I, Mayulu N, Rattu AJM. *Faktor Resiko Terjadinya Stunting pada Anak Tk di Wilayah Kerja Puskesmas Siloam Tamako Kabupaten Kepulauan Sangihe Propinsi Sulawesi Utara*. JIKMU. 2017; Vol: 5(1).
12. *Riset Kesehatan Dasar*. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI; 2018.
13. *Puskesmas Guntung Payung (2021) Banjarbaru*.
14. *Balitbangkes. Riset Kesehatan Dasar 2013*; 2013.
15. World Health Organization. *Country Profile Indicators Interpretation Guide*. *Nutr. Landcape Inf. Syst.* 2010; 1–51.
16. Pusat Data dan Informasi Kementerian Kesehatan RI. *Situasi Balita Pendek (Stunting) di Indonesia*. *Jendela Data dan Inf. Kesehat.* 1, 2; 2018.
17. *Riset Kesehatan Dasar*. 2018. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI.
18. Septiana AT, Handayani I, Inarsi H. *Aktivitas antioksidan dan sifat fisikokimia madu temulawak (curcuma zanthorrhiza roxb) yang ditambah ekstrak jahe (zingiber officinale rosc)*. *Jurnal Aplikasi Teknologi Pangan*. 2019; 8(4): 155-60.
19. Rizka I, Nuzulia, Machdawaty. *Hubungan antara Higiene Perorangan Dengan Infeksi Kecacingan Usus (Soil Transmitted Helmiths) Pada Siswa SDN 25 dan 28 Kelurahan Purus, Kota Padang, Sumatera Barat Tahun 2013*. *Jurnal Kesehatan Andalas*. 2016; 5(3).
20. Rahim F. *Faktor Risiko Underweight Balita Umur 7-59 Bulan*. *Jurnal Kemas* 9. 2017.2: 115-21.
21. Diniyyah SR, Nindya TS. *Asupan energi, protein dan lemak dengan kejadian gizi kurang pada balita usia 24-59 bulan di Desa Suci, Gresik*. *Amerta Nutrition*. 2017; 1(4); 341-50.
22. Renny F, Arief YS, Armini NKA. *Curcuma and Honey Increases Body Weight of Toddler*. *Jurnal Ners*. 2020; 5(1): 49-54.
23. Wardani MS. *Faktor-Faktor Yang Mempengaruhi Status Gizi Balita Di RW 06 Kelurahan Pancoran Mas Kecamatan*

- Pancoran Mas – Depo; 2012.
24. Patimah S. Gizi Remaja Putri Plus 1000 Hari Pertama Kehidupan. Bandung: PT Refika Aditama; 2017.
 25. Kementerian Kesehatan RI. Situasi Diare di Indonesia. Bul. Jendela Data dan Inf. Kesehat. 2011. 2: 1–44.
 26. Adriani M, Wijatmadi B. Peranan Gizi dalam Siklus Kehidupan. Jakarta: Kencana Prenada Media Grup; 2014.
 27. Wati SP. Hubungan Tingkat Pendidikan, Pengetahuan Ibu dan Pendapatan Orangtua dengan Status Gizi Anak Balita Usia 1-5 tahun di Desa Duwet Kecamatan Wonosari Kabupaten Klaten: Universitas Muhammadiyah Surakarta; 2018.
 28. Nurina R. Program Pemberian Makanan Tambahan untuk Peningkatan Status Gizi Ibu Hamil dan Balita di Kecamatan Cilamaya Kulon dan Cilamaya Wetan. J.CARE. 2016; 1: 44–49.