Food Systems, Value Chains and Covid-19 Pandemic: a Review of Current Situation in Low and Middle Income Countries

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ABSTRACT

***Background:** The food value chain is very important in driving the economy of every country. It ensures food availability by deploying the science, technology and expertise needed for crop production, food processing, storage and distribution. Coronavirus disease (COVID-19) pandemic no doubt had unprecedented short-and long-term impact on the food value chain. The literature is characterised by a gap on how to deal with the impact of COVID-19 outbreak especially in low- and middle-income countries.*

***Methods:** This article reviewed the impact of the pandemic on selected food value chains such as staple cereals and livestock. Measures on how best to respond to the COVID-19 impact on food value chains, and the importance of developing the food value chains were discussed.*

***Results**: Systematic literature review highlights the abrupt impact of the pandemic on food value chains and reveals several challenges which include loss of earnings, restricted movements, panic buying, shift in eating patterns, depression and quarantines. The review also showed that within the supply chains, there was food availability at the onset of the outbreak but this depreciated over time due to panic buying and lockdown measures. Panic buying resulted in an increase in demand, upsurge in food prices and possibly, reduced purchase in the future, while unavailability of agricultural labour, transport delays and cancellations hampered food access.*

***Conclusion:** Well organized and coordinated effort is required to establish long term measures that will contain the virus, recover the economy, as well as restore food production and access to food post pandemic.*

Keywords: COVID-19, Food, Security, Value Chain

INTRODUCTION

In December 2019, the coronavirus also known as COVID-19 broke out in Wuhan, the province of Hubei, China. The disease is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and has widely spread to over 210 countries across the continent worldwide, with 156 million confirmed cases, 92.3 million recovered and 3.26 million deaths reported globally as at May 2020 (1).

Due the fast-spread of the disease, the World Health Organization (WHO) officially declared the coronavirus a global pandemic on March 11, 2020. Since the outbreak of COVID-19, the smooth functioning of multiple industries including food processing, manufacturing industries, agricultural sectors and other economy boosting businesses have been grossly affected, leading to threatening of livelihoods of workers and other business owners (2), leaving more vulnerable populations exposed and susceptible to the virus. This assertion was made because, prior to COVID-19 outbreak, an estimated 112 million people were facing pronounced food insecurity. These people were already challenged both nutrition and health-wise with an immune system that is not well

equipped to fight the infection. Likewise, the COVID-19 pandemic is unfolding in Africa against the backdrop of worrying levels of hunger and undernourishment. The Food and Agriculture Organization of the United Nations (UNFAO), estimated that over 820 million people worldwide are experiencing hunger and starvation. Recent forecasts also show that the pandemic is likely to push 49 million people in the world into extreme poverty in 2020, with more than 45 percent (23 million) of these people in Sub-Saharan Africa been hit hardest in terms of increased extreme poverty. The number of people globally facing acute food insecurity almost doubled by the end of 2020 (about 135 million people before the crisis), due to income and remittance losses, and disruption of food systems associated with the pandemic (3).

Abrupt shock of COVID-19 on food systems and value chains

Prior to the outbreak, over 1.5 billion people were unable to afford nutritious diet. Recently, there has been loss of earnings as well as food price fluctuations in the market, especially perishable food commodities which is likely to add to this number. The income of many families is dwindling because people are not allowed to go out and work. The lock down and quarantine routines have made it difficult to access food. In some regions and countries, poor people in urban communities have been severely affected by the hampered food supply compared to poor people living in rural communities (8). In some countries, the major contribution of increased food prices has come from panic buying, speculative trading, and supply chain disruptions (9).

The cassava value chain of Mozambique as well as Nigeria has been greatly disrupted because of unavailability of workforce in the areas of processing and retail (4). With respect to the obstructed workforce, many migrant workers returned to their homes and were unable to access their workplace as currently witnessed in Ethiopia and India. The agricultural sectors have been unable to access agricultural inputs for the next planting season while for harvested produce, the market for selling these produce have been unavailable, resulting to increased volume of postharvest losses, particularly for perishable foods (10). In Uganda, for example, many smallholders have experienced difficulties in accessing seeds and agriculture advisory services (8).

Impact of COVID-19 on supply, demand and access to food

1. Impact on food supply

Grain stocks were relatively high worldwide at the beginning of the outbreak and has managed to remain high and available. The situation is however different in different regions. For instance, the production of grain in developed countries is majorly done with mechanical effort and little human or manual effort, making it less likely to be disrupted by unavailability of migrant workers as well as less vulnerable to disease outbreaks among farm workers. The situation is different in developing countries like Nigeria, Ghana and Togo as production of cereals in small farms requires more labour intensive workforce comprising of both male and dominantly females. Maize in Nigeria was affected by COVID-19 because planting seasons were disrupted as a result of the lockdown and minimal workforce. Maize in stock were unable to be distributed to different parts of the country because some drivers fell ill and incapacitated to return to work, restriction of movement was enforced and borders were closed (7). In countries like Cameroon, Mali, Chile, Bangladesh, Brazil, Mexico, South Africa and Nigeria, the school feeding programme which serves as a major food supply for school children have been put on hold due to school closures. This initiative will bridge the gap of food supply to school children in countries that have the capacity to launch these alternative programmes, however, these options are not in place in some countries, making poor households to struggle to feed their families (5).

2. Impact on food demand

The first impact of the pandemic on food demand was to create an increased demand due to panic buying resulting from lock down policies by the government. This short term increase in food demand in turn resulted in a spike in food prices. Only those with the financial capacity to buy food in large quantities for storage would indeed influence the market prices of food commodity more, while low-income earners will struggle to keep up with the new shift. More so, the social distancing policies affected largely food demand especially in establishments where large gatherings drive demand in their nature of business e.g. restaurants, hotels). It is however expected that the short term increase in food demand would invariable lead to reduced purchase in the future, probably because high income earners still have enough of stored foods.

Closure of restaurants or other catering facilities, or earnings has reduced generally across the entire population due to lockdowns, quarantines, loss of jobs and the freezing of economic sectors (15).

3. Impact on food access

Unavailability of labour for labour-intensive agricultural production like meat processing, fruits and vegetable processing, transport delays and cancellations, increase in postharvest losses, and food leakages could hurt production and food processing. This could negatively affect food sufficiency for all, especially the poor, vulnerable, low-income earners, refugees, internally displaced persons (IDPs) and the marginalized populace. Access to food will be increasingly difficult for the most vulnerable. In the event of a global recession, the impact of the outbreak would be worse since job opportunities will be limited, upsurge in food prices would occur because of high cost of raw materials and production would be slow due to reduced workforce. Fresh concerns have emanated that the present outbreak may escalate and give birth to a new wave of pandemic called "hunger crisis" or "hunger pandemic" in the nearest future if not in few months' time to come. Health agencies all over the world have cautioned that the pandemic is not going away anytime soon and people should be prepared to live with it (17).

Potential influence of COVID-19 on selected food value chains

1. Markets

Prior to COVID-19, the movement of food commodities from rural to urban areas was almost hitch free. At the beginning of the outbreak, almost all markets were on lockdown in compliance with the guidelines of health authorities to contain the spread of the virus. However, as modalities were being put in place to ensure hunger crisis does not eclipse the present pandemic, it was ensured that 50% of markets were not closed in any country.

Closures of markets were mainly localized while hot spot regions closed from 60 up to 100 percent of their markets as observed in Burkina Faso, Guinea, Nigeria, Senegal and Chad. In Nigeria, the existing markets were decongested by shifting some sectors of the market to a different location with the aim of ensuring that the number of persons that visit the market at every point in time is limited and regulated (11). Also in Nigeria, all major markets were closed in March 2020, before gradual reopening by the government which commenced towards the end-of-April. But sellers of perishables and other consumables were allowed to carry out their business in front of their homes. Livestock markets in Guinea was completely closed down in April. Also, some areas in Nigeria entirely closed their livestock markets. Countries like Senegal, Gambia, Nigeria and Mauritania suspended all weekly rural markets, while limited opening hours was allowed for urban markets. Markets were completely left open in Mali and Benin but curfew was in place and social and physical distance policy was observed to obstruct normal business activities. About 60% and 80% of opened agricultural and pastoral markets experienced distorted business activities in Niger, Mali and Togo (19).

2. Staple cereals

Closures of markets and drop in transportation in many countries ensured that farmers will have restricted access to buy good quality seedlings, agricultural equipment and agricultural inputs like pesticides, fertilizers. The Sahel regions planting period is between May and June. To ensure that farmers adhere to this planting period, access to good quality agricultural input is a key determinant factor. Achieving this target may be challenging because of border closures and restricted movement that is capable of distorting agricultural production (13). In Nigeria for instance, majority of the workforce are seasonal workers that shuttle in between the rural areas for farming activities and the urban areas for non-farming occupation. These transit were mostly across state borders. Demand for non-agricultural labour was highest in March after which the workforce migrated back to their land (rural areas) for the year's planting season which commenced in June. Restrictions in movement affected these migrant workers from engaging in their regular planting period which in turn would hamper the availability of staple cereals the following year resulting to food insufficiency (16).

3. Livestock

Due to the incessant conflicts in the West African region, livestock farming is already under threat even before the outbreak of COVID-19 (18). The pandemic has limited the free flow of livestock across border, resulting to a drop in the available livestock in the market. There has been a considerable drop in cross-border flows of animals as well as the number of animals in livestock markets. The pastoralists who are practically stuck abroad are unable to return home. This is a significant obstacle in the free flow

of livestock value chain (21).

The restricted movements have caused overgrazing due to non-movement of livestock, thus these livestock will continue feeding on the available pasture. Overgrazing has placed enormous pressure on available pastures (20). As a result of the unavailability of enough pastures for the livestock, livestock bearers are being forced to sell off their animals at a very reduced rates, leading to loss of revenue and livelihood. For example, in Senegal and Burkina Faso, the Association for the Promotion of the Livestock in the Sahel and the Savanna (APESS) reported an emergency sale of malnourished animals (22), This situation has multiple term effect. The short-term impact is an immediate loss of income for livestock bearers (22), while the medium to long term impact is the depletion of herds as a result of absence of reproductive nucleus. Consequently, there will be loss of job and earnings for some pastoralists. Furthermore, some of these livestock are stocked in areas where veterinary care is unavailable and inaccessible, leading to contraction of diseases (23).

4. Cocoa

More than 60% of the world's cocoa comes from Côte d'Ivoire and Ghana. Due to the COVID-19, the export of cocoa from Côte d'Ivoire as of April 2020 reduced by 1.7 percent compared to the exports from the previous year. Already, there is structural hindrances affecting cocoa exports which is expected to get worse following the outbreak of the pandemic, resulting to a likely decline in exports. Cocoa planting requires lots of manual labour and migrant workers since the workforce is large and extensive, and planting usually takes place from April to June. The COVID 19 lockdown resulted to disrupted planting season, insufficient workers force, reduction in planting surface and significant decline in production capacity. Closure of restaurants, markets, chocolate stores, eateries and other places of social gatherings across America, Europe and possibly China which are the biggest buyers has resulted to decreased demand (14). This will reduce the income and revenue generations in the exporting countries.

5. Cashew

Over 80% of Guinea-Bissau population depends directly on the cultivation of cashews for their daily earnings and general livelihood. Cashew farmers in Benin are heavily challenged in dealing with the multiple guidelines for safety with respect to COVID-19. Benin produce about 14,000 tons annually and it is the second largest export commodity of the country that drives revenue generation. About 80% of the country's raw cashew nuts are sold to the international community while domestic processing accounts for the remaining 20% (24). In West Africa, the period during which cashew are purchased commences in late March and ends in Mid-June. It is therefore evident that the lockdown period affected farmers drastically because they were unable to sell their products. Since 80% of the harvested cashew are sold to foreign buyers, travel restrictions made it challenging for thousands of these middlemen to access the products because they have no access to farm (25).

Responding to the impact of the COVID-19 outbreak on food value chains

1. Attention to logistics associated with food value chains

The food value chain is totally dependent on efficient logistics. Any situation that affects the smooth function of all logistic services impact negatively on the initial and final quality of food commodities, its freshness and wholesomeness, its safety and its pricing and accessibility to the market (12). Movement of seasonal and migrant workers as well as transport operators (e.g. truck drivers) should be allowed to operate across domestic and international borders but under strict health and sanitary guidelines. Protocols for screening health conditions, testing, and safety protection should be adhered to. Special transport system can be put in place to convey the needed workforce to their respective place of work especially labour force that are needed for agricultural activities and services like planting, harvesting, weeding, storage. Workers of food processing and manufacturing companies can be regarded as essential workers, while all food companies could be allowed to operate but under strict guidelines. Also, workers can be trained on adherence to safety protocols. Restaurants, markets, and other services associated with food value chain can be allowed to open at regulated hours, which would allow workers keep their jobs in addition to contributing to keeping the food value chain alive. Collection centres closer to producers can be established where farmers can conveniently deliver their produce without the need to go to markets (26).

2. Beyond emergency food distribution

To ensure that the food supply chains and other food value chains are open for consistent supply

and availability of perishable and nutrient rich foods, China has introduced a programme called the 'green channel', which allows the easy passage of truck and other transport conveying fresh and perishable food through all COVID-19 checkpoints, all with the condition of possessing a government-issued pass (27). This initiative has ensured that farmers bargained better price for their fresh foods including fruits and vegetables due to the absence of middlemen, similarly, consumers pay less to purchase nutrient rich and perishable foods. In more challenging areas in Fiji, establishments like the Agriculture Marketing Authority (AMA) delivers food they have procured from suppliers directly to retailers daily. This made it possible for retailers and consumers to purchase fresh foods, nutritious foods and nutrient rich foods at a cheaper rate in addition to making these foods available in the market (20). Although, emergency approach of food supply may effectively ensure consumption of fresh foods and nutrient rich foods in the short term especially for nutritionally deficient consumers, however, it is important to plan for the long term by putting in place a well functional and efficient food systems. In order to achieve this, three essential requirements have been proposed (6): First, recognizing that food systems are multicomponent in nature. Secondly, in the event of challenges or disaster, there is need for the entire food systems to recover swiftly from sudden short-term impacts of an outbreak such as the COVID 19 pandemic, while putting in place strategies and measures to cope with long term effects, since food value chains are vulnerable to disasters. Thirdly, total reform in the food sector

3. Gathering essential evidence to strengthen logistical related policy reforms and government interventions

Assessment of available foods as well as yield forecast can be done at national and subnational levels to identify key areas where possible lapses or abundance can occur with respect to ban on import and other international trade. Re-allocation of food materials to different areas of the country to ensure availability of food at both urban and rural areas with the intention of avoiding upsurge in food prices. More so, supply of non-food uses should be out of priority. In the interest of avoiding any shortage of food supply, simulations could be done to forecast and avert any future challenges and adaptation on how production, processing and distribution of food materials could be improved during emergencies (6). These include: Transport support, Support to food processors and retailers in particular Small and medium-sized enterprises (SMEs), Support to ensure consumer access to foods.

CONCLUSION

COVID-19 is a worldwide problem that require swift, coordinated, organized and active regional and global responses. Critical responses and measures should focus on keeping the food value chain alive at all levels- local, regional, national and international. Policies must focus on meeting the demands for uninterrupted economic and physical elements of food security. Lack of organize efforts would affect life after COVID-19 which could in turn lead to a 'food crisis within a crisis'.

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