

## THE RELATIONSHIP BETWEEN FOOD CONSUMPTION PATTERNS AND STUNTING TODDLERS IN HULU SUNGAI UTARA REGENCY

Ahmad Suhaimi<sup>1</sup>, Muhammad Aldy<sup>2</sup>, Yudhi Harianto<sup>3</sup>

<sup>1,2,3</sup>

Agribusiness Study Program, Sekolah Tinggi Ilmu Pertanian (STIPER) Amuntai

Correspondence Email : [ahmad99ec@gmail.com](mailto:ahmad99ec@gmail.com)

### Abstract

This research aims to assess food consumption patterns in families with toddlers and their correlation with stunting among toddlers in Hulu Sungai Utara Regency, South Kalimantan Province. The study uses quantitative descriptive methods, including observation, interviews, note-taking, and 24-hour dietary recalls. It employs the Expected Food Pattern (EFP) approach to evaluate toddler food consumption patterns and Chi-Square analysis to explore links between these patterns and stunting. Food consumption patterns vary due to regional resources and cultural norms. Toddlers' average daily energy intake is 1222.7 kcal per capita, with a final EFP score of 83.5, indicating sufficiency but calling for more diversity. Higher EFP scores represent better dietary diversity and nutritional balance (max 100). Cereal foods contribute the most (43.8% % EAR), followed by oils and fats (12.1%), and animal-based foods (10.6%). Conversely, sugar (1.8%) and oily fruit seeds (4.1%) have the lowest % EAR. Chi-Square analysis reveals a significance level of 0.00 (<0.05), rejecting the null hypothesis (H<sub>0</sub>). Hence, a connection between Expected Food Pattern (EFP) and stunting in North Hulu Sungai Regency is established.

Keywords : *Family, Food Consumption Patterns, Stunting, Toddlers.*

### 1. INTRODUCTION

Food consumption in Indonesia has its own issues, and in an effort to address these problems, the government has initiated a food consumption diversification program. This can be seen from secondary data and various relevant agencies. The results indicate that efforts to diversify food consumption have not yet met expectations. The food consumption pattern known in Indonesia shows that rice is consumed by the majority of the population as one of the main staple foods, while others eat rice together with other cereals and tubers, which are essential for supplying adequate energy (Suhaimi, 2019). The consumption patterns of communities vary from one region to another, which can be observed based on the local potentials and cultural structures of the society. In general, people tend to have the habit of considering rice as their primary source of carbohydrates. Food consumption patterns are significantly influenced by cultural traditions and customs (Tan et al., 1970). According to (Pranadji, 1988), Food consumption pattern is defined as the variety of foods typically consumed by families or communities in their daily meals. The habit of prioritizing taste and satiety in food consumption can lead to insufficient nutrient intake and an increased risk of infectious diseases. When an individual lacks adequate food intake, it can weaken their immune system and make them more susceptible to illnesses. Inadequate food intake can result from a lack of available food, leading to a situation where there is no food to consume (Murdiati, 2013).

The availability of food in Hulu Sungai Utara Regency includes food crops, horticulture, plantations, livestock, and fisheries, covering an area of 147.55 square kilometers. The food crops produced are rice and corn. In terms of horticulture, the most significant annual fruit and vegetable crops produced in this district are mangoes, jackfruits, soursops, bananas, sapodillas, oranges, and papayas. The dominant plantation crop is coconut. Livestock in the Danau Panggang Subdistrict includes cattle, buffaloes, goats, and free-range chickens for poultry. The fisheries production is primarily composed of capture fisheries.

Toddlers who experience growth stunting are often the result of inadequate food intake, recurrent infectious diseases, increased metabolic needs, and reduced appetite. These factors contribute to a higher prevalence of malnutrition in children. This situation further complicates efforts to address growth disturbances and increases the likelihood of stunting (Sardjito, 2015). Stunting is a chronic malnutrition issue caused by prolonged inadequate nutrient intake, typically resulting from inappropriate feeding practices that do not meet nutritional needs over an extended period (Desreza & Mulfianda, 2022). The prevalence of stunting in Hulu Sungai Utara Regency is still relatively high, reaching 25.44% with a target population of 1,467 toddlers. The prevalence of wasting is 6.12%, and the prevalence of underweight is 23.78%. Therefore, the researcher chose Danau Panggang Subdistrict as the research location. Based on the information provided, the high percentage of stunting in Danau Panggang Subdistrict led the researcher to investigate whether there is a correlation between food consumption patterns using the EFP score approach and stunting. Hence, the research is titled "The Relationship Between Food Consumption Patterns and Stunting Incidence Among Toddlers in Hulu Sungai Utara Regency."

The goals of this study are to comprehend the food consumption patterns of families with toddlers in Hulu Sungai Utara Regency and to establish a link between those patterns and the prevalence of stunting in that region's toddler population. This study is important because it advances our understanding of the dietary customs of Hulu Sungai Utara Regency households, particularly those with young children. This study offers important information that can guide public health initiatives and policies targeted at enhancing child nutrition and well-being in the area by examining potential links between these dietary patterns and the prevalence of stunting.

## 2. IMPLEMENTATION METHOD

This research was conducted in the Hulu Sungai Utara Regency's Danau Panggang Subdistrict. The research process had several stages, including planning, gathering data, processing it, and writing the report, and it lasted from January 2022 until it was finished. Both primary and secondary data sources were used in the study. Direct interviews with moms or other toddler carers using a pre-made questionnaire were used to collect primary data. On the other hand, secondary data came from pertinent organizations.

Techniques like observation, interviews, recording, and a 24-hour dietary recall were used to acquire the data. The dietary recall approach, which involved documenting the types and amounts of food consumed within the previous 24-hour period, was used to gather data on toddlers' eating patterns (Supariasa et al., 2002). The sample selection process involved determining the sample size for the t-test using G\*Power software, resulting in a total sample of 1,287 toddlers (comprising 239 stunted toddlers and 1,048 normally developing toddlers). From this population, 114 toddlers were selected as respondents for this study, with an equal distribution of 57 stunted toddlers and 57 normally developing toddlers.

### Family Food Consumption Patterns for Toddlers

To determine the family's food consumption patterns, we utilized the Expected Food Pattern (EFP) approach. Various types of food were converted into a common unit, which is grams per day. The formula utilized to tackle this initial objective aligns with the calculation process outlined in (IX, 2018) and comprises the subsequent steps:

- a. Grouping of foods.
- b. Conversion of forms, types, and units.
- c. Calculation of subtotals for energy content by food group.
- d. Calculation of the actual total energy from all food groups.
- e. Calculation of the energy contribution from each food group to the total actual energy (%).
- f. Calculation of each food group's energy contribution to the Energy Adequacy Figure (EAF) for toddlers.
- g. Calculation of the actual score.

- h. Calculation of the Energy Adequacy Rate (EAR) score.
- i. Calculation of the Expected Food Pattern (EFP) score.
- j. Calculation of the total EFP score.

According to Hardinsyah (1996), the four categories used to classify EFP scores are very low (<55%), low (55-69%), moderate (70-84%), and high (≥85%). The food diversity standard is indicated by a maximum EFP score of 100.

### The Relationship Between Food Consumption Patterns and Stunting

To understand the relationship between food consumption patterns and stunting in toddlers, we employed Bivariate Chi-Square analysis to examine whether there is an association between food consumption patterns and the occurrence of stunting in Hulu Sungai Utara District. The formula for this analysis is as follows:

$$\chi^2 = \frac{\sum(O_i - E_i)^2}{E_i}$$

Description:

$\chi^2$  = Chi-Square

$O_i$  = Frequency of Observation

$E_i$  = Frequency of Expectation

$D_k$  = k-1

The testing criteria are to reject  $H_0$  if  $\chi^2 \geq \chi^2(1-\alpha)(k-1)$ , and otherwise,  $H_0$  is accepted, where  $\alpha$  represents the significance level of the test (Susetyo, 2010). According to Bimo (2013), to assist in decision-making in SPSS, there are several guidelines for conducting the chi-square test, including:

1. If you have a 2x2 contingency table and there are no Expected values below 5, it is advisable to use Continuity Correction.
2. If you have a 2x2 contingency table and there are Expected values below 5, it is advisable to use the Fisher's Exact Test.
3. If you have a contingency table larger than 2x2, such as 2x3, 3x3, or 3x4, it is advisable to use Pearson's Chi-Square.
4. Likelihood Ratio and Linear-by-Linear Association tests are used for more specific purposes, such as epidemiological analysis and assessing the linear relationship between two categorical variables.

To simplify the Chi-Square analysis, especially when each variable has only a few categories, the data values for the variables can be presented in a table format, as shown in Table 1 below:

**Table 1.** Chi Square Contingency Analysis

Food Consumption Patterns	Nutrition Status		Total
	Not Stunted	Stunting	
Good	a	b	a+b
Fair	c	d	C+d
Low	e	f	e+f
Very Low	g	h	g+h
Total	a+c+e+g	b+d+f+h	N

The choice to utilize Pearson Chi-Square is made since the table is larger than 2x2 and based on Table 3 and the applicable standards for the Chi-Square test. The Pearson Chi-Square's significance value is 0.00, which means that the chi-square's significance value is 0.05. As a result, the alternative hypothesis (H1) is accepted and the null hypothesis (H0) is rejected. This suggests that the Expected Food Pattern (EFP) and the prevalence of stunting in the Hulu Sungai Utara District are related.

### 3. RESULTS AND DISCUSSION

#### 3.1 Result

##### Family Food Consumption Pattern

The research results regarding family food consumption patterns in toddlers in Hulu Sungai Utara Regency were obtained using the Expected Food Pattern (EFP) approach. This was achieved through the principles of the 24-hour recall method, which involved recording the types and quantities of food consumed in the previous 24 hours. The EFP scores for toddlers in the research area can be found in the following Table 2:

**Table 2.** The Expected Food Pattern (EFP) scores for toddlers in Hulu Sungai Utara Regency

EFP Score Calculation										
No	Food Group	Calories	%	% Energy Adequacy Rate (%EAR)	Weight	Actual Score	EAR Score	Max Score	Gap between EAR Score and Max Score	EFP Score
1	Grains	613	50.1	43.8	0.5	25.1	21.9	25	-3.1	21.9
2	Tubers	22.9	1.9	1.6	0.5	0.9	0.8	2.5	-1.7	0.8
3	animal-based food	148.5	12.1	10.6	2	24.3	21.2	24	-2.8	21.2
4	Oils and Fats	168.7	13.8	12.1	0.5	6.9	6.0	5	1.0	5
5	Oily Fruits/Seeds	58	4.7	4.1	0.5	2.4	2.1	1	1.1	1
6	Nuts	61.3	5.0	4.4	2	10.0	8.8	10	-1.2	8.8
7	Sugar	24.7	3.6	1.8	0.5	1.8	0.9	2.5	-1.6	0.9
8	Vegetable and Fruit	67	5.5	4.8	5	27.4	23.9	30	-6.1	23.9
9	Others	58.6	4.8	4.2	0	0.0	0.0	0	0.0	0
	Total	1222.7	101.6	87.3	11.5	98.8	85.6	100.0	-14.4	83.5

Source: Primary Data Processing, 2022

Based on Table 2, we can conclude that the average consumption of cereal foods reaches a calorie amount of 613 with a percentage of 50.1% and a EFP score of 21.9. This indicates insufficient consumption of cereal foods in toddlers, as it is still below the ideal cereal food score of 25. The cereal food group itself includes rice and its derivatives, corn and its derivatives, wheat and its derivatives. In the Hulu Sungai Utara District, the cereal food group, specifically rice, is widely found in the region, so it is possible that cereal food types, such as rice, should be consumed more by toddlers. Therefore, the cereal food group needs to be increased to meet the ideal EFP score. The tuber food group has an average consumption of 22.9 calories with a percentage of 1.9% and a EFP score of 0.8. This indicates insufficient consumption of tuber foods in toddlers, as it is still below the ideal tuber food score of 25. Consumption of tuber foods by respondents is mostly

cassava and its derivatives, so it needs to be increased and reintroduced to toddlers to meet their energy needs.

The animal-based food group has an average consumption of 148.5 calories with a percentage of 12.1% and a EFP score of 21.2. This indicates insufficient consumption of animal-based foods in toddlers, as it is still below the ideal score of 24. The animal-based food group includes meat and its derivatives, fish and its derivatives, eggs, and milk and its derivatives, which are consumed by toddlers, but the need for animal-based food is still lacking and needs to be increased to meet toddlers' energy needs. The oil and fat food group has an average consumption of 168.7 calories with a percentage of 13.8% and an EAR score of 6. This indicates that the standard consumption of oil and fat food in toddlers has already been met, as the maximum EFP score is 5. However, it needs to be reduced to balance the energy intake of toddlers. Later, the fruit/oily seed food group has an average consumption of 58 calories with a percentage of 4.7% and an EAR score of 2.1. This indicates that the standard consumption of fruit/oily seed food in toddlers has already been met, as the maximum EFP score is 1. Consumption of fruit/oily seeds, such as chocolate, is favored by toddlers but needs to be reduced to balance their energy intake.

The fruit/oily seed food group itself includes coconut and its derivatives, candlenut, and chocolate. The legume food group has an average consumption of 61.3 calories with a percentage of 5% and a EFP score of 8.8. This indicates insufficient consumption of legume foods in toddlers, as it is still below the ideal score of 10. The preferred legume foods consumed more are tempeh and tofu, so it needs to be increased to introduce this type of food to toddlers to meet their energy needs and diversify their diet. Subsequently, the sugar food group has an average consumption of 24.7 calories with a percentage of 2.0% and a EFP score of 0.9. This indicates insufficient consumption of sugar foods in toddlers, as it is still below the ideal score of 10. To meet the nutritional needs of toddlers and achieve a balanced diet, sugar consumption must be increased. The sugar food group itself includes granulated sugar, brown sugar, syrup, and bottled/canned beverages. The vegetable and fruit food group has an average consumption of 67 calories with a percentage of 5.5% and a EFP score of 23.9. This indicates insufficient consumption of vegetables and fruits in toddlers, as it is still below the ideal score of 10. Among this food group, bananas are the most consumed fruit by toddlers, while dominant vegetables include corn, green beans, and long beans. Some toddlers may not like vegetables, so mothers play a crucial role in educating and introducing the vegetable and fruit food group, which is essential for our health. The other food group has an average consumption of 58.6 calories with a percentage of 4.8% and a EFP score of 0. Toddlers frequently consume snacks and other items that do not contribute to the EFP score in this category. The other food group includes various beverages and spices such as cloves, coriander, pepper, nutmeg, tamarind, and cooking herbs.

According to Table 2, the cereal food group has the highest contribution with the highest % EAR value, reaching 43.8%, followed by oil and fat with a % EAR of 12.1%, and animal-based food with a % EAR value of 10.6%. Meanwhile, the lowest % EAR values are found in the tuber food group (1.6%) and sugar (1.8%). Based on Table 2, the average energy consumption of toddlers in Danu Panggang Sub-District is 1222.7 kcal/cap/day with a EFP score of 83.5. This indicates a low level of dietary diversity among toddlers in Danu Panggang Sub-District, with a final EFP score of 83.5, which falls into the "sufficient" category according to Hardinsyah (1996). The EFP score for toddlers in Danu Panggang Sub-District is 83.5. This score exceeds the target EFP score for Hulu Sungai Utara District and surpasses the actual EFP score based on the 2021 food consumption survey, which achieved 82.3 out of the target score of 82. This indicates that the food consumption in Danu Panggang Sub-District is higher than the EFP score in Hulu Sungai Utara District, primarily due to higher consumption of cereal foods, oil and fat, and fruit/oily seeds compared to the food consumption in Hulu Sungai Utara District.

**The Relationship Between Food Consumption Patterns and Stunting**

The research results on the relationship between food consumption patterns and the occurrence of stunting in toddlers in the Danau Panggang Sub-District of Hulu Sungai Utara District, using Chi-Square analysis in SPSS, can be seen in the following Table 3:

**Table 3.** Relationship between Food Consumption Patterns and the Incidence of Stunting in Toddlers  
EFP Category \* Nutritional Status Crosstabulation

		Nutrition Status			
		Not Stunted	Stunting	Total	
EFP Category	Good	Count	4	0	4
		Expected Count	2.0	2.0	4.0
		% with in EFP Category	100.0%	0.0%	100.0%
	Enough	Count	30	3	33
		Expected Count	16.5	16.5	33.0
		% with in EFP Category	90.9%	9.1%	100.0%
	Low	Count	21	23	41
		Expected Count	20.5	20.5	41.0
		% with in EFP Category	51.2%	48.8%	100.0%
	Very Low	Count	2	34	36
		Expected Count	18.0	18.0	36.0
		% with in EFP Category	5.6%	94.4%	100.0%
Total	Count	57	57	114	
	Expected Count	57.0	57.0	114.0	
	% with in EFP Category	50.0%	50.0%	100.0%	
Chi-Square Test					
		Value	df	Asymp. Sig. (2-sided)	
Person Chi-Square		54.560 <sup>a</sup>	3	0.000	
Likelihood Ratio		65.670	3	0.000	
Linier-By-Linier Association		52.484	1	0.000	
N of Valis Cases		114			

Source: Primary Data Processing, 2022

Based on Table 3, it is evident that with a total sample of 114 respondents, in the "good" category of nutritional status, there are 4 samples without stunting and 0 samples with stunting. In

the "fair" category, there are 30 samples without stunting and 3 samples with stunting. In the "low" category, there are 21 samples without stunting and 20 samples with stunting. In the "very low" category, there are 2 samples without stunting and 34 samples with stunting. The choice to utilize Pearson Chi-Square is made since the table is larger than 2x2 and based on Table 3 and the applicable standards for the Chi-Square test. The Pearson Chi-Square's significance value is 0.00, which means that the chi-square's significance value is 0.05. As a result, the alternative hypothesis (H1) is accepted and the null hypothesis (H0) is rejected. This suggests that the Expected Food Pattern (EFP) and the prevalence of stunting in the Hulu Sungai Utara District are related.

## 3.2 Discussion

### Family Food Consumption Patterns

The study's findings show that toddlers in the study area consume an average of 1222.7 kcal/cap/day, giving them an overall EFP score of 83.5, which falls into the "sufficient" category but is still not entirely diversified by Hardinsyah's standards. This agrees with the Food Security Agency's (2015) assertion that, up to a score of 100, the more diverse and nutritionally balanced the food consumed, the higher the EFP score. According to the study's findings, the cereal food group contributes the most, with an EAR value of 43.8%. Oil and fat are next, with an EAR value of 12.1%, and animal-based foods are last, with an EAR value of 10.6%. Meanwhile, the lowest % EAR values are found in the tuber food group (1.6%) and sugar (1.8%). These results are in line with analysis done by Fatimah (2020) which states that the EFP score for children under five in Amuntai Tengah Sub-district reached 71.4. Food consumption of toddlers in Amuntai Tengah Sub-district is still not diverse because it is still dominated by grains (66.7%) and animal-based foods (20.7%). These results also agree with research conducted by (Prasetyo et al., 2013) Among the nine food groups, it is known that the food group with the highest participation is cereals, specifically rice, which accounts for 99.4%. This indicates that the cereal food group, particularly rice, plays a significant and dominant role among the nine food groups in the Danau Panggang Sub-District, where rice serves as the main staple food. This result aligns with the opinion of Suhaimi (2019) which states that food consumption patterns in Indonesia show that rice is consumed by most of the population as one of the main staple foods, while others consume rice along with other cereals and tubers which play an important role in contributing to energy sufficiency.

Based on the research results, the average consumption of toddlers in Danu Panggang Sub-District is 1222.7 kcal/cap/day with a EFP score of 83.5. This indicates a low level of dietary diversity among family food consumption patterns for toddlers in Danau Panggang Sub-District, as the final EFP score of 83.5 falls into the "sufficient" category according to Hardinsyah's classification. This finding is consistent with research conducted by (Widyaningsih et al., 2018) In their research, they found that the average food diversity score was 4.8, indicating that the dietary intake of toddlers in the Bayat Sub-District falls into the category of limited diversity because the food diversity score is less than 5. This result aligns with previous research by (Widodo et al., 2017) indicating that the overall EFP score for children aged 0.5-1.9 years is very low, with a score of 48.7. The highest EFP score is observed in the cereal food group, while the lowest is in the fruit and oily seed food group. The EFP score for children aged 0.5-1.9 years in urban areas is higher than in rural areas. It can be observed that food consumption is still lacking in diversity, accompanied by low EFP scores, which are still below 100. These results align with the information provided (Badan Ketahanan Pangan Kementrian Pertanian, 2015), which states that the higher the EFP score, the more diverse and nutritionally balanced food consumption is (maximum 100).

### The Relationship Between Food Consumption Patterns and Stunting

Based on the research results, a total of 114 respondents were categorized as follows: in the "good" nutritional status category, there were 4 samples without stunting and 0 samples with

stunting. In the "fair" category, there were 30 samples without stunting and 3 samples with stunting. In the "low" category, there were 21 samples without stunting and 20 samples with stunting. In the "very low" category, there were 2 samples without stunting and 34 samples with stunting. Therefore, the analysis based on the Chi-Square test with a Significance value of Pearson Chi-Square being 0.00, indicates that the significance value of the chi-square is  $< 0.05$ . Thus, the null hypothesis (H<sub>0</sub>) is rejected, and the alternative hypothesis (H<sub>1</sub>) is accepted. This demonstrates a correlation between the Expected Food Pattern (EFP) and the occurrence of stunting in Hulu Sungai Utara District.

Based on the comparison of this research, it is known that there is a connection between the Expected Food Pattern (EFP) and the occurrence of stunting. This indicates that the regulation of maternal food consumption patterns can influence a toddler's nutrition. The availability of food includes staple crops, with rice and corn being the available staple commodities in the research area, although other commodities like cassava, sweet potatoes, peanuts, soybeans, and green beans are still not readily available. Horticulture includes annual fruit and vegetable crops such as mangoes, jackfruits, soursops, bananas, sapodillas, oranges, and papayas. Plantation crops are dominated by coconuts. Livestock in the research area includes cattle and buffaloes, with the most common poultry being indigenous chickens. Fishing activities mainly involve fishing in rivers. The food consumption pattern of toddlers in Danau Panggang Sub-District, as revealed by the survey, shows that on average, toddlers follow what their mothers eat. This aligns with the opinion of (Supariasa, 2005) that a child's nutritional status can be directly influenced by the food intake they consume. This is consistent with the findings of (Zahraini, 2012), which suggest that the more diverse the types of food groups consumed, the lower the likelihood of toddlers experiencing stunting.

#### **4. CONCLUSION**

The results of the inquiry into the relationship between food consumption and the prevalence of stunting in toddlers in the Hulu Sungai Utara District show that the cereal food group has the largest percentage EAR value, at 43.8%, and so has the biggest contribution. Then, oil and fat contribute with an EAR of 12.1%, followed by meals derived from animals with an EAR of 10.6%. In comparison, the dietary groups with the lowest percentage EAR values are tubers (1.6%) and sugar (1.8%). This implies that toddlers in the research area consume 1222.7 kcal/cap/day on average per day, and the final EFP score of 83.5 falls into the "sufficient" category, while not yet achieving full variety. The findings of the chi-square test analysis, which reveal that the Significance value of Pearson Chi-Square is 0.00, clearly demonstrate the relationship between food consumption and the prevalence of stunting in toddlers. This indicates that the null hypothesis (H<sub>0</sub>) is rejected because the chi-square's significance value is less than 0.05. So, in Danau Panggang Sub-District, Hulu Sungai Utara District, there is a connection between the Expected Food Pattern (EFP) and the prevalence of stunting.



## REFERENCES

- Badan Ketahanan Pangan Kementerian Pertanian. (2015). *Panduan Perhitungan Pola Pangan Harapan (PPH)*.
- Bimo, S. (2013). *Analisis Chi Square*. <http://www.statistikolahdata.com/2013/04/analisis-chi-square.html>
- Desreza, N., & Mulfianda, R. (2022). Efforts To Prevent Stunting In Families With Toddlers Based On The Planned Behavior Theory Approach In Lampulo Village, Banda Aceh City. *Pharmacology, Medical Reports, Orthopedic, and Illness Details (COMORBID)*, 1(1), 93–100.
- Fatimah. (2020). *Keterkaitan Pola Konsumsi Pangan Dengan Kejadian Stunting Pada Balita Kecamatan Amuntai Tengah Kabupaten Hulu Sungai Utara*. Sekolah Tinggi Ilmu Pertanian Amuntai.
- Hardinsyah. (1996). *Measurement and determinants of food diversity: implications for Indonesia's food and nutrition policy*. University of Queensland.
- IX, W. N. P. dan G. (2018). Percepatan Penurunan Stunting Melalui Revitalisasi Ketahanan Pangan dan Gizi Dalam Rangka Mencapai Tujuan Pembangunan Berkelanjutan. *Hotel Bidakara. Jakarta*.
- Murdiati, A. (2013). *Panduan Penyiapan Pangan Sehat Untuk Semua*. Prenada Media.
- Pranadji, D. (1988). Pendidikan Gizi. *Diktat. Jurusan Gizi Masyarakat dan Sumberdaya Keluarga, Faperta, IPB*.
- Prasetyo, T. J., Hardinsyah, H., & Sinaga, T. (2013). Konsumsi pangan dan gizi serta skor Pola Pangan Harapan (PPH) pada anak usia 2—6 tahun di Indonesia. *Jurnal Gizi dan Pangan*, 8(3), 159–166.
- Sardjito. (2015). *Kenali Penyebab Stunting Anak*. Divisi Hukum dan Hubungan Masyarakat RSUP Dr. Sardjito Yogyakarta. <https://sardjito.co.id/2019/07/22/kenali-penyebab-stunting-anak/>
- Suhaimi, A. (2019). Pangan, Gizi, Dan Kesehatan. In *Yogyakarta: CV Budi Utama*.
- Supariasa. (2005). Penilaian status gizi (Assessment of nutritional status). *EGC. Jakarta*.
- Supariasa, I. D. N., Bakri, B., & Fajar, I. (2002). Penilaian status gizi. *Jakarta: Egc, 5*.
- Susetyo, B. (2010). *Statistika untuk analisis data penelitian: Dilengkapi cara perhitungan dengan SPSS dan MS Office Excel*. PT Refika Aditama.
- Tan, M. G. ., Abunain, Suharso, Raharjo, J., Soetedjo, & Sanarjo. (1970). *Segi-segi Sosial Budaya Pola Konsumsi dan A-ebia. saan A i; lkan di Lima Daerah Pedesaan di Indonesia*. Lembaga ekonomi dan h, lasyarakat Nasional dan Drektorat Gizi departemen Kesehatan XI, Jakarta.
- Widodo, Y., Sandjaja, S., & Ernawati, F. (2017). Skor Pola Pangan Harapan Dan Hubungannya Dengan Status Gizi Anak Usia 0, 5–12 Tahun Di Indonesia. *Penelitian Gizi dan Makanan (The Journal of Nutrition and Food Research)*, 40(2), 63–75.
- Widyaningsih, N. N., Kusnandar, K., & Anantanyu, S. (2018). Keragaman pangan, pola asuh makan dan kejadian stunting pada balita usia 24-59 bulan. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, 7(1), 22–29.
- Zahraini, Y. (2012). *Analisis Biaya Minuman Makanan Bergizi dan Pemberian Makan Terhadap Status Gizi (12-23 bulan) di Wilayah Pantura, Kabupaten Brebes, Provinsi Jawa Tengah, Tahun 2012*. Tesis.