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The Food Security Of The Household Recipient Of Food Independent Village Program In Central Sumba Regency

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Submitted : October 9th, 2020 ; Revised : October 20th, 2020; Accepted: December 14th, 2020

Abstract

Keywords:

Food security; energy; consumption; share of food expense

The Food Independent Village Program was performed to give an impact on reducing the level of food and nutrition insecurity of the needy in rural areas. The success of program implementation can be seen from the level of food security of the household recipients. This research aimed to determine the level of food security based on 1) Share of Food Expenses (PPP), 2) Energy Sufficiency Rate (AKE), 3) Performance of household food security. The research method used was a survey method. Sampling used was a random sample (Random Sampling) with 85 respondents. The analysis method used was a cross-combination approach between the share of food expenses (PPP) and the level of household energy consumption (AKE). The results showed that based on AKE the distribution of food-secure households was 65.53% and food insecure was 36.47%. Meanwhile, based on PPP, the distribution of households that were food insecure was 40% and food secure was 60%. The performance of household food security in the food security category was 25.88 percent, food vulnerability was 40.00 percent, food shortage was 14.12 percent, and food insecurity was 20.00 percent. The proportion of households that were food insecure was still large, which means that efforts were needed to improve the food security of households who were the Food Independent Village program recipients.

How to Cite (APA 6th Style):

Umbu, Y., Sabaora, O., Priyanto, S. H., & Prihanti, T. M. (2021). The Food Security Of The Household Recipient Of Food Independent Village Program In Central Sumba Regency. *SOCA: Jurnal Sosial Ekonomi Pertanian*, 15(2), 334–344. <https://doi.org/https://doi.org/10.24843/SOCA.2021.v15.i02.p09>

INTRODUCTION

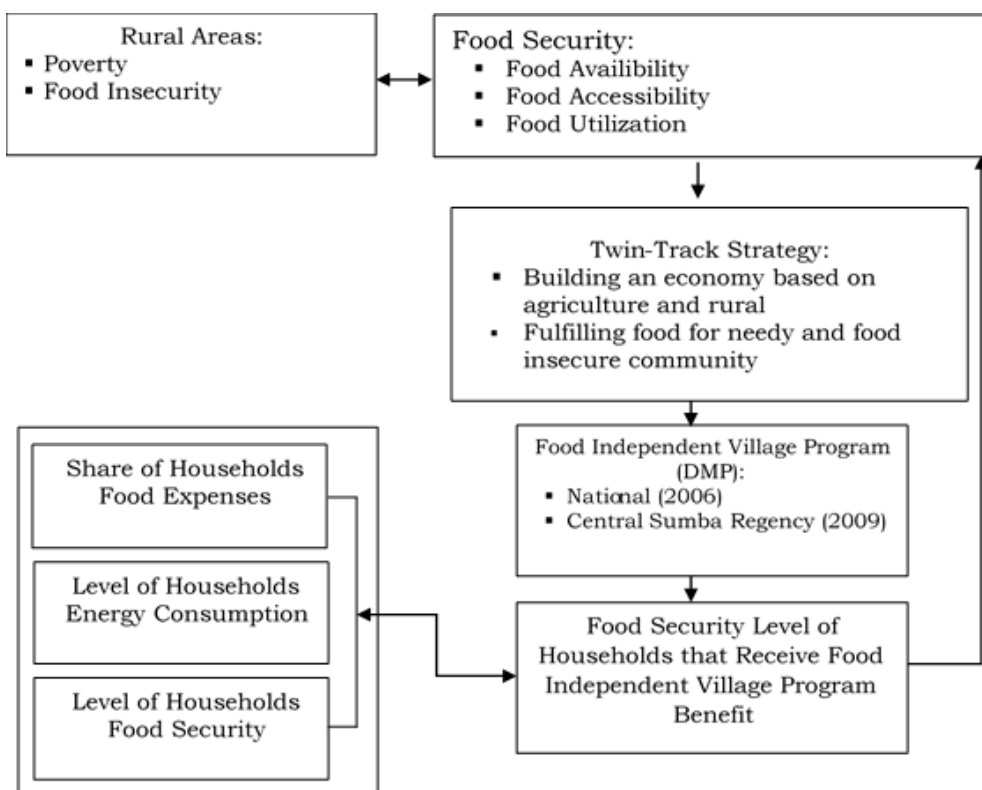
The Food Independent Village Program (DMP) was a community empowerment activity in rural areas which experiencing food insecurity with the characteristics: low quality of community resources, limited capital resources, low access to technology, and limited rural infrastructure. The components of the Food Independent Village activities include: (1) community empowerment; (2) institutional strengthening; (3) development of a food security system; and (4) integration of cross-sectoral programs in supporting the development of rural facilities and infrastructure (BKP, 2006).

Central Sumba Regency was one of the regencies that implement the Food Independent Village program. Due to the existence of poor households and the occurrence of food insecurity in this region, since 2009 - 2012 the Food Independent Village activities have been performed in Mataredi, Tanamodu, Maderi, Cendana and Padiratana villages (DKP, 2016).

The research results on household food security in rural areas showed that the proportion of households that were food insecure was still quite high. Dirhamsyah et al. (2016) stated that the percentage of food independent village households in Java that were food insecure was still quite large at 74 percent, food vulnerability 22 percent, and food security at 4 percent. Mulyo, et al. (2015) stated that the largest food security performance of farm households in Bojonegoro Regency was in the food shortage and food security categories. Meanwhile, Rahayu (2010) stated that poor households in Sukoharjo Regency were classified as food insecure households. This research raised the issue of the level of food security at the Food Independent Village location in Central Sumba Regency with the objectives of 1) discovering food security based on the share of food expenses of households that received the Food Independent Village program; 2) determining food security based on the energy consumption level of households that receive the Food Independent Village program; and 3) determining the level of food security of households receiving the Food Independent Village program. The importance of this research because of there was no research that specifically addresses the problem of household food security in the research location, and can also be used as an evaluation material for policy makers in implementing food security programs in rural areas, especially in Central Sumba Regency and can be a perspective for evaluating similar programs in rural areas.

RESEARCH METHODS

Research Framework



Picture 1. Research Framework

One of the problems in rural areas was the high level of poverty and food insecurity. BKP (2018) noted that the percentage of the food insecure population in Indonesia was still quite large, which was in 2017 there were still 12.69% of the food insecure population. According to Maxwell and Frankernberger (1992) one of the determinant factors of chronic food insecurity was poverty. Meanwhile, in the context of food security, food availability and food accessibility were two important factors in increasing household food security (Sayogyo, 1991; Suhardjo, 1996).

The Food Security Council (2006) stated that the general strategy to achieve food security was a twin-track strategy which has been performed through the Food Independent Village program by the Food Security Institution since 2006. Meanwhile, in Central Sumba Regency, this has been performed since 2009. The analysis of food security level of households that received the Food Independent Village program was performed based on the share of food expenses and the level of household energy consumption. This was in accordance with the approach used by Jonsson and Toole (1991) in Maxwell, et al., (2000) which was a combination of share of food expenses indicator with the equivalent energy consumption of adult indicator. Thus, an overview of household food security will be obtained based on the share of food expenses, the level of energy consumption, and the level of food security of a household.

Research Location

The research was conducted in Central Sumba Regency, East Nusa Tenggara (NTT) Province for 3 (three) months, from April to June 2019. The selection of

research locations was performed purposively, which in 5 (five) villages that implementing the Food Independent Village activities (DMP).

Population and Sampling

The population in the research was 550 households who were the beneficiaries of the Food Independent Village program. Sampling was done randomly (random sampling) with the Taro Yamane or Slovin formula (Riduwan, 2014). Based on Slovin's formula as can be seen below, the number of samples obtained was 85 respondents spread over 5 (five) villages.

$$n = \frac{N}{N.d^2+1} = \frac{550}{550.0.01+1} = 85 \text{ respondents}$$

Information:

n = Total Sample

N = Total Population

d² = Precision (set on 10% with confidence level of 95%)

Data Collection Method

The primary and secondary data collection by interview method was using questionnaires, observation of research objects, data recording from agencies or institutions and food recall to obtain data on family food consumption. The data analysis technique was performed by descriptive statistically to describe the various variables that used in the research. Data processed was using Microsoft Office Excel 2003 program, SPSS 25 program and Food Consumption Analysis Software of the Food Security Institution of the Ministry of Agriculture Republic of Indonesia 2013.

Data Analysis Method

First Objective Analysis

The level of food security based on the Food Expenses Share (PPP) was analyzed using an equation as follows (Purwaningsih et al., 2010):

$$PPP_i = \frac{PP_i}{TP} \times 100\%$$

Whereas,

PPP_i = Food Expenses Share to-i (%)

PP_i = Food Expenses to-i from food shopping (Rp/month)

TP = Total Expenses (Rp/month)

A farmer household was said to have a low share of food expense if the value of the share of food expense (PPP) was less than 60% (< 60%) of total expenses. On the other hand, if the share of food expense (PPP) was more than or equal to 60% (≥ 60%) of total expenses, then the farmer household was included in the high category.

Second Objective Analysis

The level of household food security based on the Energy Adequacy Rate (AKE) approach was analyzed by following the below equation (Mulyo, et al., 2015; Purwantini et al., 2002; Suharyanto, 2015; January, 2014):

a. Household Real Energy Consumption (KERT) (1)

$$KERT = \frac{BP_j}{100} \times \frac{BDD}{100} \times KG_{ji}$$

- b. Total of Adult Equivalent Unit (JUED) (2)

$$\text{JUED} = \text{JEAU}/\text{JKEA}$$
- c. Adult Equivalent Energy Consumption (KED) (3)

$$\text{KED} = \text{KERT}/\text{JUED}$$
- d. Level of Energy Adequacy (TKE) (4)

$$\text{TKE} = \frac{\text{KED}}{2.150} \times 100\%$$

Information:

KGij = Content of certain nutrients (i) for food (j) consumed food that appropriate with the unit (calories).

BPj = Food weight – j that consumed (cal).

BBD = Edible portion (in percent or grams of 100 grams of food – j).

KERT = Real energy consumption for household level (kcal).

KED = Adult equivalent energy consumption (kcal).

(Per one adult equivalent unit was equivalent to a man aged 20-59 years old, with body weight about 62 kg with moderate activities. This means that the number of family members who aged under and above that age was equivalent to a man aged 20-59 years).

JUED = Total of Adult Equivalent Units (persons) (equivalent to the number of household members).

JKEA = Total recommended energy adequacy (kcal) of 2,150 kcal kcal/capita/day based on WKNPG X of 2012 (Permenkes No. 28 of 2019).

TKE = Energy adequacy level (%)

Based on the calculation above, a farmer household was included in the category of sufficient energy if the value of the Energy Adequacy Level (TKE) was greater than 80% (> 80%) of the energy adequacy requirements. On the other hand, if the value of the Energy Adequacy Level (TKE) was less or equal to 80% ($\leq 80\%$) of the energy adequacy requirements, then the farmer household was included in the lack of energy category.

Third Objective Analysis

The analysis of the level of household food security used measuring criteria of food security performance from Jonsson and Toole as adopted by Maxwell D. et al., (2000) which was a cross combination between the share of food expense and energy consumption adequacy. The level of household food security was presented in table 1 as follows.

Table 1. The Level of Household Food Security

No.	Energy Consumption per Adult Equivalent Unit	Share of Food Expense	
		Low (<60% total expense)	High ($\geq 60\%$ total expense)
1.	Sufficient (>80% Energy Sufficiency Requirements)	Food Security	Food Insecurity
2.	Lack ($\leq 80\%$ Energy Sufficiency Requirements)	Food Deficiency	Food Vulnerability

Source: Jonhsson and Toole, (1991) in Maxwell D. et al., (2000)

Based on table 1 above, it can be seen that the cross-classification between the share of food expense and the level of energy consumption resulted in the following criteria for the level of food security:

- Food-secure households had a low share of food expense (<60%) of total expense and sufficient energy consumption (>80%) of energy adequacy requirements.
- Food vulnerable households had a low share of food expense (< 60%) of total expense and less energy consumption (\leq 80%) of energy adequacy requirements.
- Food deficient households had a high share of food expense (\geq 60%) of total expense and high energy consumption (\geq 60%) of energy adequacy requirements.
- Food insecure households had a high share of food expense (\geq 60%) of total expense and less energy consumption (\leq 80%) of energy adequacy requirements

RESULT AND DISCUSSION

Share of Food Expense of Household that Received the Food Independent Village Program

The share of food expense was the ratio between food expense and the total expense of a household per month. The respondents of household food expense according to the share of food expense can be seen in table 2 and table 3 as follows.

Table 2. The Average of Food Expense Based on Share of Food Expense

Village	Total and Percentage	Share of Food Expense	
		Low (< 60% total expense)	High (\geq 60 % total expense)
Mataredi	Total (Rp)	959.875.88	924.233.37
	Total Expense	1.737.123.09	1.425.693.99
	%	55,26	64,83
Tanamodu	Total (Rp)	891.097.69	915.154.25
	Total Expense	1.609.323.78	1.374.435.72
	%	55,37	66,58
Maderi	Total (Rp)	1.110.297.48	873.228.13
	Total Expense	2.010.218.88	1.350.001.70
	%	55,23	64,68
Cendana	Total (Rp)	1.217.335.11	1.110.258.22
	Total Expense	2.177.886.61	1.713.591.33
	%	55,90	64,79
Padiratana	Total (Rp)	949.217.88	925.296.67
	Total Expense	1.720.140.06	1.426.320.11
	%	55,18	64,87
Total	Total (Rp)	1.021.633.92	947.592.98
	Total Expense	1.844.581.66	1.454.759.62
	%	55,39	65,14

Source: Processed research primary data, 2019

Based on Table 2 above, it can be seen that the total of household food expense both in each region and in the aggregate in each category was relatively different, which had the same tendency, which was the total of food expense in the low expense share category (<60%) was greater from the high expense share category (\geq 60%). Except for Tanamodu village where the total of food expense in the high category was

greater than the low expense share category. In aggregate, the share of food expense in the low category (<60%) was Rp. 1,021,633.92 (55.39%) of the total food expense of Rp. 1,844,581.66, while the share of food expense in the high category (\geq 60%) was Rp. 947,592.98 (65.14%) of the total expense of Rp. 1,454,759.62. The results of this analysis were almost in line with the results of the analysis from the 2018 Food Security and Vulnerability Map where for Central Sumba Regency the percentage of households with the expense proportion on food more than 65 percent from total expense of 50 percent of 75.14 percent (BKP, 2018).

The average food expense based on the share of expense that described above was distributed among the respondent households in each village which can be seen in table 3 as follows.

Table 3. Household Distribution Based on Food Expense Share

Village		Food Expense Share		Total and Percentage
		Low (< 60% total expense)	High (\geq 60 % total expense)	
Mataredi	Total	7	9	16
	%	43,75	56,25	100
Tanamodu	Total	6	10	16
	%	37,50	62,50	100
Maderi	Total	7	8	15
	%	46,67	53,33	100
Cendana	Total	6	9	15
	%	40,00	60,00	100
Padiratana	Total	8	15	23
	%	34,78	65,22	100
Total	Total	34	51	85
	%	40,00	60,00	100

Source: Processed research primary data, 2019

Table 3 above showed that 51 households (60%) had a high share of food expense (\geq 60% of total expense) while 34 households (40%) had a low share of food expense (<60% of total expense). This means that the proportion of households' respondent with a high share of expense (\geq 60% of total expense) was greater than households with a low share of expense (<60% of total expense). Therefore, based on the share of food expense, households who were beneficiaries of the Food Independent Village program had a low level of food security.

Ilham & Sinaga (2007) stated that the share of expense can be an indicator of food security, in which the greater the share of a household's expense, the lower the level of food security. Similarly, with the level of community welfare. The higher the people welfare of a country, the lower the share of food expense of the community, and vice versa. In line with that, Ariani & Purwantini (2006) stated that the proportion of food and non-food expense can be an indicator to determine the level of welfare and household food security. Meanwhile, Saliem, et al., (2006) stated that from a welfare perspective, discussion and evaluation of the poverty situation can be determined through an expense pattern approach. As Engel's law, the higher a person's income (welfare), the share of food expense, especially staple food, will decrease but the share of non-food expense will increase. In accordance with this rule, it can be stated that a household with a relatively high share of food expense

was classified as a poor household. On the other hand, households with relatively low share of food expense were prosperous households

The Energy Consumption Level of Household Recipients of Food Independent Village Program

The level of energy consumption was the ratio between the total of energy consumed (calories) to energy adequacy in percent units (%) of the Nutrition Adequacy Rate (RDA). The distribution of energy consumption of household respondents based on the Energy Adequacy Rate (AKE) can be seen in table 4 as follows.

Table 4. The Energy Consumption Distribution Based on Energy Adequacy Rate (AKE)

Village	Total RT and Percentage	Energy Adequacy Rate Category (AKE)		Total
		Adequate (> 80% energy adequacy)	Deficient (\leq 80% energy adequacy)	
Mataredi	Total	11	5	16
	%	68,75	31,25	100
Tanamodu	Total	10	6	16
	%	62,50	37,50	100
Maderi	Total	10	5	15
	%	66,67	33,33	100
Cendana	Total	10	5	15
	%	66,67	33,33	100
Padiratana	Total	13	10	23
	%	56,52	43,48	100
Total	Total	54	31	85
	%	63,53	36,47	100

Source: Processed research primary data, 2019

Saliem, et al., (2006) based on Maxwell and Frankernberger (1992) stated that if viewed in terms of outcomes, food consumption was the entry point to evaluate the performance of one's household food security. Food consumption that was calculated in this case was that which had been converted in the form of energy and protein. The degree of household food security can simply be determined by evaluating energy and protein intake. Based on the data in table 4 above, it can be seen that the proportion of households which sufficient in energy sufficiency level (>80%) was greater than those that deficient in energy sufficiency level (\leq 80%) with a ratio of 65.53 percent and 36.47 percent. This showed that based on the level of energy consumption, most of the respondent households were households with food security category, which means that they were able to meet their household energy needs.

The Food Security Level of the Recipients of Food Independent Village Program

The level of household food security based on the cross combination between food expense share and energy consumption level as well as household distribution based on food security level can be seen in table 5 and 6 as follows.

Table 5. Cross Classification of Food Security Level

Energy Consumption per Adult Equivalent Unit	Food Expense Share	
	Low (<60% total expense)	High (≥60% total expense)
Adequate (> 80% Energy Adequacy)	Food Security (25,88%)	Food Vulnerable (40,00%)
Deficient (≤ 80% Energy Adequacy)	Food Deficiency (14,12%)	Food Insecurity (20,00%)

Source: Processed research primary data, 2019

Table 6. Household Distribution Based on Food Security Level

Village	Food Security Level								Total	
	Food Security		Food Vulnerable		Food Deficiency		Food Insecurity			
	Ttl	%	Ttl	%	Ttl	%	Ttl	%	Ttl	%
Mataredi	5	31,25	7	43,75	2	12,50	2	12,50	16	100,00
Tanamodu	4	25,00	6	37,50	2	12,50	4	25,00	16	100,00
Maderi	4	26,67	6	40,00	3	20,00	2	13,33	15	100,00
Cendana	4	26,67	6	40,00	2	13,33	3	20,00	15	100,00
Padiratana	5	21,74	9	39,13	3	13,04	6	26,09	23	100,00
Total	22	25,88	34	40,00	12	14,12	17	20,00	85	100,00

Source: Processed research primary data, 2019

Based on Tables 5 and 6 above, it can be seen that there were 22 food security households (25.88%), 34 food vulnerable households (40.00%), food deficient of 12 households (14.12%), and food insecurity of 17 households (20.00%). Food security households were households with relatively high incomes which able to meet their energy needs. A Good expense allocation and increased knowledge about nutrition can make households in a condition of food security. Meanwhile, food vulnerable households had been able to meet their energy needs with relatively lower income levels. Therefore, an increase in income can encourage these households to reach the food security category. This was different from food deficient households where the relatively higher income level had not been able to meet their energy needs. Increased knowledge about nutrition can increase food deficient households to become food security. Households with lower income levels but had not been able to meet their energy needs were food insecurity households. Increased income and knowledge about nutrition can remove households from food insecurity conditions.

CONCLUSION

The level of household food security based on cross classification between food expense share and energy adequacy rate showed that total household with food insecurity was greater than household with food security, food deficient and food vulnerable. This means that household respondents with relatively low income were yet not be able to meet their energy needs.

RECOMMENDATION

Increasing household income and knowledge about nutrition can be one solution to remove household respondents from food insecurity. Productive business training and the provision of social assistance (bansos) as a stimulant for business capital which had become one of the Food Independent Village programs can be one solution. Meanwhile, related to food consumption, in which household energy adequacy, education and assistance were needed regarding varieties of food consumption, nutritionally balanced and safe.

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