

Analyzing the Impact of Socioeconomic Factors on Food Security in Poor Rural Households: A Study from Nagari Nyiur Melambai, Indonesia

Nurul Asikin¹, Gusriati^{2*}, Wawan Sumarno³, Mahmud⁴, Herda Gusvita⁵
Agribusiness Study Program, Faculty of Agriculture, Universitas Ekasakti Padang

Corresponding Author: Gusriati Gusriatimsi@gmail.com

ARTICLE INFO

Keywords: Food Security, Food Expenditure, Non-food Expenditure, Poor Households

Received : 12, April

Revised : 28, April

Accepted: 28, April

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ABSTRACT

This study aims to: (1) determine the food energy consumption of poor households in Nagari Nyiur Melambai, Ranah Pesisir District; (2) assess the food security status of poor households; (3) analyze the effects of income, expenditure proportion, family size, husband's education, and poverty on food security and poverty. The research was conducted from June to July 2024 using purposive sampling. Primary and secondary data were used. The analysis applied a descriptive associative method with multiple linear regression and the Sobel Test. Results showed an average household energy consumption of 2,036.43 kcal/day. Food security levels: 50.56% secure, 11.24% nearly secure, 33.71% vulnerable, and 4.49% food insecure.

INTRODUCTION

Food security is one of the most fundamental human needs; therefore, food availability for the community must always be guaranteed (García-Díez et al., 2021). Improving food security is a top priority in development because food is a basic human necessity, and household-level food security is crucial to ensure sustainable livelihoods (Kassegn & Endris, 2021; Tesfaye et al., 2023). Food security is influenced by various factors, including land ownership (physical), supported by suitable climate conditions and human resources (HR) (Tantoh et al., 2021). Agricultural policies also play a role in determining the activities of producers and markets in providing food, as well as influencing household income and consumption expenditures (Shikur, 2020). Food security is defined as a condition in which individuals can continuously access sufficient, safe, and nutritious food to maintain a healthy and active life through physical, social, and economic means (Berry et al., 2015; Meerts, 2021). There are four main factors that affect food security: food availability, stability of food supply, accessibility to food, and the quality/safety of food (Haji et al., 2022).

The Food Security Index is a composite score derived from various indicators used to measure the food security condition of a region (Izraelov & Silber, 2019). Indonesia recorded a Global Food Security Index (GFSI) score of 60.2 in 2022, showing an increase of 1.7% from the 2021 score of 59.2. From 2018 to 2022, the highest GFSI score was in 2019 (62.6), and the lowest was in 2018 (54.8). West Sumatra is one of the provinces in Indonesia with a relatively good food security index. From 2018 to 2022, the highest score in West Sumatra was recorded in 2021 at 79.55, and the lowest in 2018 at 75.22. In 2022, West Sumatra ranked 8th out of 34 provinces with a score of 79.45.

Pesisir Selatan Regency is also considered to have good food security, ranking 6th out of 12 regencies and 7 cities in West Sumatra. Between 2018 and 2022, the food security index in this regency peaked in 2021 at 85.48 and was lowest in 2018 at 80.66. From 2018 to 2021, the IKP in Pesisir Selatan consistently increased before declining in 2022 to 83.53. Poverty, on the other hand, is one of the most urgent economic issues that must be addressed immediately. It is a government priority because of its widespread negative effects, including reduced quality of life, barriers to developing human capital, increased socio-economic burdens, heightened crime rates, and decreased public order. Poverty indirectly indicates the vulnerability of food access due to unequal income distribution, which in turn places the poor at higher risk of food insecurity (Pereira & Oliveira, 2020).

According to BPS, the number of poor households (RTM) in Indonesia declined by 889 households between 2018–2019, and again by 7 households from 2020–2021. Over the five-year period from 2018 to 2022, the highest number of poor households was recorded in 2020 (27.55 million or 11.15%), and the lowest in 2019 (24.79 million or -3.46%), showing a fluctuating trend. In West Sumatra, the number of poor households in 2022 was recorded at 335,210, a decrease from 370,670 in 2021. From 2018 to 2022, the highest figure was in 2021, and the lowest in 2022, indicating a fluctuating trend across these years. In Pesisir Selatan Regency, the poverty trend also fluctuated. From 2018 to 2019, there was a

positive development; from 2019 to 2020, the number of poor households decreased by 2.87%. It increased again in 2021 by 5.49% and dropped significantly by 9.70% in 2022. The highest number of poor households was in 2021 (37,410), and the lowest in 2022 (33,780).

Ranah Pesisir District, located within Pesisir Selatan Regency, has shown a continuous increase in the number of poor households over the years. Between 2018 and 2022, the highest number was recorded in 2022 at 5,725 households, and the lowest in 2018 at 4,987. Ranah Pesisir District spans 562.44 km² and comprises 10 nagari (villages). In 2022, it had 5,725 poor households out of a total of 12,479 families across these villages. Nagari Nyiur Melambai ranks as the second poorest nagari in Ranah Pesisir. In 2023, it had 809 poor households out of a total population of 5,212 people (1,343 households). Within this nagari, Kampung Air Tambang had 450 poor households out of 893 total households, while Kampung Sumedang had 359 poor households out of 450.

This study hypothesizes that energy consumption among poor households in Nagari Nyiur Melambai reflects certain patterns that are indicative of their food security conditions. Household food security is presumed to be influenced by the proportion of food expenditure and energy consumption. Furthermore, household income, food expenditure, family size, and the husband's education level are all suspected to have significant effects on both food security and poverty levels. Additionally, poverty is expected to serve as a mediating variable in the relationship between these socioeconomic factors and household food security in Nagari Nyiur Melambai.

However, studies that examine energy consumption as an indirect indicator of food security, as well as the mediating role of poverty in rural settings like Nagari Nyiur Melambai, remain limited. Therefore, this research aims to address this gap by providing a more comprehensive analysis of the socioeconomic dynamics influencing food security among poor households.

LITERATURE REVIEW

Food security is a multidimensional concept that encompasses the availability, access, utilization, and stability of food. According to Bobe et al (2019) food security is defined as a condition in which every individual has continuous physical, social, and economic access to sufficient, safe, and nutritious food to maintain a healthy and active life. The Food and Agriculture Organization (FAO) identifies four key pillars of food security: food availability, food access, food utilization (including nutritional value and safety), and the stability of these three over time. These components reflect not only the physical presence of food but also the capacity of individuals and households to obtain and effectively use it.

One tool often used to measure food security at the regional or national level is the Food Security Index (FSI), a composite indicator based on multiple metrics related to food systems, economic conditions, and public policy (van Berkum & Ruben, 2021). Variations in the food security index over time can reflect changes in agricultural productivity, market access, household income, infrastructure, and broader socio-economic factors. In Indonesia, improvements

in food security have been uneven across regions, with provinces like West Sumatra showing relatively strong performance. Within West Sumatra, food security levels at the district level, such as in Pesisir Selatan Regency, demonstrate fluctuations due to varying socio-economic dynamics.

Food security is strongly influenced by household-level factors such as income, food expenditure, land ownership, and education. As noted by Rakodi, (1999), physical assets such as land, favorable climate, and human capital all contribute to household food production and access. Moreover, agricultural policies play a crucial role in determining market operations, pricing, and food availability, which in turn affect household consumption and income patterns (Anderson et al., 2013). Research by Ogundari (2017) further emphasizes that socioeconomic status, particularly poverty, is a critical determinant of household food security. Poor households often allocate a larger share of their income to food, making them more vulnerable to price shocks and supply disruptions.

Poverty, in this context, is not only an economic issue but also a key variable affecting food access and consumption. As explain Steve Hatfield-Dodds (2007), poverty often correlates with food insecurity due to limited income, poor infrastructure, low education, and lack of access to nutritious food. The relationship between poverty and food security is often cyclical – food insecurity can perpetuate poverty by undermining health and productivity, while poverty limits the ability to acquire sufficient food. Therefore, understanding poverty as a mediating variable is essential for analyzing household food security, especially in rural areas with high poverty prevalence.

In rural communities such as Nagari Nyiur Melambai, limited economic opportunities and infrastructure exacerbate food insecurity risks. Furthermore, energy consumption patterns in poor households are increasingly being examined as indirect indicators of food security. Energy intake, often measured in kilocalories, can reflect the quantity and quality of food consumed and is influenced by household income, expenditure behavior, family size, and education level. However, studies that specifically explore the interrelationship between energy consumption, poverty, and food security remain limited – particularly in localized rural contexts. This research seeks to fill that gap by examining how these variables interact and shape household food security conditions in Nagari Nyiur Melambai.

METHODOLOGY

This research was conducted in Nagari Nyiur Melambai, Ranah Pesisir Subdistrict, Pesisir Selatan Regency from May to July 2024. The study employed a descriptive associative method. Descriptive research is used to examine groups of people, objects, conditions, systems of thought, or current events (Arikunto, 2015). The research location was chosen purposively, based on the consideration that Nagari Nyiur Melambai ranks second in poverty levels among all nagari in Ranah Pesisir Subdistrict. The population of this study consists of 809 poor households spread across two villages. A total sample of 89 poor households was selected, deemed representative of the entire population. The study used both primary and secondary data sources. Data collection techniques included observation, interviews, and documentation. The data consisted of quantitative

variables such as household income, proportion of food expenditure, number of household members, husband's education level, and poverty levels (numerical data), as well as qualitative data obtained from relevant institutions like BPS, previous studies, journals, and other literature.

Data analysis involved several methods. Energy consumption was calculated using the formula:

$$G_{ij} = B_{pj} \times B_{ddj} \times K_{gij}$$

Where G_{ij} is nutrient intake, B_{pj} is food weight (grams), B_{ddj} is the edible portion, and K_{gij} is nutrient content. Food security was measured based on the proportion of food expenditure and energy consumption, using:

$$PF = (PP / TP) \times 100\%,$$

Where PF is food expenditure share, PP is food expenditure, and TP is total expenditure. Factors affecting household food security were analyzed using multiple linear regression:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e,$$

Where Y is food security and X_1 – X_5 represent income, food expenditure, family size, education, and poverty. Classical assumption tests (normality, heteroscedasticity, Sobel test) and hypothesis testing (F-test, t-test, and R^2) were also conducted.

RESULTS

1. Respondents' household energy consumption

Food consumption is the quantity, ingredients, types and amounts of food consumed by the family in a certain period of time, so that it can meet the energy needs in a person's body. In this study, the types of food calculated consisted of staple foods, side dishes, vegetables, and fruits. For the results of the respondents, you can see table 1 below:

Table 1. Average per capita household energy consumption of respondents.

Description	Amount (kcal/day)
Total energy consumption of respondents	181.242.10
Average energy consumption	2.036.43
Average energy consumption per capita	5.512.38
Per capita energy consumption rate (%)	27.62

Based on table 1, it can be seen that the average energy consumption of poor households in Nagari Nyiur Melambai Ranah Pesisir District is 2,036.43 kcal/ day, the total energy consumption of respondents is 181,242.10 kcal/ day, the average energy consumption/capita is 5,512.38 kcal/ day and the energy consumption rate is 27.62%. The requirements for the adequacy level of household consumption are calculated using the AKG results of WNPG XI in 2018. The national AKG at their respective levels is 2,100 kcal per person per day.

2. Household food security

Food security is an important component in seeing the ability of households to access and guarantee the food to be consumed and also the nutritional quality

contained in the food. Therefore, in this study, we look at the food security of poor households in Nagari Nyiur Melambai.

Table 2. Household Food Security

TKP	PPP	EFS	Amount	%
Food Secure	$\leq 60\%$	$\leq 80\%$	45	50.56
Food Vulnerable	$\geq 60\%$	$\leq 80\%$	30	33.71
Food Insufficient	$\geq 60\%$	$\geq 80\%$	10	11.24
Food Insecure	$\leq 60\%$	$\geq 80\%$	4	4.49

Based on table 2, it can be seen that most of the poor households in Nagari Nyiur Melambai are in a food-secure position. Poor households in Nagari Nyiur Melambai are at the first level from the top in the food security category, namely food security. This proves that people tend to spend a lot of money on non-food needs.

Classic Assumption Test

1. Normality Test

Normality detection is performed by examining the Normal Probability Plot graph. For more details, see figure 1.

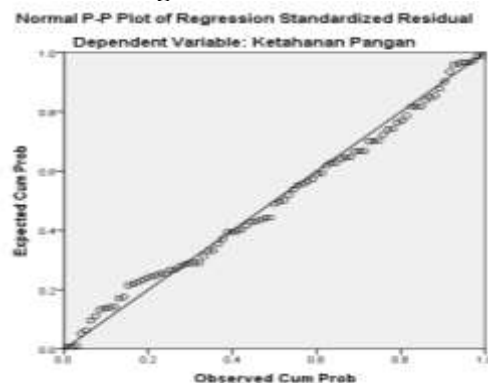


Figure 1. Normal Chart P-P plot

The P-P figure above shows that the distribution of the data (point) on the diagonal axis has followed its diagonal line so that the indication that the residual has spread normally.

2. Multicollinearity Test

This test is conducted to determine whether there is a correlation between independent variables in the regression model. If there is a strong correlation, it indicates a multicollinearity issue in the regression model. For more details, see table 3.

Table 3. Results of Multicollinearity Test

Independent Variables	Tolerance	VIF
Household Income (X_1)	0.805	3.888

Proportion of Poor Household Expenditures (X_2)	0.854	3.943
Number of Family Members (X_3)	0.848	1.179
Husband's Education Level (X_4)	0.978	1.285
Poverty (X_5)	0.853	3.957

From Table 3, it can be seen that there are 5 independent variables: household income, proportion of poor household expenditures, number of family members, husband's education level, and poverty. In the multicollinearity test, all of these variables have a VIF < 10 and a tolerance > 0.10. Therefore, it can be concluded that no multicollinearity exists between these independent variables. It can be said that these independent variables meet the classical assumption requirement for multicollinearity.

3. Heteroscedasticity Test

The heteroscedasticity test aims to examine whether there is a disparity in the residual variance from one observation to another in a regression model. For further clarification, this can be seen in Figure 2.

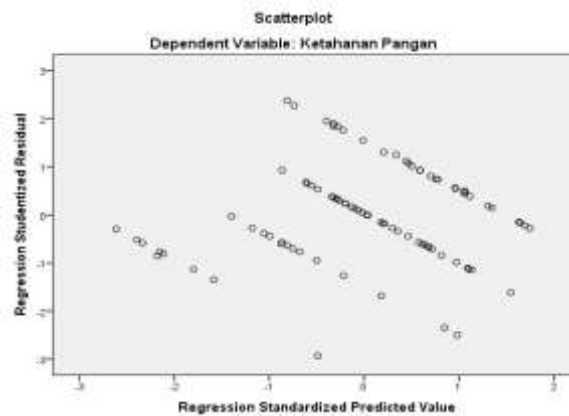


Figure 2. Heteroscedasticity Test

From Figure 2, it can be seen that the points are scattered both above and below the zero mark on the Y-axis without forming any specific pattern. Therefore, it can be concluded that the regression in this study is free from heteroscedasticity.

Multiple Linear Regression Analysis

Table 4. Results of Multiple Linear Regresion Analysis

Model	Unstandardized Coefficients		Sig
	B	Std. Error	
Constant	0,593	0,522	0,000
Household Income (X_1)	0,001	0,004	0,002
Proportion of Poor Household Expenditures (X_2)	-0,022	0,014	0,009
Number of Family Members (X_3)	- 0,194	0,005	0,047
Husband's Education Level (X_4)	0,044	0,032	0,004

Poverty (X ₅)	11.468	0,001	0,013
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The multiple linear regression equation for the factors affecting household food security levels based on the proportion of food expenditure and energy consumption levels in Nagari Nyuir Melambai can be formulated as follows :

$$Y = 0,593 + 0,001 X_1 - 0,022 X_2 - 0,192 X_3 + 0,044 X_4 + 11,468 X_5$$

The interpretation of this equation is as follows:

1. The constant value of household food security in Nagari Nyuir Melambai is 0.593, assuming that household income, the proportion of poor household expenditures, the number of family members, the husband's education level, and poverty are all equal to zero.
2. The regression coefficient for the variable household income is 0.001, indicating that household income has a positive relationship with household food security. This means that for every additional Rp 1 in household income, household food security will increase by 0.001, assuming that other variables (proportion of poor household expenditure, number of family members, husband's education level, and poverty) are zero.
3. The regression coefficient for the variable proportion of poor household expenditures is -0.022, indicating that this proportion has a negative relationship with household food security. This means that for every additional Rp 1 in the proportion of poor household expenditures, household food security will decrease by 0.022, assuming that other variables (household income, number of family members, husband's education level, and poverty) are zero.
4. The regression coefficient for the variable number of family members is -0.194, indicating that the number of family members has a negative relationship with household food security. This means that for every additional family member, household food security will decrease by 0.194, assuming that other variables (household income, proportion of poor household expenditures, husband's education level, and poverty) are zero.
5. The regression coefficient for the variable husband's education level is 0.044, indicating that the husband's education level has a positive relationship with household food security. This means that for every level increase in the husband's education, household food security will increase by 0.044, assuming that other variables (household income, proportion of poor household expenditures, number of family members, and poverty) are zero.
6. The regression coefficient for the variable poverty is 11.468, indicating that poverty has a positive relationship with household food security. This means that for every 1 kg increase in rice consumption, household food security will increase by 11.468, assuming that other variables (household income, proportion of poor household expenditures, number of family members, and husband's education level) are zero.

Hypothesis Test

1. F-Test (Simultaneous Test)

To examine the combined effect of household income, proportion of food expenditure, and number of family members on food security in Nagari Nyuir Melambai, Ranah Pesisir District, an F-test was conducted. For further details, refer to Table 5.

Table 5. Results of Hypothesis Test (F-Test)

Model	Sum Of Squares	Df	Mean Square	F	Sig
Regression	41,545	5	8,309	17,955	0,000 ^b
Residual	38,410	83	0,463		
Total	79,955	88			

Based on Table 5, the F-test result shows a sig value of ($0.000 < 0.05$), meaning the hypothesis is accepted. This indicates that, simultaneously, the variables of household income, proportion of food expenditure, number of family members, husband's education level, and poverty have a significant effect on household food security in Nagari Nyuir Melambai.

2. t-Test (Partial Test)

The t-test is used to test the regression coefficients of independent variables against the dependent variable on a partial basis. The decision-making criterion involves comparing the probability value (p) of the calculated t-statistic with the significance level $\alpha = 5\%$. For further details, refer to Table 6 below:

Table 6. Results of t-Test (Partial Test)

Model	Unstandardized Coefficients		Standardized Coefficient	T	Sig
	B	Std. Error	Beta		
Constant	0,593	0,522		1,136	0,000
Household Income (X ₁)	0,001	0,004	0,316	1,881	0,002
Proportion of Poor Household Expenditures (X ₂)	-0,022	0,014	-0,231	-1,528	0,009
Number of Family Members (X ₃)	-0,194	0,005	-0,153	-1,853	0,047
Husband's Education Level (X ₄)	0,044	0,032	0,119	1,377	0,004
Poverty (X ₅)	11,468	0,001	0,600	3.967	0,013

Based on Table 6, the influence of the independent variables on the dependent variable is as follows:

1. The significance value for household income (X_1) is 0.002, which is smaller than the significance level (alpha) of 5%. Therefore, the hypothesis is accepted, meaning that household income significantly affects household food security.
 2. The significance value for the proportion of poor household expenditures (X_2) is 0.009, which is smaller than the significance level (alpha) of 5%. Therefore, the hypothesis is accepted, meaning that the proportion of poor household expenditures significantly affects household food security.
 3. The significance value for the number of family members (X_3) is 0.047, which is smaller than the significance level (alpha) of 5%. Therefore, the hypothesis is accepted, meaning that the number of family members significantly affects household food security.
 4. The significance value for the husband's education level (X_4) is 0.004, which is smaller than the significance level (alpha) of 5%. Therefore, the hypothesis is accepted, meaning that the husband's education level significantly affects household food security.
 5. The significance value for poverty (X_5) is 0.013, which is smaller than the significance level (alpha) of 5%. Therefore, the hypothesis is accepted, meaning that rice consumption significantly affects household food security.
3. Analysis of the Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to measure how well the model explains the variation of the dependent variable. The value of the coefficient of determination ranges from zero (0) to one (1). A small R^2 value indicates that the independent variables have limited ability to explain the variation of the dependent variable. A value close to one indicates that the independent variables provide most of the information needed to predict the variation of the dependent variable. In this study, the R^2 value is 0.802, meaning that household income (X_1), the proportion of food expenditure in poor households (X_2), the number of family members (X_3), the husband's education level (X_4), and poverty (X_5) together contribute to 80.2% of the food security level, while the remaining 19.8% is explained by other factors not addressed in this study.

Table 7. Results of the Coefficient of Determination Test

Model	R	R Square	Adjusted R Square
1	0,896 ^a	0,802	0,7901

From Table 7, it is also shown that the R^2 (correlation coefficient) value is 0.896, which means that the independent variables—household income (X_1), proportion of food expenditure in poor households (X_2), number of family members (X_3), husband's education level (X_4), and poverty (X_5)—have a very strong positive relationship with the household food security level. A high R^2 value, close to 1, means that the higher the values of household income (X_1), proportion of food expenditure (X_2), number of family members (X_3), husband's education (X_4), and poverty (X_5), the higher the food security level will be. This

means that 53.8% of the variation in household income, number of dependents, and education level affects the food security level of fishermen's households, while the remaining 46.2% is explained by other factors not explored in his study.

4. Mediating Effect on Poverty (Sobel Test)

The Sobel test is used to determine whether there is a mediation effect in the relationship between two variables through a mediator (Jose, 2013). To simplify the calculation of the z-value for the Sobel test, you can use the online calculator available at www.danielsoper.com. Based on the results of the test using the IBM SPSS Statistics 23 application When the calculation was performed using the Sobel test calculator, the following results were obtained:

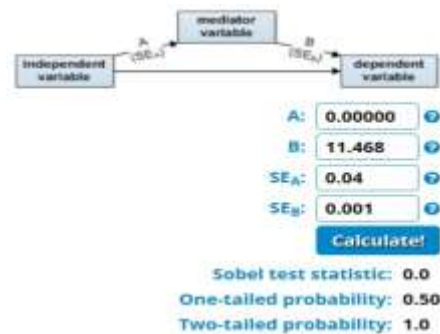


Figure 3. Sobel Test on the Effect of Household Income on Food Security Mediated by Poverty

Based on Figure 3, the two-tailed Sobel test probability value is 1.0. This value is greater than 0.05, which means there is no mediation effect. In other words, poverty does not serve as a mediator in the relationship between household income and food security. This finding aligns with the study by Cooper & Stewart (2021), which shows that the relationship between income and consumption in poor households is positive but not linear. This means that as household income increases, consumption also rises, but not always in proportion.

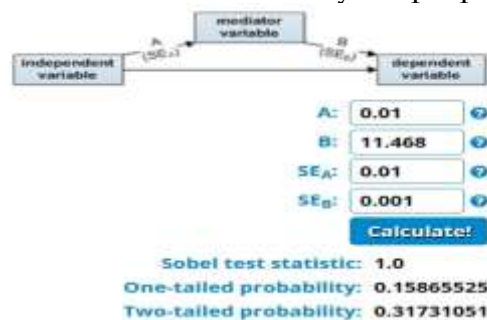


Figure 4. Sobel Test on the Effect of the Proportion of Poor Household Expenditure on Food Security Mediated by Poverty

Based on Figure 4, the two-tailed Sobel test probability value is 0.31731051. This value is greater than 0.05, which means there is no mediation effect. In other words, poverty does not serve as a mediator in the relationship between the proportion of poor household expenditure and food security.

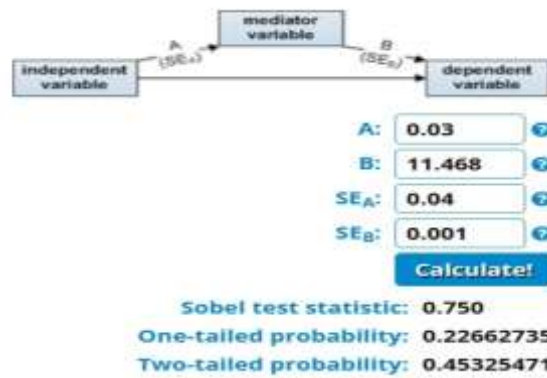


Figure 5. Sobel Test on the Effect of Family Size on Food Security Mediated by Poverty

Based on Figure 5, the two-tailed Sobel test probability value is 0.45325471. This value is greater than 0.05, which means there is no mediation effect. In other words, poverty does not serve as a mediator in the relationship between family size and food security. This finding is consistent with the study by Hakim et al (2021), which indicates that family size has a positive effect but does not significantly influence food consumption in poor households.

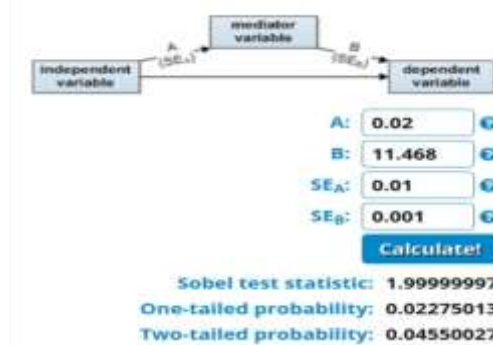


Figure 6. Sobel Test on the Effect of Husband's Education Level on Food Security Mediated by Poverty

Based on Figure 6, the two-tailed Sobel test probability value is 0.04550027. This value is less than 0.05, which means there is a mediation effect. In other words, poverty can mediate the relationship between the husband's education level and food security. This result is in line with the research by Wordofa et al. (2021), which shows that education positively affects household poverty. Each additional year of education increases income. This finding aligns with the study by Sugiharti et al (2022), which found that the relationship between the education level of the head of the household and household poverty is positive. Households with lower education levels in the head of the household tend to have a higher risk of poverty compared to those with higher education levels.

DISCUSSION

This research is important as it addresses a fundamental aspect of poor households' livelihoods—household food security. Food security goes beyond just caloric intake; it reflects a household's ability to access and afford nutritious food sustainably. In the context of Nagari Nyiur Melambai, the findings show that while

most poor households are categorized as food secure, the actual average energy consumption is only 27.62% of the national dietary adequacy standard (2,100 kcal/day). This indicates a disparity between food access and consumption quality. The results align with the findings of Liu et al (2016), which revealed that household income has a positive impact on consumption, but the relationship is not necessarily linear. This is supported by the Sobel Test results in the present study, which show that poverty does not mediate the relationship between income and food security. The findings also support Steve Hatfield-Dodds (2007) which concluded that household size does not significantly influence food consumption in poor households. Conversely, this study found that husband's education level affects food security through poverty, in line with Janjua (2014) which emphasized that education reduces poverty and positively impacts household welfare. Educated heads of households are more likely to have better income and food access.

The implications of this study are significant for policy development aimed at poverty alleviation and improving food security. Local governments and social institutions can use these findings as a basis to design programs that focus on increasing educational access and vocational training for poor households. Moreover, food aid programs should not only address caloric needs but also focus on long-term economic empowerment and nutrition education.

However, the study has limitations. It does not consider other potential factors affecting food security, such as access to health services, cultural food practices, and local environmental sustainability. Additionally, the focus on energy intake (calories) overlooks important dimensions of nutrition, such as protein, vitamins, and micronutrients. Recommendations for future research include expanding the scope of variables to cover nutritional quality, environmental factors, and gender roles in food security. Longitudinal studies are also recommended to capture dynamic changes in food security over time. Furthermore, incorporating qualitative methods such as in-depth interviews could provide deeper insights into how poor households manage food insecurity and adapt during crises .

CONCLUSIONS AND RECOMMENDATIONS

This study explores the relationship between household income, food expenditure, family size, education level, and poverty in determining food security in Nagari Nyiur Melambai, Ranah Pesisir Subdistrict, Pesisir Selatan Regency. The research finds that the majority of poor households in this area experience food security, but still face challenges in achieving adequate energy consumption. The average energy consumption is lower than the national requirement, indicating nutritional inadequacies. The study employs multiple linear regression analysis to examine how these factors affect food security, revealing that household income, education level, family size, and poverty significantly influence food security levels. Additionally, the Sobel test, which tests the mediating effect of poverty, shows no mediation effect between household income and food security, but does reveal a significant mediation effect for the husband's education level.

The results suggest that improving household income, reducing family size, and increasing the husband's education level can contribute to enhancing food

security. Addressing poverty remains crucial, but its role as a mediator is more complex. The study highlights the interconnectedness of socioeconomic factors in shaping food security in rural communities.

FURTHER STUDY

Future research should explore the dynamics of energy consumption and food security using longitudinal data to capture changes over time. Additionally, incorporating qualitative methods may provide deeper insights into the lived experiences of rural households and the nuanced role of poverty as a mediating factor.

ACKNOWLEDGMENT

The author would like to thank the Central Statistics Agency, the Food Security Agency, Wali Nagari Nyiur Melambai for allowing and assisting in conducting research in taking data, and also to related parties who assisted in conducting this research.

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