

DIVERSITY OF FOOD CONSUMPTION AND THE EVENT OF STUNTING IN CHILDREN IN THE LOWLANDS OF SOUTH KALIMANTAN, INDONESIA

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ABSTRACT

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This study aims to determine the diversity of food consumption and its relationship with the incidence of stunting in children under five in the lowlands of South Kalimantan, Indonesia. The research location is in Batang Alai Selatan District, Hulu Sungai Tengah Regency. This research is an associative type of research using primary and secondary data sourced from respondents, and BPS Hulu Sungai Tengah Regency. The diversity of food consumption in stunting toddlers was first carried out with a 24-hour food recall and analyzed using the Expected Food Pattern (PPH) approach. The relationship between the diversity of food consumption and the incidence of stunting in children under five was carried out by Chi Square analysis. The results showed that the PPH score for the diversity of food consumption under five reached 76.44, indicating that the criteria were less diverse because it was still dominated by the grain food group (52.8%) and animal food (38.3%). The results of the Chi Square analysis show that the diversity of food consumption with the incidence of stunting in children under five in the study area has an Asymp value. Sig. (2-sided) $0.000 < 0.05$, and the calculated Chi Square value is $20.17 > \text{Chi Square table } 3.841$, it can be concluded that there is a relationship between the diversity of food consumption and the incidence of stunting in children under five.

KEYWORDS

Diversity of Food Consumption, Toddler, Stunting, Lowlands

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INTRODUCTION

Food consumption is the amount of food and drink consumed by a person, group, or population to meet their nutritional needs, the Food Security Agency (2014).

One of the main nutritional problems in developing countries is the lack of food diversity, mainly consisting of plant-based food sources, as well as limited fruits and vegetables (Mahmudiono et al., 2017)

The nutritional problem that is the main concern at this time is the high number of stunted children in Indonesia. From 10 children, about 3-4 children under five are stunted. Stunting is a malnutrition problem caused by inadequate nutritional intake for a long time due to feeding that is not in accordance with nutritional needs (Virgianita, 2015)

Stunting begins in the womb and only appears when the child is two years old. Malnutrition at an early age results in infant and child mortality, causes sufferers to get sick easily and have a posture that is not optimal as an adult (Suhaimi, 2019; Suhardjo & Riyadi, 1989)

Toddlers who experience inhibition in growth are due to lack of adequate food intake and recurrent infectious diseases, making it difficult to overcome growth disorders which consequently have the opportunity for stunting. The lack of food diversity is influenced by two factors, namely internal factors and external factors (Trisasmita et al., 2020). Internal factors that influence food diversity are income, knowledge of nutrition, culture and religion, and preferences (Astuti et al., 2020). External factors include the production, availability, and distribution of food ingredients. Households in agricultural areas have higher incomes than households in pond areas, but household food expenditures in pond areas are higher than households in agricultural areas (Choliq et al., 2020).

Based on the description of the background above, this study aims to determine the diversity of family food consumption in stunting toddlers in Batang Alai Selatan District, to determine the relationship between food consumption diversity and stunting in children under five in Batang Alai Selatan District.

RESEARCH METHOD

This research was conducted in Batang Alai Selatan District, Hulu Sungai Tengah Regency. The time of the research starts in December 2020 until August 2021. The data sources used in this study are primary data and secondary data. The data needed in this study are:

1. Data on the diversity of food consumption in Batang Alai Selatan District, Hulu Sungai Tengah Regency for the period 2019. This data was obtained from the Food Security and Fisheries Service of Hulu Sungai Tengah Regency.
2. Stunting data in the South Batang Alai sub-district, Hulu Sungai Tengah district for the period 2019. This data was obtained from the health post in the South Batang Alai sub-district.
3. Primary data obtained from the results of a questionnaire (questionnaire) with mothers who have children under five in the Batang Alai District, Slatan District, Hulu Sungai Tengah Regency.
4. Other secondary data that is still related to the purpose of this study.

This type of research is associative, which is research that aims to determine the effect or also the relationship between two variables. Consideration of the selection of the District area is done intentionally (purposive). The reason for choosing this area is that in Batang Alai Selatan District, most of the area is in the swamp and lowland topography, which is 27.11 masl. looking at the data received, that the South Batang Alai District in 2019 including the prevalence of stunting is quite high in Hulu Sungai Tengah Regency, with a total of 238 children under five. And Hulu Sungai Tengah Regency is included in the Special Location for Integrated Stunting Reduction Intervention for 2018-2022 based on the decision of the Minister of National Development Planning/Head of Bappenas No.Kep 42/M.PPN/HK/04/2020.

It was determined that the number of respondents in this study amounted to 23 stunting toddlers from the initial number of 238 toddlers using the Slovin formula (Sugiyono, 2018).

Data was collected by observation, interviews, recording, and 24-hour recall. 24-hour recall is one of the data collection techniques used to obtain data on food consumption of children under five. The principle of the recall method is to record the type and amount of food consumed in the past 24 hours (Supariasa et al., 2012). The food consumption survey was conducted three times in an interval of two days. The repetition is intended to obtain more accurate household real consumption data.

Chi Square analysis is used to test whether there is a relationship between the diversity of food consumption and the incidence of stunting in children under five in Batang Alai Selatan District, with the formulation, namely:

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

Where:

X^2 = Chi Square

O_i = observation frequency

E_i = expected frequency

$Dk = k-1$

The test criteria is to reject H_0 , $X^2 \geq X^2 (1-\alpha) (k-1)$ and others H_0 is accepted, α = real level of testing.

RESULT AND DISCUSSION

Diversity of Family Food Consumption in Stunting Toddlers in Batang Alai Selatan District

Food Diversity

The diversity of individual food consumption was measured by the Individual Dietary Diversity Score (IDDS) questionnaire. The diversity of food consumption is a qualitative measure of food consumption that can reflect a person's nutritional adequacy, both macro and micro. IDDS was positively correlated to the density of micronutrients in complementary foods and the adequacy of macro and micronutrients. The following are the results of food consumption patterns among toddlers in Batang Alai Selatan District using the PPH approach.

Table 1. Scores of PPH Toddlers in Batang Alai Selatan District

No	Food Group	Calories	%	% AKE	Weight	AKE score	Actual Score	Max Score	Gap and AKE Score and Max Score	PPH score
1	Grains	759,4	52,8	54,2	0,5	26,4	27,1	25,0	2,1	25,0
2	tubers	19,4	1,3	1,4	0,5	0,7	0,7	2,5	-1,8	0,7
3	Animal Food	551,4	38,3	39,4	2,0	76,7	78,8	24,0	54,8	24,0
4	Oil and fat	2,6	0,2	0,2	0,5	0,1	0,1	5,0	-4,9	0,1
5	Oily Fruits/Seeds	4,2	0,3	0,3	0,5	0,1	0,2	1,0	-0,9	0,1
6	Nuts	25,7	1,8	1,8	2,0	3,6	3,7	10,0	-6,3	3,6
7	Sugar	6,4	0,4	0,5	0,5	0,2	0,2	2,5	-2,3	0,2
8	Vegetable and fruit	65,4	4,5	4,7	5,0	22,7	23,4	30,0	-6,6	22,7
9	Etc	4,1	0,3	0,3	0,0	0,0	0,0	0,0	0,0	0
	Total	1438,6	100,0	102,8	11,5	130,5	134,1	100,0	34,1	76,44

Source: Primary Data Processing, 2021

Based on the table above, the average energy consumed by toddlers in Batang Alai Selatan District is 1438.6 kcal/day with a PPH score of 76.44. This value shows that the standard for energy consumption for toddlers is 1400 kcal/cap/day and the ideal PPH score is 100. However, the PPH score shows that it is classified as less diverse, because it is still dominated by the grain food group (52.8%) and animal food (38, 3%).

1. Grains

The grain food group is the food group that is consumed the most by children under five in Batang Alai Selatan District compared to other food groups. The average number of grain food groups consumed was 759.4 kcal per day and the PPH score of grains exceeded the maximum score of 25.0. Because rice is the main staple that is widely used for consumption and other types of commodities such as corn, wheat is processed into various kinds of preparations.

2. Tubers

Types of tuber commodities include cassava and its processed products, sweet potato, potato, taro, and sago. The average consumption of tubers food groups under five in Batang Alai Selatan District is 19.4 Kcal per day with a PPH score of 0.7, which means it is still below the maximum PPH score of 2.5.

3. Food/Animals

Animal food is a food group that also exceeds the maximum score with a value of 78.8. In addition to consuming fish, meat, and eggs, toddlers in Batang Alai Selatan District consume milk to complement their nutritional needs. The average consumption of children under five from the animal food group is 551.4 Kcal per day.

4. Oils and fats

The average consumption of oil and fat food groups under five in Batang Alai Selatan District is 2.6 Kcal per day with a PPH score of 0.1, which means that the maximum PPH score is not sufficient.

5. Oily fruit/seeds

The average consumption of the oily seed fruit food group is 4.2 Kcal and the PPH score is 0.1, which means that the maximum score for this food group is not sufficient, which is 1. Only a little energy is obtained from these oily fruits/seeds such as from processed foods that use coconut milk, candlenut, and chocolate.

6. Nuts

The average consumption of the legume food group was 25.7 Kcal and the PPH score was 3.6. Calories obtained from various types of preparations such as peanuts, tempeh, tofu, soy sauce and others.

7. Sugar

The average consumption of the sugar food group is 6.4 Kcal per day. The PPH score obtained from this food group is 0.2, which means that the maximum score of 2.5 is not sufficient. The types of commodities consumed include granulated sugar for tea, brown sugar for cakes, syrups and other ready-to-drink beverages.

8. Vegetables and Fruits

The average consumption of vegetable and fruit food groups under five in Batang Alai Selatan District is 65.4. Kcal per day and PPH score 22.7. The score obtained is quite far from the maximum score, which is 30. This is because toddlers don't like vegetables and most of the calories obtained from this food group come from fruit.

9. Others

The average of other food groups is 4.1 Kcal. Consumption of spices, tea, and others is not intended to meet nutritional needs.

Based on the table above, it can be concluded that the grain type food group has the highest %AKE value, reaching 52.8% and animal food with 38.3% AKE.

Food Consumption Patterns with Stunting Incidence

Table 2. Food Consumption Patterns with Stunting Incidence in Toddlers in Batang Alai Selatan District.

Food Consumption Pattern	Nutrition Status		Amount
	Stunting	No Stunting	
Not Diverse	21	6	27
Diverse	2	17	19
Amount	23	23	46

Source: Primary Data Processing, 2021

Based on Table 2 above, it is known that there are 21 samples with non-diverse consumption categories and stunting nutritional status, 6 samples with non-diverse categories and non-stunting nutritional status, 2 samples with diverse categories and stunting nutritional status and 17 samples with diverse categories and poor nutritional status. stunting.

The Relationship of Food Consumption Diversity to Stunting in Toddlers in Batang Alai Selatan District.

The results of the research analysis with the Chi Square formulation using the SPSS version 24 package application can be seen in Table 3 below.

Table 3. Chi Square . Analysis Results

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	20.175 ^a	1	.000		
Continuity Correction ^b	17.575	1	.000		
Likelihood Ratio	22.379	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	19.737	1	.000		
N of Valid Cases	46				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.50.
b. Computed only for a 2x2 table

Source: Primary Data Processing, 2021

Based on the output table above, the Asymp value is known. Sig. (2-sided) $0.000 < 0.05$, so based on the basis of decision making, it can be concluded that there is a relationship between the diversity of food consumption and the incidence of stunting in children under five in the study area. This can also mean that the more diverse food consumption by children under five, the incidence of stunting will decrease, and vice versa the less variety of food consumption consumed by toddlers, the incidence of stunting will increase. Based on the output table "Chi-square test" it is known that the calculated Chi square value is $20.17 > \text{Chi square table } 3.841$, it can be concluded that H_0 is rejected and H_1 is accepted, so it can be interpreted that there is a relationship between the diversity of food consumption and the incidence of stunting in toddlers.

The results of the study above are in line with research conducted by (Wantina et al., 2017), which shows that there is a relationship between the diversity of food consumption and stunting in toddlers aged 6-24 months ($p < 0.05$). The more diverse the food consumption, the better the nutritional status. Education about the diversity of food consumption is needed, especially for mothers who have toddlers.

The diversity of people's food consumption is usually greatly influenced by the conditions of the region or area where they live, how much people can obtain and utilize existing natural resources, besides that it is influenced by other factors such as social, economic, cultural customs and also community knowledge (Virgianita & Pratiwi, n.d.). According to (Ruel, 2003), family food diversity is influenced by social, economic, and cultural status of the community. The lack of variety in food consumption is one of the causes of various health problems in people with low economic status in various developing countries.

The diversity of food in the research area with a total of 46 respondents 27 of them included in the non-diverse category and 19 other respondents included in the diverse category. Food diversity is dominated by food groups of grains and animal foods. This is due to the habits of the villagers who prefer food made from grains and animal foods. Food diversity is one of the important factors to minimize the incidence of stunting in toddlers because it ensures that the nutrients in the food consumed can carry out their respective functions.

This is in line with the opinion of (Hanafie, 2010), consuming a variety of foods can ensure that the nutrients in food carry out their respective functions so that the body's needs will be met. The diversity in food consumption by toddlers greatly affects their nutritional status, this is reinforced by (Purwaningrum & Wardani, 2012) who states that nutritional status is directly affected by the food consumed daily. According to (Rahmadhita, 2020), food intake for toddlers is very important because toddlers are a group that shows rapid body growth, so they require high nutritional substances per kg of body weight.

CONCLUSION

Based on the results of the analysis of the diversity of food consumption in stunted toddlers in the research area, it can be concluded that: The PPH score for the food diversity of children under five in Batang Alai Selatan District reached 76.44. With the criteria of food consumption under five in Batang Alai Selatan sub-district, it is still less diverse because it is still dominated by the grain food group (52.8%) and animal food (38.3%). Asymp Value. Sig. (2-sided) $0.000 < 0.05$, the calculated chi square value is $20.17 >$ Chi square table 3.841, indicating that there is a relationship between the diversity of food consumption and the incidence of stunting in children under five.

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