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Post-Pandemic Covid-19 Food Security Strategy Model in Coastal Community and Fisherman Households in Lampung Province

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ABSTRACT

Fishermen are one part of the community members who have the lowest level of welfare. The COVID-19 pandemic is an event that causes the spread of the coronavirus disease 2019 around the world. The pandemic has caused global socio-economic disruption, the postponement or cancellation of sporting and cultural events, and widespread concern about stock shortages driving panic buying. A household is said to have food security if its inhabitants are not in a state of hunger or feel threatened by hunger. The linkages between the lives of coastal communities and fishermen in Lampung Province are quite concerning, coupled with the COVID-19 pandemic requiring special treatment to improve their welfare and standard of living, one of which is by increasing food security for coastal communities and fishermen. The most appropriate effort is to carry out a post-COVID-19 Pandemic Food Security Strategy modeling for Coastal Community and Fisherman Households in Lampung Province. The research was carried out from April to September 2022 in Labuhan Maringai subdistrict, East Lampung Regency. Sampling was done purposively. The data collected from the survey results have been analyzed statistically descriptive and inferential. The level of food security for the respondent's family is in the moderate category, meaning that the respondent can provide, reach and use it quite well but not optimally. The community has not been able to ensure that the food security component can run consistently at any time. This happens because the income of fishing households is very unpredictable, this can also determine the ability of the family to provide food. The influence of the education level of a housewife has an indirect effect through her nutritional knowledge. Food knowledge has a more direct influence on food security, meaning that the knowledge of housewives related to food is the basis for action in realizing food security at the family level.

1. Introduction

Lampung Province is the province with the third largest population on the island of Sumatra after North Sumatra and South Sumatra. Based on 2020 BPS data, Lampung Province has a population by district/city of 8,521,201 people (BPS Lampung, 2020), has a land area of ± 35,288.35 km^2, sea area of ± 24,820 km^2, and a coastline length of ± 1,105 km, so that the area of Lampung Province is 61,213.35 km^2 (57.65% land and 42.35% sea) (BPS Lampung, 2020).

Fishermen are a characteristic of people who live in coastal areas. Fishermen are often defined as people who carry out fishing activities in the sea (Satria, 2002). Fishermen are one part of the community members who have the lowest level of welfare, so that the fishing community is the poorest community compared to members of other subsystem communities. Because it is always at a low level of welfare and economic life. This condition causes the standard of living, health and the need for food is not properly met. Even though the main basic need for humans that must be met at any time is food.

The COVID-19 pandemic is an event that causes the spread of the coronavirus disease 2019 around the world. This disease is caused by a new type of coronavirus called SARS-CoV-2. Efforts to prevent the spread of the virus include travel restrictions, quarantines, curfews, event postponements and cancellations, and facility closures. This pandemic has caused global socio-economic disruption, postponement or cancellation of sporting and cultural events, and widespread concern about stock shortages driving panic buying (Hirawan, 2020).

Related to this, food security is the main thing that needs to be prioritized. Because food security greatly determines the life and welfare of coastal communities in general and fishermen in particular. Food security is the availability of food and one's ability to access it. A household is said to have food security if its inhabitants are not in a state of hunger or haunted by the threat of hunger (Arifin, 2001). Apart from that, food security is currently a topic that is very much discussed by various parties as a consequence of the impact of the spread of COVID-19 which continues to expand.

After facing with health problems and people's purchasing power, food supply is another central issue that needs to be addressed as soon as possible. Food must be a concern because this matter is the most basic need, apart from cloth and house (Tambunan, 2003). When viewed from the great potential of the sea and supported by the existence of regional autonomy, it can be said that "ideally" fishermen get very decent welfare because they actually control the sea. However, in reality coastal communities and fishermen are always categorized as poor and left behind, which affects their lives and welfare. Some of the factors that cause poverty for coastal communities and fishermen include: (1) low level of fishing technology, (2) small scale of business, (3) inefficient marketing system for fish products and (4) status of fishermen who are mostly laborers.

The linkages between the lives of coastal communities and fishermen in Lampung Province are quite concerning, coupled with the COVID-19 pandemic requiring special treatment to improve their welfare and standard of living, one of which is by increasing food security for coastal communities and fishermen. The most appropriate effort is to carry out a post-COVID-19 Pandemic Food Security Strategy modeling for Coastal Community and Fisherman Households in Lampung Province.

2. Methods

T The research was carried out for six months, from April to September 2022. The research location was in Labuhan Maringai subdistrict, East Lampung Regency, Indonesia. Where the area is one of the potential coastal areas in Lampung Province. The district is an area that has a fisher village. Sampling was carried out purposively, namely by selecting two predetermined villages.

This research is a research model for Strengthening Food Security after the COVID-19 Pandemic in Lampung Province. The research was designed using a quantitative and qualitative approach. Quantitative approach is carried out by collecting primary and secondary data. Primary data by conducting interviews and surveys using a structured questionnaire, while the qualitative approach by way of Focus Group Discussion (FGD), in-depth interviews, and observations of local communities.

The data processing process includes editing, coding, entry and analysis. Household size is categorized based on BKKBN provisions. Small households consist of ≤4 people, medium if 5-6 people, and large if ≥7 people. Household expenditure is categorized into two categories, namely "poor" if spending per capita is below the poverty line and "not poor" if it is above the poverty line. Maternal nutrition knowledge was categorized into three, namely "low" if the score was ≤5, "moderate" if the score was 6-7, and "high" if the score was ≥8. Social support is categorized into three, namely "poor" if the score is 20.

According to Yamin and Kurniawan (2009), in path analysis there is an indirect effect. The magnitude of the indirect effect of a variable on a particular variable can be calculated by multiplying the regression coefficients (beta-β) of the effector variable.

The data collected from the survey results have been analyzed statistically descriptive and inferential. Descriptive statistics in the form of averages and percentages, while inferential with multiple regression tests. To measure the relationship between variables analyzed using Pearson correlation analysis and Spearman's rank, while to measure the influence between research variables analyzed using path analysis. The software used is Excel, SPSS version 24 and Lisrel.

3. Results and Discussion

3.1 Respondents Characteristics

Age of respondent

Age is a factor in influencing a person's attitude to social activities. The difference in a person's age influences his daily life, so that it can determine his love and passion for work. It is known that the age of respondents who are vulnerable to the age of 20-30 is 9 people or 15 percent. The age 31-40 amounted to 20 people or 34 percent. Ages 41-60 amounted to 26 people or 43 percent and ages > 61 amounted to 5 people or 8 percent. The age of most respondents is at the age of 41-60 years, where this age is a person's productive age.

Respondent's gender

Respondents in this study included men and women. The sample used in this study did not differentiate between gender, but the respondents were more dominant towards men. There were 57 men or 75 percent of all respondents interviewed, while 3 women or only about 5 percent. Where, the blue swimming crab fishermen are generally men because this work is quite heavy for women.

Level of education

Education aims to develop and increase one's intellectual abilities, psychological maturity, and the formation of one's character. The level of education that has been taken by respondents has diversity. At the non-school education level, there were 1 person or 2 percent of the respondents interviewed, the elementary education level was 20 people, or 34 percent, the junior high school education level was 29 people, or 48 percent, and high school education was 10 people, or 33 percent. The level of education most respondents reached was junior high school. This condition was caused by economic factors and environmental conditions preventing them from obtaining higher education.

Number of family dependents

The number of family dependents is the number of family members who are still dependent on meeting their daily needs, both siblings and non-siblings who live in the same house but do not have a job. The largest number of dependents of the respondent's family, namely 4 to 5 dependents with a total of 32 people or 53 percent of the total number of respondents. So it can be assumed that one of the main motivations of the respondents to work as fishermen is due to the demands of responsibility towards the family to meet their needs. The number of dependents of this respondent's family consists of his wife, children, and parents.

Respondent's side job

A side job is another job that someone does outside of the main job that aims to channel their interests or abilities to supplement their income. There were only 3 respondents who had side jobs, namely 3 percent as drivers and 2 percent as construction workers. As for respondents without side jobs, there were 57 people or 95 percent of the total number of respondents interviewed in this study. It can be concluded that most of the respondents only work as fishermen and are very dependent on marine products to earn income to meet their daily family needs.

Respondent's business ownership

Business ownership is a form of business activity in terms of the owner/founder as well as the source of capital in carrying out the business. Ownership of this business will affect the income that will be received by respondents. There are 20 people as workers in becoming fishermen or 33 percent, meaning that labor fishermen are fishermen who work with the boss, who are seen as superiors and as a source of capital for labor fishermen, starting from nets, engine fuel (Bahan Bakar Minyak/ BBM), and so on. For labor fishermen, the price of the catch will be reduced in order to return the business owner's capital spent in meeting the necessary facilities needed to catch small crabs. There are 40 people or 67 percent who become fishermen with their own capital and are counted as the owners of the business. Fishermen with their own business ownership will bear the costs of boats, nets, fuel, and so on based on their capital.

Work experience

The experience one gets at work is a good work ability. Experience working for crab fishermen 1-10 years totaling 19 people or 32 percent, 11-20 years totaling 20 people or 33 percent, 21-30 years totaling 11 people or 18 percent, and 31-40 years totaling 10 people or 17 percent. The experience of working fishermen is quite experienced and has a lot of knowledge about the crab business and the problems that exist in the small crab business, so that fishermen have high quality and productivity in work based on the experience gained.

Income of respondents

Income is the amount of money received by a person from their activities, mostly from the sale of products and/or services that have not been deducted by expenses to meet their daily needs. Most of the sources of income in the community in this study came from the sale of crab catches which were accumulated for one month and can be seen in the following table 1.

Table 1. Income of respondents

No	Income of respondents (Million IDR)	Amount (People)
1	0-24	45
2	25-49	3
3	50-74	3
4	75-100	5
5	>100	4
	Total	60

Based on the results of Table 1 it is known that the respondents with the most income range at a value of 0 to 24 million as many as 45 people or 75 percent. Income of respondents with a total of 25-49 million and 50-74 million respectively there are 3 people or 5 percent. Meanwhile, for income in the range of 75-100 million, there were 5 people or 8 percent of all respondents and 4 respondents with receipts of more than one hundred million rupiah. Respondents with revenues of more than 100 million are respondents who have crab processing, so the income generated is much higher than ordinary crab farmers, which is 7 percent.

3.2. Respondent Family Food Security

Food security is a measure of the indicators used to produce a composite value of food security conditions in an area. The nine indicators used in the preparation of the measurement are derivatives of three aspects of food security, namely food availability, food access and food utilization. The level of food security of the respondents can be seen in Table 2

Table 2. Food security of the respondent's family

Category	Number of family dependents	Amount (People)
Low	3-6	10
Moderate	7-9	25
High	10-12	15
	Total	60

Table 2 shows that the level of food security for the respondent's family is in the moderate category, meaning that the respondent can provide, reach and use it quite well but not optimally. The community has not been able to ensure that the components of food security can run consistently at any time, this happens because the income of fishing households is very uncertain, this can also determine the ability of families to provide food. When viewed from the availability, diversity of types and very easy access to food, it can be seen from adequate market facilities and infrastructure. However, this inability can be seen from the economic conditions related to the livelihoods of fishermen who are very dependent on natural resources and weather. Housewives' knowledge of food can also be said to be good, because many good consumption patterns have been conveyed through Posyandu (Health integrated service post) activities and there is a link between food, nutrition and health for endurance.

3.3 Path Analysis

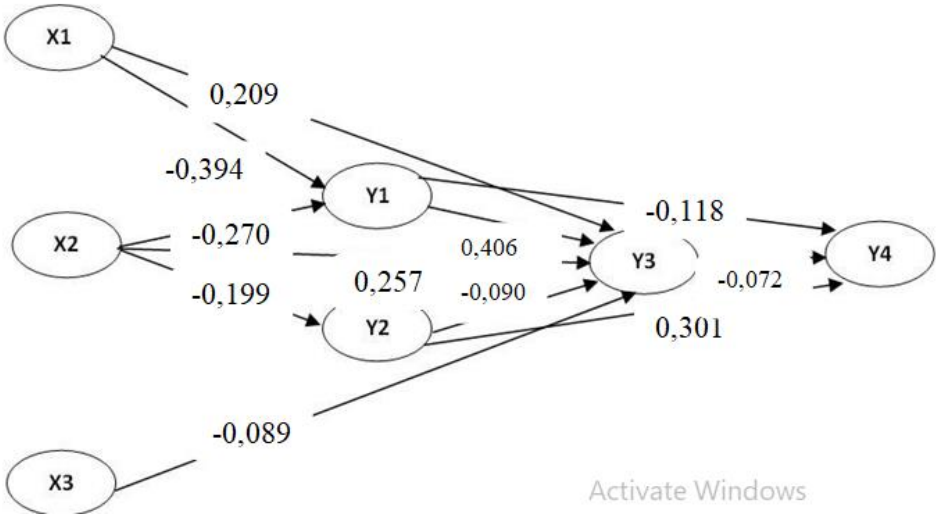

Figure 1. Path analysis

Information :
X1 : Education Level of Head of Household (KRT),
X2 : Education Level of Housewives (IRT)
X3 : Household Size Y1 : Social Support
Y1 : Social Support
Y2 : Knowledge of Nutrition
Y3 : Household Expenditures
Y4 : Level of Household Food Security

Effect of the Education Level of the Head of the Household (X1) and the Education Level of the Housewife (X2) on Social Support (Y1)

The effect of the education level of the head of the household (X1) and the education level of the housewife (X2) on social support (Y1) was carried out using the SPSS 22 calculation, the value of R^2 = 0.048 was obtained. Based on these figures the combined effect is equal to 4.80 percent (R^2 x 100%) indicating that the effect of the education level of the head of the household and the education level of the housewife combined on social support is 4.80 percent and the remaining is 95. 20 percent is influenced by other factors not explained in this study. While the influence individually can be seen in the following table 3.

Table 3. Test results of effect of education level of heads and housewife on social support.

Variable Influence	Significance	Path Coefficient
X_1 to Y_1	0.341	0.209
X_2 to Y_1	0.114	-0.394

Table 3 shows that the effect of the education level of the head of the household (X1) and the education level of the housewife (X2) on social support (Y1) both have no significant effect. This is shown from the significant value of each variable of 0.341 > 0.05 and 0.114 > 0.05. Based on the test results, it shows that the education level of the head and housewife has no effect on social support, this happens because social support is formed from complex components, especially concrete actions to build social conditions that support both the community and stakeholders.

Effect of Education Level of Housewives (X2) on Nutrition Knowledge (Y2)

The effect of the education level of housewives (X2) on nutritional knowledge (Y2) obtained the value of $R^2 = 0.040$. Based on these figures it can be seen that the combined effect is equal to 4.00 percent (R^2 x 100%) indicating that the effect of the education level of housewives on knowledge is 4.00 percent and the remaining 96.00 percent is influenced by other factors that are not explained in this research. Meanwhile, if viewed from the significance value, it is known that the significance value is 0.127> 0.05, which means that there is no effect of the education level of housewives on nutrition knowledge. This happens because much of the knowledge of housewives related to nutrition is obtained through social interaction and exchange of information both formally and informally, because in essence the need for food is the most basic need in priority human needs. Information about food is widely discussed not through formal learning activities but rather through real experiences from each individual or through counseling at the non-formal Posyandu.

Effect of Education Level of Head of Household (X1), Education Level of Housewife (X2), Household Size (X3), Social Support (Y1) and Knowledge of Food (Y1) on Household Expenditures (Y3).

The influence of the education level of the head of the household (X1), the education level of the housewife (X2), the size of the household (X3), social support (Y1) and food knowledge (Y1) on household expenditure (Y3) was carried out by calculating SPSS 22, obtained the value of $R^2 = 0.222$. Based on these figures it can be seen that the combined effect is equal to 22.20 percent (R^2 x 100%) indicating that the education of the head of the household, the level of education of the housewife, the size of the household, social support and food knowledge combined to household expenditure is 22 .20 percent and the remaining 78.20 percent is influenced by other factors not explained in this study. While the influence individually can be seen in the following table.

Table 4. Results influence test of household head of educational, education level of housewife, household size, social support and food knowledge on household expenditure.

Variable Influence	Significance	Path Coefficient
X_1 to Y_3	0.223	0.257
X_2 to Y_3	0.207	-0.270
X_3 to Y_3	0.475	-0.089
Y_1 to Y_3	0.002	0.406
Y_2 to Y_3	0.486	-0.090

Table 4 above shows that the effect of the education level of the head of the household (X1), education level of the housewife (X2), household size (X3), social support (Y1) and food knowledge (Y1) on household expenditure (Y3), only the social support variable has a significant effect. This is shown by the significant value of each variable that has no effect on household expenditure of 0.223 > 0.05 for the education level variable of the head of the household, 0.207> 0.05 for the education level variable for housewives, 0.475 > 0.05 for large household variables and 0.486> 0.05 for food knowledge variables. Meanwhile social support has a significance value of 0.002 <0.05 with a contribution of 16.68 percent (0.406^2 x 100%) which means it has a significant influence on household expenditure. Based on the test results, it shows that social support is able to influence household expenses in a family, this is because a person is able to develop if he joins and mingle in the social environment, this developing ability can also be involved in economic and institutional activities. The social environment is able to provide encouragement and assistance when individuals face a problem,

one of which is in terms of household expenses, such as communities that are members of institutions that can receive many benefits through communication, cooperation and social interaction within them.

Effect of Social Support (Y1), Food Knowledge (Y2) and Household Expenditure (Y3) on Family Food Security (Y4)

The effect of social support (Y1), food knowledge (Y2) and household expenditure (Y3) on family food security (Y4) was carried out by SPSS 22 calculations, the value of R2 = 0.140 was obtained. Based on these figures it can be seen that the combined effect is equal to 14.00 percent (R2 x 100%) indicating that social support, food knowledge and household expenditures combined on family food security is 14.00 percent and the remaining 86.00 percent is influenced by other factors not explained in this study. While the influence individually can be seen in the following table 5.

Table 5. The influence of social support, food knowledge and household expenditure on family food security.

Variable Influence	Significance	Path Coefficient
Y_1 to Y_4	0.175	-0.118
Y_2 to Y_4	0.019	0.301
Y_3 to Y_4	0.604	-0.072

Table 5 above shows that the effect of social support (Y1), food knowledge (Y2) and household expenditure (Y3) on family food security (Y4), only the food knowledge variable has a significant effect. This is shown from the significant value of each variable that has no effect on family food security of 0.175 > 0.05 for the social support variable and 0.604 > 0.05 for the household expenditure variable. While food knowledge has a significance value of 0.019 <0.05 with a contribution of 9.06 percent (0.301^2 x 100%) which means it has a significant influence on family food security. Based on these data, it shows that the level of food knowledge will underlie housewives in behavior in determining food consumption patterns and efforts to maintain food security at the family level. This happens because domestic activities in providing food are largely based on the role of women, especially the role of mothers in the household. The greater the knowledge of housewives about the importance of diverse, nutritious, balanced and safe food, it can affect the mother's ability to manage food so that she is able to meet the nutritional adequacy of each family member.

Indirect Effect of Education Level of Head of Household (X1) and Housewife (X2) on Household Expenditure (Y3) through Social Support (Y1) and Knowledge of Food (Y2)

The indirect effect of the education level of the head (X1) and housewife (X2) on household expenditure (Y3) through social support (Y1) and food knowledge (Y2) can be seen from the multiplication between the path variable coefficient and the intervening coefficient, in terms of In this case, social support and food knowledge are intervening variables. Based on the direct and indirect test results can be seen in the following table 6.

Table 6. Indirect effect of education level of household head (x1) and housewife (x2) on household expenditure (y3) through social support (y1) and food knowledge (y2)

Variable Influence	Direct	Indirect influence trough Y	Total
X_1 to Y_3	0.257	trough Y_1 0.084	0.359
X_2 to Y_3	-0.270	trough Y_1 -0.159	-0.429
X_2 to Y_3	-0.270	trough Y_2 0.017	-0.253

Table 6 shows that there are direct and indirect effects of the education level variable of the head (X1) and housewife (X2) on household expenditure (Y3) directly by 0.257 and -0.275 respectively, while the indirect effect is the level of education head of household (X1) on household expenditure (Y3) through social support (Y1) of 0.084 (0.209 x 0.406), the indirect effect of the education level of a housewife (X2) on household expenditure (Y3) through social support (Y1) of -0.159 (-0.394 x 0.406) and the indirect effect of the education level of a housewife (X2) on household expenditure (Y3) through food knowledge (Y2) is 0.017 (-0.199 x -0.090). Based on the direct and indirect effects, it shows that the effect of the education level of the head of the household (X1) on household expenditure (Y3) has a more direct effect, this is because the education of the head of the family is identical as the main role holder in production and the highest decision maker in the family will affect household expenditure, such as for the allocation of primary needs or the purchase of tertiary goods. Meanwhile, the education level of housewives (X2) has a more indirect effect on household expenditure (Y3) especially through food knowledge (Y2), this is because mothers who play the main domestic role such as providing food for the family will pay more attention to food consumption patterns so that will indirectly affect family expenses through knowledge of nutritional adequacy through food that is processed and served for family consumption.

Indirect Effect of Social Support (Y1) and Food Knowledge (Y2) on Family Food Security (Y4) through Household Expenditures (Y3)

The indirect effect of social support (Y1) and food knowledge (Y2) on family food security (Y4) through household expenditure (Y3) can be seen from the product of the path variable coefficient and the intervening coefficient, in this case household expenditure is the intervening variable (liaison). Based on the direct and indirect test results can be seen in the following table

Table 7. The indirect effect of social support (Y1) and food knowledge (Y2) on family food security (Y4) through household expenditure (Y3).

Variable Influence	Direct	Indirect influence trough Y3	Total
Y_1 to Y_4	-0,118	-0,029	0,359
Y_2 to Y_4	0,301	0,006	-0,429

Table 7 shows that there are direct and indirect effects of social support (Y1) and food knowledge (Y2) on family food security (Y4) directly by -0.118 and 0.301 respectively, while the indirect effect is social support (Y1) on family food security (Y4) through household expenditure (Y3) of -0.029 (0.406 x -0.072) and the indirect effect of the level of food knowledge (Y2) on family food security (Y4) through household expenditure (Y3) of 0 .06 (-0.090 x- 0.72). Based on these data, it shows that the influence of the food knowledge variable has a more direct influence on food security, meaning that the knowledge of housewives related to food is the basis for action in realizing food security at the family level.

4. Conclusions

The characteristics of the respondents consist of the age group belonging to the productive category, namely 41-60 years, the level of education is included in the medium category, namely junior high school, and long working experience of 10-20 years. The level of food security for the respondent's family is in the moderate category, meaning that the respondent can provide, reach and use it quite well but not optimally. The community has not been able to ensure that the food security component can run consistently at any time, this happens because the income of fishing households is very

uncertain, this can also determine the ability of the family to provide food. The influence of the education level of a housewife has an indirect effect through her nutritional knowledge. Food knowledge has a more direct influence on food security, meaning that the knowledge of housewives related to food is the basis for action in realizing food security at the family level.

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