

Short Communication

Coronavirus (COVID-19) Impacts on Malaysian Fisheries Sectors: Lesson Learned from the Movement Control Order (MCO)

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ARTICLE INFO

Received: Sept 05, 2022

Accepted: Nov 12, 2022

Published: Jan 06, 2023

Available online: Jan 15, 2023

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Keywords:

Coastal Community

COVID-19

Fishery Industry

Livelihoods



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Abstract

COVID-19 has a significant impact on the fishery industry, economy, and food supply. The government of Malaysia imposes a Movement Control Order (MCO) to curb the spread of COVID-19 infection. Although the MCO implementation has benefits in terms of public health, it has affected the fishery industry and the livelihood of coastal communities in Malaysia. This study aimed to identify the impact of the COVID-19 pandemic on the fishery industry and their livelihoods during that period of calamity. Qualitative research and thematic analysis were employed to seek deeper information on the real situation that retards the fishing activities to the opt stage. COVID-19 has already revealed gaps in health care, the economy, and food systems. The findings obtained can provide recommendations to the government to provide initiatives to fishermen to help them maintain and improve their livelihood. However, this study has limitations as the number of respondents is relatively small due to the restrictions of movement allowed by the government. Future studies could be further enhanced in terms of the impact of COVID-19 after movement restrictions have been loosened and could use a quantitative approach to obtain significant data.

Cite this as: Arzaman, A. F. M., Salleh, H. S., Embong, A. M., Kadhim, K. A., Afzainizam, N., Pham, L. H. H. P., Abdul-Kadir, N. A., & Nasir, N. Y. M. (2023). Coronavirus (COVID-19) Impacts on Malaysian Fisheries Sectors: Lesson Learned from the Movement Control Order (MCO). *Jurnal Ilmiah Perikanan dan Kelautan*, 15(2):420-429. <http://doi.org/10.20473/jipk.v15i2.38774>

1. Introduction

Novel coronaviruses are a threat to human health globally and the first case was reported in Wuhan, China in December 2019 which was given the acronym COVID-19 by the World Health Organization (WHO, 2020). Most countries have implemented lockdowns as a measure to slow and stop the spread of the virus as well as to “flatten the curve” of hospital admissions and deaths (Bennett et al., 2020). In Malaysia, the government has implemented the Movement Control Order (MCOs) since March 18, 2020, to December 31, 2021, which amongst others is to control the spread of the COVID-19 pandemic chain infection that affects various sectors of the country’s economy, including the fisheries industry. As a result, the number of employees has been reduced, and working hours have been restricted to shorter periods. The impact of the MCO that has been implemented in Malaysia has caused various difficulties for the fishery industry, including fishermen, fishmongers, and small-scale fishery entrepreneurs. As noted by Lau et al. (2021), fisheries are a major source of employment, food supply, and food security for millions of people worldwide, and the fisheries sector involves direct interaction to capture marine resources, sell, and process the raw fish into food. Consequently, this situation has given an impact on the nutrition, well-being, and livelihoods of the coastal community and its surroundings.

In 2016, the fishery industry and marine products were the main contributors to Malaysia’s fish production and economy with a value of USD 2.5 million and employing 132,305 people (SEAFDEC, 2018). In 2019, the gross domestic product from fishing was expected to reach around 12.1 billion Malaysia Ringgit (Statista, 2019). Furthermore, as the primary source of livelihood in coastal areas, the fisheries sector provides employment opportunities to local people, ensuring their survival and well-being. The impact of COVID-19 is focusing not only on the national economy but also on the local community’s economic aspects. Society experiences changes in daily lifestyle compared to previous lives, such as employment, income, and expenses. The fisheries sector is still indirectly impacted by the pandemic through changes in consumer demand, market access, logistical problems related to transportation reductions and border restrictions (Hoque et al., 2021). According to Lim (2020), the economy is nosediving with intensifying negative impacts on jobs, incomes, and livelihoods, disrupting supply chains, poverty, and hardships, particularly for the most vulnerable. The influential economic effects of market

disruptions have affected fishermen’s ability to earn a living through the ‘twin disasters’ of declining demand and falling prices (Bennett et al., 2020).

In Malaysia, the reported cases of COVID-19 by the Ministry of Health until 24th April 2021 were 390,252 cases with total death of 1,426. The increase in the number of cases is due to industrial, economic, social, and religious activities carried out among communities without following the appropriate Standard Operating Procedures (SOPs). As a result, the Prime Minister enforced the Movement Control Order (MCO) on 18th March 2020 to curb the spread of this pandemic. The MCO requires that the public remain at home and maintain social distancing and it is a government initiative aimed at maintaining a safe space between individuals (Chu, 2020). To put this into practice, the (SOPs) required that each person should be one meter apart from the next. These (SOPs) were implemented in all public areas, including restaurants, shopping malls and hospitals.

When it comes to control the spread of COVID-19, movement control is essential because it helps to reduce contact with potential patients, contaminated objects, and surfaces while also encouraging and maintaining virtual community connections within themselves (Galea, 2020). However, in response to the effects of movement control, many sectors have been closed and economically affected. While governments are taking measures around the world to curb and control its spread, global economic disruption has occurred and has affected all sectors of the economy (Lugo-Morin, 2020). This causes unemployment, which affects their income, daily expenditure, education, health, and livelihood. Also, the effects of COVID-19 have had an impact on food supply where there are restrictions on movement between producers and consumers as well as limited quantities (Barman et al., 2021). Other than that, fishermen are affected in terms of their catch, the cost of fishing, and emotionally because they are frustrated by the limited movement (Macusi et al., 2022).

Back home, fisheries activities are essential and well-developed sectors, contributing significantly to the national economy and community livelihood (Suadi et al., 2019; FAO, 2020). The fishing industry is popular and famous as one of the traditional fishing methods in the world that can increase the community’s income (Rosdi et al., 2021). As reported by the Department of Statistics Malaysia (2021), the record for fisheries-based product supply in 2015 was RM18.8 billion, with the trend beginning to rise the following years.

By 2018, the fisheries sub-sector had remained a significant contributor to the country's (GDP), a source of employment, and a source of food for the Malaysian population. In addition, Malaysians consume one of the highest rates of fish per capita globally, consuming an average of 56.5 kilograms of fish per year (Ahmad *et al.*, 2016). This demonstrates that fish is approximately 70% to 80% of total protein consumed in Malaysia.

Coastal fishermen performs traditional fishery activities to seek income using small capital and energy aside from short trips and artisanal boats. However, the impact of movement control implemented by the government to curb the spread of COVID-19 has affected the economy of fishermen as they are unable to carry out fishery activities (Jomitol *et al.*, 2020). According to the Department of Statistics Malaysia (2020), up to 33% of fishermen lost their income due to the impact of COVID-19 on economics and 79.1% experienced a reduction in daily income. As a result, several sectors including the fishery industry were affected by MCO as the numbers of workers and working hours were reduced and shortened respectively.

Additionally, MCOs have affected them by imposing time constraints on their ability to go fishing and generate income to survive. According to The State of Fisheries and Aquaculture (2020), COVID-19 has proven to be one of the most challenging obstacles faced by society since the Food and Agriculture Organization (FAO) inception. The consequences of a severe pandemic will complicate the fight against hunger and injustice as fisheries and aquaculture are among the industries most affected by this situation. As noted by Ma *et al.* (2021), the implication of MCOs on Malaysia's fisheries sectors is reducing national and global demand for buying power. Moreover, Minahal *et al.* (2020) mentioned that closing a single dominant market has exposed the susceptibility of small-scale fisheries to global market shocks, as many of these fisheries depend heavily on international buyers while having domestic markets. In addition, the consequences of limited movement have a dominant effect on small-scale fishermen in the fishing market and their income is indirectly affected (Yusoff *et al.*, 2021).

Results of a study conducted by Azra *et al.* (2021) showed that the impact of MCO has led to a reduction in production, sales and demand for fish and seafood, as well as posed various problems among workers involved in the fishery industry. This shows a significant impact on fishermen and local communities who depend on marine resources for income and staple

food. Department of Statistics Malaysia (DOSM) reports the inflation rate of Malaysia increased 2.8% in May 2022 compared to 2021 which amongst others is caused by the COVID-19 pandemic. Food's price rises by 5.2%. Leading the list is the chicken that at one point was being sold up to USD5. The average price of chicken in July for the second tenure one year of MCO was USD2.50 per kg as compared USD 4.00 in May 2021. The price of the cheapest fish has also increased. Catfish can cost up to USD4.50 and Mackerel is reaching USD5.00 per kilo at the ordinary market.

Following that, the significance of this study in the fisheries sector served as the foundation for a subsequent in-depth study to provide an overview of the community's impact, practices, and living conditions, particularly for fishermen. Aside from that, this study has the potential to formulate and recommend policies that will benefit coastal communities while also contributing to economic growth. Therefore, it is crucial to identify the situation and the impact of MCO implemented on their livelihoods, sources of income, food supply, and how they adapt to these conditions to survive during this pandemic.

In order to gain a better understanding of the impact of the COVID-19 pandemic on the fishery industry and fishermen's livelihoods, it is necessary to assess the virus's impact on the fisheries sub-sector and communities that rely on the fishery industry for their livelihood. Therefore, this study aims to investigate the impact of the COVID-19 pandemic on the fishery industry as well as the impact on livelihoods among fishermen. Even the MCO has reached its end in Malaysia and most of the countries all over the world, COVID pandemic still exists and stubbornly is still in high numbers. Based on the experience Malaysia fishery industry responded to the pandemic, there should be future directions that the global community should take to manage and mitigate the emergency.

2. Materials and Methods

2.1 Study Area

The study was conducted on the East Coast, Malaysia, namely Terengganu, Kelantan, and Pahang as these states have extensive coastlines with a high range of fishery activities and the potential to obtain appropriate data (Figure 1). As mentioned by Boddy (2016), the sample size in the qualitative approach is determined by the saturation of the data achieved and it can be used as a justification for the use of particular sample size in any qualitative research. Therefore, a

total of 18 respondents were selected for this in-depth interview and the data obtained were appropriate as they had reached data saturation. Saturation is defined as the point at which the data collection process no longer requires any new or relevant data (Dworkin, 2012). All the selected respondents are based on coastal communities involved in fishing activities affected by the Covid-19 pandemic. This study obtains information from the respondents by contacting the Area Fishermen Association in the three states on the East Coast, Malaysia. The interview process is stopped when the answers given are saturated. As stated by Fusch and Ness (2015), the number of respondents for a qualitative study does not need to be determined or stated because data collection will be stopped when the data is sufficient or saturated. The researcher determines whether the data is saturated when the answers given by respondents in the same location are similar.

2.2 Method

The qualitative method was chosen because it is an effective method for gaining a comprehensive understanding of the COVID-19 pandemic situation and its impact. This approach can investigate various conditions that occurred during the pandemic and their impact on income, livelihood, and fishery industry on the east coast of Malaysia. A qualitative approach is used to understand people's experiences and perceptions thoroughly, it is flexible and focused on meaningful value when interpreting data (Creswell and Poth, 2018). These factors indicate that qualitative research is an appropriate method of gaining a deeper understanding of research issues from respondents in the context of the study. This study used a snowballing method in selecting the respondents to answer the questions and achieve the objectives of the study, in which, respondents

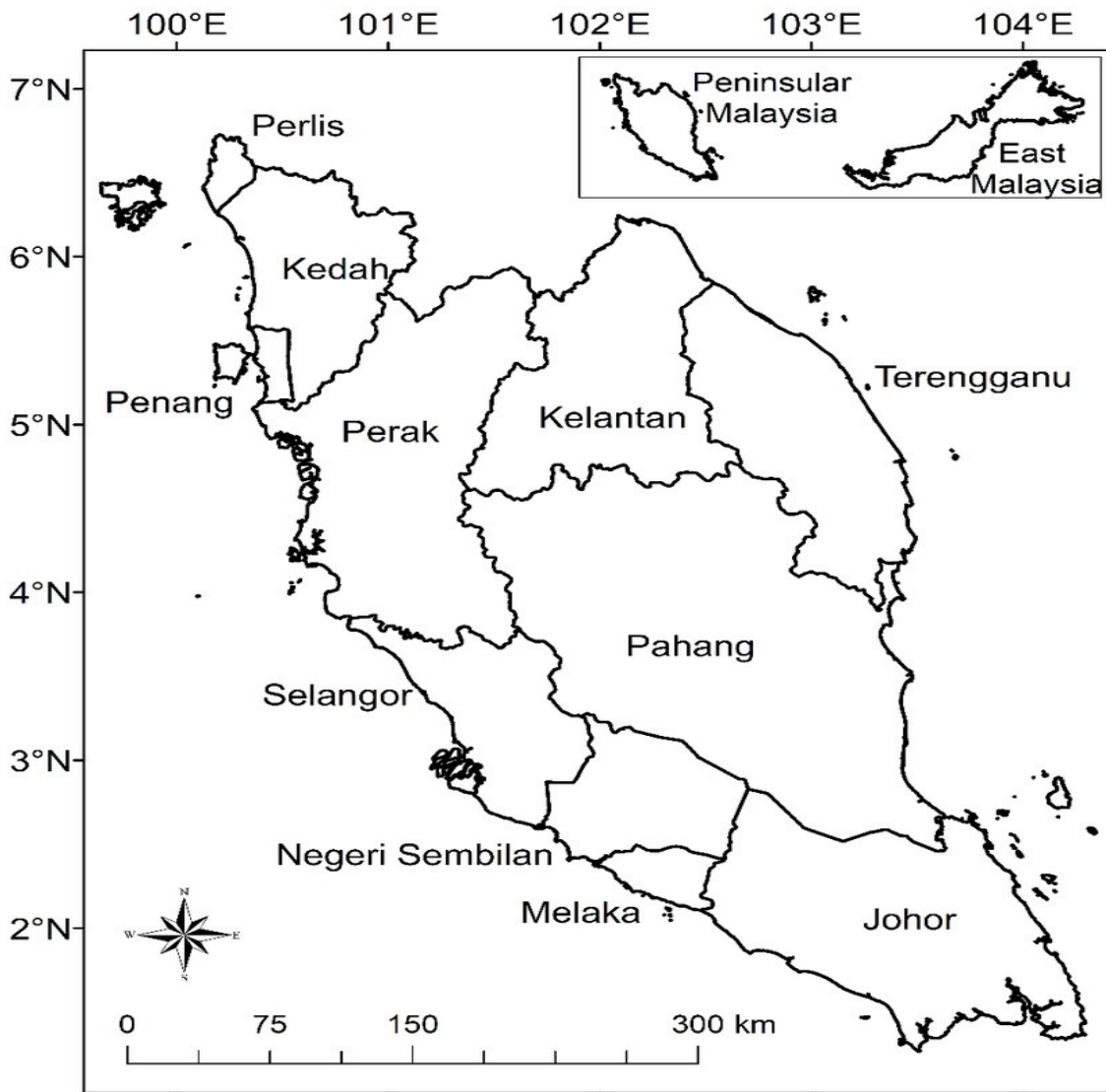


Figure 1. Map of peninsular Malaysia

recommended other people who have knowledge or experience in this fishery industry and those affected by the pandemic as potential respondents. Semi-structured interviews were employed to collect data because they allowed researchers to use both open-ended and closed-ended questions, communicate closely with respondents, and observe nonverbal responses from respondents so that the context of their answers could be thoroughly investigated. This study employed the snowball method by starting with the Area Fishermen Association, which is the Chairman of Area Fishermen. At the end of this interview, the researcher asked the respondent to suggest other respondents who have the same characteristics that fit the scope of the study. Snowball sampling is a method in which respondents are asked to suggest other potential respondents who have similar criteria to help the researcher find suitable respondents (Naderifar *et al.*, 2017). Therefore, snowball sampling is the most appropriate method to obtain potential respondents during the Movement Control Order in Malaysia.

2.3 Analysis Data

These interviews were recorded using a digital voice recorder and then transcribed into a Microsoft Word document. Subsequently, thematic analysis was used to identify themes to achieve the objectives and the appropriate data in the context of the study. This study employed Microsoft Excel to analyze the data that has been obtained to identify themes and codes. Altogether, there are three main themes related to MCO that were tabulated into a few sub-themes under the main themes making it nine sub-themes in the study. The themes are initially based on arbitrary interpretations of the researcher.

The data analysis process in this study began with data collection and interviews in the east coast state, Malaysia (Figure 2). When the interview process and data collection were completed, the audio conversation that had been recorded with the respondent was transcribed into Microsoft Word. Next, the text or answers found in Microsoft Word are transferred to Microsoft Excel to organize the answers and information obtained. The next process is to update Microsoft Excel for each answer that has been answered by the respondent for the purpose of coding. The coding and themes that were formed were listed and determined to answer the issues and questions of this study. Next, sub-themes are formed from the final theme that has been decided. Next, the theme is interpreted according to the objectives that have been set and then the data is transferred from Excel into Microsoft Word to explain each theme and sub-theme formed. Following that, the data and themes that have been interpreted get confirmation from experts to assess the validity of this study (Figure 2).

3. Results and Discussion

A total of 18 respondents were identified in this study. The profile of the respondent was as follows; the states of Terengganu and Kelantan both had seven respondents and Pahang had four respondents (Table 1). A total of 13 respondents worked as fishermen and the remaining five respondents worked as fishmongers. Additionally, 15 respondents were male and the remaining three respondents were female. In this study, most of the respondents were over 60 years of age (10 people), followed by the group aged 50-59 which was a total of five respondents. Senior citizens are more

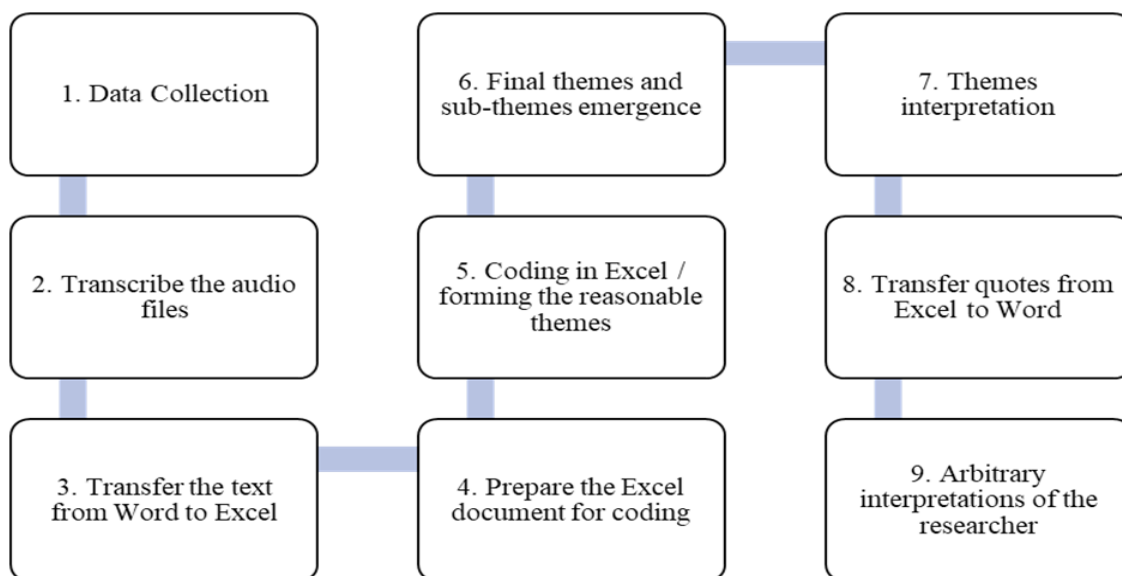


Figure 2. Analysis process

involved in fishing activities and the job was most likely inherited. Next, a total of 16 respondents were Malay and the rest were Chinese. In terms of education, six respondents completed their education at the secondary school level while 11 completed the primary school level. As fishing activity is associated with poverty, the majority of the families did not have a stable income to support their children to further their education at the tertiary level. In terms of income, the majority of respondents earned RM1000.00 and below, most earned from fishing activities.

Table 1. Profile of the respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	15	83.3
Female	3	16.7
Age		
40-49	3	16.7
50-59	5	27.8
60 & above	10	55.5
Marital Status		
Married	16	88.9
Single	2	11.1
Income		
RM1000 & below	11	61.1
RM1001 - RM2000	5	27.8
RM2001 - RM3000	2	11.1
Ethnicity		
Malay	16	88.9
Chinese	2	11.1
Education		
Primary school	11	61.1
Secondary school	6	33.3
STPM	1	5.6
Employment		
Fishermen	13	72.2
Fishmonger	5	27.8
Location		
Terengganu	7	38.9
Kelantan	7	38.9
Pahang	4	22.2

MCO had influenced the fishery industry on the East Coast of Malaysia and had a significant impact on coastal fishermen. A total of 13 respondents stated that

the catch of marine resources has decreased, and this situation makes the resources obtained is insufficient due to time constraints allowed by the government (Table 2). As reported in BERNAMA (2020), fishermen have reduced their fishing routines as they must comply with the conditions set during the MCO as well as the limited time allowed to go out. In addition, 16 respondents stated that the workforce in the fisheries sector had to be reduced and they were forced to implement a rotation system among fishermen. Therefore, MCOs have reduced workforce attendance and a rotation system is needed at this time (Aziz et al., 2020). This will reduce the number of workers available at one time, as well as the amount of seafood caught.

Table 2. MCO on the fishery industry

Description	Frequency	Percentage (%)
Lack of seafood resources	18	100
Lack of manpower	16	88.9
Inflation caused by limited resources	15	83.3
The growing inland fisheries sector	13	72.2

The first theme of this paper is MCO on the fishery industry (Table 2). There are four subsequent of sub-themes. The first item or the sub theme is on lack of seafood resources where five respondents claimed MCOs have caused a shortage of seafood resources for fishermen and coastal communities, as well as being a loss for the fishery industry. The two respondents lamented they always did fishery activities together with other fishermen but during covid time they could only do this activity alone because the workers had to be reduced due to instructions from the government.

The second subtheme is on manpower. Fifteen respondents stated that MCO had also resulted in higher prices for goods and a scarcity of resources because the rising inflation rate impacted them. Jomitol et al. (2020) for example reported that fishermen in Sabah and the same scenario is depicted in other states in the region of Malaysia.

The country has lost their primary income due to the prohibited fishery activities during the MCO and faced rising fish market prices. The third sub-theme is inflation which caused by irresponsible parties who carry out fishing activities without asking permission from the government and using prohibited fishing equipment. Therefore, it results in the decrease of catch

and greatly affects the fishermen as the market price for fish increases. In addition, fishermen also have a distance limit to catch marine resources when the MCO is implemented. They are not allowed to go to the open sea or not more than 10 nautical miles from the mainland. Thirteen respondents emphasize that the improvement in the inland fisheries sector is on the rise as many coastal fishermen have sought other initiatives in improving their economy.

Three fishmongers (R2, R8, and R13) were aghast by the price increment of goods and the inflation rate during the pandemic. In their opinions, some resources should be reduced in terms of cost since some people did not have fixed income. On the other hand, while coastal fishermen were looking for employment, inland fisheries industries have been growing as explained by R4 and R17 who were fishermen.

Table 3. MCO on the income of fishermen

Description	Frequency	Percentage (%)
A decline in total income	18	100
Venture into new business	11	61.1
Loss of income	9	50

The second theme of the study is the respondents' income during the MCO (Table 3). It leads to the first sub-theme in term of income decline. All respondents stated that their income had decreased significantly and needed to find alternative sources of income to support themselves and their families. Eleven respondents had ventured into new jobs or businesses which is the second sub-theme, such as working as labor to build houses or mowing grass to increase their income. The last sub-theme touches on loss of income (Table 3). Nine respondents had entirely lost their income and had no other source of income due to this pandemic. As the Department of Statistics Malaysia (2020) reported that 52.6 per cent of fishermen had difficulty finding income, and 33 per cent had lost their jobs during this pandemic.

Going deeper, fishermen's incomes were significantly affected by the MCO; hence, it has also impacted their families economically as they are solely dependent on marine activities (R15, R12 – Fishermen and R8, R11 – Fishmonger). Some fishermen were forced to find other means of incomes for instance, working as construction workers and taking payment for mowing lawns (R1, R3 – Fishermen). There were also fishermen who completely lost their source of incomes and could not find any job replacement because

the number of workers were reduced during MCOs (R8, R11 – Fishmongers).

Since not all fishermen's associations are involved in purchasing and marketing their catch, some coastal fishermen are still forced to rely on middlemen. In addition, the MCO has banned the presence of middlemen, affecting the source of income of the fishermen themselves. Friends of Environment (2020) emphasized that fishermen's catch cannot be sold when middlemen stop buying the marine resources because they do not want to take risks since the market is volatile. Thus, the catch of fishermen does not reach the consumer. As a result, the coastal fishery community's income and livelihoods were impacted, as they were unable to profit from their catch and were forced to suspend fishery activities to avoid further significant losses.

Table 4. MCO on the food supply/sources

Description	Frequency	Percentage (%)
Lack of food resources	18	100
Lack of seafood production	15	83.3
Rising prices on food sources	11	61.1

There are sub-themes mainly on lack of food resources, lack of seafood production and rising prices on food sources were discussed. The finding showed that fish and crabs acted as primary sources of nutrition, which with its amount depleting had been affecting all respondents (100 percent) (Table 4). In addition, a total of 15 (83.3%) respondents said that seafood production was also limited due to time constraints and a lack of workforce involved in the fisheries sector during the MCO period. The remaining 61.1% or 11 respondents described that phenomenon led to an increase in food prices due to a lack of food supply.

According to some respondents (R15, R16 – Fishermen and R8 – Fishmonger), seafood supplies were dwindling down during MCOs since the number of fishermen going to the sea were reduced. Coastal community had great demand for marine resources but the supplies unable to meet the demand (R11, R13 – Fishmonger). As a result, the prices for food resources which includes seafood were increasing and this had affected fishermen who had unstable income during MCOs (R3, R5 – Fishermen). In the light of recent challenges in food supply and sources, there is now considerable concern about food production, processing, distribution, and demand. COVID-19 resulted in the

movement restrictions of fishermen, changes in demand of consumers, closure of food production facilities, restricted food trade policies, and financial pressures in food supply chain.

Adequate food resources are crucial for fishermen to ensure their survival, particularly in coastal communities that are entirely reliant on seafood. Furthermore, it has the potential to provide nutrition to the community because marine resources contain a variety of nutrients that are beneficial to human health. As mentioned by [The State of World Fisheries and Aquaculture \(2020\)](#), marine resources such as fish products are recognized as some of the healthiest foods on the planet and as foods that have the most negligible impact on the planet's natural environment. The COVID crises somehow, have resulted in lower incomes and higher prices of foods resources, putting food out of reach for many, and undermining the right to food and stalling efforts to have nutrients. The situation is fluid, characterized by a high degree of uncertainty. The complex dynamics triggered by the lockdowns or MCO.

Disruptions to food resources also resulted when gate keepers that related to fish industry experienced high rates of illness, leading to shutdowns and scarcity of seafood products. Labour-intensive fish production has also been especially affected by COVID-19 and face barriers to travel due to MCO. To make thing worsen, the perishable food and agricultural products, such as fresh fruits and vegetables or specialty crops, such as cocoa and key staple food items like rice and wheat are affected by MCO. They become particularly vulnerable and anchor the food supply chain disruptions.

In short, food environments including fish industry have been intensely changed by the pandemic. Lockdown measures like MCO and supply chain disruptions delineated have changed the context and thus the way people involve and intermingle with the food system to obtain, prepare, and consume food. With the scarcity of food and the deteriorating health due to COVID attack, man face different forms of malnutrition, including not just famine and undernutrition, but also obesity and micronutrient insufficiencies. The pandemic has made the necessity for this change copiously clear, as those suffering malnutrition—in any form—are more exposed to the disease.

4. Conclusion

The impacts of MCO result in new connections between fishermen, local fisheries, and consumers. Fishers in the context of this study seem to struggle as

a response to COVID-19. It is measured on their source of income as well as their basic food supply. Fishermen lose their primary source of income, which affects the country's food supply chain. The fishery industry and fishermen's income were affected as they could not go to sea and sell marine resources to middlemen. There must be an implementation upon a portfolio of economic relief policies that fishers can tap into. But short-term relief rarely translates to long-term structural change.

It is hard during this time of destitution to think about the future. Still, whenever the status quo is disturbed, there are perpetually people who come out better for it because commotion forms new openings. Being robust and bouncing back from destruction, always comes at a cost, but elasticity can also be a stand for forming a new path into the future. The government and the authorities need to come out with several incentives such as monitoring market prices and setting ceiling prices to control this condition and the request for fish markets can be met customarily without rising prices and declining marine resources. Malaysian Fisheries Development Authority (LKIM) a body that has a direct link to the fishing industry needs to ensure that all fishermen's associations participate in the purchase and marketing of fishermen's catch. In order to support business development among coastal communities, the government has a strategic role in supporting and providing financing for productive business activities.

COVID-19 has already revealed gaps in health care, the economy, and food systems. Perhaps the destructive power of this pandemic combined with the adaptation of fish producers will pave the way for all coastal communities to develop more organized fishing systems and sufficient food sources based on the feedback shown in this study. This study which is qualitative in nature and bore a small number of respondents due to certain limitations. Therefore, future studies can be extended to a quantitative approach and not focus only on fishermen and can be extended to other gatekeepers. In addition, these findings may not represent the entire population of Malaysia because it is focusing on the East Coast of Malaysia. Future research should focus on other coastal areas in Malaysia, as the impact of MCO in other regions may depict different revenues under the same scope of the study.

Acknowledgment

The authors acknowledge the respondents for sharing their experiences during this research, and the anonymous reviewers for their insights and comments.

Authors' Contributions

The contribution of each author is as follows, Ameer; conceptualized the research idea, collected, and analyzed the data, and drafted the manuscript. Hayatul and Abdul; supervised, reviewed, and finalized the manuscript. Norzamziah, Nurul Asyikin, and Nur Yuhanis; gathered literature information. Kais and Loi; cosmetic of the paper and language wise.

Conflict of Interest

The authors agree that this research was conducted in the absence of any conflicting interests.

Funding Information

The author(s) received no financial support for the research and authorship of this article.

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