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Analysis Of Food Security of Farmworker Households in Sedenganmijen Village, Krian District, Sidoarjo Regency

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A B S T R A C T

The concept of food security includes food production and availability, easy access to food, individual consumption to meet the nutritional needs of each individual by monitoring indications of food insecurity. Adequate food availability means that the average amount and quality of food nutrients available in communities and markets meet the consumption needs of all households. Food security in an area can be measured from food availability, purchasing power, and population consumption levels. This study aims to determine the priority of household expenditure by analyzing consumption patterns and the level of resilience of farmers' households as a form of prevention or handling the problem of food insecurity. so that quantitative analysis with the Nutritional Adequacy Rate (AKG) and quality analysis with the Expected Food Pattern (PPH) are needed as a simple tool to assess the food consumption status of a population. The location of the research was done deliberately. Sedenganmijen Village makes farm labor as the main and side livelihood. The sampling method uses saturated sampling (census). The sample selected in this study was 35 farm labor households through a food recall questionnaire within a week. The results of the study explained that the level of resilience in Sedenganmijen Village of 334.93% can be said to be food resistant with a food security level exceeding 91-110% of the AKE. Meanwhile, the diversity of household consumption patterns with a Income Tax Score of 88.27 is still less than the provisions of the Normative Income Tax Score of 100. Therefore, it is necessary to increase knowledge about the consumption of nutritious, balanced, and safe foods (B2SA).

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INTRODUCTION

Indonesia is a country with a large population and a high growth rate, so efforts to realize food security are a challenge that must be prioritized for the welfare of the nation. Food has always been a strategic issue in development both at the global and national levels, because the fulfillment of food is the right of every citizen who must be guaranteed quantity and quality, safe, healthy and nutritious. The government continues to be committed to optimistically rising to strengthen food security as an effort to provide food for its 40 million residents (Muttaqin et al., 2023). This commitment is in line with efforts to achieve the Sustainable Development Goals (SGDs), which are to eliminate hunger by 2030 (Muttaqin et al., 2023).

Food is one of the basic needs that the body needs every day in a certain amount as a source of energy and nutrients. Lack or excess of food in the long term will have bad consequences for health. The state of a person's health depends on the level of consumption, the level of consumption is determined by the quality and quantity of the dish, the quality of the dish indicates the fulfillment of all the nutrients needed by the body while the quantity indicates the amount of each nutrient to the body's needs. Food security is an important and strategic thing, because based on several countries, it shows that no one country can carry out development steadily before being able to realize food security first. Every country needs food for its people to survive, in meeting their needs (Samim et al., 2021).

According to Law Number 18 of 2012, food security is the condition of food fulfillment for the state and individuals, which is reflected in the availability of sufficient food, with the ability of the community to access adequate food in terms of physical and economic access, both in quantity and quality, safely, diversely, nutritiously, healthily, equitable, and affordable and not contrary to religion, beliefs, and culture, so that their absorption can be carried out optimally to be able to live a healthy, active, and productive life in a sustainable manner (Samim et al., 2021). Food affordability from an economic perspective is influenced, among others, by the level of income or purchasing power, food price stability, and poverty levels. Food is said to be safe, both quantity and quality consumed directly will determine nutritional status, but the absorption of nutrients in the body is influenced by a person's physical condition, so food intake and nutrition are needed in accordance with the needs of efforts that can be made in meeting these food and nutrition needs with the application of a diverse, nutritious, balanced and safe food consumption pattern (B2SA) starting from the family (Saputro, 2020).

Fulfilling food needs in food security is a pillar for the formation of quality human resources needed to increase the competitiveness of the Indonesian nation in the global order where people's eating habits in general differ from one community to another, this is called food consumption patterns. Food security is very important and strategic because food is a basic human need. Food security is basically divided into food availability, food consumption, and food accessibility (Muttaqin et al., 2023). The availability of sufficient food means that the average amount and quality of food nutrition available in the community and the market meets the consumption needs of all households. Food security in an area can be measured from food availability, purchasing power, and population consumption levels. The level of food consumption can provide an overview of the health condition of the population in an area reviewed from the aspect of nutritional status. The indicators used for consumption analysis are from measuring the adequacy of energy and protein consumption (Muttaqin et al., 2023). Globally economic conditions are still experiencing high

enough inflation, so the government is taking anticipatory steps to keep the economy accelerating by enacting various policies, including fiscal and monetary policy mixes so that the domestic economy remains under control, including inflation as a result of rising energy prices. The commodities that contribute the largest to inflation are rice, filtered clove cigarettes, onions, red chili, and white cigarettes, on a monthly basis in February 2023 which slowed down compared to January 2023. This slowdown in inflation tends to be driven by deflation in the prices of volatile goods and also goods regulated by the government. Volatile food is reflected in the decrease in the average price of several foodstuffs, such as chicken, eggs, and cayenne pepper, by -4.38 percent, -3.37 percent, and -7.15 percent, respectively (Muttaqin et al., 2023). The government has also prepared a number of policies, in the form of providing food budget allocations, in order to maintain the stability of food prices in the country.

Sidoarjo Regency has superior agricultural sectors such as rice commodities and the fisheries sector, namely milkfish and shrimp, but with the increase in housing and industrial development in Sidoarjo Regency, the agricultural sector and the fisheries sector experience a decrease in production related to the reduction of production land. Household consumption patterns are often used as an indicator to measure the level of well-being. The level of welfare of a household can also be said to improve if income increases and part of the income is used to consume non-food, and vice versa (Soedarto et al., 2020). The shift in spending patterns for household consumption from food to non-food can be used as an improvement in the welfare of farmers' households, assuming that after food needs are met, non-food needs can be met. Krian District is a strategic location located between 4 Regencies/Municipalities, namely Surabaya (east), Sidoarjo (south), Gresik (north) and Mojokerto (west). Krian District is bordered by Taman District and Sukodono District to the east, Wonoayu District to the Southeast, Driyorejo District and Wringinanom District which are included in the Gresik Regency area in the north, Balongbendo District in the west and Prambon District in the south Suryanto, (2024).

Krian District is currently the center of community economic activities in the western Sidoarjo area and is an important area for the economy of the surrounding community, has one of the villages, namely Sedanganmijen Village with an area of 143 hectares which administratively the government has a population of 4,464 people and 1,383 families (Soedarto et al., 2020), but from the area of such potential there are still many natural resources that have not been explored at this time. The daily life of the people of Sedenganmijen Village are traders, farming, farming, farm laborers, cattle and goat breeders, construction workers and civil servants. Considering the state of the Sedenganmijen Village area, rice fields are 60% of the area of Sedenganmijen Village (Soedarto et al., 2020).

Farmer households are their own economic system that has distinctive behavior at the level of farming, so that they can act as consumers to meet the needs of the production carried out and try to maximize the level of satisfaction through optimization of usability and can also act as producers who produce goods and to meet the needs of their households. The tendency to have access to food needs in farm labor households has consumption patterns of various types of food needed to meet nutritional needs, including protein, vitamins, and minerals, by regulating the right consumption patterns, farming households can avoid food waste and maximize the use of existing food resources (Amir, 2022).

The quality of people's food consumption at the regional level is measured by the Prospective Food Pattern (PPH)

score, where the diversity and balance of household food consumption determine the quality of consumption at the district/city, provincial, and regional levels. Farmer households in Krian District, Sidoarjo Regency often have problems ranging from insecure income so that daily needs are sometimes not enough and affect business capital so that it is not optimal. This is based on the increasing level of household consumption and production investment, investment in farmers' children's education, and BPJS health investment, in addition to the increase in population every year affecting food security, due to the food production capacity which is at levelling off (Saputro, 2020). Efforts to improve the food security of farmer households in Krian District, Sidoarjo Regency need to be carried out gradually and continuously by identifying various kinds of household consumption expenditures ranging from food expenditure and non-food expenditure, so that quantitative analysis with Nutritional Adequacy Figures (AKG) and quality analysis with Expected Food Patterns (PPH) are needed as a simple tool to assess the food consumption status of a population. assess the quantity and composition of food based on the type of food expressed with a PPH score. The higher the PPH score, the more varied and nutritionally balanced food consumption is (maximum 100). Therefore, it is necessary to conduct research that aims to determine the priority of household expenditure by analyzing consumption patterns and the level of resilience of farmers' households as a form of prevention or handling the problem of food insecurity (Saputro, 2020).

METHODOLOGY

This research is research with a descriptive methodology to describe the characteristics and administration of the area of the research location, the respondents studied and the data collected, the data that has been obtained is tabulated in a table which is then discussed descriptively by identifying the conditions in the field. The location of the research was carried out purposively based on the results of observations in the field and on the recommendation of the Krian District Agricultural Extension Center that the community works as farm laborers who are active in Sedenganmijen Village. Sedenganmijen Village makes farm workers as the main and side livelihood. The sampling method uses saturated sampling (census) where all members of the population are used as samples. The selection of this sampling technique is often used when the population is relatively small or less than 30 people, so this study makes generalizations with very small errors. The sample selected in this study was 35 farm labor households. This study uses primary data and secondary data. Primary data was obtained through observation and interviews with farmers through a food recall questionnaire within a week, this method used respondents' memories related to the food they consumed in the last week before the interview was conducted and this method used data in household size so it was necessary to convert household size into gram size. Secondary data comes from data from BPS Sidoarjo Regency, BPP (Agricultural Extension Center) of Krian District, relevant books and journals. Data analysis methods used:

Consumption Pattern Analysis

The analysis of the quantity of food consumption patterns in this study used the Nutritional Adequacy Rate (AKG) which was measured based on the Energy Adequacy Rate (AKE) and the Protein Adequacy Rate (AKP). Unit conversion and tabulation of food consumption grouping data on food consumption patterns obtained through a food recall questionnaire for one week, the data obtained is still raw from the weight of food consumption based on the unit of Household Size (URT) then the URT unit is converted into grams and

tabulation of the data to group the types of foodstuffs consumed. It is divided into 6 food groups, namely; Sources of carbohydrates, vegetable proteins, animal proteins of vegetables and fruits, sources of fats and oils, and sugars.

The calculation of Energy and Protein Content in each food group consumed is calculated by the following formula:

$$E_j = \frac{B_j \times KE_j}{100} \times \left(\frac{BDD}{100}\right) \div JRT$$

$$P_j = \frac{B_j \times KP_j}{100} \times \left(\frac{BDD}{100}\right) \div JRT$$

where Ej represents the actual energy consumed from food j(in Kcal per capita per day), Pj denotes the actual protein consumed from food j(in grams per capita per day). The variable Bj indicates the weight of the food material (in grams), KEj and KPj refer to the energy and protein content per 100 grams of the food item, respectively. The value of BDDdescribes the edible portion of the food (%) and JRTrepresents the number of household members.

After the total energy and total protein of each food ingredient have been calculated, the next step is to calculate the total energy and protein of each food group consumed by summing the calculation results obtained from the previous calculation using the formula:

$$TE_i = \sum_{p=1}^{n} E_p$$

$$TP_i = \sum_{p=1}^{n} P_p$$

and TPi denote the total actual energy and protein intake of household i, while Ep and Pp represent the energy and protein values of each food group p.

Calculation of the Energy Percentage of each food group against the Energy Adequacy Rate (%AKE). The Energy Adequacy Rate (AKE) which is the normative standard is the achievement of total energy of 2,000 Kcal / cap / hr and the Protein Adequacy Rate (AKP) which is the normative standard is the achievement of total energy of 52 grams / cap / hr. This energy percentage shows the energy contribution that each food group has achieved. The AKE percentage calculation is explained by the following formula:

$$P_p = \left(\frac{E_p}{AKE}\right) \times 100\%$$

Pp indicates the percentage contribution of each food group to the total energy adequacy, while AKEis the normative standard of energy adequacy, which is 2,000 Kcal per capita per day.

The food security parameters of this study are shown by the AKE and AKP values reaching 2,000 Kcal/cap/hr and 52 grams/cap/hr which have an even proportion of energy adequacy to all food groups. Quantity indicates the amount and proportion of energy consumption and is expressed in units of calories and grams.

Table 1.
Food Security Levels

Energy consumption	Food Security Level
91-110% AKE	Food Security
70-90% AKE	Food Prone
< 70% AKE	Highly Food Insecure

Source: Ministry of Health in 1996 and Widya Karya Pangan dan Gizi (WKPG) X in 2012

Food security indicators can be seen from the calculation of energy consumption per capita per day. This indicator is in accordance with information from the Ministry of Health in 1996, which divides 3 categories: food security, vulnerable and very vulnerable as in the following table.

According to Azwar, (2004) in Dirhamsyah et al., (2016), if food security is seen from table 1 indicators, namely the deficit in energy consumption < 70% RDA, the energy deficit in low-income groups ranges from 6.5% - 28.3%, in middle-income groups ranges from 8.1% - 25.7%, and in high-income groups ranges from 7.1% - 19.3%. Based on these data, it shows that energy deficits can occur in all income groups and illustrates that energy consumption is not only determined by income factors but can be determined from food and nutrition knowledge. So it can be said that the daily consumption pattern that has been carried out is included in the quality category. Some of the categories are; Food Resistance is a condition where farm worker households are able to meet adequate food needs ranging from safe, diverse, nutritious, balanced and affordable quality to a healthy, active and productive life. Food Insecurity is a condition where farm labor households are still unable to meet their food needs at a certain time, thus hindering the growth and health of the community to obtain sufficient and suitable food for a healthy and active life. Very Food Insecure is a condition where farm labor households experience food insecurity for a long time so that conditions are very food insecure can affect physiological needs for growth and development and public health.

Analysis of Food Patterns of Hope

The qualitative analysis of food consumption patterns in this study uses the Hope Food Pattern (PPH) approach to show the diversity of food consumed by the community in the research area. The calculation of this PPH score is obtained by comparing the actual AKE score with the normative PPH score, to calculate the AKE score by multiplying the percentage of energy to the AKE by the weight of the food group that has been determined. The following is the calculation of the AKE score:

$$\text{AKE Score} = P_p \times B_p$$

where Pp represents the percentage of actual energy contribution of food group p to the total Energy Adequacy Level (AKE), and Bp denotes the weight assigned to each food group according to its nutritional contribution to a balanced diet.

There is a stipulation that if the AKE score of the food group is higher than the normative PPH score, then what will be taken for the actual PPH score is the normative PPH score. Conversely, if the AKE score is lower than the normative PPH score, then the actual PPH score will be taken for the AKE score. The parameters that become a reference for achieving diversity in household consumption patterns are shown by the PPH score which reaches 100.

RESULTS AND DISCUSSION

Descriptive Statistics of Daily Energy Consumption

The descriptive statistical analysis provides an overview of the distribution and variability of household energy consumption across different food groups among farm labor households. The mean value of energy consumption is 405.67 Kcal per capita per day, indicating that on average, each food group contributes approximately 405 kilocalories to total daily energy intake. This shows that in general, each food group provides a relatively substantial portion of energy within the household consumption structure.

The standard deviation of 334.36 Kcal indicates a relatively high level of variability, suggesting that energy intake differs considerably among food groups.

Table 2.
Daily Energy Consumption per Food Group

Food Group	Energy Consumption (Kcal/capita/day)
Carbohydrates (Grains)	918.36
Tubers	30.61
Animal Food	730.61
Oils & Fats	144.89
Fatty Fruits/Grains	38.77
Nuts	251.02
Sugar	138.77
Vegetables and Fruits	969.38
Others (cigarettes, etc.)	428.57

Source: Data Processing Results (2024)

Table 3.
Descriptive Statistics

Parameter	Value (Kcal)
Mean (Average)	405.67
Standard Deviation	334.36
Minimum	30.61
Maximum	969.38
Number of Samples	9

Source: Primary Data, 2024

Some food groups contribute very high energy values such as vegetables, fruits, and grains, while others such as tubers and fatty fruits contribute significantly less. This result implies that household consumption patterns are uneven and not fully balanced across food types.

The maximum energy value, recorded at 969.38 Kcal, is found in the vegetable and fruit group. Interestingly, vegetables and fruits are typically not the main sources of energy. This high value may occur because these foods are easily accessible or self-cultivated in home gardens, are often consumed in large quantities as side dishes, or because the data include a combination of vegetables, fruits, and other garden products.

The minimum energy value of 30.61 Kcal is observed in the tuber group, indicating that tubers are not a staple source of food energy in the studied area. This condition may be due to low local production, limited preference for

tubers, or the tendency to prioritize selling them rather than consuming them.

The analysis covers nine food groups, reflecting the diversity of food sources that contribute to household energy intake. These findings provide valuable insights into the structure of dietary energy consumption among farm labor households and highlight the imbalance across food types, which may inform efforts to promote a more diverse and nutritionally adequate diet.

Geographical Location

Sidoarjo Regency is one of the buffers of the capital of East Java Province which is experiencing rapid development with an area of 63,438,534 Ha or 634.39 km2, this success is supported by various potentials in the region such as industry, trade, tourism and small to medium-sized businesses that are directed in addition to that Sidoarjo Regency is able to become a strategic area for regional economic development located between 112.5° - 112.9° East Longitude and between 7.3° - 7.5° Latitude South. The northern boundary is the Municipality of Surabaya and Gresik Regency, the south is Pasuruan Regency, the east is the Madura Strait and the west is Mojokerto Regency. Sidoarjo Regency is located between two rivers, namely the Surabaya River and the Porong River which is a branch of the Brantas River which upstreams in Malang Regency, has a Delta Plain with an altitude between 0-25 m, an altitude of 0-3 m with an area of 19,006 Ha which covers 29.99%, is a farming area located in the eastern region, in the central area with fresh water with an altitude of 3-10 m above sea level is a residential area, trade and government. Covering 40.81% of the western area with an altitude of 10-25 m above sea level is an agricultural area. Sidoarjo Regency has 18 sub-districts and 353 villages. It consists of the sub-districts of Buduran, Candi, Sidoarjo, Porong, Krembung, Tulangan, Jabon, Tanggulangin, Krian, Balongbendo, Wonoayu, Tarik, Prambon, Taman, Waru, Sedate, and Sukodono. The sub-district with the largest area is Jabon District with an area of 80,998 km2 and the sub-district with the smallest area is Gedangan District which is 24,058 km^2.

According to the Central Statistics Agency, (2023) Sedenganmijen Village is included in the Krian District area with an area of 143 Ha of Sedenganmijen Village by being divided into 3 hamlets with a population of 5,734 people and 1,383 families, but from the area of Sedenganmijen Village there are still many potential natural resources that have not been explored to date. According to the Central Statistics Agency, (2023) Krian District, Sidoarjo Regency is one of the areas that produces food crops as the availability of food to meet the food needs of the surrounding population, the difference in potential in each region with other factors such as weather, climate, rainfall, pests and diseases and other factors that have an impact on increasing or decreasing production yields as a determinant of food security conditions in various regions in the Sidoarjo Regency. Several villages/sub-districts in Krian District have the largest rice land area of 1,179 Ha for the area of land planted with rice and 1,162.75 Ha for the area of land that has been successfully harvested and the area of land that has failed to harvest or puso is 16.25 Ha.

Land is one of the important factors in agriculture in Sedenganmijen Village, it has an area of 143 hectares, of which 99.5 hectares are used as rice fields for some residents in Sedenganmijen Village, Krian District, Sidoarjo Regency and the remaining 43.5 hectares are used as residential areas and other public facilities (Central Statistics Agency, 2023). Residents in Sedenganmijen Village usually cultivate crops 3 times a year, starting with rice commodities, then soybean commodities and returning to rice commodities, to plant rice it takes 4 months after planting and

soybeans take 3 months after planting. Problems that often occur that cause crop failure are pests and lack of water supply, as happened some time ago there was a road construction that resulted in most of the farm workers not being able to grow crops because the supply of running water was centralized for road construction. In addition, the influence of pests and diseases has a significant impact every harvest season, around 1.25 hectares of land that fails to harvest. Efforts to handle pests and diseases have been carried out periodically and variously, but there are pests and diseases that interfere.

Analysis of Nutritional Adequacy Rate (AKG)

According to Bapanas, (2022) Household consumption patterns in urban or rural areas are basically the same but can be differentiated based on income, education of housewives, number of family members, diversity of jobs, number of workers, and level of nutritional knowledge. So that it is one of the factors that differ in consumption patterns between households, in addition to that the allocation of household consumption expenditure is grouped into two groups, namely; expenditure on food and non-food expenditure. The proportion of food expenditure in the household grain food group in rural areas is twice as high as that of urban households and also the variety of household food in urban areas is usually more diverse. Expenditure on fish consumption is also higher spent by households in rural areas than households in urban areas, but there is an inverse difference in expenditure on consumption of meat, eggs and milk in households in rural areas which tend to be lower than that of urban households. The statement is in accordance with the results of a survey conducted in Sedenganmijen Village, Krian District, Sidoarjo Regency. Where the results of the research show that the average

Table 4.
Average Food Consumption based on Energy Adequacy Rate (AKE) of Farmworker Households in Sedenganmijen Village, Krian District, Sidoarjo Regency in a Day

No.	Food Group	Energy Consumption (Kcal/capita/day)		
		AKE Current	Normative AKE	% AKE Current
1.	Carbohydrate Sources	918,36	1000	91,83
2.	Tubers	30,61	120	25,50
3.	Animal Food	730,61	240	304,42
4.	Oils and Fats	144,89	200	72,44
5.	Oily Fruits/Seeds	38,77	60	64,61
6.	Peanut	251,02	100	251,02
7.	Sugar	138,77	100	138,77
8.	Vegetables and Fruits	969,38	120	807,81
9.	Other	428,57	60	714,28
	Sum	3.651,02	2000	182.551

Source: Primary Data, 2024

farm worker household allocates some of the harvest for food needs, especially for the grain food group, namely rice. The allocation of expenditure on animal food in rural households is more likely to consume fish than other animal foods such as chicken, beef, eggs and milk. In addition, the ease of obtaining food, including the accessibility of physical food, is indirect because food is obtained by buying. So that the decision of farm labor households in consuming food such as the food, vegetables, and fruits group is physical accessibility or ease of acquisition (Dwi Sayekti et al., 2021).

The pattern of food consumption of farmworker households can be seen in terms of quantity through the Energy Adequacy Rate (AKE) approach. The amount of AKE recommended for consumption by the Indonesian population is 2,000 Kcal / capita / day, if a household can meet the recommended Energy Adequacy Rate, the quantity of food for farmworker households can be said to be effective, so that it can reflect the condition of food-secure households. Conversely, if households cannot meet the recommended Energy Adequacy Figures, the quantity of food for farmworker households can be said to be ineffective, so that it can reflect the condition of households that are not food secure (Prasetyoningrum et al., 2020). The following is a table of average food consumption based on the Energy Adequacy Rate (AKE) of farmworker households in Sedenganmijen Village, Krian District, Sidoarjo Regency.

Table 2 shows the average amount of energy consumed by farmworker households with the largest expenditure in the vegetable and fruit food group of 969.38 Kcal/cap/day. This number has met and exceeded the normative figure of 120 Kcal / cap / day with a percentage of vegetable and fruit consumption of 807.81%. From the results of the interview, the average respondent has an old age so often consumes vegetables and fruits because of the energy content and protein of vegetables and fruits which are very good for health. Vegetables that are widely consumed by farmworker households are spinach, kale, bean sprouts, and carrots while superior and popular fruits one of them is papaya and banana because of the ease of obtaining vegetables and fruits, low prices and some agricultural workers have their own papaya or banana trees so that the availability of the amount of consumption of vegetable and fruit food groups is abundant. According to the Ministry of Health, (2020) consumption of foods with balanced and safe nutrition can improve the immune system and reduce the risk of chronic diseases and infectious diseases. One that must be done for the implementation of healthy living behavior is to maintain a diet and consume fruits and vegetables by regulating a healthy diet is one way to overcome the disease (Samim et al., 2021).

As for the smallest expenditure in the root food group because most farmworker households rarely consume tubers. Food consumption of tubers amounted to 30.61 Kcal / cap / day. This amount still does not meet the normative figure of 120 Kcal / cap / day with a percentage of tuber consumption of 25.50%. Because the Sedenganmijen Village area is not a tuber-producing area so that farmworker households prefer to consume rice for carbohydrate fulfillment. The types of root food that are most consumed by agricultural worker households are usually in the form of aci crackers and cassava. Not too different from the results of research (Sayekti, WD., Lestari, DAH, and Ismono, 2020) where the types of root foods consumed the most are boiled and fried cassava, although it does not make this root food group a food group with high interest in consumption.

The food group of carbohydrate sources consumed by farmworker households amounted to 918.36 Kcal / cap / day, this amount has not met the normative figure of 1,000 Kcal / cap / day with a percentage

of consumption of carbohydrate sources of 91.83%. The lack of normative figures in the carbohydrate source food group is one of the problems that occur is the instability of food supplies or fluctuations in the price of staple foods. This condition states that the rice harvest for farmers is not enough to meet household needs, if too much rice is stored for own household consumption then the rice harvest sold will be small so that the income will be reduced for production costs in the next harvest. The shortage of rice in Indonesia has been proven to trigger the emergence of national turmoil of diverse, nutritious, balanced and safe food. According to the Food Security Agency, (2020) during the 2013-2019 period, the development of carbohydrate source food consumption patterns was still dominated by grain groups, especially rice and flour. Nutritional imbalance due to the consumption of less diverse foods will have an impact on the emergence of nutrition and health problems with the consumption of quality food and balanced nutrition will produce quality human resources (Heriyanto, 2021).

The animal food group consumed by farmworker households has met the established energy consumption standards. The household energy consumption of agricultural workers derived from animal food amounted to 730.61 Kcal/cap/day, this amount exceeds the normative figure of 240 Kcal/cap/day. So that the percentage of meeting the energy needs of animal food is 304.42%. From the results of the interview, the average respondent does not consume beef on weekdays because the price of beef is quite expensive compared to other animal foods, for daily consumption respondents consume fresh fish, salted fish and eggs. The selection of fish as a popular consumption of animal food because the price is relatively cheap compared to other animal food groups but has a source of animal protein that is no less large. As conveyed by the Head of the Health Research and Development Agency, Prof. dr. Tjandra Yoga Aditama (Djunaidah, 2020) the description of omega 3 content in fish exceeds other livestock. For every 100 g of fish contains 210 mg, this figure far exceeds the omega 3 content of 22 mg per 100 g of red meat. In addition, the diversity of fish species that can be consumed by households can provide a variety of choices of fish types every day. According to Dewanti, (2020) diversity of food consumption is an effort to realize the adequacy of nutrients needed by the body, basically there is no single food that contains all the nutrients the body needs. The more food groups consumed daily, the greater the chance of nutrients in the body being fulfilled.

Oil and fat foodstuffs consumed by farmworker households amounted to 144.89 Kcal / cap / day, this amount still did not meet the normative figure of 200 Kcal / cap / day with a percentage of consumption of oil and fat foodstuffs of 72.44%. Expenditure for the oil and fat food group is cooking oil, butter, coconut and others, the consumption of this oil and fat food group is still less used because most agricultural labor households consume fried foods only in some foodstuffs not all foodstuffs use cooking oil, butter and coconut. The habit of farmworker households that rarely consume oil and fat food groups such as fried foods is because the average age of these farmworker households is elderly which is recommended to reduce excessive consumption of fried foods so that most of these farmworker households consume animal foods such as eggs by boiling (Anzaini et al., 2022).

The sugar food group exceeds the normative figure of 100 Kcal/cap/day which is 138.77 Kcal/cap/day with a percentage of sugar consumption of 138.77%. The average farmworker household consumes a lot of sugar as a flavor enhancer and of course a complement to coffee and tea that is drunk every day, so sugar consump-

tion is quite high in Sedenganmijen Village besides that regular sugar consumption as a complement to coffee is much popular, not only consuming bitter black coffee but sweet black coffee which is always sought after by farm workers. According to Yulian et al., (2020) The selection of sweet black coffee because of the caffeine and glucose content in this sweet black coffee which helps increase the energy of farmers at work so that they become enthusiastic about working again and do not lack energy intake, while bitter black coffee alone is still considered less effective in quenching thirst and less increasing energy intake.

The oily fruit/seed food group has an energy adequacy rate of 38.77 Kcal/cap/day, this amount still does not meet the normative figure of 60 Kcal/cap/day. The actual energy consumption percentage of the oily fruit/seed food group was 64.61%. The consumption of oily fruit/seed food groups such as candlenut and coconut which are rarely consumed in farmworker households in Sedenganmijen Village is because candlenut and coconut themselves are only complementary to kitchen spices not being the main food ingredients cooked every day. According to Alfrida and Noor, (2021), the allocation of food expenditure is prioritized to staple foods for other food expenditures or complementary foods are only purchased if needed, not provided as stock in these farmworker households, besides that knowledge to process oily fruit/seed foods is still rare so that farmworker household consumption has not met normative figures.

The legume food group has an energy adequacy rate of 251.02 Kcal / cap / day, this amount has met and exceeded the normative figure of 100 Kcal / cap / day. The percentage of actual energy consumption from the legume food group is 251.02%. Most farmworker households consume legume foods such as tempeh and tofu. According to Suryanto, (2024) tempeh and tofu are in great demand by farmworker households because they are one of the sources of vegetable protein that are cheap, the availability of tempeh and tofu that are easily found in the market and easily processed with various other cooking ingredients. In addition to tempeh and tofu, the food group of nuts that are widely consumed are peanuts which are usually boiled as a complement or snack and as a spice for pecel.

Other food groups have 428.57 Kcal/cap/day, this number exceeds the normative figure of 60 Kcal/cap/day. The percentage of actual energy consumption from other food groups is 714.28%. The consumption of other foods that have exceeded the normative number is because most farmworker households consume cigarettes almost every day so that the percentage of other food groups is quite high. According to Nguyen, (2020) non-food expenditures consist of six groups of expenditure types including transportation and telecommunications, cigarettes, education, health, clothing and others. This is because some agricultural workers manage agricultural land that is located quite far from gutters or residences, in addition to spending on cigarette consumption. The amount of cigarette consumption expenditure is caused because most or 90% of the total respondents are active cigarette consumers with smoking habits are very difficult to eliminate, so almost all farmworker households allocate their income to cigarette consumption which affects other food consumption expenditures (Adriani et al., 2020).

According to Azwar, (2004) in Dirhamsyah et al., (2016), if food security is seen from the indicator table 3.1, namely the level of food security with a deficit in energy consumption < 70% RDA, the energy deficit in low-income groups ranges from 6.5% - 28.3%, in medium-income groups ranges from 8.1% - 25.7% and in high-income groups ranges from 7.1% - 19.3% (Susenas, 2002). Based on these

data, it shows that energy deficits can occur in all income groups and illustrates that energy consumption is not only determined by income factors but can be determined from food and nutrition knowledge. In appendix 3 of the AKG analysis calculation data, the actual energy percentage in each farmworker household food group in Sedenganmijen Village, Krian District, Sidoarjo Regency of 334.93% can be said to be food secure with a food security level exceeding 91-110% AKE.

Analysis of Food Pattern of Hope (PPH)

Ensuring the availability of food in sufficient, quality, adequate, and affordable quantities which is the desired target and target to be achieved in the preparation and formulation of national food policies. In Law Number 18 of 2012 concerning food as a basic need which is the right of every population is one of the determining factors for food quality, namely household food consumption. The pattern of household food consumption of farm workers can be seen in terms of quality, which can be measured using parameters through the Expected Food Pattern (PPH) approach. The value of this PPH is not only to find out the nutritional fulfillment for a person, but also to know the nutritional balance of the food consumed. The PPH value can be determined by the PPH score where the maximum PPH score is 100 to show that the food consumed has reflected the quality of food consumption that is diverse, nutritious, balanced and safe (Heriyanto, 2021). Food security can be realized if all people have physical and economic access to food to meet the adequacy of nutrition that meets their daily needs so as to help them live a more productive life every day (Subkhi, 2020). Diversity of food consumption is an effort to realize the adequacy of nutrients needed by the body, this is based on the

Table 5.
Average Percentage of Actual PPH Score of Food Group Consumption in Sedenganmijen Village, Krian District, Sidoarjo Regency

No	Ex. Food	AKE Current	Normative AKE	% AKE Current	Weight	Score AKE	Actual PPH score	Normative PPH score
1.	Grains	918,38	1000	91,83	0,5	88,63	25,0	25,0
2.	Tubers	30,61	120	25,50	0,5	0,01	0,01	2,5
3.	Animal Food	730,61	240	304,42	2,0	85,70	24,0	24,0
4.	Oils and Fats	144,89	200	72,44	0,5	1,02	1,02	5,0
5.	Oily Fruits/Seeds	38,77	60	64,61	0,5	0,88	0,88	1,0
6.	Legumes	251,02	100	251,02	2,0	7,06	7,06	10,0
7.	Sugar	138,77	100	138,77	0,5	0,30	0,30	2,5
8.	Vegetables and Fruits	969,38	120	807,81	5,0	146,59	30,0	30,0
9.	Other	428,57	60	714,28	0,0	349,74	0,0	0,0
	Sum	3.651,02	2000	182.551		679,93	88,27	100

Source: Data Processing Results (2024)

fact that there is no single food that contains all the nutrients that the body needs. The more food groups consumed daily, the greater the chance that the body's nutrition can be fulfilled. Diversification of food consumption needs to be done to minimize the risk of certain nutritional deficiencies due to consumption that relies on certain foods. According to Bapanas, (2022) efforts to increase food security by diversifying food where the process is a process of developing food products that do not only depend on one type of foodstuff, but can utilize various types of foodstuffs. The development efforts include four aspects, namely aspects of production, processing, distribution, and consumption at the household level.

Food consumption of farmworker households in Sedenganmijen Village, Krian District, Sidoarjo Regency can be seen by comparing AKE scores with normative PPH scores. If the AKE score is greater than the normative PPH score, the actual PPH score uses the AKE score for the maximum limit of food consumption from each type of food group. Conversely, if the AKE score is lower than the normative PPH score, then the actual PPH score uses the normative PPH score. The following is the average percentage of the actual PPH score of food groups.

Table 3 shows the results of research in Sedenganmijen Village, Krian District, Sidoarjo Regency as a whole the total average PPH score of farmworker households in Sedenganmijen Village, Krian District, Sidoarjo Regency is 88.27. This figure still does not meet the standard of the Normative PPH Score which has a maximum limit of 100 with a difference of 11.73. So it takes several efforts to overcome these problems to reach the normative number of 100. From these data, it shows that food consumption carried out by farmworker households in Sedenganmijen Village, Krian District, Sidoarjo Regency is still not diverse and uneven, this is due to the uneven consumption of food groups of villagers. One of the uneven consumption of food types is the low purchasing power of the people of Sedenganmijen Village who still depend a lot on the food group of grains, animal foods, vegetables and fruits.

The difference is quite far in the grain food group of 25.0 while in the root food group of 0.01 which is still less than the Normative PPH Score of 2.5. According to the Food Security Agency, (2020) during the 2013-2019 period, the development of carbohydrate source food consumption patterns was still dominated by grain groups, especially rice and flour. The habit of consumption patterns of farmworker households as a staple food consumes rice because farmworkers at each harvest set aside part of their rice for daily household consumption as a staple food until the next harvest, while in the root food group is low because most farmworker households no longer buy or consume other staple foods so it is rare to buy tubers as a substitute for rice (Heriyanto, 2021). In addition, the Sedenganmijen Village area is not a tuber-producing area so that farmworker households prefer to consume rice for carbohydrate fulfillment. The type of food of the root group is most consumed by agricultural worker households. The type of food consumed is usually in the form of aci crackers and cassava.

The animal food group has a large value of 24.0. The consumption of animal foods that are often consumed in farmworker households is fresh fish, chicken, eggs and for beef consumption is not consumed every day because the price of beef is quite expensive. The selection of fish as a popular consumption of animal food because the price is relatively cheap compared to other animal food groups but has a source of animal protein that is no less large. As conveyed by the Head of the Health Research and Development Agency, Prof. dr. Tjandra Yoga Aditama (Djun-

aidah, 2020) the description of omega 3 content in fish exceeds other livestock. For every 100 g of fish contains 210 mg, this figure far exceeds the omega 3 content of 22 mg per 100 g of red meat. In addition, the diversity of fish species that can be consumed by households can provide a variety of choices of fish types every day. According to Dewanti, (2020) diversity of food consumption is an effort to realize the adequacy of nutrients needed by the body, basically there is no single food that contains all the nutrients the body needs. The more food groups consumed daily, the greater the chance of nutrients in the body being fulfilled.

The difference in the oil and fat food group was 1.02 which was still less than the Normative PPH Score of 5.0 and the fruit/oily seed food group of 0.88 which was still less than the Normative PPH Score of 1.0. The habit of farmworker households that rarely consume oil and fat food groups such as fried foods is because the average age of these farmworker households is elderly which is recommended to reduce excessive consumption of fried foods so that most of these farmworker households consume animal foods such as eggs by boiling (Anzaini et al., 2022). The consumption of oily fruit/seed food groups such as candlenut and coconut which are rarely consumed in farmworker households in Sedenganmijen Village is because candlenut and coconut themselves are only complementary to kitchen spices not being the main food ingredients cooked every day. According to Alfrida and Noor, (2021) the allocation of food expenditure is prioritized on basic foods for other food expenditures or complementary foods are only purchased if needed are not provided as stock in these farmworker households, besides that knowledge to process oily fruit/seed foods is still rare so that farmworker household consumption has not met the normative figure.

The legume food group has an Actual PPH Score of 7.06, still less than the Normative PPH Score of 10.0 because most farmworker households consume legumes such as green beans or tempeh and tofu as a complement to side dishes is not used as the main side dish. According to Suryanto, (2024) tempeh and tofu are in great demand by farmworker households because they are one of the sources of vegetable protein that are cheap, the availability of tempeh and tofu that are easily found in the market and easily processed with various other cooking ingredients. In addition to tempeh and tofu, the food group of nuts that are widely consumed are peanuts which are usually boiled as a complement or snack and as a spice for pecel.

In contrast to the vegetable and fruit food group which has a sufficient Actual PPH Score of 30.0. According to Dwi Sayekti et al., (2021) Vegetables and fruits are sources of several minerals and vitamins that are important for their daily nutritional needs, it can be seen from the results of field surveys that most of these farmworker households consume vegetables and fruits every day as a complement. Vegetables that are widely consumed by farmworker households are spinach, kale, bean sprouts, and carrots while superior and popular fruits include papaya and bananas because they are easy to obtain, cheap prices and Some farm workers have their own papaya or banana trees. According to Akbar &; Aidha, (2020) One of the things that must be done for the implementation of healthy living behavior is to maintain a diet and consume fruits and vegetables by regulating a healthy diet is one way to overcome disease.

The sugar food group has a small Actual PPH Score of 0.30, in sharp contrast to the Normative PPH Score of 2.5. Sugar consumption in farmworker households is very small because sugar is only consumed as a complement to coffee and tea. According to (Yulian et al., 2020) the selection of sweet black coffee because of

the caffeine and glucose content in sweet black coffee which helps increase the energy of farmers at work so that they become enthusiastic about working again and do not lack energy intake, while bitter black coffee alone is still considered less effective in quenching thirst and less increasing energy intake. In addition, relatively small sugar consumption is due to the allocation of food expenditure prioritized to staple foods only. While other food groups have a fairly high Actual PPH Score because most of these farmworker households consume 1-2 packs of cigarettes a day. The amount of cigarette consumption expenditure is caused because most or 90% of the total respondents are active cigarette consumers with smoking habits are very difficult to eliminate, so almost all farmworker households allocate their income to cigarette consumption which affects other food consumption expenditures (Adriani et al., 2020).

According to the National Food Agency, (2022) there is a provision that if the AKE Score of the food group is higher than the Normative PPH Score, then what will be taken for the Actual PPH Score is the Normative PPH Score. While the AKE Score of the food group is smaller than the Normative PPH Score, then what will be taken for the Actual PPH Score is the AKE Score. The parameters that are a reference for achieving diversity in household consumption patterns are shown by the PPH Score which reaches 100 (Suwignyo et al., 2022). So it can be seen that the Actual PPH Score from farmworker households in Sedenganmijen Village, Krian District, Sidoarjo Regency of 88.27 is still lacking with the provisions of the Normative PPH Score. These farmworker households still lack knowledge and diversity to fulfill their energy balance proportions only consume as long as they are full without considering diverse, nutritious, balanced and safe (B2SA).

CONCLUSIONS

The results of the Daily Value (AKG) analysis showed that in Sedenganmijen Village, Krian District, Sidoarjo Regency it was 334.93%. Based on the actual percentage of energy quantity, it can be seen that with the food security parameters from the Ministry of Health in 1996, namely Sedenganmijen Village, Krian District, Sidoarjo Regency is food security with a food security level exceeding 91-110% of the AKE.

The results of the analysis of the Expected Food Pattern (PPH) show that in Sedenganmijen Village, Krian District, Sidoarjo Regency as a whole, the achievement of a PPH score of 88.27 was achieved. The score still does not meet the standard Normative Income Tax Score, which is 100. This causes some achievements of the Actual Income Tax Score to be above the Normative Income Tax Score in certain food groups. These results show that there is still a low PPH Score.

Farm labor households in Sedenganmijen have quite diverse energy consumption patterns, with a tendency to consume high in the group of vegetables and fruits and carbohydrates (rice). Consumption of tubers, whole grains, and sugars is relatively low, which indicates a potential imbalance in intake when compared to ideal nutritional needs. The variation between food groups is quite high, so it is important to educate farming families about food diversification and balanced nutrition. So it is recommended to hold socialization on the use of other basic food sources that will be processed so that the source of food energy for farm labor households in the village is not only sourced from rice. In addition, socialization about the importance of maintaining consumption patterns in accordance with the principles of Food Pattern Expectations, namely the 3B Diverse, Nutritious, and Balanced which needs to be carried out and applied in daily life, it is hoped that the nutritional needs of farm workers' households can be met.

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