MEASUREMENT OF FOOD SECURITY IN LABOR FISHERMENT HOUSEHOLDIN THE COASTAL AREAS OF LOMBOK ISLAND(CASE STUDY IN LABUHAN LOMBOK VILLAGE , EAST LOMBOK DISTRICT)

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ABSTRACT

The objectives of the study are (1) To determine the level of food security of fishermen household workers and (2) To find out the factors that influence the food security of fishermen household workers. This research uses descriptive method with a case study in Labuhan Village Lombok. Data collection techniques used survey techniques. The respondents were a fishing fisherman household. 38 households Data analysis were performed using the Food Expenditure Portion Index, Energy Adequacy Indexand Protein Adequacy Index. The Energy Adequacy Index and Protein Adequacy Index refered to the results of the 2004 National Food and Nutrition Work (WKNPG) which set an average Energy Adequacy Rate (AKE) at the consumption level of 2000 Kcal / Cap / day, Protein Adequacy Rate (AKP) 52 grams / cap / day and the Food Expenditure Portion Index (IPPP) are determined based on the provision that a household is said to be food insecure if 70% of total household income is used for food consumption.The measurement of the Food Security Index (IKP) for the level of labor fishermen Households is measured based on the average value of the sum of IAKE, IAKP and IPPP values. If the IKP value <1, then the labor fishermen household is not food security and if IKP> = 1, then the labor fisherman household is food securiy. To find out the factors that influence the level of food security of Labor Fishermen Households, the Logit Model statistical analysis was used. The results of the study showed that (1) labor Fishermen household monthly

expenditure was Rp 2,4601,009which consisted of food expenses of Rp 2,150,160 (87.4%) and non-food expenditures of Rp 310,849 (12.6%) (2) In general, labor fishermen households are categorized as "food security" with details of 68.42% of food-security households and 31.58% of food-security households and (3) Factors influencing the food security of labor fishermen households are the number of members household and household expenditure.

1. INTRODUCTION

1.1. Background

Indonesia has large coastal and marine resource potential which sea area is 5.8 million km2, 17,508 islands, and coastline is 81,000 km. NTB Province has considerable coastal and marine resource potential which are Lombok Island, Sumbawa Island and the surrounding small islands. The area sea is around 29,159.04 km2, the coast length is 2,333 km and the coral water is approximately 3,601 km. The sustainable potential of fisheries in NTB is 129,863 tons / year which consists of the sustainable potential of pelagic fish 55,917.4 tons / year and the potential for demersal fish is 73,945.6 tons / year (Abubakar, 2009) [1]

The great potential does not positively correlate with the level of people welfare especially on the Lombok Island. The poverty data of the people inEast Lombok Regency which has large coastal area on the Lombok Island is inhabited by a large proportion of labor fishermen. According to Maharani (2017)[9] the LRC researcher in his study entitled Identification of Poverty Conditions of fishermen in the Coastal Areas of East Lombok, West Nusa Tenggara ", in his research explained that most of the people occupying coastal areas generally have a livelihood as fishermen.

They work depending on the climate so that the income earned is also low. And most of them include people are low welfare levels and category of poor people.(https://www.swarasenayan.com/indeks-kedalaman-kemiskinan-nelayan-dan-masyarakat-pesisir-ntb/). Poverty in East Lombok Regency increased by 0.14%, in 2014 poverty reached 19.00% and increased to 19.14% in 2015. 222,019 people of 1.2 million people in East Lombok were classified as poor. Most of them live in rural areas especially coastal villages (BPS East Lombok District, 2016)[3].

The fundamental dimension in poverty is food security, because poverty causes loss of access to sufficient food. Poor households use no less than 80% of all expenditure on food expenditure and 60% of them are for rice. So the dependence of poor households on food is very large even reallocating education and health funds to divert food. Inferior food types are an option even though it is not rich in energy and protein content so that it has an impact on decreasing energy and protein consumption (FAO, 2005; Siswono, 2001)[5].

The poverty and socio-economic pressures faced by labor fishermen households are from in complex interrelated factors. This also happened to the labor fishermen households of Lombok Island. These factors can be classified into natural and non-natural factors. The

natural factor is related to the fluctuation of the fishing season and the natural structure of the village's economic resources. Non-natural factors are associated with limitations to the reach of fishing technology, inequality in production sharing systems and the absence of definite labor social security, weak marketing networks and the non-functioning of existing fishing cooperatives, as well as the negative impact of fisheries modernization policies that have been going on for a quarter of a century last (Kusnadi, 2002)[8].

Labuhan Lombok Village as one of the coastal villages in East Lombok Regency has different characteristics from other coastal villages. Besides being dependent on the fisheries sector (capture fisheries), this coastal village people also depends on the agriculture sector, the trade sector and the service sector. 464 (3.70%) people of12,509 people the total population work as fishermen, including 144 labor fishermen (31%) of the total number of fishermen (BPS Pringgabaya District, Lotim, 2016)[4].

From these problems, the study of "Measuring Food Security in labor fishermen Households in the Coastal Areas of Lombok Island (Case Study in LabuhanLombok Village, East Lombok Regency)" becomes very important to do.

1.2. Research Purposes

Specifically the objectives of this study are:

1) To find out the level of food security of labor fishermen households.
2) To find out the factors that influence the food security of labor fishermen households.

2. DATA USED AND FOOD SECURITY

The research used a descriptive method, which was a method that purposed to solve existing problems by collecting, compiling, analyzing and interpreting data and then drawing conclusions and copying them in the form of systematic reports about the object under study (Nazir, 1985)[10].Data collection technique used survey techniques that were direct interviews with respondents based on the list of questions compiled in advance (Surakhmad, W., 1990)[13].

The research used the case study method, which was a more in-depth research method over a certain period of time. The determination of Labuhan Lombok Village as a research location was based on a number of unique characteristics that transportation lane between Lombok Island and Sumbawa Island that one of the islands of inter-island trade and have a large number of labor fishermen households (Husni, S.; Abubakar; Sukardi, L .; And Yusuf, M., 2017)[7].

The respondents in this study were labor fisherman households. The number of respondents were determined by quota samplings of 38 households (26%) out of 144 labor fishermen households. The selection of respondents were done by Simple Random Sampling (Husni, S. *et al*., 2017)[7].

The type of data used were primary data and secondary data. Primary data were obtained from respondents through direct interview techniques using list of questions. Food consumption data were obtained using the recall method to determine past food consumption (24 hours ago) both in terms of quantity and quality. Secondary data were obtained from institutions related to this study (Husni, S. *et al*., 2017)[7].

Data analysis refer to above statement namely: **First Goal,**to find out the level of food security of labor fishermen households Labor Fishermen Household Food Security. Measurement of household food security is based on the Food Expenditure Portion Index, the Energy Adequacy Index and the Protein Adequacy Index. The value of the food security

index is the average value of the total Food Expenditure Portion Index, the Energy Adequacy Index and the Protein Adequacy Index. Households are said to be Food-Security if the food security index value is> 1 and less food-security if the food security index value is <1 (Purwanti, 2010)[11].The Energy Adequacy Index and Protein Adequacy Index referred to the results of the 2004 National Food and Nutrition Work (WKNPG) which set an average Energy Adequacy Rate (AKE) at the consumption level of 2000 Kcal / Cap / Day, Protein Adequacy Rate (AKP) 52 grams / cap / day and the Food Expenditure Portion Index (IPPP) were determined based on the provision that households were under food insecurity if 70% of total household income is used for food consumption. Thus the indicators of AKE, AKP, IPPP are:

$$AKE = AKE /2000 \tag{1}$$

$$IAKP = AKP/52. \tag{2}$$

$$IPPP = 70/PPP \tag{3}$$

The measurement of the Food Security Index (IKP) for the level of labor fishermen Households is measured based on the average value of the sum of the IAKE, IAKP and IPPP values

$$IKP = (IAKE + IAKP + IPPP) / 3. \tag{4}$$

If the value of IKP <1, then the labor fisherman household is not food security and if IKP> = 1, the labor fisherman household is food security.

Second Goal, to find out the factors that influence the level of food security of labor Fishermen Household.The Logit Model statistical analysis is used (Yuliana, *et.al*, 2013)[14]:

$$Pi = F (Zi) = F (a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4) \tag{5}$$

Information:

Pi = Opportunity of labor fishermen household have certain level of food security if Xi is known

Zi = Opportunity of labor fishermen household to have a certain level of food security, whereZ = 1 for food-resistant households and Z = 0 for non-food-resistant households

a, b = regression coefficient

X1 = Education of housewives

X2 = Number of household members

X3 = Household expenses

X4 = Knowledge of housewife nutrition

3. RESULTS AND DISCUSSION

3.1. Level of Food Security of labor Fishermen Households

Law number 7 (seven) of 1996 mandates about food. Food security is a condition for the fulfillment of food for households which is reflected in the availability of sufficient quantity and quality, safe, equitable and affordable. Food fulfillment depends on food and non-food expenditure.

The results showed that the average food expenditure of labor fishermen households was Rp. 2,150,160 (87.4%) of all household expenses such as rice, animal food, vegetables, spices, cooking oil, granulated sugar, tea, coffee, food and beverages, cigarettes and betel. In addition there are as much as Rp. 310,849 (12.6%) represent non-food expenditure in the

form of electricity, clean water, fuel oil (BBM), education, clothing, personal equipment and taxes (Husni, S. *et al.*, 2017)[7]

Food security at the household level of labor fishermen can be determined based on adequate consumption. The indicator of the achievement of consumption sufficiency in Indonesia refers to the results of the VIII National Food and Nutrition Work (WKNPG) of 2004, setting an Energy Adequacy Rate (AKE) of 2000 kcal / cap / day and a Protein Adequacy Rate (PPA) of 52 grams / cap / day.

According to Zeitlin and Brown (1990) in Purwanti (2010)[11] one of the classifications of household food security into food secure and food insecure (food insecurity) can be done using measurements from output indicators that are food consumption or individual nutritional status. Households are categorized as food insecurity if the level of energy consumption is lower than the cutoff point or AKE <70% or <1,400 kcal / cap / day and PPA <70% or <36.4 grams / cap / day.

The level of energy and protein consumption of labor fishermen households can be assessed from their food consumption. Food consumption is a number of foods and drinks that are consumed and drunk by the population or someone in order to meet their physical needs. Food consumption is calculated from the food or drinks eaten by each household member without considering the origin of the food. The average energy consumption of labor fishermen households by type is presented in Table 1.

Table 1. Average Household Energy and Protein ConsumptionLabor Fishermen in Labuhan Village Lombok, 2017

Foodstuffs	Consumption Figures	
	Energy (Kcal/cap/day)	Protein (gr/cap/day)
Main food	1033,0	19,5
Side dishes	297,0	34,2
Vegetables	42,1	4,5
Etc	167,7	4,0
Total	1.539,8	62,2

Source: Primary Data Processed, 2017

Table 1 shows that the average energy consumption of labor fishermen household is 1,539.8 kcal / cap / day. The amount of energy consumption is higher than AKE of 1400 kcal / cap / day. Meanwhile, protein consumption was 62.2 grams / cap / day higher than PPA 36.4 grams / cap / day. This is still better than farmers' households participating in the independent food program in Indrapuri District, Aceh Besar, which is classified as a deficit (<70%) with an average energy consumption of 1,276.12 kcal / cap / day and an average protein consumption of 43.87 grams / cap / day (Arida, A .; Sofyan, Fadhiela, K., 2015)[2].

The highest energy consumption is obtained from the main food in the form of rice which is 297 grams / cap / day where every 100 grams of rice contains 360 cal, then followed by side dishes, other foodstuffs (cooking oil, granulated sugar, etc.), vegetables, while the highest protein consumption is obtained from side dishes, then followed by main foods such as rice, vegetables, and finally from other foods and drinks.

Measuring food security of labor fishermen household by using the Food Security Index (IKP) in the sum of the values of the Energy Adequacy Index (IAKE) with the Protein Adequacy Index Index (IAKP), and the Food Expenditure Portion Index (IPPP) divided by 3. If the Index Value Food security of household> 1 is included in food-resistant household and

<1, then the household is included in food-insecure household. The Food Security Index of labor fishermen household in Labuhan Lombok Village is presented in Table 2.

Table 2. Food Security Index (IKP) of labor Fishermen Householdin Labuhan Village Lombok in 2017

No	Description	Value
1	IAKE	0,77
2	IAKP	1,20
3	IPPP	1,15
4	IKP	1,04

Source: Primary Data Processed, 2017

From Table 2 it can be seen that the IKP of labor fisherman households is 1.04. This figure is greater than 1.0, meaning that the household is generally categorized as food security. IAKE value of 0.77 means as much as 77% or 1524 kcal / capita / day from the recommended 2000 kcal / capita / day has met the recommended energy adequacy standard.This is in accordance with the criteria stated by Zitlin and Brown (1990) in Purwanti (2010)[11] that households whose individuals consume calories less than 70% of the average value or 1,400 kcal / capita / day are rated as problematic households in terms of daily food sufficiency or household calorie deficit.

Meanwhile, the IAKP value of 1.20 shows that protein consumption of 62.2 grams / cap / day has exceeded the Portent Sufficiency Rate (AKP) standard of 52 grams / cap / day. Means that the household consumes high protein. A great source of protein comes from sea fish. Then the IPPP number is 1.15, meaning the percentage of food expenditure is below 70% of total household income. According to Engel's theory, if the portion of food expenditure is> 70% of total expenditure, it can be said that it is not food resistant while <70% is classified as food security. The distribution of the level of food security in each labor fisherman household is based on the IKP number as shown in Table 3.

Table 3. Distribution of labor Fishermen Households According to Food Security inLabuhan Village Lombok, 2017

No	Criteria	total	Persen (%)
1.	Food Security	26	68,42
2.	NotFood Security	12	31,58
	Total	38	100,00

Source: Primary Data Processed, 2017

In Table 3 shows that as much as 68.42% of labor fishermen households are classified as food resistant and 31.58% are not food security. Thus, more than 50% of the labor fishermen households are food security, which means that the main base of labor fishermen income sources from capture fisheries is able to support the achievement of adequate food and nutrition. The level of household food security is influenced by the size of energy and protein consumed, and the size of household food income and expenditure.

3.2. The Factors That Affect the Food Security of Fishermen Household

To find out the factors that influence the food security of labor fishermen households, the Logit Model statistical analysis is used, where the independent variables include the education of housewives, the number of household members, household expenditure, and

housewives' knowledge about nutrition. The complete results of the analysis are shown in Table 4.

Table 4. Logit Model Regression Analysis Factors that influenceAgainst Food Security Labor Fishermen Household

Independent variable	Coefficient	Sig	Exp (B)
Intersep	2,980	0,296	11,963
Housewife Education	-0,242	0,262	0,785
Number of household members	-1,848	0,011*	0,159
Household expenditure	0,000	0,029*	1,000
Nutrition Knowledge	0,868	0,329	2,383
Nagelkerke R Square = 0,375			

* Significant at α level <0.05

In Table 4, the Nagelkerke R Square value of 0.375 or 37.5% the ability of independent variables such as housewife education, number of household members, household expenditure, and knowledge of housewives about nutrition in explaining the dependent variable (the level of food security of fishermen household workers) and the remaining 62.5% is influenced by other factors outside the model.

The variable of housewife education does not significantly influence the level of food security at the 95% level of trust and has a negative value, meaning that the higher the education of housewives the less chance of achieving food security. Thus the level of education of housewives does not affect food security. Food security is influenced by the amount and type of food consumed not by education level. The average level of education of housewives, labor fishermen are relatively low, starting from not completing elementary school to completing elementary school. According to the results of Herdiana's research (2009)[6], the education of housewives did not significantly affect household food security

The variable number of household members has a negative value on the food security of labor fishermen households, and has a significant effect on the confidence level of 95%. The average number of labor fishermen household members is 4 people. Thus the more household members, the lower the chance of food security. Ex (B2) value of 0.159 means that increasing the number of household members by 1 will reduce the level of food security by 0.159. Thus if there is an increase in the number of family members it will reduce the probability of food security by 0.159. Similar to the results of Herdiana's (2009)[6] research, there is a negative relationship between household size and household food security. In line with the results of Arida's research, A. *et al*. (2015)[2] that the more family members, the more food expenditure and needs.

Variable household expenditure has a positive effect on food security at a 95% confidence level. The higher the household expenditure, the higher the level of food security. The results showed that the index of the portion of food expenditure to household expenditure is below 70%. Yuliana, *et al*. (2013)[14] states that household expenditure significantly affects the level of household food security. An Ex (B3) value of 1.0 means an increase in the amount of household expenditure of Rp. 1 will increase the chance of food security by 1.0.

Housewife's knowledge of nutrition has a positive effect on food security opportunities but does not significantly affect the 95% confidence level, meaning that the level of knowledge of housewives about nutrition either low or high is the same effect on food security, the difference is the amount of food expenditure and able to meet the needs of family members. In contrast to the results of the study of Yuliana *et al.* (2013)[14] which states that the knowledge of housewife nutrition significantly influences the level of household food security.

4. CONCLUSIONS

Limited to the purpose of research and discussion it can be concluded as follows: (a) Fishermen household workers' monthly expenditure of Rp 2, 4601,009 which consists of food expenditures of Rp 2,150,160 (87.4%) and non-food expenditures of Rp 310,849 (12.6%) (b) In general, labor fishermen households are categorized as "food security" households with details of 68.42% of food-security households and 31.58% of food-security households(c) Factors that affect the food security of labor fishermen households are the number of household members and household expenditure. (d) There is a need for the utilization of free time by labor fishermen households by providing skills training to work outside the fisheries and marine sector as a form of work diversification, so that it has an impact on increasing income (e) It is necessary to provide capital assistance and provision of employment by the local government in an effort to improve the welfare of the labor fishermen household

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