FOOD SECURITY OF SMALL-SCALE FISHERMEN HOUSEHOLDS IN TAKISUNG DISTRICT OF INDONESIA BASED ON PROPORTION OF FOOD EXPENDITURE AND ENERGY CONSUMPTION

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ABSTRACT

Food security is a condition where humans have complete physical and economic access to sufficient food nutrition and security in providing food needs for a healthy life per local values and culture. The proportion of food output and energy consumption is essential in determining household food security. This research aims to determine the proportion of food expenditure, energy-protein consumption, and the food security conditions of small-scale fishing households in Takisung District, Tanah Laut Regency, South Kalimantan Province. This research was carried out in Takisung District using the purposive sampling method. Samples were taken from 60 small-scale fishing households. The data was analyzed by analyzing fishermen's household income and expenditure, food consumption, and cross-indicators of fishermen's household food security. The research results show that: (1) small-scale fishermen's average monthly household income is IDR 3,200,600.00, and the average household expenditure of small-scale fishermen for food is IDR 1,689,600.00 and non-food cost is IDR 955,750.00. 63.33% of respondents in fishing households had a low proportion of food expenditure, and 36.67% had a high proportion of spending on food. (2) The average TKG for energy and protein of small-scale fishing households is 66.33% and 87.96%. TKG for energy is classified as deficit (<70%), and TKG for protein is classified as moderate (in the range of 80-99%). (3) The food security condition of small-scale fishing households in Takisung District is 6.67% classified as food security, 11.67% classified as food vulnerability, 68.33% classified as food insufficiency, and 13.33% classified as food insecurity.

KEY WORDS

Food security, proportion of food expenditure, energy consumption.

Food security is a condition where food is met for the country as well as individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and does not conflict with the religion, beliefs, and culture of the community, to be able to live. Healthy, active, and productive sustainably (Government Regulations of the Republic of Indonesia, 2015). Strategic issues for food security by the South Kalimantan Provincial government in 2024 are handling inflation in the region, handling extreme poverty, safe, fresh food, food loss, and food waste, as well as interventions to address stunting, wasting and obesity (Publik Info, 2023).

Food is everything that comes from biological sources, agricultural products, plantations, forestry, fisheries, animal husbandry, waters, and water, both processed and unprocessed, intended as food or drink for human consumption, including food additives, food raw materials, and other ingredients used in the process of preparing, processing and making food or drinks.

Food security is a condition where humans have complete physical and economic access to sufficient food nutrition and security in providing food needs for a healthy life per local values and culture. In a food security system, the ability of households to control the food supply for their families (food entitlement) needs to be a concern (Purwanti, 2010). *Food security* is a complex concept related to the food and nutrition systems chain, starting from production, distribution, consumption, and nutritional status.

Ernest Engel (1857 in Mankiw, 2017) stated that the percentage of expenditure on food will decrease as income increases. Therefore, the composition of household expenditure can be used as an indicator of population welfare. The lower the percentage of expenditure on food to total expenditure, the better the economic level of the population.

Keynes's consumption theory in his book entitled The General Theory of Employment, Interest, and Money explains the current relationship between income received (disposable income) and consumption carried out. In other words, the income held at a particular time will influence the consumption carried out by humans at that time. If income increases, consumption will increase, and vice versa (Pujoharso, 2013).

Deaton and Muelbauer (1980) and Deaton and Dreze (2010) also emphasized that the higher the welfare of society, the smaller the proportion of food expenditure and vice versa. In Indonesia, rice is the energy source most consumed by people, while most non-rice energy comes from cassava (Arida, 2015). The main difference in food consumption is in the consumption levels of rural and urban communities. The results of Susenas September 2022 show that rice consumption in rural communities is higher than in urban communities.

At the household level, developments in food consumption also reflect household income or purchasing power. An increase in income will result in individuals tending to increase the quality of their food consumption at higher prices. If income increases, food consumption patterns will become more diverse, so the consumption of food with higher nutritional value will also increase (Ismah et al., 2020).

The level of nutritional adequacy can be used as an indicator to show the level of population welfare, which is calculated based on the amount of calories and protein consumed (BPS, 2022). The standard for adequate consumption of calories and protein per capita per day in the 2012 WNPG sets the standard for energy and protein requirements at 2150 kcal and 57 grams.

Meeting energy and protein needs can indicate adequate food needs (Adriani & Wirtjatmadi, 2012). Other nutrients will be met if energy and protein consumption is met according to the Nutritional Adequacy Rate (AKG). A person's nutritional adequacy rate (RDA) will differ according to gender and age. Meanwhile, the Energy Consumption Level (TKE) is obtained by comparing protein and energy consumption with the recommended AKG.

Food security for households is influenced by many factors, such as land ownership (physical) supported by a suitable climate and human resources (HR). Agricultural policy also determines production actors or markets to provide sufficient food. The condition of a country that has guaranteed resilience only sometimes reflects household food security. Household food security is an indicator of the formation of regional food security, both regionally and regionally. Meanwhile, household food (food and non-food) expenditure indicates household food security (Ismah et al., 2020). The greater the share of food expenditure in a household, the lower the household's food security. Household food security can also be seen from nutritional adequacy indicators. The nutrients currently used as indicators of food security are the level of micronutrient adequacy, namely energy and protein.

Small/traditional fishermen are very dependent on direct income sources from sea products sold to meet their daily needs. So, every daily income from marine products is used to meet family needs. Not getting income from fishing means not getting results to meet family needs (Mustika, 2017). Income from fishing also can only sometimes meet the daily economic needs of the family. The selling value of fish is not equal to the price of other basic household necessities. Fishermen's income will directly influence their quality of life because fishing is their primary or even only source of income, so the size of their income will significantly influence their lives, especially their ability to meet their basic food needs (Luciana et al., 2017).

Purwanti (2010) stated that the low productivity of small-scale fishermen causes fishermen's household income from the fisheries sector to be low and, in turn, also influences the structure of fishermen's household expenditure. With low income, fishermen often need help meeting the basic food needs of fishermen's households and basic non-food needs such as education and health. Current economic conditions, population, and government

policies will greatly influence poverty, nutritional status, and food security. The increasing prices of essential food commodities, which have continued to increase in recent years, have had a significant impact on the household economy of fishermen.

In a food security system, it is not only how a household gets enough food that needs to be considered, but what is more important is looking at the household's ability to control the food supply for its family (food entitlement). Production activities, income generation, and consumption (expenses) of fishing households are one unit in a series of interrelated economic activities of fishing households.

Takisung District is one of the centres for sea fishing, with 740 fishing households in 2021 (BPS Tanah Laut Regency, 2022), and 66% of this number are small-scale fishermen. Most fishing households in Takisung District only rely on sources of income from fishing at sea; some have side businesses from agriculture or small trading businesses.

Based on the background stated, this research aims to analyze the level of food security of small-scale fishing households in Takisung District based on energy consumption and the proportion of food expenditure.

METHODS OF RESEARCH

The scope of this research studies the relationship between small-scale fishing household activities and household economic activities, especially socio-economic activities, regarding the influence of various factors on production decisions, income, and expenditure to achieve food security for small-scale fishing households. In production activities, all activities, both fishing (on-fishing) and activities other than fishing (non-fishing), are analyzed, which are strategies of small-scale fishing households in order to achieve food security. Small-scale fishermen are synonymous with poverty, who have non-motorized or motorized fishing vessel assets with a driving force below 12 PK and a maximum of 2 engines per unit.

This research was conducted in Takisung District, Tanah Laut Regency. Determining the research location was based on the consideration that Takisung District is a coastal area with the majority of its population making a living as fishermen (there are 740 fisherman household, and 66% of these fisherman household are small-scale fishing households). Takisung District is also a recipient area of the Coastal Community Economic Empowerment Program and other assistance programs in education and health from the government. The coastal villages chosen as research locations were Tabanio Village, Takisung Village, Pagatan Besar Village, and Kuala Tambangan Village.

The research was carried out using a survey method, namely systematically and factually describing current phenomena and explaining the relationship between phenomena, testing hypotheses, making interpretations, and obtaining meaning from the phenomena studied (Nazir, 2013). According to Singaribun and Effendi (2008), the purpose of the survey method is to take samples from a population using a questionnaire to collect primary data from respondents, while secondary data is taken from agencies related to the research in question.

The number of samples from each selected village in Takisung District was taken from 15 small-scale fishing household units at simple random (random sampling). The total sample for the 4 selected villages is 60 small-scale fishing households representing different types of fishing gear. Taking a sample of 60 respondents based on the assumption that the population is normally distributed, the minimum sample limit is 30 units (Walpole, 1995). In general, small-scale fishermen have one fishing business unit. Therefore, capturing fishing business units also represents the size of the fishing households used as samples in this research, namely 60 small-scale fishing household units.

The data sources in this research use secondary data and primary data. Secondary data was collected from the Maritime Affairs and Fisheries Service office through fisheries statistics, population data from Villages, Districts, Central Statistics Agency offices, and other institutions related to this research in the form of literature, research results, and reports.

Collecting primary data on small-scale fishing households through in-depth interviews using questionnaires and direct observations in the field to obtain clear and detailed

information. The types of household data collected include household characteristics and fishing businesses in general, use of inputs, fish production, costs, sources and amount of income, and expenditure on food and non-food consumption.

Descriptive analysis is used to answer the first objective regarding the economic conditions of small-scale fishermen's households in meeting their living needs to achieve household food security. In contrast, the following formula is used for income, expenditure, and food security analysis.

Farmers' household income consists of household income from farming (on-farm) and outside farming (off-farm). The income equation is as follows:

$$Pd = Pdon + Pdoff$$

Where: Pd = Total fishermen household income (IDR); Pdon = Income from fishing business (IDR); Pdoff = Income from outside the fishing business (IDR).

The total expenditure of fishermen's households can be determined by calculating food and non-food expenditure. The formula used is:

$$TP = Pp + Pn$$

Where: TP = Total fishermen household expenditure (IDR); Pp = food expenditure (IDR), and Pn = non-food expenditure (IDR).

The calculation of food expenditure towards the total expenditure of fishing households can be calculated using the following formula:

$$PF = x\ 100\%$$

Where: PF = Proportion of food expenditure (%); PP = Food expenditure (IDR) and TP = Total farmer household expenditure (IDR).

Fisherman household food consumption can be seen from the quantity and quality of food consumption. Food quality shows the nutrients the body needs, while food quantity shows the amount of nutrients in a food. To measure the amount of energy consumption, the following formula can be used (Perdana et al., 2013):

$$G(e/p) = \frac{BP}{100} x \frac{Bdd}{100} x\ KG(e/p)$$

Where: G(e/p) = Energy or protein consumed from food; BP = Weight of food or food consumed (grams); Bdd = Edible part (%); KG(e/p) = Protein/energy nutritional content (%).

The Energy Consumption Level (TKE) and Protein Consumption Level (TKP) parameters are used to assess food consumption quantitatively.

$$TKE = \frac{\Sigma\ Energy\ Consumption}{AKE\ is\ recommended} x\ 100\%$$

$$TKP = \frac{\Sigma\ Protein\ Consumption}{AKE\ is\ recommended} x\ 100\%$$

Where: TKE = Energy Consumption Level (%); TKP = Protein Consumption Level (%); ∑ Energy/Protein Consumption = Total energy/protein consumption (kcal/capita/day); AKE = energy sufficiency figure; AKP = protein sufficiency figure.

List of calculations of the average Energy Adequacy Rate (AKE) and Protein Adequacy Rate (AKP) based on age and gender using WNPG standards.

To measure the degree of food security at the household level, a cross-classification of two food security indicators is used, namely the proportion of food expenditure and the adequacy of energy consumption. Measurement of the degree of food security is presented in Table 1.

Table 1 – Measuring the Degree of Food Security at the Household Level

Energy Consumption Level	Proportion of Food Expenditure	
	Low (<60% total expenditure)	High (≥60% total expenditure)
Enough (>80% energy adequacy)	1. Food Security	2. Food vulnerability
Less (≤80% energy adequacy)	3. Food Insufficiency	4. Food insecurity

Source: Jonsson and Toole, 1991 in Maxwel S, et al. (2000).

RESULTS AND DISCUSSION

Age level influences a person; as age increases, a person's productivity will increase but decrease again after passing the productive period. The average age of fishermen is relatively young, namely around 43 years, and is still of fertile age (15 - 64 years) so that they can carry out their business optimally to meet their household needs. Likewise, fishermen's wives have an average age of around 37 years. Meanwhile, the average age of boys and girls is 8 years and 7 years, respectively. The age difference between parents and children makes a difference in nutritional fulfilment.

The better a person's level of education will increase their knowledge and insight so that they are expected to be able to provide support in their social and economic activities. The research results showed that the highest level of education of the heads of the respondent's families was junior high school graduates, namely 37 people. In terms of food security, education influences household consumption. Housewives play a role in making food consumption decisions. Serving food to all household members is the main task of housewives. Therefore, the higher the education levels of a housewife, the higher her ability to make household consumption decisions, especially to meet the nutritional needs of all family members. The highest level of education for housewives also graduated from junior high school with 36 people. The education level of both husband and wife is classified as middle, thus allowing for a more open mindset.

The number of dependents is related to increasing income, including household food expenditure and consumption. The more household members, the greater the costs, so price and consumption will be more significant. The most prominent household members were 3 – 4 people, 45 households, or 75% of the respondents. Members of fishing household consist of the husband (head of the family), wife, and children. The size of the number of family members will influence household expenditure and consumption. The more family members there are, the greater their expenses and food needs will be.

Household income is the amount of money earned from work in one month. The respondent's source of income comes from fishing and non-fishing businesses. According to the research results, the income of most respondent households comes from their primary job, namely as fishermen. Apart from being fishermen, respondent households also earn income from collecting and producing fish/shrimp crackers. Meanwhile, non-fisheries jobs include farming, gardening, building labourers, and trading non-fisheries goods. Table 2 presents the average monthly income of respondents' households.

Table 2 – Average Monthly Income of Respondent Households in Takisung District

Number	Source of Income	Income (IDR/month)	Percentage (%)
1	Fishing business		
	Fishermen	2,495,600	
	collecting fishery product	286,400	
	Processing fish/shrimp crackers	163,200	
	Total Fishing Business	2,945,200	92.02
2	Non-Fishing Business	255,400	7.98
	Total Income	**3,200,600.00**	**100.00**

Source: Primary data processed, 2023.

Table 2 shows that 92.02% of the household income of fishermen respondents comes from fishing businesses, whether as fishermen, traders collecting fishery products, or

processing fish/shrimp crackers, an average of IDR 2,945,200/month. This is because most people's livelihood in Takisung District is as fishermen. The lack of side jobs in the research area makes household income low. Low household income can affect household food consumption levels. However, households with high incomes also only guarantee nutrition for some families. The food consumption story, energy, and protein will be influenced by household members' nutrition knowledge, especially parents. Although not all heads of families earn income from non-fishing businesses, revenue from non-fishing companies is needed to meet household needs. Meanwhile, housewives have only one job besides helping their husbands sort the catch and handle household chores.

Everyday household expenses are divided into food and non-food expenses. Household food consumption in Takisung District consists of rice, drinking water, vegetables, fish, fruit, eggs, milk, sugar, coffee, tea, cooking oil, noodles, kitchen spices, and cigarettes. Food expenditure is calculated as an average expenditure per month. Table 3 presents the average food expenditure of fishing households, which shows that the most significant food expenditure is on rice, cigarettes, and eggs, namely 21.86%, 24.48%, and 10.45%, respectively. Total food expenditure. Respondent fishermen's household expenditure on fish was only 7.52% because spending on buying fish was almost non-existent; most of the fish consumed came from their catch.

Table 3 – Average Food Expenditures per Month for Respondent Households in Takisung District

Number	Food Expenditure	(IDR/Month)	(%)
1	Rice	303,800	21.86
2	Water	62,500	4.50
3	Vegetables	43,000	3.09
4	Fish	104,500	7.52
5	Meat	15,400	1.11
6	Fruits	26,700	1.92
7	Eggs	145,200	10.45
8	Milk	18,750	1.35
9	Sugar	87,700	6.31
10	Coffee	63,250	4.55
11	Tea	12,500	0.90
12	Cooking oil	63,700	4.58
13	Noodles	34,600	2.49
14	Herbs	67,800	4.88
15	Cigarattes	340,200	24.48
	Total	1,389,600	100.00

Source: Primary data processed, 2023.

Non-food expenses consist of several costs, including electricity costs, education costs, clothing costs, health costs, transportation costs, telephone costs, kerosene/LPG costs, coconut fiber and firewood costs, toiletry costs, and other costs. The average non-food expenditure in fishing households is presented in Table 4.

Table 4 – Average Non-Food Expenditures per Month for Respondent Households in Takisung District

Number	Non-Food Expenditure	(IDR/Month)	(%)
1	Electricity cost	145,600	15.23
2	Education costs	342,500	35.84
3	Clothing costs	63,000	6.59
4	Health costs	73,400	7.68
5	Transportation costs	83,000	8.68
6	Telephone costs	40,350	4.22
7	Kerosene/LPG	64,500	6.75
8	Firewood	14,300	1.50
9	Cost of toiletries & cosmetics	45,600	4.77
10	Social costs	45,750	4.79
11	Refreshment fee	37,750	3.95
	Total	955,750	100.00

Source: Primary data processed, 2023.

Table 4 shows fishermen's households' most significant non-food expenditure is education, electricity, and health costs, namely 35.84%, 15.23%, and 7.68% of total non-food expenditure, respectively.

The proportion of food consumption expenditure to total household expenditure is the percentage of food expenditure compared to total expenditure. Most of the respondents' fishing households had a low proportion of food expenditure, namely 63.33%, and 36.67% had a high proportion of respondents' expenditure on food. The distribution of respondent fishing households based on expenditure proportion categories is presented in Table 5.

Table 5 – Distribution of respondent fishing households in Takisung District based on expenditure proportion categories

Number	Proportion of Food Expenditure	Food Expenditure Proportion Category	Amount (n)	(%)
1	<60%	Low	38	63.33
2	≥60%	High	22	36.67
Total			60	100,00

Source: Primary data processed, 2023.

Food consumption can be seen from nutritional consumption, namely protein and calories. Calculated consumption is not only staple foods but also other foods such as fruit. To find the nutritional content in a food, it is necessary to know the consumption patterns of each household member. The research results present information on the consumption patterns of farming households in Takisung District in Table 6.

Table 6 – Respondents' Household Food Consumption Patterns in Takisung District

Meal Time	Consumption Pattern				
	Often Rarely				Jarang
	Pattern 1	Pattern 2	Pattern 3	Pattern 4	
Morning	Moist cake + coffee/tea	White rice + omelet + coffee/tea	White rice + shredded fish/shrimp + coffee/tea	Porridge + breast milk/milk formula	Meat, fruits, milk and tubers
Afternoon and evening	White rice + fried fish + vegetables (fresh vegetables) + water	White rice + fried tempe+ sauteed vegetables + anchovies + water	White rice + various egg dishes + water	Porridge + breast milk/milk formula	

Source: Primary data processed, 2023.

In the research area, fishermen's household consumption patterns are dominated by rice, eggs, and fish. Rice is the staple food menu; eggs are the most affordable and accessible to serve, while the types of fish consumed are varied, such as tuna, baron shrimp, yellow shrimp, mackerel, and squid, depending on the catch from their business. The vegetables consumed, cassava leaves and kale, are obtained without buying.

Nutritional energy and protein consumption was obtained by looking at the Food Ingredient Composition List (DKBM) and adjusting to the daily consumption patterns of the respondent's household. Meanwhile, the AKG (Nutritional Adequacy Rate) is adjusted to standards based on age and gender. TKG is the level of nutritional consumption obtained from the percentage comparison between household nutritional consumption and the recommended AKG. Table 7 presents the average consumption of energy and protein as well as household TKG in the Takisung District.

Table 7 – Average Energy and Protein Consumption and TKG of Respondent Households in Takisung District

Information	Energy (kkal/day)		Protein (grams/day)	
	Households	Person Per day	Households	Person Per day
Consumption	5,978.37	1,373.72	207.94	47.42
Recommended AKG	9,012.50	2,048.30	236.40	53.73
TKG (%)	66.33	67.07	87.96	88.26

Source: Primary data processed, 2023.

Table 7 shows that household energy TKG and energy TKG per family member in the research area are still classified as a deficit (<70%) because respondent households do not consume various foods to supplement energy. The primary source of energy (carbohydrates) is mostly rice. Food sources containing carbohydrates will be converted into valuable energy for daily activities. Almost every head of the family consumes cigarettes and coffee, so the energy obtained is much less. The consumption of coffee and cigarettes is one that is difficult to separate from the habits of fishermen's households.

The percentage of protein TKG in households in the research area is moderate because it reaches 80-99% of the AKG, namely 87.96%. In the research area, fish and shrimp consumption is obtained from catches, where part of the catch is used to meet household needs, and the other part is sold to meet other household needs. It is also supported because almost every household consumes eggs to cover the need for fish if fishermen do not get a catch in their business activities. Eggs and fish are the most significant protein sources besides meat, milk, and anchovies.

The food menu consumed by all family members depends on the menu served by the housewife. Therefore, housewives should be able to serve more variety in serving food. Adequate protein intake in respondent households in the research area has been met with animal protein intake from eggs and fish. However, animal protein in the form of meat is very lacking. The distribution of TKE and TKP of respondent households can be seen in Table 8.

Table 8 – Distribution of Respondent Household TKE and TKP Categories in Takisung District

Number	TKG (level of nutritional consumption)	Category	Energy		Protein	
			Number of Household	%	Number of Household	%
1	≥100	Good	0	0	6	10.00
2	80-99%	Currently	4	6.67	47	78.33
3	70-80%	Not Enough	7	11.67	3	5.00
4	<70%	Deficit	49	81.67	4	6.67
Total			60	100.00	60	100.00

Source: Primary data processed, 2023.

Table 8 shows that overall, the protein consumption (TKP) level in respondents' households is better than the level of energy consumption (TKE). Limited energy intake from food other than rice means that many families still need to be well off. The results of research on small-scale fishing households in Takisung District show that no households are classified as having a good level of energy consumption.

many as 10% of households have achieved a good level of protein consumption. Protein is divided into vegetable protein and animal protein. Examples of vegetable protein obtained come from nuts (tempeh and tofu). Meanwhile, animal protein mainly comes from fish and eggs. Fish, eggs, and vegetables are the most easily obtained food ingredients in Takisung District.

Food nutrition is determined by whether there is enough food or not. The cross-classification between the proportion of food expenditure and the level of household energy consumption can determine the food security of respondent fishermen's households. Table 9 presents food security distribution in respondent fishing households in Takisung District.

Table 9 shows that the majority, or 68.33%, of fishing households are classified as food insufficiency, with an average Energy Consumption Level (TKE) of 63.21% and a Food Expenditure Proportion of 57.42%. This shows that household energy needs still need to be met but have high purchasing power and access to food because the proportion of food expenditure is low, indicating that the household has sufficient income. Still, expenditure on food consumption is only a small portion of household revenue. Most respondent households allocate their income to savings because the income from fishing is almost non-existent during the non-fishing season (southeast season)nonexistent. In the southeast season, fishermen spend more capital to go to sea than the catch they can sell. However, they still have to try to catch this season in the hope that there will still be catches and can cover the

costs incurred. This is also inseparable from the character of fishermen who still go to sea under any conditions, even though the results obtained do not meet expectations. Apart from that, fishermen's households need more knowledge regarding recommendations for meeting energy adequacy and good nutrition, which is also why most respondent fishermen's homes are in the food-deficient category. For fishermen, the need for cigarettes exceeds their nutrition needs rather than more diverse food. For this reason, efforts are needed to increase the knowledge of fishing households regarding the importance of meeting sufficient energy and other nutrients according to needs to achieve food security conditions (Devanda et al., 2020).

Table 9 – Distribution of Respondent Household Food Security in Takisung District

Number	Food Security Category	Proportion of Food Expenditure (%)	Energy Consumption Rate (%)	Number of Households	%
1	**Food Security,** if the Proportion of Food Expenditures is *Low* (<60%), TKE is *enough* (>80%)	52.63	81.13.00	4	6.67
2	**Food Vulnerability,** if the Proportion of Food Expenditures is *Hight* (<60%), TKE is *enough* (≥80%)	71.18.00	82.23.00	7	11.67
3	**Food Insufficiency,** if the Proportion of Food Expenditures is *Low* (<60%), TKE is *less* (≤80%)	52.63	63.21.00	41	68.33
4	**Food Insecurity,** if the Proportion of Food Expenditures is *High* (≥60%), TKE is *less* (≤80%)	71.18.00	60.94	8	13.33

Source: Primary data processed, 2023.

13.33% of respondents' fishing households were classified as food insecurity, with an average level of energy consumption of 60.94% and a proportion of food expenditure of 77.38%. This shows that food-insecure households have a high proportion of food expenditure, and their daily energy needs still need to be met. Respondent households in the food insecure category have relatively low household incomes, so they cannot access food according to their needs, which results in less energy and other nutritional deficiencies.

11.67% of respondent fishing households were classified as food vulnerable, with an average level of energy consumption of 82.23% and a proportion of food expenditure of 71.18%. This shows that fishing households in the food-vulnerable category have succeeded in meeting their daily energy needs but have a high proportion of food expenditure. This is because respondent fishing households in this category have relatively low incomes, so most of their income is spent on food shopping; this opinion is in line with the results of research by Delly et al., 2019.

Only 6.67% of fishing households are classified as food secure, with an average Energy Consumption Level of 81.13% and a proportion of food expenditure of 52.63%. This shows that household energy consumption levels are sufficient and have a low share of food expenditure. Respondent fishermen in this category have relatively higher incomes, so they can allocate their expenses to a wider variety of food to fulfil energy and other nutrients. Even though their expenditure on food is more diverse because their income is also high, the proportion of their spending on food is still low.

CONCLUSION

The average monthly household income of small-scale fishermen is IDR 3,200,600.00, the average household expenditure of small-scale fishermen for food is IDR 1,389,600.00, and the spending for non-food is IDR 955,750.00. 63.33% of respondents in fishing households had a low proportion of food expenditure, and 36.67% had a high proportion of spending on food. The average TKG for energy and protein of small-scale fishing households is 66.33% and 87.96%. TKG for energy is classified as deficit (<70%), and TKG for protein is classified as moderate (in the range of 80-99%). The food security condition of small-scale fishing households in Takisung District is 6.67% classified as food secure, 11.67% classified as food vulnerable, 68.33% classified as food deficient, and 13.33% classified as food insecure.

ACKNOWLEDGMENTS

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