



Community adaptation strategy affected by Covid 19 pandemic in the fulfilling of family food

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Abstract. Food is a basic human need that should be fulfilled in terms of quality, quantity and sustainability. The Covid 19 pandemic influences human life in aspect such as the availability of food, especially in economically categorized low-income families. This study aims to describe the community adaptation strategy in fulfilling family food during the Covid 19 pandemic. Furthermore, it was conducted at Kupang Regency using survey methods with interview techniques and Focus Group Discussion (FGD) analysis. A total of 60 respondents were determined purposively, and data which includes, household source of food supply, consumption patterns, household expenditure, and respondents' adaptation strategies were collected. The results showed that 70% of food sources come from the garden, 25% from market, and 5% outside the garden. In addition, 65% of respondents experienced changes in their pattern of consumption, while 30% did not change, and 5% were erratic. It was further revealed that 60% of respondents did not experience an increase in expenditure. However, 40% increased. Therefore, cultivation of crop for family food is increasing as adaptation strategies are faced with the effects of Covid 19 pandemic

Key Words: community adaptation, family food, Covid 19 pandemic, pandemic influences, adaptation strategies, Kupang Regency.

Introduction. Coronavirus 19 (Covid 19) is a highly contagious viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which occurs in Wuhan, China and Taiwan, and spread throughout the world (Shereen et al 2020). It has caused public health problems globally in nearly 109 countries including Indonesia (Harapan et al 2020; Wang & Su 2020). It was further stated that each country was obliged to increase its supervision to prevent widespread transmission that could affect all aspects of human life. Ozili & Arun (2020) showed that the impact of the Covid 19 pandemic has reduced global economic growth because social restrictions imposed by many countries have limited economic activity specifically in Indonesia. According to Susilawati et al (2020), the sectors affected were transportation, tourism, trade, health and others. However, the most affected economic sectors by Covid 19 were households. One strategy in dealing with this pandemic is to create a robust and sustainable food system in order to ensure balanced nutrition for the global community (United Nations 2020).

Kuntoro (2020) stated that an important defense against Covid 19 is food security. The government has implemented a health protocol, and prepared a special strategy to prevent the virus spreading through a large-scale social restrictions (known as PSBB). However, this will only be effective as long as basic foods are available to the community. Furthermore, Rosalina (2020) stated that one of the important strategies in dealing with Corona virus is to consume vegetables and fruits according to WHO standards, which is 5 servings per day. This is increasingly important because the dietary pattern of Indonesian people still consumes less vegetables and fruits, the standard of

consumption of vegetables and fruit from the Indonesian has only reached 108.8 g/person/day, which can be said to be still lower than the WHO standards set 400 g/person/day. Based on the description above, a fast strategy is needed in overcoming the impact, especially for communities that have lost their source of income and employment.

One of the strategies that can be implemented is to optimize the garden to produce food in a fast time through horticulture, small livestock and poultry, as well as inland fisheries. Mancebo (2018) and Trendov (2018) stated that urban agriculture functions to reduce global warming, creates sustainable ecosystems, and encourages communities to cultivate local plants as a source of food. This strategy is considered important because garden optimization can produce food in a fast time with low cost. Furthermore, through the diversification of food supply in the garden, households can obtain balanced nutritious food, especially protein (vegetable and animal), vitamins, and minerals, therefore, increasing the body's immunity in facing the Covid 19 pandemic or other infectious diseases (Wallace et al 2019).

This study aims to describe the attitudes, behaviors, and strategies of households affected by Covid 19 in adapting both during and post-pandemic period, and to utilize the garden as a source of food for the family.

Material and Method

Description of the study site. The study was conducted from March to May 2020 in Kupang Regency, East Nusa Tenggara Province, Indonesia (Figure 1).

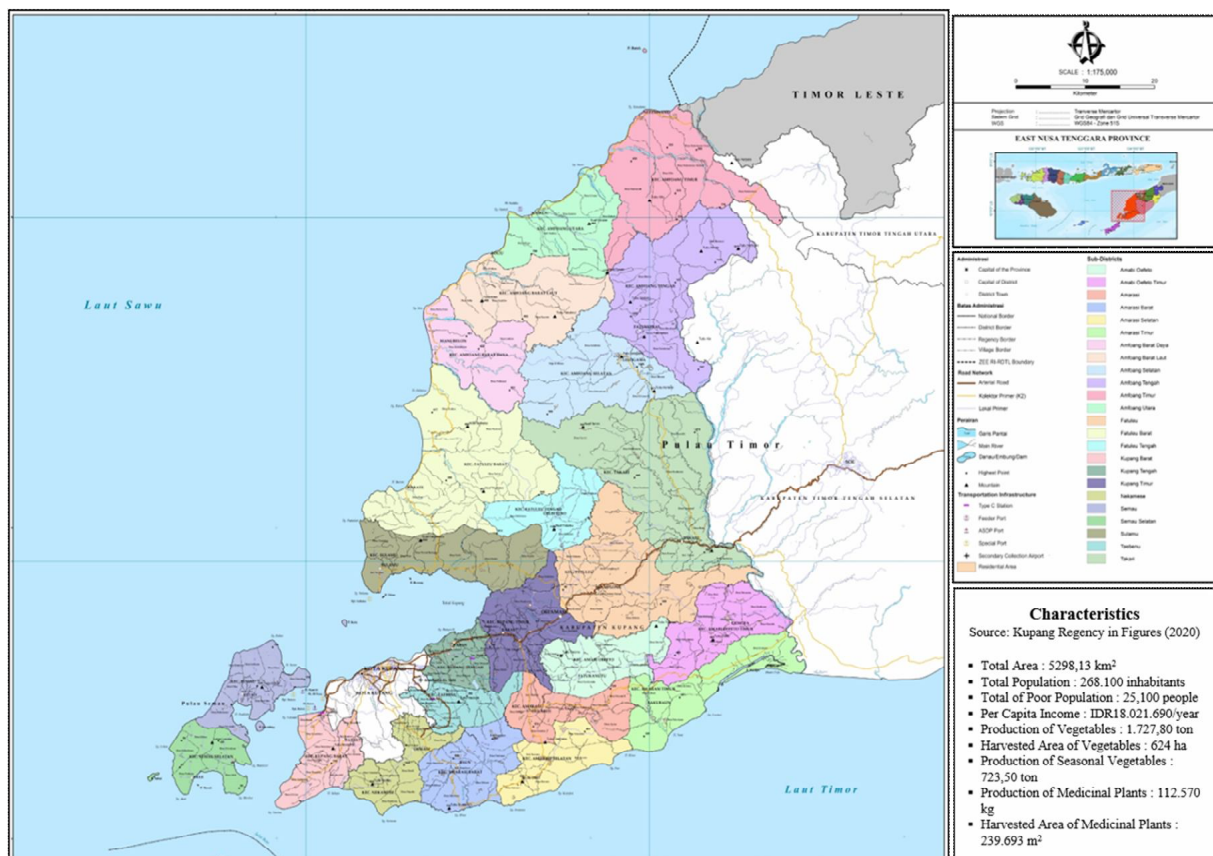


Figure 1. Location map of Kupang Regency, East Nusa Tenggara Province, Indonesia. Map source: Development Planning Agency at Kupang Regency, 2019.

Determination of respondents. A total of 60 people were selected as respondents, and they were determined by purposive sampling with consideration that the selected households are farmers/ranchers and market participants in the Kupang City.

Data collection method. Data were collected through structured interviews based on questionnaire and focus group discussion (FGD).

Research data analysis. The data obtained was tabulated based on the respondents' answers and the results of the FGD. Furthermore, they were analyzed descriptively (Evans et al 2020) in relation to the attitudes and strategies of households affected by the Covid 19 pandemic in fulfilling family food.

Results and Discussion

The sources of food supply. Based on interviews, it was discovered that the source of food supply especially vegetables was 70% from the garden, 25% markets, 5% outside the yard (without buying on the market), as shown in Figure 2.

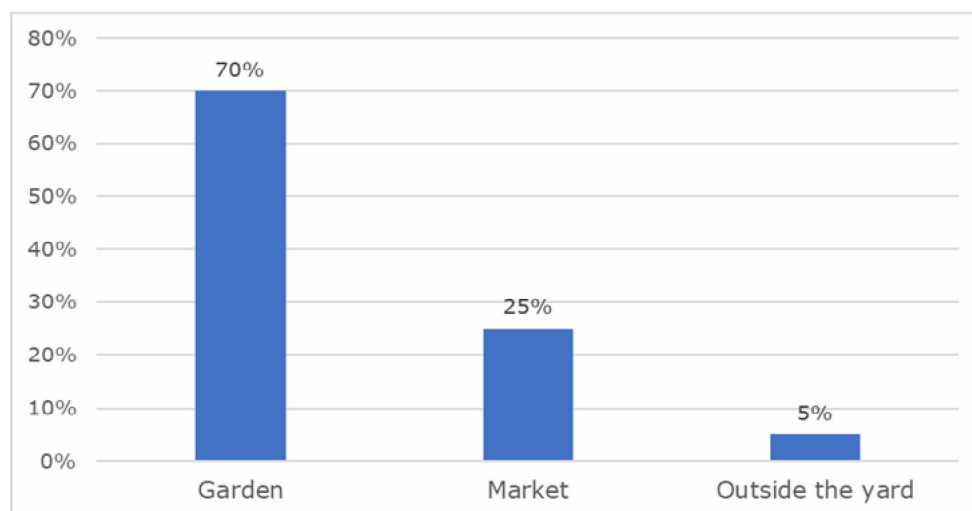


Figure 2. The sources of food supply, especially vegetables.

Increased use of the garden by respondents to cultivate vegetables is a strategy in dealing with the Covid 19 pandemic, in which family food, especially vegetables is produced independently in the garden, thereby reducing family expenses in the field of food. This is in accordance with Rauf et al (2013) which stated that the garden utilization plays a role in supporting the nutritional needs of the family as well as for beauty (aesthetics) when managed optimally and planned. Furthermore, in urban areas particularly, it is an independent source of family food (Noorsya & Kustiwan 2013). Farming in the garden is identical to urban agriculture which generally has narrow land. Mancebo (2018) and Trendov (2018) stated that urban agriculture can reduce global warming, create sustainable ecosystems, and encourage communities to cultivate local plants. Furthermore Santoso & Widya (2014) added that several benefits were felt by the Surabaya citizens as a result of this agricultural program, including the ability to improve family nutrition through the yield of independent farming, increases family income if farming yield are sold, and broadly increase food supply in Surabaya. Therefore, community needs will be fulfilled and have an impact on stable selling prices as well as ecological benefits in increasing the proportion of green open space.

Family consumption patterns. Based on interviews, it was discovered that 65% of respondents changed their consumption patterns, while 30% did not change, and 5% were erratic (Figure 3).

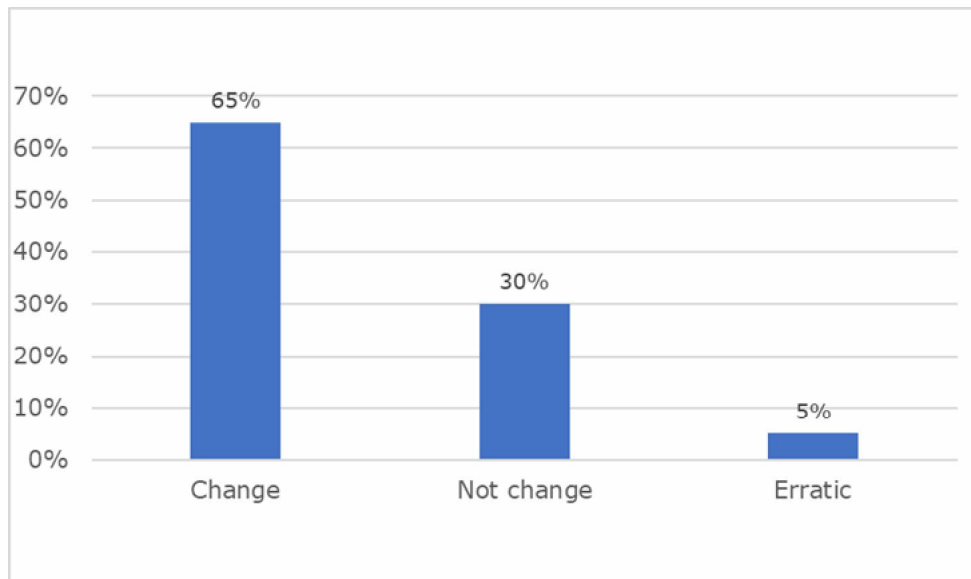


Figure 3. Family consumption patterns during the Covid 19 pandemic.

Changes in patterns are related to an increase in vegetables and fruit consumption during the pandemic caused by appeals or recommendations. Adequate consumption can increase immunity, therefore being able to adapt to Covid 19. This is in accordance with Wallace et al (2019) that vegetables and fruits consumption can provide a balanced nutrients intake, especially vitamins and minerals needed by the body to develop the immune system, hence preventing various disease infections. Siswanto et al (2013) stated that nutritious food is indicated by the availability of food substances such as carbohydrates, proteins, fats, minerals, and vitamins to fulfill human needs, including building the body's immunity or the immune system. Minerals and vitamins in food are very important to build the immune system. However, they are unable to be synthesized in the body, therefore this requires a lot of other intake sourced from vegetables, fruits, and animal protein.

Respondent's household expenditure. Based on interviews, it was discovered that 60% of respondents' household expenditure did not increase during the Covid 19 pandemic. However, 40% of respondents' household expenditure had increased (Figure 4).

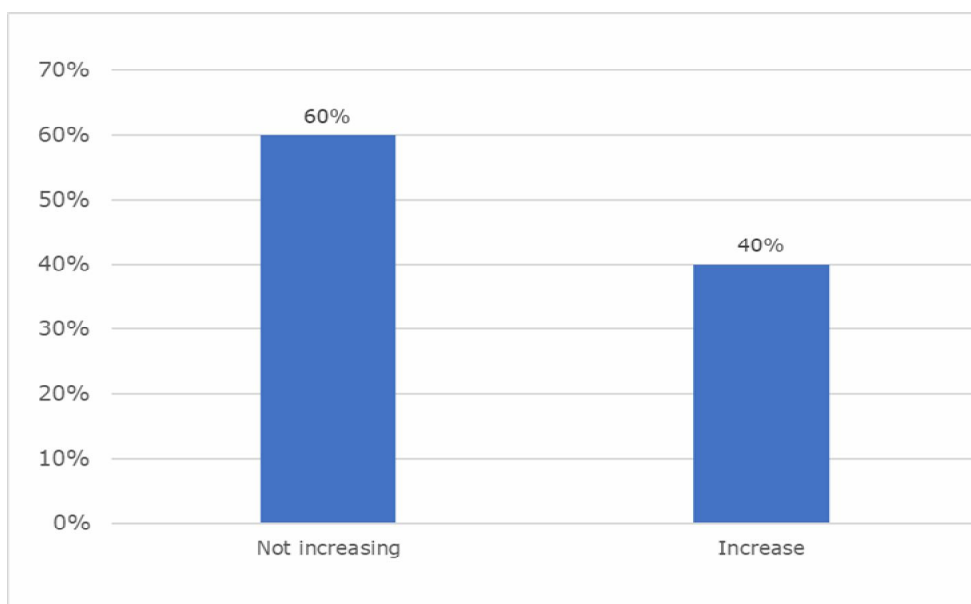


Figure 4. Respondent's household expenditure.

The respondents that did not experience an increase in household expenditure may have been caused by the decision to prioritize the provision of basic needs such as food and health during the Covid 19 pandemic. Farrell et al (2020) reported that households had a method to offset decreased income by prioritizing expenditure for the supply of food and health care. Furthermore, it may be due to social assistance from the government, hence it becomes a stimulant to support the fulfillment of family needs during the Covid 19 pandemic. Martin et al (2020) reported that in America, some households that did not receive government assistance had greater expenditure. Utilizing home garden for vegetable cultivation is a strategy to maintain a stable household expenditure level, because the vegetables needed for family food are fulfilled from independent production. This decision was taken as a result of its cultivation been relatively inexpensive and did not use large cash capital. Therefore, it was useful in the midst of the Covid 19 pandemic threat. This was in accordance with Farrell et al (2020) that during the pandemic in America, generally small household businesses that used money is more vulnerable to the disaster threat as happening today.

The household adaptation strategy. Considering the focused discussion results, it was discovered that the household adaptation strategy affected by the Covid 19 pandemic in the fulfillment of family food, is summarized in the Table 1.

Table 1

Household adaptation strategies affected by the Covid 19 pandemic in fulfilling family food

<i>No</i>	<i>Aspects</i>	<i>Strategies</i>	<i>Obstacles</i>
1	Food supply	Garden land utilization for crop cultivation	The optimal understanding of household cultivation techniques is still low
2	Family consumption patterns	Increasing fruit, and animal protein consumption, especially fish	The price is relatively expensive
3	Household expenses	Expenditures are prioritized for food fulfillment	Decreased sources of income due to Covid 19 pandemic
4	Labor utilization	Utilize free time at home during the Covid 19 pandemic for productive activities	The younger generation has not been adapted to agricultural cultivation, including utilizing garden land
5	Family health	Consuming herbal ingredients with the potential to increase body immunity	The younger generation is not accustomed to consuming herbal ingredients even though its properties are known

Source: The results of focused discussion (2020).

Based on the focused discussion on Table 1, it is seen that households affected by the Covid 19 pandemic have an adaptation towards the fulfillment of food needs and the survival of their families. In the food supply variable, a strategy of using the garden for crop cultivation is a choice that supports the supply of family food, especially for the vegetables and fruit needs. However, it was also found that the main obstacle in this strategy is the understanding of household members about optimal agricultural cultivation which is still low. This was in accordance with Mardiharini (2011) that realizing an integrated farming system in the garden is not an easy thing for the community, and also for the farmer's household. One of the supporting factors is the existing human resources but limited information that can reach the rural areas (Paulus et al 2020). Therefore, in order to optimize the garden as an independent food source, training and assistance are needed, especially related to the provision of planting media which include organic fertilizer, plant seed selection, and maintenance. This is supported by Siswati (2012) that family food security is realized through the garden land utilization with an

integrated farming system that combines traditional farming patterns with modern science in agriculture that continues to develop. In the family variable, the strategy taken is to increase food consumption, especially vegetables and fruit. This relates to public awareness during the Covid 19 pandemic that more vegetables and fruits should be consumed as a source of vitamins and minerals needed by the body to increase immunity. However, this strategy has constraints because generally the fruits and vegetables prices during the pandemic experienced an increase caused by the sellers reduction in the market due to distance restrictions and avoiding crowds. In the household expenditure variable, the strategy is that the expenditure during the Covid 19 pandemic is prioritized for the fulfillment of food and family health. On the contrary, based on the focused discussion, the obstacle of this strategy is that reduced economic activity had an impact on declining family income as a result of the health protocols adoption during the Covid 19 pandemic. Furthermore, in the family labor utilization variable, the strategy adopted was to utilize free time at home for productive activities including the garden land utilization for crop cultivation. However, the obstacle is that the young generation in the family has not adapted to agricultural cultivation, therefore labor in the family has not been utilized optimally. In the family health variable, it was discovered that during the Covid 19 pandemic, in addition to the order of the health protocol, the community should also utilize or consume herbal ingredients cultivated in the garden or obtained in the market with the potential to increase body immunity. However, the younger generation is not familiar with this strategy, hence its utilization is not yet optimal. The discussion result showed that households affected by Covid 19 have an adaptation strategy as a normal response from a changing condition. This is in accordance with Drever (1952) quoted by Lumaksono (2013) that adaptation has an understanding as a process of organism's sensitivity towards a conditions or situation, either done or learned. Furthermore, it is emphasized by Smith & Larimer (2009) which states that the concept of adaptation strategy leads to an action plan for a certain period of time, by certain groups or all humans as an effort or steps with capabilities inside and outside them such as increasing the capacity of society in provision of family food by studying in their group or outside innovations such as NGOs, universities, agricultural research and development agencies.

Conclusions. Households affected by Covid 19 are using strategies in fulfilling food needs and family survival through home garden, increasing the consumption of vegetable and fruit, prioritizing household expenses for food needs, utilizing family members' free time, and using herbal ingredients in maintaining body immunity. Up to 70% of family food are sourced from the garden utilization to fulfill vegetable needs, 25% from market, and 5% from outside the garden. Furthermore, 65% of consumption patterns did not change, while 30% changed, 5% were unclear. Subsequently, 60% of household expenditure did not increase and 40% increased. Households have strategies that adapt towards the impact of the Covid 19 pandemic. However, innovative steps are needed to optimize the existing strategies.

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