[COVID-19 PANDEMIC: POTENTIAL RISKS TO GLOBAL FOOD SECURITY]

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Abstract

Human being has experienced several series of pandemics throughout life’s history. The serious impacts of the pandemic are experiencing towards different sectors include threatening global food security. The consequences of the COVID-19 outbreak have affected people’s productivity in daily life. The disruptive effect gives a major strike on the food supply chain which is one of the most vital areas of the economy. Prior to the outbreak of Covid 19, this paper will be discussing the factors and effects of the pandemic on global food security. Due to the income decline, it leads to difficulty accessing healthy and nutritious food. Implementation of Movement Control Order (MCO) has affected the agriculture productivity sector as well. At the early stage of the pandemic, panic buying becomes a new trend among the consumers to ensure the food supply keeps available. The declination of purchasing power is another effect, particularly from the low-income community. The risk of virus infection is reported to be high among the food supply chain workers due to negligence towards Standard Operating Procedure (SOP). Lastly, this pandemic also affected mostly community dietary routine patterns. To write this paper, the researchers are genuinely depending on the secondary sources from recent academic journals and trusted websites to vast up the discussion. It is hoped that this paper provides good ideas for other researchers to vast up another scope of discussion in the future.

Keywords: COVID-19; pandemic; global food safety; food supply chain & community.
Introduction

Coronavirus or synonymously called (COVID-19) was declared as a pandemic by the World Health Organization (WHO) in March 2020. It leads to a public health crisis that contributes to economic and social crises (Paslakis et al., 2021). Global cases of coronavirus (COVID-19) have grown exponentially since February 2020 worldwide and getting to increase during the northern hemisphere winter season. After the Spanish flu outbreak in 1918, Covid 19 pandemic is recognized as the most severe pandemic that is still ongoing nowadays (Laborde et al., 2021). The pandemic has interrupted food systems’ smoothness towards the livelihoods quality of human beings, plants, and animals (Mardones et al., 2020). This led to a shortage of food supply.

In 2020, world hunger has raised dramatically because of this pandemic outbreak. If this situation is remaining for five years, the prevalence of undernourishment risk will be increasing from 8.4 % to approximately 9.9 % in just one year. It will be leaving a great challenge to achieve the World Zero Hunger target by 2030 (Food and Agriculture Organization of the United Nations, 2021). Although no major food shortages threat emerge yet, agricultural and food markets are facing disruptions because of labor shortages created by restrictions on movements of people and shifts in food demand because of restaurants’ closures and schools because of income losses (McAuliffe et al., 2020).

The implementation of lockdowns globally has affected food supply chains systems from farm to fork, including processing, production, shipping, distribution, and consumption patterns. These shortages have increased food prices and loss of income due to high unemployment rates, and also global food insecurity alerts have been issued (Paslakis et al., 2021). Food security, as defined by the United Nations (2020) Committee on World Food Security refers to a situation where human beings should have physical, social, and economic access towards sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. COVID-19 threatens access to food mainly through losses of income and assets that reducing the power of consumerism among the consumers. The poorest households spend around 70% of their incomes on food and have limited access to financial markets, making their food security particularly vulnerable to income shocks (McAuliffe et al., 2020). The lack of consistent access to nutritious food sources will be associated with chronic physical and mental health problems and mortality rates (Paslakis et al., 2021) particularly among the low and middle-income group of communities (Food and Agriculture Organisation of the United Nations, 2021).

DIFFICULT TO ACCESS HEALTHY AND NUTRITIOUS FOOD

Undoubtedly, the COVID-19 pandemic becomes a major concern of the public health sector worldwide trigs malnutrition crisis is happening nowadays. The difficulty to access nutritious food during this pandemic is one of the challenges. This challenge stemmed from a high rate of
unemployment in various sectors because of the economic recession. As adapted from the Department of Statistics Malaysia Official Portal (2020), the rate of unemployment in Malaysia has shown an increasing pattern where the percentage escalates rapidly from March to April in 2020 from 3.9 percent to 5.0 percent. In fact, this pattern keeps increasing by 0.3 percent from April to May as can be seen in Figure 1. The rate of unemployment in Malaysia is approximately increasing in the future if there are no effective exit plans to stabilize the economy.

![Graph](image)

Figure 1: Statistics of Unemployment Rate in Malaysia from 2010-2019 and January-May 2020 (Department of Statistics Malaysia Official Portal, 2020).

A few studies have suggested that nutritional quality is an alternative solution to keep the body healthy while improving the immune system (Tsoupras et al., 2019). Thus, it is important to ensure that the daily dietary routine is carefully well-planned. For the families who have stable incomes and are financially secured, accessing healthy and nutritious food is not a big deal compared to low-income and middle-class communities. Moreover, for those who are unemployed and have the insufficient financial support are difficult to buy nutritious and healthy food where generally need high cost. In fact, the food supply is scarce and needs to share among the household members. Sometimes, one family is comprised of many family members that forcing them to cut off the daily food supply in order to save up daily expenses (Goudet et al., 2016). Due to this, the children will not only lack nutrition but also will lack meal quantity that supposedly should be taken to grow up healthily. Therefore, this issue is supposedly be addressed effectively by the responsible authority to avoid malnutrition problem widespread among the community while helping the community to be creative in creating job opportunities (Smed et al., 2017).
In addition, previous researches have also shown that poor nutrition in childhood is associated with both short-term and long-term negative impacts. The adverse consequences are weakened immune system, increase in caries rates and cognitive impairment, and emasculate the learning ability (Nelson, 2021). Children or any vulnerable groups with weak immune systems are prone to be at higher risk to be infected with COVID-19. Poor health condition will be affected the immune system contributing to likelihood to get severely ill from COVID-19” (CDC, 2020). In contrast to, an upper-class group who are likely to get a better diet quality compared to those with low socioeconomic status (Shariff et al., 2015).

Families with low socioeconomic status are more likely to access deficient macro and micronutrients such as proteins, calcium, folate, important vitamins, and other minerals in their diet which can jeopardize their growth and development (Shariff et al., 2015). It is vital to be aware that having a balanced daily nutritional intake will give a positive influence towards recovery progressive from any illness (Kurtz et al., 2021) and improve the overall health in combating any serious diseases such as infection from COVID-19. Thus, it would be a great privilege for those who have a stable financial condition and obtain enough daily nutrients as there is a phrase saying, ‘you are what you eat’. Eating healthily will not just satisfy hunger, but also helps in developing great well-being to combat any diseases.

AFFECT TO LARGE SCALE OF AGRICULTURAL PRODUCTION

During the COVID-19 pandemic, Malaysia has taken action to impose a Movement Control Order (MCO) to overcome the spreading of the pandemic. Due to the imposition of MCO, all activities were limited such as economic, social, agriculture activities, and other sectors (Adnan and Nordin, 2021). This imposition also disrupted the agriculture supply chain in Malaysia (Mohd Amir et al., 2020). A few days after the MCO was imposed, some local farmers were facing difficulties to sell harvested products. According to a report issued by European Union (2020) agriculture remains a vital part of the economy, employing nearly 11% of the 14.94 million people to work in labor force sectors. The pandemic also gives a significant effect on the number of workers to work along in supply chain systems (Food and Agriculture Organisation of the United Nations, 2021).

The agriculture sector is classified as a critical sector by the government during the imposition of the Movement Control Order (MCO), allowing related- businesses activities to operate as usual (European Union, 2020). Nevertheless, food production and distribution are affected due to limited supply of raw materials and inputs, shortage of labor, market access, hindrances in global supply chains and exports, as well as decreasing bulk demand from the hospitality and tourism sectors (Vaghefi, 2020). Road closures and transport activity restrictions slowed down agricultural services in terms of buying and selling activities, particularly among the small-scale farmers. At the same time, food prices have risen due to unpredictable market trends and changes in consumerism patterns (Mohd Amir et al., 2020).

The imposition of lockdown worldwide has also affected other country’s agriculture industries. For instance, Vietnam, the world’s third-largest shipper, has reduced its rice export by 40% in April and May 2020, compared to the previous years. Meanwhile, Myanmar is also facing the same pattern as it may reduce export activity to shore up domestic supplies (Vaghefi, 2020). For agro-food exports, within-ASEAN trade represented about 30% of the national value
of all agri-food products exported in 2019; 70% of ASEAN agro-food exports were for destinations outside the regions. For agro-food imports, within-ASEAN trade represented a larger share of the average national value of all agro-food products imported at about 43%; 57% of agro-food imports originates outside of the regions (Gilmour et al., 2021). The trade relations among the member states potentially help to predict how COVID-19 will affect different trading partners and agro-food sub-sectors. It urges for any necessary alternative strategic plans to increase supply chain resiliency and robustness.

Furthermore, in Malaysia, the agriculture sector is heavily depending on foreign workers (European Union, 2020). Restrictions of the movement particularly among the foreign workers resulted in labor shortage to work at the farms. This affects the crops, livestock, and fishery sub-sectors, especially the labor-intensive ones, and its impact is felt along the whole agriculture value chain, affecting food availability, and market prices (Vaghefi, 2020). Around 10% of Malaysia’s labor force is involved in agriculture where affected the well-being of workers in terms of unstable wages compared to other sectors that exposing workers to unstable economic hardship (Shaharudin, 2020). Hence, it is crucial to ensure a safe working atmosphere in the agriculture workforce and establish a proper plan to preserve work forces’ welfare (Abdullah et al. 2020). Around 90% of agriculture industrial players in Malaysia is Small Industry Enterprises (SMEs) and half of them employed workers (Shaharudin, 2020). The government also provides special privileges among SMEs entrepreneurs in terms of facilities, fund assistance for infrastructure development, short-term agriculture projects, financial assistance to workers on unpaid leave, and wage subsidy programs. (European Union, 2020).

The agriculture sector needs to be given attention during this crisis to ensure the food is securely supplied and sufficient for the consumers while the welfare of farmers, breeders fishermen, and any workers who work in this sector are protected (Adnan and Nordin, 2021). Undoubtedly, the government has introduced various initiatives upon producers, workers, and also consumers to maintain food security (Shaharudin, 2020). Hence, effective plans and programs need to be executed to ensure the activities of agriculture sectors and related essential sectors run smoothly. As the pandemic is still endless, panic buying and concerns over food supply chain disruptions have caused some countries to stop exporting some staple foods to avoid domestic shortages (Mohd Amir et al., 2020). If not properly tackled the issue, would lead to a global food price crisis that will be affected power buying among the consumers.

**PANIC BUYING OF FOOD PRODUCTS**

The rapid rising of COVID-19 cases, along with the anticipation of movement’s restriction to reduce virus transmission during the early stages of this outbreak, has prompted consumers to stockpile the food supply as a preventative measure. It is a precautionary measure during quarantine to avoid major food supply shortages will be happening. Due to social distancing has been implemented to reduce the virus infection, this urges the consumers to buy things in bulk to avoid long queues in supermarkets or groceries (Chua et al., 2021). Panic buying is spontaneous behaviors where a consumer purchases many items that are usually are not necessary to fulfill their needs (Chua et al., 2021). This trend emerges because they believe there will be a supply deficit. Such activity happens generally during natural disasters or health crises that potentially contribute to food shortages (Yuen et al., 2020). This trend will be
affecting low-income families to obtain their needs since there will be an insufficient number of products left for them. In addition, the emergence of panic buying is also not good for mind contentment as people tend to be worrying about unnecessary things (Yuen, Qi, et al., 2020).

Based on past research, there are a few factors that trigger the panic buying trend within the community. According to the findings, most of the factors are caused by psychological factors. Behavioral changes that happen during crises such as pandemics are potentially changing how people should adapt to the situation like doing panic buying. Yuen et al. (2020) noted panic buying is undoubtedly influenced by four major factors i.e., individual perception towards the threat from the health crisis, scarcity of products, negative emotion and uncertainty that are controlling them. These contribute to uncontrolled feelings as a coping mechanism due to behavioral changes. If it is not controlled properly, this trend will prolong in the community. In another context, the reaction automatically pops up because they feel the necessities will be getting scarce due to food shortages in the future (Tsao et al., 2019).

During the COVID-19 pandemic, the desire to stock up huge amounts of products also comes from social media influence (Chua et al., 2021). From posts that broadcasted widely on Twitter, Facebook, and Instagram about people who shared their stock of food products such as health supplements, and, other household products drive the viewers to reciprocate. Nevertheless, they do not realize somehow it beyond their necessities. Unfortunately, there are some of the products are disposed of because some of the products are rotten in a short time (Chua et al., 2021). As this pandemic has never happened before, the community tends to follow the crowd’s attitudes as they perceived it as a part of social norms. Thus, the consumers will imitate the behaviors of others as they are not sure how to react once the problem arose (O’Connell et al., 2021).

On the other hand, the retailers also will be facing problems sorting out the groceries stocks systematically because of the panic buying trend. It happened because the consumers tend to buy the groceries in bulk quantity and somehow will be taking ample time to restore the products. Due to this occasion, there are many groceries are not able to restock the materials owing to the lack of time and the need to compete with other retailers to get the stocks (Catherine Prentice et al., 2020). Moreover, panic buying also encourages virus transmission as during the activity, people will be unconsciously neglecting the social distancing. It is common to know that the mode of transmission for the COVID-19 virus is transmitted through direct contact, droplets, airborne, bloodborne, mother-to-child, fomite, fecal-oral, and animal-to-human transmission (WHO, 2020). Thus, during peak periods such as festive seasons, panic buying is worsening the infection risk as the crowd tends to gather at the compact space (Catherine Prentice et al., 2020). Some of the people are infected with the virus with no symptoms.

DECLINATION OF PURCHASING POWER AMONG THE LOW-INCOME CONSUMERS

Another factor that affects global food security is declining purchasing power, particularly among low-income consumers. After a few months of lockdown and social distancing due to COVID–19, the consumers implement different purchasing patterns by reprioritizing what is essential and swapping the checkout line for online shopping more than ever before
Inflation in urban areas climbed faster than inflation in rural areas in 2020. It means that price changes in urban regions are faster than in rural areas. The inflation gap between urban and rural areas widened since 2014 and continues to be increased to 3.4 index points in 2020. At the same time, purchasing power by the main group in urban areas was lower (17.1%) than in rural areas (14.7%) (Mahidin, 2021).

The price rate is affected by the rate of inflation, which naturally affects consumer spending on goods significantly. This is a reason the producer price index (PPI) and the consumer price index (CPI) are leading economic indicators (Maverick, 2021). Higher inflation rates erode purchasing power, making it less likely that consumers have excess income to spend after covering basic expenses such as food and housing. Inflation, as measured by Consumer Price Index (CPI), indirectly reflects the purchasing power of Malaysia’s household consumption. Based on an analysis of CPI 2020, the purchasing power of Malaysia’s household consumption from 83.3 %, declined to 16.7 % over a decade (Mahidin, 2021).
On the demand side, the market had a considerable increase in food demand at the beginning of the outbreak, but this quickly subsided. Food demand is generally non-elastic, particularly for basic food commodities, and overall consumption over a limited span of time does not tend to vary much, even if dietary patterns may change (Vaghefi, 2020). An unusual and temporary increase in demand tends to have an inflationary effect, prices of healthy foods may rise, and this will change the dietary pattern of consumers (Adnan and Nordin, 2021). Since poorer households are typically spending a large of their income on food will be affecting purchasing patterns. In addition, limited imported products influenced the fluctuation of price in the local market. This analysis was supported by the average price of 100 selected items from 2018 to 2020. For example, the average price of black pomfret (1kg) at RM26.49 (2018) and increased to RM26.97 (2020), beef local (1kg) at RM31.69 (2018) increased to RM32.19 (2020), and fresh cuttlefish 10-12cm (1kg) with RM24.12 (2018) to RM26.35 (2020) (Mahidin, 2021). The Food Price Index Report of the United Nations Food and Agriculture Organization (FAO) rose 2.2% to 107.5 in December 2020, compared with the previous month. On a yearly basis, the index rose 3.1% from December 2019 (Food and Agriculture Organisation of the United Nations, 2021). The index rose steadily due to the higher price of dairy products and vegetable oils.

The rates of wages are also affecting consumer’s expenditure patterns. If wages are steadily rising, the consumers are generally to expend more. In contrast, if the wages are stagnant or falling, demand for optional consumer goods is likely to fall (Maverick, 2020). For example, most of the households prefer to cook at home to maintain their household budget. According to Monitor Deloitte, it is nearly 64.9% of households were preparing meals several times a week before the crisis, while more than one-fourth of consumers (26.8%) indicated will be continuing to prepare more meals at home after COVID-19 (Zierlein et al., 2020). This is due to consumers try to adjust their expenditure wisely particularly during the crisis. Regardless of urban areas or rural areas, both have been affected by the pandemic, particularly people who come from the low-income class group. They are the most affected community since the pandemic hit worldwide.

**FOOD SUPPLY CHAIN TRANSMISSION RISKS**

This pandemic put unforeseen strains on food systems that imposed numerous challenges. In this case, any involved supply chain operators are urged to reorganize plans to assure the food supply is sufficient for the community. Careful and effective plans are important to allow the industries to keep operating as usual while minimizing risks of virus transmission (OECD, 2020). The policymakers also need to give a swift response to provide suitable policy upon the essential industries. Thus, there are several steps have been executed to ensure the continuity of the food supply chain’s related activities run smoothly and ensure that the industry can function well even during the pandemic. For example, in Malaysia, the government has already took action to ensure the food processing industry keeps operating by recognizing food manufacturers as an essential service despite strict Standard Operation Producers (SOP). However, due to the variable dispersion of the viral particles, low viral content, and non-optimal laborious isolation, detecting viruses in foods are not convenient to be detected (Rizou et al., 2020). Following the recent issues, (WHO 2020), noted the virus also may be transmitted via
food and food packaging although the risk is lower compared to physical activities (White, 2021). Thus, the food producers need to take extra precautions to minimize virus transmission while ensuring operation services keep going to sustain the food supply (Barman et al., 2021).

Since there is greater potential for the workers who work in food production lines to be infected with the virus, implementation of personal hygiene, the use of personal protective equipment (PPE), proper schedule of sanitization activities, strict SOP in handling, preparing, and delivering of food, and lastly implementation of social distancing are among the safety measures have been taken (Rizou et al., 2020). Sometimes, the safety measure is difficult to obey as the employees need to work together with team members. Long-term close contact with co-workers, communal housing, shared transportation, and regular contact among the workers in the workplace contribute to virus transmission (Waltenburg et al., 2021) particularly those who work in food processing factories and in agriculture sectors (Waltenburg et al., 2021). Therefore, an appropriate sanitization process is vital to kill the viruses (Rizou et al., 2020). A strict good hygiene practice also is important in handling any related food products particularly in transporting and distributing upon the consumers.

A study in Singapore showed that physical contact and food sharing during a conference lead to the emergence of a new cluster for that country (Ceniti et al., 2021). Despite implementing strict hygiene practices (Rizou et al., 2020), the worker should follow workplace-specific by doing a shift rotation to limit the number of workers at one time (Waltenburg et al., 2021). An example of a great and efficient preventive measure taken by an authority is depicted in the case of the COVID-19 outbreak at Xifandi Market. A fast order has been implemented to shut down the market to curb virus transmission. The swab test on each worker and customers who come to the market are strictly implemented to identify to trace the root cause (Liu, 2020). From the fast response of the government, the involved contacts are conveniently traced, and the business activities are continued within a short time. (Telukdarie et al., 2020).

EXPOSURE TO UNHEALTHY DIETARY ROUTINE

The Covid-19 pandemic affected human health due to new norm lifestyle patterns as a result of social distancing, work from home culture, weight gain, behavioral changes, social isolation, and changes in purchasing patterns among the consumers (Di Renzo et al., 2020). Implementation of dietary routines patterns have also changed since the pandemic outbreak, particularly in Malaysia (Kuan et al., 2020). The community is being exposed to mental health problems such as stress that causes eating disorders in society. Being exposed to news related to the pandemic from social media put tensions among the community (Abd Rahman, 2020). It encourages people to consume sugary foods and foods enriched by carbohydrates when in a state of stress. Importantly, it is linked to chronic diseases such as diabetes and obesity (Simone et al., 2021). It is because the brain stimulates the human’s desire to consume sugary snacks more than their needs particularly in facing stress conditions (Peters, 2019).

In addition, implementation of the restriction movement, the community prefers to purchase long-shelf-life food products instead of fresh food products such as fruits, vegetables, and other fresh raw products to keep them in a long-term period (Abd Rahman, 2020). Generally, the long shelf-life foods are comprised of high salt, sugar, or trans-fat ingredients (Bennett et al., 2021). Furthermore, psychological, and emotional disorders are also part of the
contributive factors leading to eating habits disorders. It is commonly recognized that negative emotions react to over-eating, sometimes known as "emotional eating" (Di Renzo et al., 2020). People may be more prone to seek pleasure and fulfillment physiologically connected with food consumption to counteract and respond to the negative sense of self-isolation, even overriding other signals of satiety and hunger (Simone et al., 2021). The stress also discourages people become lazy to do physical activities because of limited space in their home. Moreover, no suitable equipment is available to implement the exercise at home.

A study by (Kuan et al., 2020), stated before MCO, 44% of participants claimed no exercise routine has been implemented and this increased to 65.7% during MCO due to working from home culture and, gym closures and restriction of sports activities during the peak of the pandemic (Bennett et al., 2021). Therefore, these factors gradually influenced the community to do physical activities during the pandemic (Füzéki et al., 2020).

In addition, the quality of sleep may disrupt some people. Moreover, the sleep disturbances contribute to obesity because it increases the secretion of pro-inflammatory cytokines. It has increased visceral adipose that altering the sleep-wake rhythm (Di Renzo et al., 2020). In addition, dietary patterns also influencing sleep quality. Recently, a cross-sectional study involving 172 middle-aged adults reported that good sleepers tend to practice Mediterranean diet (MD) style and possessing lower body mass index (BMI) compared to poor sleepers (Füzéki et al., 2020). During MCO imposition, people tend to cook at home instead of eating at restaurants or other food stalls and are eager to try a variety of recipes to combat boredom (Di Renzo et al., 2020). A study by (Kuan et al., 2020) signifies that respondent eating more than 4 meals per day during MCO. The patterns increased from 6.8% to 18.4% during MCO based on the study. It shows that if this unhealthy trend prolongs, it may contribute to more issues of public health if there is no proper solution and awareness among the community particularly there are no signs that this pandemic will end in a short time (Abd Rahman, 2020).

CONCLUSION

In a conclusion, this pandemic is undoubtedly affected global food security, particularly among the low and middle-income classes. They face difficulties accessing healthy and nutritious food which is costly compared to long-shelf-life food products. Indirectly, it will be affected the health quality since these products are not good to supply healthy and nutritious nutrients that
are important to boost up the immune system. In addition, the restricted activities of import, export, and limiting the number of workers eventually affected agriculture and food manufacturing productivity as well. Accompanied with the issue of panic buying has also affected purchasing patterns among the consumers that contribute to wastage and instability of purchasing power upon different classes groups. Therefore, the policymakers, involved authorities, and community should cooperate to ensure the food security is guaranteed and fairly distributed so that sufficient food supply is sustained while educating the community to practice eating a healthy lifestyle, mainly during this pandemic.

REFERENCES


