

# Food Security Analysis in Stunted Children Below Five in Coastal Area of Soropia Konawe in Indonesia

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## ABSTRACT

**Background:** The government has established a number of policies and programs to prevent inhibiting, both definite and complex food interventions. Increasing access to nutritious food and promoting food safety is part of emotional interventions. The goal of this study is to analyze the food safety associated with incidents of inhibiting in kids below the age of five. **Method:** This is an experimental study with a circumstance-control method. This is conducted in the coastal areas of the Saurpia sub-district of Konao. The study included 192 children below the age of five living in coastal ranges. The participants were separated into two sets, 34 stunted children and 34 non-stunted children as the control group. The data analysis was a chi-square and odds ratio test. **Results:** This presented that the maternity occupation of children with disabilities was that of housewives (94.1%) and that of fishermen for paternal occupations (52.1%). 70.6% of children with disabilities were from high family expenditure, while 67.6% were in the control group. The common of defendants (55.9%) in the controller group had food insecurity without appetite, while in the case group, 44.1% were at hazard of moderate hunger. A two-way analysis of household spending with inhibiting actions using the chi-square test found p-value = 1.000. Investigation of food protection with inhibiting incidents using the chi-square test found a p-value = 0.242, or value = 0.414 (95% CI = 0.124 – 1.377). **Conclusion:** This study concluded that family costs and food safety were not hazard issues for inhibiting in children below the age of five. More research is needed investigating hazard issues for inhibiting, such as nutrient consumption and infectious diseases.

**Keyword:** Food security, family expenditure, coastal area, stunted children

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## Introduction

The Global Nutrition Report (GNR) in 2016 revealed that an occurrence of inhibiting in Indonesia put this country in 108 ranks out of 132. Indonesia is one of the 17 countries experiencing a double burden of nutrition, either due to excess or lack of nutrients [1]. The prevalence of inhibiting below five in Southeast Sulawesi was 36.4%. In Konawe Regency, the inhibiting prevalence was 29.6% [2].

To prevent inhibiting occurrence, the government has established policies and programs, which required integration among specific and sensitive nutrition interventions. Specific nutrition interventions relate to the programs from the Organization of Wellbeing. On the other hand, sensitive intervention is intervention that should be done by other sectors outside the Ministry of Health areas. One type of sensitive intervention is how to increase access to nutritious food and prevent food insecurity [3].

The food consumption of the Indonesian population also fluctuated. In 2012, the consumption was 1945kcal/capita/day

before decreasing to 1931 kcal/capita/day in 2013 and then increasing to 1949 kcal/capita/day in the next year. Inadequate food intake in a long-term period will cause food insecurity problems, and subsequently affects nutritional status, especially infants [4].

The Indonesian Basic Health Survey in 2018 exposed a 6.4% reduction in the occurrence of inhibiting, from 37.2% (2013) to 30.8% (2018), although this number did not reach the 2019 National Medium-Term Development Plan (RPJMN) target, which is 28% [5]. Meanwhile, the prevalence of inhibiting in Southeast Sulawesi Province reached 36.4% and in the coastal areas of Soropia Konawe District was 23%.<sup>6</sup> This study aims to analyse food safety as a hazard influence of inhibiting in the beach area.

## Method

This was a circumstance-regulator study with a 1:1 circumstance-control ratio. This study was conducted from May to October 2019 in the coastal areas of Soropia in Konawe District. A total of 68 children below five were observed, consisting of 34 samples in each group. Stunted children were assigned to the case group, while

non-stunted children were in the control group. The indicator used in determining inhibiting status was height for age z-score (HAZ) below -2 standard deviation (SD).

Samples selection was done using consecutive sampling techniques, taking into account the inclusion criteria of children below five age 6-59 months, and the mothers are willing to participate. The exclusion criteria were children who are taken care of by other people besides their parents, do not have an MCH handbook (so-called "KMS"), do not have immunization history records, or experienced congenital growth disorders/down syndrome diagnosed by a doctor/pediatrician. The family expenses were categorized by high ( $\geq$  Rp 2,351,000) and low ( $<$  Rp 2,351,000). The food security levels were categorized as at hazard if the family experienced food insecurity without hunger, moderate hunger, or acute hunger [7].

Inhibiting status was determined from the measurement result of height adjusted by sex and age. Height was measured using a body length/ height instrument. The data obtained from the interview were availability of food, family expenses, food security. Information investigation was accepted out by chi-square and odds-ratio test. The level of arithmetical meaning in this study was  $p < 0.05$ .

## Result

The consequences presented that the controller set consisted of mothers and fathers who graduated about 40% from primary school, while in the case group there were junior high schools for both mothers and fathers (41.2%, 35.3%, respectively). For occupation, most mothers were a housewife (97.1%), fathers were fishermen (76.5%) in the control group. In the case group, most (94.1%) mothers of children below five were also housewives, while most of the fathers (52.9%) worked as fishermen (Table 1).

Table 2 expressions sex and age circulation of children among the case and the control groups. In the circumstance set, 53% were female. In the control group, 64.7% were aged 24-59 months.

Table 3 shows the distribution of family expenditure and food security among the two groups. Respondents from the control group mostly have a high family expenditure, while in the case

group most also have a high expense (67.6% vs 70.6%). For the food security variable, the common of defendants from the regulator collection (55.9%) in food insecurity without hunger, while in the case group most (44.1%) were in vulnerability to moderate hunger.

Table 4 demonstrates the connection among family expenditure and inhibiting. The study shows that there was none important association among expenditure and occurrence of inhibiting.

The investigation of food safety variables with the chi-square test found a p-value of 0.242, which means that there is no important connection among food safety and inhibiting.

## Discussion

Many problems disturb the occurrence of inhibiting, and the closest dietary intake, infectious diseases, which are considered direct causes. A lack of food intake and the onset of the disease can "work together" to exacerbate malnutrition. Moreover, the disease can reduce appetite and therefore reduce food intake. Statistical analysis of the present study showed that there is no important connection among expenditure and the occurrence of inhibiting. Odds ratio (OR) value was 1.148 (95% CI = 0.410-3.214), indicating that families of toddlers who have high expenditures have a 1.148 times greater hazard of suffering from inhibiting compared to families of toddlers who have low expenditures (because the distance among the upper limit value and the lower limit value is through a value of 1.00). The result of the study shows that family expenditure and food security are not a hazard for inhibiting. This might be due to inhibiting is produced by many issues, both straight and unintended issues, which are not observed in this study.

Absence of intake can mostly be affected by family income. Adequate income will importantly distress the accessibility of food for children, and vice versa. Adequate income will disturb family expenditures, both food and non-food expenditures. Families with low economic levels usually have higher food expenditures than non-food expenditures.

The case collection had advanced average food expenditures than non-food expenditures. Although they had high spending, their toddlers' lack of quality and quantity of food was still lacking.

Table 1: Parents Characteristic.

Characteristics of Respondents	Sample							
	Control				Case			
	Mother		Father		Mother		Father	
	n	%	n	%	n	%	n	%
<b>Level of Education</b>								
Did not finish Elementary School	0	0.0	1	2.9	1	2.9	2	5.9
Elementary School	13	38.2	14	41.2	11	32.4	9	26.5
Junior High School	9	26.5	8	25.3	14	41.2	12	35.3
Senior High School	10	29.4	10	29.4	7	20.6	9	26.5
Diploma/ Bachelor	2	5.9	1	2.9	1	2.9	2	5.9
<b>Occupation</b>								
Housewife	33	97.1	0	0	32	94.1	0	0
Farmer	0	0	0	0	0	0	1	2.9
Fishermen	0	0	26	76.5	0	0	18	52.9
Civil Servant/Police	0	0	0	0	0	0	1	2.9
Entrepreneur	1	2.9	0	0	0	5.9	1	2.9
Private sector employee	0	0	2	5.9	0	0	6	17.6
Motorcycle taxis driver	0	0	1	2.9	0	0	1	2.9
Labourer	0	0	5	14.7	0	0	6	17.6
<b>Total</b>	<b>34</b>	<b>100</b>	<b>34</b>	<b>100</b>	<b>34</b>	<b>100</b>	<b>34</b>	<b>100</b>

Table 2: Infant Characteristic.

Characteristic of Sample	Sample			
	Control		Case	
	n	%	n	%
<b>Sex</b>				
Female	17	50.0	18	52.9
Male	17	50.0	16	47.1
<b>Age (Month)</b>				
6-11	6	17.6	5	14.7
12-23	6	17.6	10	29.4
24-59	22	64.7	19	55.9
<b>Total</b>	34	100	34	100

Table 3: Distribution of Samples Based on Family Expenditure and Food Security.

Variable	Respondent			
	Control		Case	
	n	%	n	%
<b>Family Expenses</b>				
High	23	67.6	24	70.6
Low	11	32.4	10	29.4
<b>Family Food Security</b>				
Food Security	10	29.4	5	14.7
Food insecurity without hunger	19	55.9	14	41.2
Food insecurity with moderate hunger	5	14.7	15	44.1
<b>Total</b>	34	100	34	100

Table 4: Analysis of the Connection of Family Expenditure with Inhibiting Incidents

No	Family Expenditure	Control		Case		p-value	OR with 95% CI
		n	%	n	%		
1	Low	11	32.4	10	29.4	1.000	1.148 (0.410 – 3.214)
2	High	23	67.6	24	70.6		
<b>Total</b>		34	100.0	34	100.0		

Table 5: Analysis of the Connection among Food Security and Inhibiting Occurrence

No	Food Security	Control		Case		p-value	OR with 95% CI
		n	%	n	%		
1	Hazard	24	70.6	29	85.3	0.242	0.414 (0.124 – 1.377)
2	No at Hazard	10	29.4	5	14.7		
<b>Total</b>		34	100.0	34	100.0		

Lack of fulfilment of diverse, nutritious, and balanced family consumption at the level affects food consumption patterns [8,9]. Deficiency of food accessibility can result in a lack of fulfilling nutritional intake in the family [10].

This study is different from Benning's research, Margawati and Rosidi [11], which states that the amount of children with low levels of food expenditure is greater in the case group (81.7%) than in the control group (74.6%). The results of the test chi-square indicate that a low level of food expenditure is not a hazard of inhibiting ( $p > 0.05$ ). Similarly, Reyes' (2006) [12] study states that children with families with lower per capita incomes have a 1.65 times greater chance of experiencing inhibiting. Another study conducted by Aryu (2010) [13] in Semarang City found that low food expenditure was a hazard factor for Inhibiting in children (OR=2.43).

Ernest Engel (1857 in BPS, 2014) [4] that the expenditure on food will decrease in line with the increase in income. Therefore, the structure of household expenditure can be used to indicate the welfare of the population. The lower the percentage of spending on food to total expenditures, the better the people's economy.

Food security is where all households have physical and economic access to carry food for all members of their family. Poverty and lack of income will lead to a lack of affordability to provide adequate and nutritious food for all members of the family, or this is called food insecurity. [13,14]

The income of most households is below the minimum wage. This will have an impact on the purchasing power of the household to buy food for family members, reducing the quantity and quality of food. Lower household incomes will also affect the percentage of spending on food which is getting worse. The proportion of food expenditure of respondents is mainly in the lower category. Both groups are mainly in the hazard category based on food safety status. Family food insecurity can inhibit children's growth, health, and cognitive development.

Family food security is affected by four dimensions, namely availability, access, consumption and level of stability. If there is any level of disturbance, it will increase food insecurity [12,17]. Based on the results of a study conducted by Rohaedi et al. (2014), food security at the family level affects the nutritional status of children below the age of five. [9,18-21]

The inadequate accessibility of nutritious food in families without food insecure can affect the progress and expansion of children. If this state of food insecurity persists for a long time, it will affect the progress and expansion of children. Children with familial conditions of food insecurity have a 2.7 times higher hazard of chronic malnutrition than familial conditions of food insecurity, such as access to food in terms of amount and value.

## Conclusions

There is no connection among family expenses and food safety with the occurrence of chronic malnutrition. Family expenses and food security are not hazard issues for chronic malnutrition in children below five years of age. This research suggests that more research should be done directly looking at hazard issues for inhibiting, such as dietary intake and disease.

## What is known about the subject ?

Majority of respondents from the control group (55.9%) were in food insecurity without hunger, while in the case group most (44.1 %) were in vulnerability to moderate hunger. There is no important connection among food safety and inhibiting.

## What does the study performed add to the literature?

This finding presented that the circumstance collection had advanced regular food expenditures than non-food expenditures, but the amount and value of food given to their children was still absent. It affected the food consumption patterns and the nourishing rank of the children.

## What are the implications of the results obtained?

These findings originate that family expenditure and food safety are not hazard issues for Inhibiting in kids below five in this education area. This study suggests that further research should be conducted by looking at the direct hazard factors for stunting such as dietary intake

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