

The Impact of Food Social Assistance on Household Food Security In An Islamic Perspective

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ABSTRACT

Indonesia, a developing nation, boasts a vast population of 263 million individuals. Despite this, many of the population still live in impoverished conditions, leading to a notable unemployment rate of 14.23% in Aceh, equivalent to 804,530 individuals. The Central Statistics Agency (BPS) suggests that community welfare can be gauged by food sufficiency, encompassing calorie and protein intake. This research uses logistic regression analysis to examine the determinants of food security at the household level. Logistic regression was chosen due to the categorical nature of the variables under study, specifically the classification of food security (0) and food insecurity (1). The independent variables considered in this research comprise the frequency of aid (X_1), household head income (X_2), family size (X_3), aid amount (X_4), and household perceptions of food assistance (X_5). The findings reveal that the household's perception of food assistance is the most influential factor affecting household food security in Gampong Klieng Manyang. The resulting logistic regression model is represented as $g(x) = -15.299 - 18.879 X_1 - 0.000 X_2 - 0.238 X_3 - 18.460 X_4 + 0.425 X_5$. In logistic regression, the coefficients are interpreted through odds ratios. Notably, the frequency of the aid variable exhibits the highest odds ratio, underscoring its significance in shaping household food security in Gampong Klieng Manyang, Sukamakmur District, Aceh Besar Regency.

Keywords: Food Social Assistance, Food Security, Logistic Regression.

I. Introduction

As a developing country with a population of 263 million, Indonesia faces a significant challenge in reducing its unemployment rate, which reached 14.23% in Aceh as of March 2024, equivalent to 804,530 people (BPS Aceh, 2024). Although Indonesia is rich in natural resources and classified as an agricultural country, food accessibility remains critical. With the population projected to reach 319 million by 2045 (A. Rachman, 2021), food security is becoming increasingly important. Indicators of community welfare, such as calorie and protein adequacy, are key measures in assessing poverty levels. Banda Aceh is reported to have the highest poverty line and energy consumption among several regions, while North Aceh, Southeast Aceh, Bener Meriah, and Subulussalam have the lowest (Zakiah, 2016). In response to food insecurity, the Government Rice Reserve (CBP) Food Assistance Program in Gampong Klieng Manyang distributes 10 kg of rice monthly to underprivileged households. The objective is to reduce the economic burden of beneficiary families. However, issues of injustice persist in distribution; for instance, deceased individuals are still listed as

recipients, while some eligible citizens are excluded. In 2023, Hasimi found that in Merak Batin Village, South Lampung, not all Beneficiary Families (KPM) receiving food aid truly represented the poorest households (Hasimi et al., 2020). From an Islamic perspective, food security is one of the key objectives of sharia (maqāṣid al-sharī'ah), specifically related to the protection of life (ḥifẓ al-nafs). Food is a fundamental human need for survival, and ensuring access to safe, nutritious, and sufficient food aligns with Islamic principles of justice and welfare. In light of this, questions arise regarding the impact of food social assistance on household food security in Gampong Klieng Manyang from an Islamic perspective. This study aims to evaluate the effectiveness of food aid in improving household food security and assess whether it fulfills the community's nutritional needs according to Islamic teachings. The benefits of the above research are to improve public understanding of food social assistance and improve the community's welfare as recipients of food social assistance. This research's positive impact is reducing poverty and hunger and supporting sustainable community development in the village of Klieng Manyang, Sukamakmur District, Aceh Besar Regency.

II. Literature Review and Hypothesis Development

2.1. Social Food Assistance and Food Security

Social food assistance refers to government support provided in non-cash form to low-income communities, aimed at reducing food-related expenses so that households can allocate their limited funds for other essential needs. Based on the Ministry of Social Affairs Regulation No. 20 of 2019, Non-Cash Food Assistance (BPNT) is directed at families in the lowest 25% of the socio-economic bracket. Additionally, the government launched the 2023 Direct Cash Assistance (BLT) program to mitigate the impact of food inflation, targeting 18.8 million households with IDR 600,000 over three months. This initiative is expected to improve household consumption quality and indirectly support health and education. (Olabu, *et al.*, 2024).

Food security is closely tied to community welfare, especially as Indonesia's per capita food expenditure remains high. Food affects household resilience, commonly assessed by spending and consumption patterns. Economically and physically, food must be accessible, safe, nutritious, and aligned with cultural preferences to support a healthy and active life. (Akrasi, *et al.*, 2020). Despite the country's agricultural potential, the sector still faces challenges in providing added income and youth engagement value. A shift toward modern and innovative agriculture is necessary to attract younger generations and enhance productivity. In Islamic teachings, the household plays a fundamental role in the social structure. The Qur'an emphasizes the importance of protecting the household and ensuring its welfare. Islam encourages proper food utilization and emphasizes family responsibility to achieve physical and spiritual well-being. (Subianto, 2020). Food security at the household level prevents malnutrition and diseases such as stunting and fulfills religious obligations.

2.2. Measurement Scale

The measurement scale in this study uses a Likert scale. The Likert scale in this study measures the perception of the impact of social food assistance on household food security. The Likert scale measurement in this study can be seen in Table 1.

Table 1. Likert Scale

Question	Skor
Strongly Agree (SS)	5
Agree (S)	4
Disagree (KS)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

The FAO developed the Food Insecurity Experience Scale (FIES), commonly used to measure food security levels. It assesses individual experiences and observable symptoms of food insecurity, making it applicable across different cultural contexts. (Cafiero, *et al.*, 2019). As a pilot study, this research will be conducted in Gampong Klieng Manyang, Aceh Besar, an area with a diverse range of agricultural activities and a significant percentage (26.23%) of agricultural households.

Table 2. Eight Statements in FIES Measurement and Analysis

1.	Households/others may worry about not having enough food due to limited funds and other resources (Worry)
2.	Households/others may not be able to enjoy nutritious and healthy meals due to limited funds and other resources (Healthy)
3.	Households/others may only be able to enjoy a small variety of meals due to limited funds and other resources (Fewfood)
4.	Households/others may have missed meals due to limited funds and other resources (Skipped)
5.	Households/others may consume less than usual due to limited funds and other resources (Ateless)
6.	Family may experience under-consumption due to limited funds and other resources (Runout)
7.	Households/others may feel deprived but are unable to eat due to limited funds and other resources to obtain food (Hungry)
8.	Households/others may not consume at all in a day due to limited funds and other resources (Whlday)

Source: SITASI Guidelines 2020, adapted from the National Socio-Economic Survey Questionnaire Module KOR 2019

Table 2 contains eight questions using the FIES measurement and analysis method. In this explanation, the level of food vulnerability is illustrated, which is divided into three levels: mild food vulnerability as seen from questions 1-3, moderate food vulnerability from questions 4-6, and severe food vulnerability from questions 7-8. The questions in the FIES also reflect the psychological conditions of households facing food vulnerability (Wambogo, *et al.*, 2018).

III. Research Method

3.1. Type of Research

This study employs a quantitative research method. According to (Sugiyono, 2018) Quantitative research is rooted in the positivistic paradigm, involving the examination of a specific population or sample with the purpose of testing predetermined hypotheses. It involves using research instruments, systematic data collection, and statistical analysis to conclude. (Hermawan, *et al.*, 2019) Further describes quantitative research as a scientific approach that is inductive, objective, and relies on large-scale data—either numerical values or evaluable statements—analyzed through statistical methods.

3.2. Research Sample

The sample is a subset of the population that represents its characteristics. This study's sample consists of 110 respondents, all residents of Gampong Klieng Manyang and recipients of government food social assistance. These households were selected based on purposive criteria, specifically targeting beneficiaries of the food aid program.

3.3. Data Collection Techniques

Data collection was conducted using a structured questionnaire. The questionnaire included questions and statements relevant to the study variables and was distributed directly to the respondents to

ensure clarity and ease in responding. This method allows for systematic data collection that aligns with the study objectives. (Sugiyono, 2022).

3.4. Operational Definition of Variables

a. Dependent Variable (Y): Food Security

Food security is the primary focus of this study and is influenced by several independent variables. It represents the level of household access, availability, and adequacy of food. (Sugiyono, 2018).

b. Independent Variable (X): Characteristics of Food Social Assistance

Meanwhile, the independent variable is a variable that has an influence on changes in the dependent variable and has a positive or negative correlation with the dependent variable. (Sugiyono, 2018). The characteristics of food assistance examined in this study are:

- X₁: Frequency of Assistance
- X₂: Income of Head of Household
- X₃: Number of Family Members
- X₄: Amount of Assistance Received
- X₅: Household Perception of Food Social Assistance

3.5. Data Analysis Techniques

a. Descriptive Statistics

Table 3. Characteristics of Respondents Based on Gender, Age, Occupation, Monthly Income, Number of Family Members, and Assistance Received

Respondent Characteristics Based on Gender, Age, Occupation, Monthly Income, Number of Family Members, and Assistance Received	Frequency	Percent (%)
Gender		
Female	63	57,27%
Male	47	42,73%
Age		
Age 28-31 Years	3	2,73%
Age 32-40 Years	18	16,36%
Age 41-50 Years	45	40,91%
Age 51-65 Years	44	40%
Pekerjaan		
Housewife	22	20%
Teacher	25	22,73%
Farmer	58	52,73%
Trader	5	4,55%
Monthly income		
Rp 0 - Rp 500,000	33	30%
Between Rp 600,000 and Rp 1,000,000	43	39,09%
Starting from Rp 1,100,000 to Rp 1,800,000	32	29,09%
Price range Rp 1,900,000 to Rp 2,500,000	2	1,82%
Number of Family Members		
One person		
Two people	16	14,5%
Three people	16	14,5%

Respondent Characteristics Based on Gender, Age, Occupation, Monthly Income, Number of Family Members, and Assistance Received	Frequency	Percent (%)
Four people	33	30%
Five or more people	42	38,2%
	3	2,7%
Assistance Received		
Cash	71	64,5%
Food Packages	39	35,5%

Based on the data in Table 2, the characteristics of the respondents' gender show that there are 63 male respondents, with a percentage of 57.27%, and 47 female respondents, covering 42.73%. From this information, it can be seen that most respondents are male, reaching 57.27%. Judging from the age characteristics, the respondents are divided as follows: three people aged 28-31 years (2.73%), 18 people aged 32-40 years (16.36%), 45 people aged 41-50 years (40.91%), and 44 people aged 51-65 years (40%).

These data show that the largest age group among respondents is between 41 and 50 years, reaching 40.91% of the total. This may be due to the high level of up-to-dateness of people in this age group regarding information related to the village, such as social assistance and other information. In terms of job characteristics, respondents consisted of 22 housewives (20%), 25 traders (22.73%), 58 farmers (52.73%), and five teachers (4.55%). From this distribution, farmers were the largest group with a percentage of 52.73%. In terms of income, respondents were divided into several categories 33 people earned between Rp 0 - Rp 500,000 (30%), 43 people earned between Rp 600,000 - Rp 1,000,000 (39.09%), 32 people A total of 29.09% of respondents had an income between Rp 1,100,000 - Rp 1,800,000, while 1.82% had an income between Rp 1,900,000 - Rp 2,500,000. In addition, data on household characteristics show that there are 16 households with one family member (14.5%), 16 households with two family members (14.5%), 33 households with three family members (30%), 42 households with four family members (38.2%), and three households with five or more family members (2.7%). On average, the community receives social assistance, where 71 people receive cash assistance (64.5%), while 39 people receive necessities (35.5%).

b. Logistic Regression

The regression analysis method used in logistic regression involves binary or categorical response variables, with values 0 and 1 (Safitri, et al., 2019). This analysis is used to evaluate factors that influence food security in households. For example, some people receive social assistance based on gender, age, occupation, and income. In this case, variable X is the community receiving social assistance. The binary logistic regression model examines the relationship between the response variable and the predictor variable, with the response variable being dichotomous qualitative data. (Tampil, et al., 2017).

1. Simultaneous Significance Test

The first step is to test the role of the parameters in the overall model with the following hypotheses:

H_0 : There are no significant coefficients (the model has no meaning)

H_1 : At least one coefficient has a value that is not equal to zero (the model has meaning)

$i = 1, 2, 3, \dots, p$

Statistics used:

$$G = -2 \left(\ln L_0 - \ln L_1 \right) = -2 \left(\ln L_0 - \ln L_1 \right)$$

Where:

l_0 : Highest assessment of potential role for species under null hypothesis

l_1 : Highest assessment of potential role for species under alternative hypothesis

L_0 : Highest assessment of potential logarithmic role for species under the null hypothesis

L_1 : Highest assessment of potential logarithmic role for species under the alternative hypothesis

The squared value of W will follow the Chi-square distribution with degrees of freedom = 1. If the value of $W^2 \geq \chi^2_{(1, \alpha)}$ or $p\text{-value} \leq \alpha$, then the null hypothesis will be rejected, while the alternative hypothesis will be accepted otherwise (Ghozi, *et al.*, 2018).

2. Partial Significance Test

The significance test of each parameter is carried out using the Wald Test method, where the proposed hypothesis is:

$H_0: \beta_i = 0$ (logit coefficient is considered to have no significance in the model)

$H_1: \beta_i \neq 0$ (logit coefficient is considered significant in the model)

$i = 1, 2, 3, \dots, p$.

With test statistics:

$$WW^2 = \frac{\beta}{SE(\beta_i)}$$

Where:

β β regression parameter estimation value

$SE(\beta_i)$: is the standard error

However, the value of the W square will still follow the Chi-square distribution with $df = 1$. If the value of $W^2 \geq \chi^2_{(1, \alpha)}$ or $p\text{-value} \leq \alpha$, then the null hypothesis is not accepted, and the alternative hypothesis will be accepted.

3. Goodness of fit test

The Hosmer-Lemeshow test is used to evaluate the suitability of the model in logistic regression with the following hypothesis:

$$H_0: \pi(x_1) = \frac{\exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi})}{1 + \exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi})}$$

(The model is suitable if there is no significant difference between observations and estimates.)

$$H_1: \pi(x_1) = \frac{\exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi})}{1 + \exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi})}$$

(The model is unsuitable if there is a significant difference between observations and estimates.)

$$i = 1, 2, 3, \dots, p$$

The Hosmer-Lemeshow statistic will follow the Chi-square distribution with degrees of freedom = $g - 2$, where g is the number of existing sequences, with the following formula:

$$X^2_{HL} = \sum_{i=1}^{gg} \frac{(O_i - N_i \pi_i)^2}{N_i \pi_i (1 - \pi_i)}$$

Where:

N_i : total number of observations from the i -th sequence

O_i : frequency observations of the i -th sequence

π_i : estimated average probability of the i -th sequence

The model suitability test compares the Chi-square value obtained with the Chi-square results in the table, with degrees of freedom $df = g - 2$. Jika $X^2_{HL} \geq X^2_{(g-2)}$ then H_0 is not accepted and H_1 is accepted (Ghozi, et al., 2018).

4. Odds Ratio

The odds ratio measures the risk or tendency to experience a 'success' event in one category or another. Odds ratio is a measure that estimates how much the dependent variables tend to be. Odds ratio indicates how much success occurs in a group compared to other groups, especially the classification of Food Security as zero and Food Insecurity as 1 (Risdayanti, et al., 2020). The ratio of odds for $x = 1$ and $x = 0$ can therefore be written in the following equation:

$$\varphi = \frac{\pi(1)/[1 - \pi(1)]}{\pi(0)/[1 - \pi(0)]}$$

So, the Odds Ratio value is:

$$\varphi = \frac{\left(\frac{e^{\beta_0} + \beta_1}{1 + e^{\beta_0} + \beta_1}\right) \left(\frac{1}{1 + e^{\beta_0} + \beta_1}\right)}{\left(\frac{e^{\beta_0}}{1 + e^{\beta_0}}\right) \left(\frac{1}{1 + e^{\beta_0}}\right)}$$

$$\varphi = \frac{e^{\beta_0} + \beta_1}{e^{\beta_0}} = e^{\beta_1}$$

This means that the odds (risk) of $Y = 1$ occurring in category $X = 1$ is $\exp(\beta_1)$ times the odds of $Y = 0$ occurring in category $X = 0$. Suppose the independent variable is a categorical variable with more than two categories (polychotomy). In that case, the interpretation is done in the same way as the interpretation of the dichotomous variable, but a dummy variable needs to be formed first for this variable. Meanwhile, for continuous independent variables, the interpretation is that every increase in the value of X by one unit will result in a change in the odds value of $Y = 1$ occurring by $\exp(\beta_1)$ times. Simply put, if the odds ratio > 1 then the independent variable affects the dependent variable, then if the odds ratio $= 1$ then there is no relationship between the independent and dependent variables, whereas if the odds ratio < 1 the independent variable reduces the effect on the dependent variable. (Risdayanti, et al., 2020).

IV. Results and Discussion

4.1. Overall Significance Test

The rejection condition of H_0 is $G > X^2(df, 0.05)$. The test results show that

Table 4. Overall Significance Test

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	83.640 ^a	0,067	0,118

From the summary of the model obtained, the value of -2 Log likelihood of 83,640 exceeds X^2 (0.05), so H_0 can be rejected. This indicates that at least one independent variable impacts the model. Although the Cox & Snell R Square and Nagelkerke R Square values are relatively low, namely 0.067 and 0.118, they still show how well this model can predict the dependent variable in a broader context.

4.2. Individual significance test

The criterion for rejecting H_0 is $|W^2| > X^2(1, \alpha)$ or $P\text{value} <$

Table 5. Wald Test Statistic Value

		B	S.E.	Wald	df	Sig.
Step 1 ^a	FrequencyHelpX ₁	18.879	40192.696	0,000	1	1.000
	IncomeX ₂	0,000	0,000	0,058	1	0,809
	NumberofMembersX ₃	0,238	0,325	0,536	1	0,464
	HelpX ₄	-18.460	40192.696	0.000	1	1.000
	PerceptionX ₅	0,425	0,188	5.116	1	0,024
	Constant	-15.299	7.119	4.618	1	0,032

Based on the regression analysis presented in Table 5, the frequency of assistance (X_1) has a regression coefficient of 18.879 with a significance value of 1.000, indicating that this variable does not have a statistically significant effect on food security. Similarly, the income of the head of household (X_2) shows a regression coefficient of 0.000 with a significance value of 0.809, suggesting no significant impact on the dependent variable. The number of family members (X_3) has a positive regression coefficient of 0.238, but with a significance value of 0.464, this influence is also not statistically significant. Meanwhile, the amount of assistance funds (X_4) shows a negative regression coefficient of -18.460, but with a significance value of 1.000, making the effect statistically insignificant. In contrast, the variable household perception of food social assistance (X_5) has a regression coefficient of 0.425 and a significance level of 0.024.

This result indicates a statistically significant positive effect on food security. In other words, a better perception of the assistance program contributes to a higher level of household food security. The constant value in this model is -15.299 with a significance level of 0.032, suggesting that in the absence of the independent variables, the baseline level of food security tends to be low. From the five independent variables tested, only household perception (X_5) significantly affects household food security. This supports the acceptance of H_1 and highlights the importance of positive perception and understanding in maximizing the impact of food social assistance programs. Other variables, including frequency of assistance, income, number of family members, and amount of assistance funds, do not show statistically significant effects, leading to the rejection of H_0 for those variables.

These findings suggest the need for improved communication, education, and transparency in the distribution of assistance, as well as targeted strategies that emphasize not just the quantity but the quality and perception of food social aid programs. Such improvements are crucial to achieving more effective and equitable food security outcomes in Gampong Klieng Manyang, Sukamakmur District, Aceh Besar Regency.

4.3. Model Suitability Test

Based on the decision criteria, if $C\beta \times X(2\alpha, g-2)$, then H_0 is rejected. Test results:

Table 6. Hosmer and Lemeshow Test

Step	Chi-square	df	p-value
1	5.534	8	0,699

The analysis results show a figure of 5,534 with a p-value = 0.699. This indicates a rejection of H_0 because the p-value is greater than α , which is 5%. Thus, it can be concluded that the model fits the observed data without a significant difference between observations and model predictions.

4.4. Odds ratio

Table 7. Odds Ratio

Variable	Odds ratio
Frequency of Assistance (X_1)	2.119
Income (X_2)	1.000
Number of Members (X_3)	1.269
Aid Fund(X_4)	0.000
Perception (X_5)	1.530

Table 7 above shows that the odds ratio for the Frequency of Assistance variable with a value of more than 1 indicates that the frequency of assistance has a significant effect on household food security in Gampong Klieng Manyang, Sukamakmur District, Aceh Besar Regency. In general, the results of this study are in line with the research conducted by Rahmadya saputri (2020) The study examines the relationship between food consumption patterns and household food security levels in Kampar Regency, Riau Province. It is known that some households are not food secure, with unfulfilled food consumption patterns in 58 (90.36%) households. Meanwhile, households with fulfilled food consumption patterns are only 31 (75.61%), including food-secure households. (Saputri, et al., 2020).

V. Conclusion

This study analyzed the impact of social food assistance on household food security in Gampong Klieng Manyang by examining several contributing factors. The findings indicate that the frequency of assistance potentially influences food security, although not statistically significantly, with a B value of 2.119. Similarly, the income of the head of household and the number of family members do not exhibit a significant relationship with food security, with respective significance values of 0.809 and 0.464. The assistance funds received also show no significant impact on household food security. Interestingly, household perceptions of food assistance emerged as a significant factor, with a B value of 1.530 and a significance level of 0.024. This finding highlights how recipients' perceptions and interpretations of assistance can play a crucial role in improving food security at the household level. From an Islamic perspective, maintaining food security is essential to fulfilling the objective of *hifz al-nafs* (protection of life), ensuring that individuals can live safely and with dignity, free from hunger and deprivation. Although factors like assistance frequency and household perception show some influence, the overall analysis concludes that social food assistance does not significantly improve household food security in Gampong Klieng Manyang, Sukamakmur District, Aceh Besar Regency.

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