

## FOOD SECURITY AT THE VILLAGE LEVEL: LEARNING FROM HARGOREJO VILLAGE AS A VILLAGE FOR REDUCING FOOD INSECURITY IN THE SPECIAL REGION OF YOGYAKARTA

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### ABSTRACT

*This study aims to analyze food security at the village level, especially in Hargorejo Village, because Hargorejo Village has made achievements in reducing food insecurity in Yogyakarta. Thus making Hargorejo Village a pilot village for food security for other villages, especially villages still experiencing food insecurity. This study uses a descriptive qualitative research method, with a literature study using secondary data from the analysis of previous research and several mass media. Researchers used Webb and Rogers' food security theory to find out more details related to food security in Hargorejo Village. There are several indicators of food security: food availability, access, and absorption. The study's results stated that sweet potatoes were the most dominant food supply in Hargorejo Village on the food availability indicator. With data from village food production in Kokap District, this village produced 2,777 tons of cassava per year, then on the food access indicator, in accessing food in Hargorejo Village. More dominant in using physical access than social and economic access. This is evidenced by the description, which shows that there is physical access in the form of opening new land and making reservoirs by the Village Head of Hargorejo Village to supply the availability of food and clean water. Finally, on the food absorption indicator, it is noted that this village has a good record of nutrition and intake, as evidenced by the distribution table for the energy and protein adequacy consumption of rice and cassava by farm and non-farmer households.*

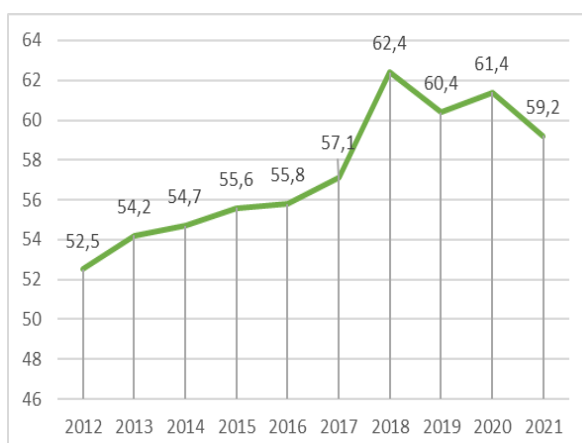
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### INTRODUCTION

The problem of food availability, such as the scarcity of essential food ingredients, is an issue that is often discussed. This was motivated by the disruption of the domestic food supply

chain and food production processes due to social restriction regulations, plus the number of layoffs during the Covid-19 pandemic. An increase in unemployment can potentially reduce

purchasing power and food and nutrition insecurity. This problem has also become the concern of the World Food and Agriculture Organization (FAO), which highlights the disruption of food availability due to the behavior of hoarding food (panic buying) in Indonesia (Napitupulu et al. 2021). The peak of food security problems in Indonesia will occur in 2021, where data from Global Food Security (GFSI) shows that in 2021 Indonesia's food security will decline compared to the previous year. GFSI recorded that Indonesia's food security index score in 2020 reached 61.4. However, in 2021 it has decreased to 59.2. With this index, Indonesia's food security in 2021 is ranked 69th out of 113 countries (Ahdiat 2022). This can be seen in the graph of Indonesia's food security index below:



Source: *The Economist*, 2021

Figure 1. Indonesia's food security index in 2012-2021 according to the Global Food Security Index

Based on these data, the issue of food security must be seriously addressed by the government because it involves the sustainability of the country and the lives of the nation's next generation. If the food crisis persists, the country's stability will be disrupted. In dealing with food problems, the government continues to make various efforts, both central and regional, one of which is the provincial government which carries out the mapping of business priorities to divide the authority of the food affairs sector in the administration of the local government related to the food sector. This aims to ensure that every service in the food sector can reach all parties who must be served and create an ideal, efficient, and effective organization (Sucihatningsih 2020).

There is an effective collaboration to achieve food security by encouraging the use of village funds. The use of village funds through community empowerment is essential to do so that village communities have sufficient ability to meet food needs independently. In this case, village funds are expected to be able to support activities from production to processing and marketing (Kemenko 2022). In addition, it is sufficient to strengthen food security at the village level to overcome food problems because the

key to food security is in the village. If all villages carry out a census of food needs, starting from the type and amount of production, food security will be easily realized (Sidik 2020).

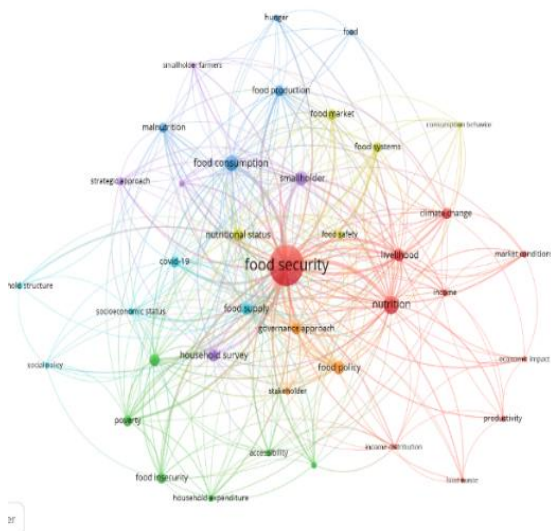
Hargorejo Village is a village that has succeeded in overcoming food insecurity. This is evidenced by the achievements achieved from 2012 to 2016, ranking 2nd in the Poverty Reduction and Vulnerability Pilot Village program for the Special Region of Yogyakarta (Pertanian Kulon Progo 2017). To maintain food security in this village, the Lurah Hargorejo has prepared land to support food security and has received support from the village head in the form of making dams to provide water for the community (Cahyani 2020).

This study aims to analyze food security at the village level, namely Hargorejo Village, because this village received an award in the food insecurity program in Yogyakarta. Previous studies related to food security, such as (Damayanti and Khoirudin 2016), His research examines the factors that influence household food security against farmer groups; (Ediwiwati, Koetiono, and Setiawan 2015) his study focused on the food self-sufficient village program which has the aim of analyzing the level of food security based on expected food patterns and

analyzing factors that influence food diversification; (Arida, Sofyan, and Fadhiela 2015) reviewing the analysis of household food security based on the proportion of food expenditure at the household level; (Rahmawati, Noor, and Yusuf 2020) examines related to food security based on the structure of income and expenditure at the farmer household level; (Hapsari and Rudiarto 2017) his research studies related factors that affect food insecurity and security;

(Safitri, Pangestuti, and Aruben 2017) examines the relationship between family food security and energy consumption levels; (Arlus, Sudargo, and Subejo 2017) his study, he conceptualized a new design for overcoming problems of family food security and nutritional status of children under five based on household empowerment; (Umanailo 2018) examine the factors of the decline in the level of consumption participation which has resulted in stagnation in efforts to diversify food consumption; (Hernanda, Indriani, and Kalsum 2017) his study focused on the approach to household food security of rice farmers; (Tajerin, Sastrawidjaja, and Yusuf 2017) examines the relationship between the level of welfare and food security of poor households in urban and rural areas. Previous searches were also

carried out by performing bibliometric analysis using VOSviewer. The results of the analysis can be seen in the following figure:



Source: VOSviewer Bibliometrics, 2022

Figure 2. VOSviewer Bibliometric Analysis

Based on the results of previous research searches which were analyzed using literature review techniques with several 10 journals and Bibliometric VOSviewer analysis, it can be seen that previous studies focused on nutrition, food consumption, food production, food systems, food markets, food policy, household, and stakeholders. In addition, previous research only focused on the study of factors, problems, levels, income, and expenditures of food security, and the theory used only focused on

consumption and economic theory. The lack of research that uses the theory of food security. Therefore, this study aims to fill the research gap by focusing on studies related to food security based on food security theory.

To facilitate research in analysis, research uses the theory of food security, which is an approach used to determine food supply at the village level. This theory is divided into three indicators according to Webb and Rogers (2003), namely; (1) Food availability, (2) Food access, and (3) Food absorption (Riadi 2020). This theory makes it easier for researchers to determine food security at the village level, especially in Hargorejo Village based on the three indicators of the theory. These three indicators make it easier for researchers to analyze food security in Hargorejo Village, such as the food availability indicator in this indicator the researcher aims to see the food stock and the level of food availability in households in Hargorejo Village, then on the food access indicator the researcher aims to find out which access is the most important. dominant in Hargorejo Village. Finally, on indicators of food absorption, the researcher aims to see and analyze the nutritional and energy status of household consumption in Hargorejo Village.

## RESEARCH METHOD

This research uses a qualitative descriptive research type. According to Denzin & Lincoln (2011: 3-4), qualitative research is an attempt to rationalize and interpret or interpret the reality of life based on what is understood by the researcher. Therefore, this type of research usually involves some evidence in the form of field data that describes natural and problematic events in the life of each human being (Al-Hamdi et al. 2020). This research can facilitate researchers because this type of research is more detailed and in-depth, considering that this research also focuses on quality.

There are three main principles used in measuring the quality of qualitative research according to Simon C Kitto, namely: (1) Rigour (overall and the determination of the use of the method), (2) Credibility (the meaning and findings are well presented), (3) Relevance (the usefulness of the findings) (M Rahardjo 2012). The data sources in this study used secondary data obtained by analyzing libraries such as previous studies and several mass media that have relevance to the topic raised. The data obtained were analyzed using interactive modeling techniques including data reduction, data presentation, and conclusion drawing. In addition, data analysis uses

qualitative data analysis software using Nvivo 12 plus software. The features used are crosstab analysis and mindmaps.

## RESULT AND DISCUSSION

### Food security theory

In general, the definition of food security is the availability of sufficient, healthy, diverse and nutritious food for every person or community (Fallahnda 2021). In addition, food security is a form of state and nation strength where the state will be in trouble if there are problems with its food security. Therefore, food security plays an important role in supporting defense and security, because not only an economic commodity, food is a commodity that has social and political functions, both nationally and globally. For this reason, food security has an important influence on safety (Sucihatningsih 2020). The definition of food security in the version of the Republic of Indonesia has been formulated in the Food Law.

By referring to various definitions that apply in Indonesia and the international community, the drafters of the Food Law formulate limits on food security which include several important points as follows: (1) fulfillment of food needs for the state to the individual level; (2) benchmarks for

the fulfillment of food needs include various aspects, namely: (a) in terms of sufficient quantity, (b) in terms of quality, good quality, safe for consumption, various types of food available, fulfilling nutritional adequacy, (c) in terms of food safety spiritually, food must not conflict with religious principles, beliefs and culture of the community, and (d) in terms of economic affordability, food is available evenly to all corners of Indonesia at affordable prices by all components of society; and (3) the provision and affordability of this food is intended so that the community and individuals can live healthy, active and productive lives in a sustainable manner (Suryana 2014).

Law No. 18 of 2012 defines food security as a condition of fulfilling food for the state to the people, which is reflected in the availability of sufficient food, both in quantity and quality, which is safe, diverse, nutritious, evenly distributed and affordable and does not conflict with religion, belief or culture. the community so that they have a healthy, active and productive standard of living in a sustainable manner (Mardatila 2020). Webb and Rogers (2003) say food security is a condition when everyone at all times has access to and control over sufficient quantities of food and good quality for an active and healthy life. There are 3 indicators in the

theory of food security, namely food availability, food access and food absorption which will be explained further as follows;

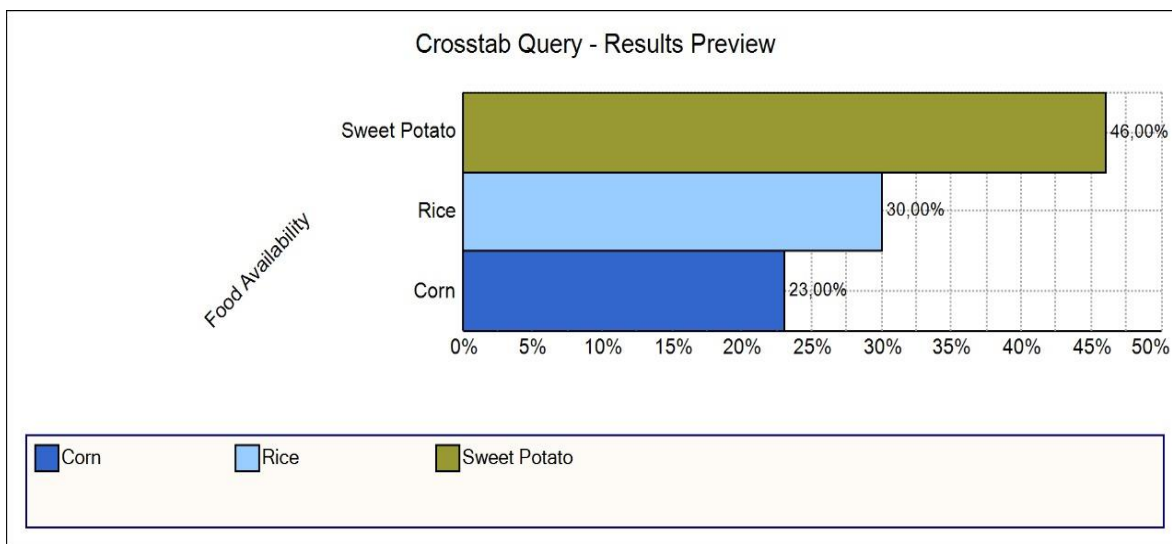
### **Food Availability**

Food availability is one of the main components and subsystems of food security. Meanwhile, if viewed from the perspective of food security and vulnerability, food availability is the condition of the availability of food from domestic production, reserves and food imports, including food assistance available for consumption (Junanda and Midyanti 2018). In addition, food availability is one of the indicators to determine the level of food security in a village. The more unavailability of food in the village, it is certain that the level of food security in the village will be lower. According to Webb and Rogers, food availability is a condition in which a person can fulfill food needs in sufficient quantities that are safe, nutritious and healthy, originating from the country's own production or imports, as well as food assistance so that the number of calories needed for people's lives can be fulfilled (Riadi 2020).

Food availability is also viewed from the context of population or food availability on land or rice fields, such as; rice, corn, wheat, cassava, sweet

potato and so on. Therefore, to determine the availability of food in Hargorejo Village, this indicator is divided into 3 (three) variables, namely;

rice, maize and sweet potatoes. Where these three variables are explained in the cross tab analysis using the Nvivo 12 plus feature below:



Source: Data Processed by author

Figure 4. Cross Tab Analysis use Nvivo 12 Plus

Based on the results of the Cross Tab analysis using the Nvivo 12 plus feature, it can be seen that in terms of food availability, it can be seen that there are three parameters, where three parameters indicate that the sweet potato parameter reaches the highest percentage with 46%, followed by rice 30% and maize 23%. The first parameter is sweet potatoes, meaning that sweet potatoes are the most dominant food in Hargorejo village, where based on data from village food production in Kokap District, this village produces 2,777 tons of cassava per year. The second parameter is rice, which means rice is

the second food supply after cassava. The total rice production in this village reaches 189 tons per harvest. The last parameter is corn.

In one corn harvest, Hargorejo Village can produce 132 tons (Mutakin 2017). The description of regional food availability indicates that aspects of food security related to sustainability in the community have been fully fulfilled, namely in terms of efforts to diversify food production and consumption aimed at reducing pressure on one type of food product. Policies on local food have actually started in the last decade. Through the Kulon Progo Regent's

Instruction No. 1 of 2009, concerning the use of local food raw materials at meetings such as meetings, courses/training and field work visits, which instructs institutions in Kulon Progo to promote the use of local food by serving food in the form of snacks, fruit, vegetables and beverages made from local food.

In addition, the success of food security in Hargorejo Village is strengthened by the findings of (Aninda 2019) who said the condition of the level of food availability in the village had a good level of food availability, which can be seen from the data presented in

the form of a table, where this table shows the level of food availability of households in Hargorejo Village.

Based on the data in table 1 below, it can be seen that the condition of the level of food availability in Hargorejo Village has succeeded by reaching a percentage of 43%. This success is inseparable from the awareness of the people of Hargorejo Village who stock up on staple food in the form of rice and also consume quality side dishes with complete nutritional content, namely containing vegetable protein and animal protein.

Table 1. Food availability level in Hargorejo Village

Food Availability Level Hargorejo Village	Number of samples (n)	%
High	13	43,33
Medium	13	43,33
Low	4	13,34
<b>Total</b>	30	100

Source, (Aninda 2019)

Based on the analysis above, it can be seen that the community is the most basic thing in supporting national food security. How not in this situation the fulfillment of food needs is more left to the community while the role of the government is mostly to regulators and also providers of infrastructure. In doing so, the community must jointly mobilize the strengths they have. Such

as forming a farmer organization in Indonesia, so that farmers do not feel difficulties and keep their problems to themselves. With the existence of farmer organizations, they must be able to carry out social criticism and analysis of the problems they experience. So that they are not trapped by mere wishful thinking in upholding food sovereignty. They must be able to position



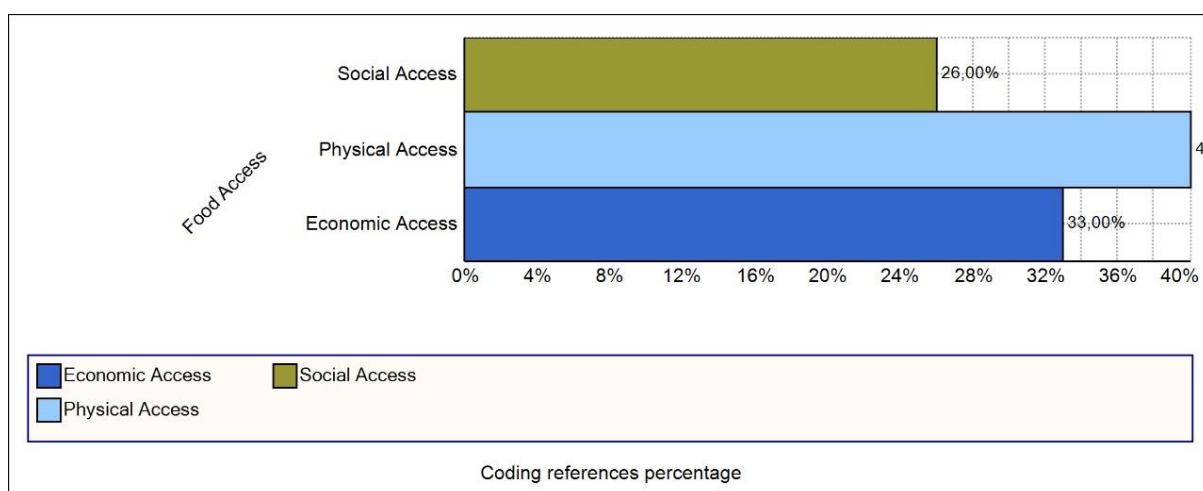
themselves as opponents of policies that do not support them. Especially those who have access to produce and influence agricultural policy.

In addition, farmer organizations must provide mutual support in solidarity and cooperation with the poor and oppressed (farmers, laborers, fishermen, and urban poor). Not even dropping each other to survive. After that, farmers and farmer organizations must implement sustainable agriculture in strengthening the struggle for food sovereignty (Barat 2016).

### Food Access

Food access is the ability of all households and individuals with the resources they have to obtain sufficient food for their nutritional needs (Mun'im 2012). Food affordability or access to food comes from own products,

stocks, purchases, barter, gifts, loans, and food assistance so that households can obtain sufficient food. Webb and Rogers (2003) said that food access means all individuals or households with the ability the resources they have to obtain food that is following nutritional needs obtained from personal food production or food purchases and assistance. There are several households and individuals access to food, namely: (1) economic access which includes income, employment opportunities and prices, (2) physical access related to distribution facilities and infrastructure and (3) social access concerning food preferences. To find out which access is more dominant in Hargorejo Village, these three accesses will be analyzed in a cross-tab analysis using the Nvivo 12 plus feature below:



Source: Data Processed by author

Figure 5. Cross Tab Analysis use Nvivo 12 Plus

Based on the results of the Cross Tab analysis using the Nvivo 12 plus feature, it can be seen that in food access it can be seen that there are three parameters, where three parameters indicate that the physical access parameter reaches the highest percentage with 40%, followed by economic access 33% and social access 26%. The first parameter is physical access, physical access means the existence of infrastructure to reach food sources. In Hargorejo Village there is physical access in the form of local food contributions. This contribution is in the form of production activities using locally processed food in the form of non-rice carbohydrate sources produced by residents. There are various types of local food resources produced in this village. However, the majority of processed local food products in Hargorejo Village are made from cassava and tapioca flour. Examples of local food made from cassava are growol and gethuk, while local food made from tapioca flour, for example, is geblek. Tempe benguk, growol, gethuk, and geblek are food products that are still in great demand by the people of Hargorejo Village.

In addition, local food resources in Hargorejo Village are very numerous and can be easily found so that they can support food access. Local food

ingredients can be easily obtained from the market or vegetable vendors who usually walk around the community's residence. The people's purchasing power for local food is very high because the people in Hargorejo Village stated that they prefer to consume local food. The condition of people's affordability in obtaining local food can also be influenced by distance. The distance traveled by the people of Hargorejo Village in obtaining local food ingredients is not so far and easy to reach, because it is still within the scope of Hargorejo Village. Households in Hargorejo Village who obtain local food by buying do not have problems with distance because people whose homes are far from the market can get local food from vegetable vendors who pass around their homes.

The second parameter is economic access. Economic access in question is the household's financial ability to buy sufficient and nutritious food. In this case research from (Aninda 2019) presents a comparison of local food consumption between socioeconomic strata of households in Hargorejo Village and Bendungan Village which is presented in table form, while the socioeconomic strata of households are divided into 3. Household I is a household that has land to meet food needs and is still able to sell the results

of production, household II is a household that has land to meet food needs but is unable to sell the product,

and the last is household III which is a household that does not own land but has good access to food.

Table 2. Classification of socioeconomic strata of households in Hargorejo Village and Bendungan Village

The Classification of Household	Hargorejo Village		Bendungan Village	
	Number of samples (n)	%	Number of samples (n)	%
Household I	9	30	14	46,67
Household II	11	36,67	8	26,67
Household III	10	33,33	8	26,67
<b>Total</b>	30	100	30	100

Source: (Aninda, 2019)

Based on the table above, it can be seen that Bendungan Village has more type I household conditions than Hargorejo Village with a sample of 14 so it gets a percentage of 46%. This is because the land in Hargorejo Village is mostly used as rice fields so most households in Hargorejo Village have agricultural land. The frequency of eating local food in type I households in Hargorejo Village is more frequent than in type II and type III households. According to (Aninda 2019) Based on the field results obtained, the longest type of household eats local food is once every 2 weeks, in contrast to type II and type III households where there are still households with the frequency of eating local food only once a month. However,

when viewed from the overall type of household, the average household in Hargorejo Village, which owns land or not, consumes local food once a week.

Almost the same as the eating habits of the people in Hargorejo Village, the frequency of households consuming local food in Bendungan Village is also more often carried out by type I households. There are even households in type I who consume local food every day because they have land that produces raw materials. local food. This is also the same as what happened to households in Hargorejo Village.

Lastly, is the social access parameter. Social access is in the form of social capital that can be used to obtain informal support in accessing food, such

as; barter, loans, or social safety net programs. To maintain food access in Hargorejo Village, the Lurah Hargorejo has made various efforts to support food security in the form of land and the construction of reservoirs as a means of providing water for the community. Based on the statement, it can be said that the involvement of parties such as; Lurah, regional/central government, private sector, and companies are important in maintaining food security, especially at the village level. For example, the Sinar Mas Agribusiness and Food Company is engaged in cultivating and supplying food ingredients. In general, the company helps communities by financing pilot plots, providing planting materials, and assisting local farmers with training on good agricultural practices by providing access to modern agricultural experts to support national food stability (Hafiz 2020).

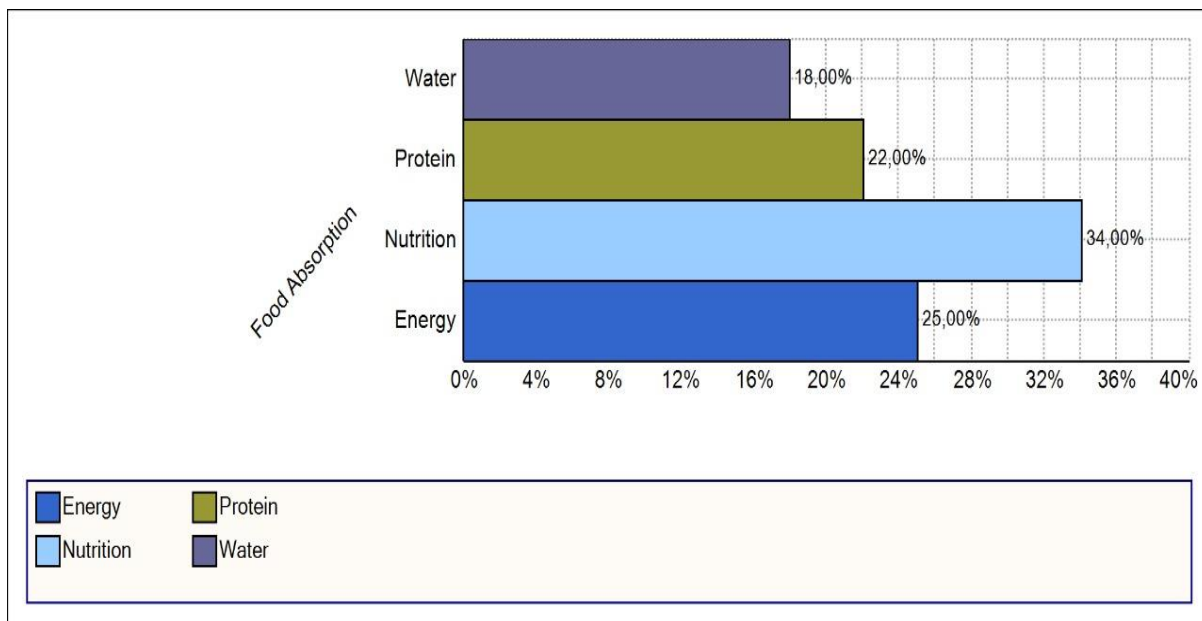
### **Food Absorption**

Food absorption is the use of food for the needs of a healthy life which includes the needs of energy and nutrition, water, and environmental health. The effectiveness of food absorption depends on household/individual knowledge, sanitation and water availability, health

facilities and services, as well as nutrition education and child care. It also refers to the household's use of food and the individual's ability to absorb and metabolize nutrients (Mun'im 2012).

Meanwhile, according to Webb and Rogers (2003), food absorption is a person's need for a healthy life in using food such as the need for energy, nutrition, water, and environmental health, knowledge of household members on sanitation, water availability, health service facilities, nutrition counseling, and the health level of toddlers is very effective in food absorption. Therefore, to see the absorption of food in Hargorejo Village, this indicator is divided into 4 (four) variables, namely; energy, nutrition, protein, and water. These four variables will be analyzed using Nvivo 12 plus with the following crosstab analysis features.

Based on the results of the Cross Tab analysis using the Nvivo 12 plus feature, it can be seen that in food absorption it can be seen that there are four parameters, of which the four parameters indicate that the Nutrition parameter reaches the highest percentage with 34%, followed by Energy 25%, Protein 22% and Water 18. %.



Source: Data Processed by author

Figure 6. Cross Tab Analysis use Nvivo 12 Plus

Based on data from (Mutakin 2017) related to nutrition (energy and protein) on food absorption in Hargorejo Village, it shows that in 60 non-farm household respondents, 10 people consume cassava and from 60 farmer household respondents, 26 people consume non-rice carbohydrate sources, details of which 19 respondents only consume cassava. only 7 respondents consumed cassava and corn. Of the 10 non-farm household respondents, 8 respondents, the intensity of consumption of local food sources of non-rice carbohydrates (cassava) is very small, or less than the figure recommended by WKNPG (Widyakarya Nasional Food and Nutrition) VIII 2004, which is 120

kcal/capita/day of energy. and 3.12 g/capita/day of protein. That is the intensity of consumption of cassava which contributes energy and protein by 46.75 kcal and 0.30 g/capita/day (as many as 7 respondents). And the intensity of consumption of cassava which contributes energy and protein is 93.49 kcal and 0.61 g/capita/day (as many as 1 respondents). While 2 respondents' consumption figures exceed the recommended figure. Namely, each with the contribution of energy and protein of 654.5 kcal and 4.25 g/capita/day and the contribution of energy and protein of 140.25 kcal and 0.91 g/capita/day.

Table 3. Distribution of Energy and Protein Adequacy Levels of Rice and Cassava Consumption of Non-Farming Households Based on WKNPG 2004 (Ideal Score of Rice-Grains + Tubers of 1,120 kcal and 29.60 g/capita/day)

Name of Respondents	Rice		Cassava		Total Energy (Rice and Cassava) (kcal/cap/day)	Total Protein (Rice and Cassava) (g/cap/day)
	Energy (kcal/cap/day)	Protein (g/cap/day)	Energy (kcal/cap/day)	Protein (g/cap/day)		
12	603,66	14,12	46,75	0,30	650,41	14,42
13	452,75	10,59	46,75	0,30	499,5	10,89
24	603,66	14,12	46,75	0,30	650,41	14,42
27	603,66	14,12	46,75	0,30	650,41	14,42
29	1.811	42,37	93,5	0,61	1.904,5	42,98
30	905,5	21,18	46,75	0,30	952,25	21,48
47	603,66	14,12	46,75	0,30	650,41	14,42
48	905,5	21,18	46,75	0,30	952,25	21,48
51	603,66	14,12	654,5	4,25	650,41	14,42
53	905,5	21,18	140,45	0,91	1.045,95	22,09

Source, (Mutakin 2017)

Based on the distribution table for the level of energy and protein adequacy of consumption of rice and cassava by non-farmer households from 10 respondents, as many as 8 respondents have not reached the ideal consumption rate. Meanwhile, there was 1 respondent who almost reached the ideal figure of 1,045.95 kcal and 22.09 g/capita/day (93.38% energy adequacy level and 74.62% protein adequacy level). Then there is 1 respondent whose consumption rate

exceeds the recommended figure of 1,904.5 kcal and 42.98 g/capita/day or experiences an excess of 70.04% energy adequacy level and 45.20% protein adequacy level consumption of carbohydrate sources from rice- grains and tubers. In farm households of 26 respondents who consumed cassava, there were 15 respondents (57.69%) with the adequacy of energy and protein from the contribution of cassava consumption exceeding the recommended figure and 11

respondents (42.31%) with the adequacy of energy and protein from cassava consumption. The tree is still below the recommended number. Contribution of cassava consumption intensity to the fulfillment of energy and protein in the largest farming household contributed energy and protein of 327.25 kcal and 2.12 g/capita/day. Then the smallest consumption intensity contributed energy and protein of 31.17 kcal and 0.20 g/capita/day.

## CONCLUSION

In this study, a general conclusion can be drawn that food security in Hargorejo Village is fairly good, regarding the indicators in the theory used, namely the food security theory of Webb and Rogers (2003). First; on the food availability indicator, it can be seen that Hargorejo Village has quite a lot of food stocks, namely sweet potatoes which are the most dominant food supply in the village. The condition of food availability in Hargorejo Village is very good, this is evidenced by obtaining the highest percentage at the level of food security by taking several household samples. Second; on the food access indicator, Hargorejo Village is more dominant in physical access related to food access or distribution. Where this village has a form of contribution, namely the contribution of

local food to maintain and strengthen food security in the area. Third; on the food absorption indicator, it can be seen that Hargorejo Village has energy in the form of nutrition and protein by WKNPG (Widyakarya Nasional Food and Nutrition).

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