



**INTERNATIONAL JOURNAL OF  
PHARMACEUTICAL SCIENCES**  
[ISSN: 0975-4725; CODEN(USA): IJPS00]  
Journal Homepage: <https://www.ijpsjournal.com>



## Review Article

# Global Food Supply Chain Challenges During The COVID-19 Pandemic: A Review

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## ARTICLE INFO

Published: 22 Aug 2025

### Keywords:

COVID-19 Pandemic,  
Emerging Challenges, Food  
Supply Chains

### DOI:

10.5281/zenodo.16927094

## ABSTRACT

The outbreak of the coronavirus in 2020 triggered a global emergency, leading to widespread loss of life, nationwide lockdowns, and critical medical challenges. Beyond the health crisis, the pandemic severely disrupted the global food supply chain, affecting both international trade (import and export) and domestic markets. This disruption had a significant negative impact on the food and agriculture industries. Furthermore, the shortage of manpower during this period resulted in inadequate distribution of food supplies worldwide. This study highlights the key challenges faced by the global food supply system during the pandemic and also proposes strategies and recommendations to mitigate its adverse effects on food and dietary systems.

## INTRODUCTION

The worldwide spread of the virus has resulted in more than 245,310,781 fatalities, with more than 4,979,544 deaths globally as of 27 October 2021, after his public health declaration Emergency International from World Health Organization (WHO).<sup>[1,2]</sup> Many nations implemented locking standards to restrict the fast growth of the food supply network, leading to labour force deficiencies, logistical uncertainty and upheaval.<sup>[3]</sup>

These have put millions of people throughout the world, the majority of whom already experience hunger and malnutrition, at considerable risk to their food and food security. A worldwide food emergence will occur unless quick action is taken.<sup>[4,5]</sup> In addition, international interactions have been well beyond the labour force of the agri-food industry.<sup>[6]</sup> The utilisation of inputs such as seeds and fertilizers is needed in food production.<sup>[7]</sup> International shipping, cross-border restrictions, and movement restrictions vary per

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



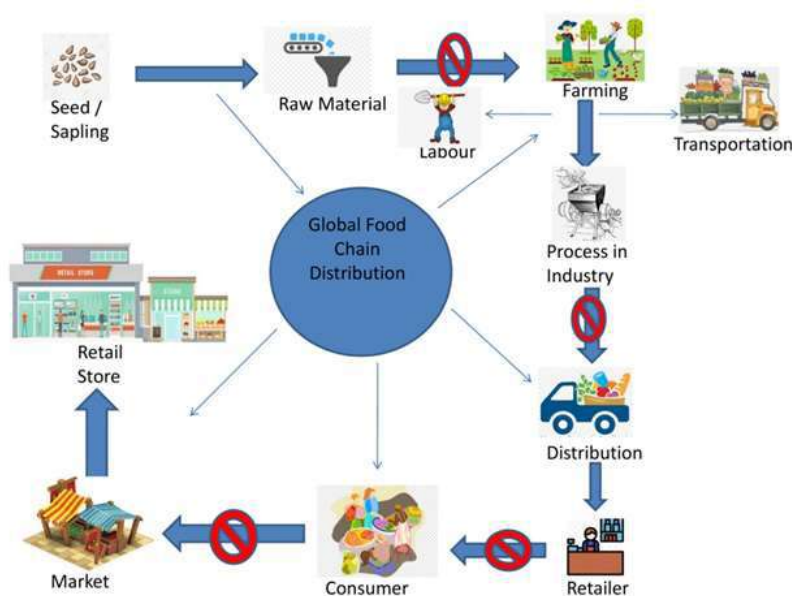
country. However, are difficult to achieve.<sup>[8]</sup> Food production and consumption are both on the rise garnering more attention than food demand worldwide,<sup>[9]</sup> due to the worry of production. Moreover, the COVID-19 pandemic has jeopardised the manufacturing chain and alerted countries to the potential worldwide catastrophe of food supply.

Depleting health care, labor-intensive agriculture, and logistical unpredictability are just a few examples other things have all been seriously influenced by food supply chains in poor nations. The supply chain from all angles, in particular fresh vegetable chains, fruits, bakery goods, perishable commodities and food grains, was damaged.<sup>[10]</sup> The acute glits of famine, malnutrition and food waste were exacerbated by major perturbations in the food supply chain Which responsible for the coronavirus pandemic.<sup>[11]</sup>

Most serious effects of food disruption, notably in the fields of cereals, meats and fresh fruit, etc. will be expected in vulnerable food-dependent developing nations.<sup>[12]</sup>

### Food Supply Chain

Global supply networks have quickly turned into a new public awareness catchphrase, according to <sup>[13, 14]</sup> It is introduced a COVID-19 remark and claimed that COVID-19 interrupted food supplies. Increasingly bad weights have been brought about by mainstream media updates that depict food inadequacy due to the pandemic <sup>[15]</sup> and thus the absence of panic supplies for the supplier and food shops. All industries are interconnected by a supply chain and logistics network in particular (Figure 1).



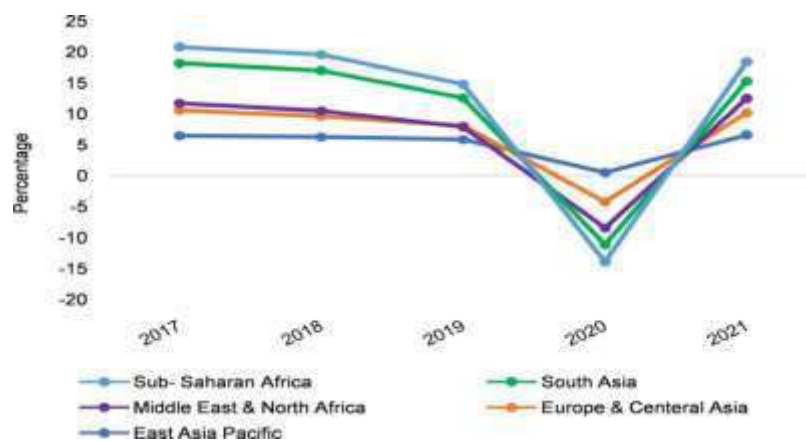
**Figure 1 :- The food supply chain(Global) disrupted due to COVID-19.**

The graph shows the chain to which food is produced from the farm. The chain covers the relationship between manufacturers, processors, dealers and consumers of raw materials. One of these disturbances is bad for the other. For

example, with the outbreak of the COVID-19 pandemic in April 2020, worldwide industrial production declined by 20 per cent over the same month last year.<sup>[16]</sup> There is a likely economic recession due to a sharp fall in economic

operations The World Bank, the International Monetary Fund, and the World Economic Forum are all places where you may work. [17] Different supply chain lockdown actions impact, leading to reduced economic growth or projected economic recession. There has been a quick decline in several companies as well as economic indices,

including global GDP as a product of the pandemic, in recent report and observation on the world economic situation. Although Corona virus has originally been detected in East Asia (China), the impact of food insecurity, inadequate infrastructure and economic collapse in sub-Saharan Africa is mostly felt (Figure 2).



**Figure 2 :- The COVID-19 impact on the gross domestic product.**

Global economic shocks produced by COVID-19 will influence the cash flow and financial liquidity of manufacturers as well as small and medium-sized businesses to banking institutions limited market access, lost money transfers, lack of employment and unanticipated medical costs. [18] Especially, these turbulences do not exclude food supply systems. In reality, the coronavirus has radically changed since the beginning of the pandemic with regard to food availability, food access, food loss and waste. [19]

The inputs of obstacles, particularly the use of particulate matter, hampered agriculture productivity. Some farming industries depend more on regular work than others, and limits on the mobility of individuals are restricted. In many countries access to seasonal planting and harvesting work for the fruit and vegetable industry. [20,21] Recent agricultural performances and urbanizations throughout the world have led to a plex food supply chain, which frequently need long transit of raw materials, including

commodities from foodstuffs such as corn, wheat, soybean, maize and oily seed. Every element can suffer from disruptions from the beginning of the supply chain, from farmer to customer. [22] Coronavirus has had such severe ramifications for food supply networks more than anyplace else in the least underdeveloped countries. [23]

The resilience of the supply chain offers an adaptive capability for unanticipated occurrences, and how to recover from crashes and operations as planned. [24] Resilience in the supply chain is now rising fear. Pires Ribeiro and Barbosa-Povoa have therefore warned against the capacity to employ effective measures to assist choices on robust supply chains. [25] once stressed the necessity for flexibility, adaptation and market absorption of ecological shocks that led to an operational food supply chain.

One of the major roadblocks to solving the problem is the creation of food systems that are sufficiently resilient to continue operating. [26] The

term food system resilience was proposed as a multi-level overtime capacity, sufficient supply and adequate for a food system and its units Even amidst uncertainty, and accessible nourishment for everybody. Most decision-makers focus on the stability of the supply chain during this pandemic, specifically its adaptability to provide in the frequent food buying manner .The influence of COVID-19 on the food supply chain was demonstrate suggested that the impact rates of a pandemic were in tune with the global supply chain.<sup>[27]</sup> Their capacity to absorb and tolerate difficulty was also suggested by the supply chain, which is important to protect their performance and achievements.<sup>[28]</sup>

## EMERGING CHALLENGES

The COVID-19 happened during a period when food and food safety systems were relatively stress-free. Conflict, natural catastrophes, change in climate, interconnected pests and pestilence prevention, and food security in many situations is already undermined. For example, people face a 'triple threat' of mutually worsening disasters in East Africa, where torrential rain is still being stifled in the middle of the outbreak of COVID-19.<sup>[29]</sup> However, the greatest customs crisis in decades is threatening crops into the harvest time, which just took place in Kenya as a special event.<sup>[30]</sup>

The delay in the creation of vaccines has deteriorated as well as the remoteness of clinical therapy. The epidemic has placed food systems in unforeseen condition and created several urgent obstacles. What is noteworthy is the rates at which supply chain players might restructure themselves to ensure that food in the less developed countries is continually available. However, bottlenecks are still present and some new disruptions may continue to occur if COVID-19 spreads more the challenges for urban residents to get access to fresh

and healthy food at cheap rates is one of the primary chal enes in the coronavirus epidemic. There's little infrastructure and poor institutional support to exacerbate the issue in the food supply chain, the pandemic has a possible impact on the smooth transit function.

The availability of trained staff in the transport industry throughout the food supply chain has been reduced by COVID 19 associated disorders. The supply chains including field inputs, storage services, manufacturers, distributors and retailers were elaborated. As one third of the world's people are locked down, there have been worldwide warnings on food security. The pandemic has worsened international unrest and is in danger of causing long-term malnutrition and negative health implication.<sup>[31]</sup> At the level of the community, food availability and access have deteriorated as a result of transport, distribution and supply challenges. Many lockouts caused undesirable disturbances to the customer due to insufficient market supply.<sup>[32]</sup> Consumer habits likewise have altered with a dramatic influence on the food system.<sup>[33]</sup>

In 2019, 135 million people were food insecure. The report of the World Food Crisis estimated. Nevertheless, new forecasts of the World Food Program (WFP) show that this figure might quadruple by 2020 to 265 million owing to its economic effects and supply chain disruption related with COVID-19.<sup>[34]</sup>

Millions of people are affected by the COVID 19 problem, not because of the virus itself, but because of the loss of money and purchasing power associated with the closure of institutions ordered by national/local governments (infection, sickness, or death). The Organization for Economic Cooperation and Development (OECD) and the Organization for Food and Agriculture Development (OFAD) provided an explanation of



how the COVID-19 illness might lead to a historically significant market size (FAO) Against this background the drop in the disposed income of COVID-19, especially in low-income nations, agricultural prices including food, raw materials and drinks, decreased dramatically

The graphic describes the effect of the pandemic on agricultural price decreases when food production is disrupted via the supply chain, causing consumers to demand less internationally than witnessed during the locking period. This also led to food glow, which lacked storage facilities for farmers in lower-income nations to extend the shelf-life of their products. As already said, despite a reduced equivalent price this exceptional loss of acquisition power will drop in food consumption.

Food security in the Middle East and North Africa, Sub-Saharan Africa, Latin America and South Asia were already affected by extremes of weather before the epidemic. Unfortunately, in these nations food security has influenced the current economic crises in Venezuela, Haiti, Sudan, and Zimbabwe. Moreover, some 71 to 100 million individuals in South Asia and Sub-Saharan Africa have been expanded into severe poverty.

## SOLUTIONS AND SUGGESTIONS

To strengthen the resilience of global food supply, everyone in the supply chain must grasp what the system is complicated to react to undesirable occurrences and retrieve them from them.<sup>[35]</sup> Countries must maintain food supply systems to avert major food shortages. Accordingly, FAO has proposed specific methods, including extending emergency food support programs and giving urgent support to small-scale farmers through promotion of e-commerce.<sup>[36]</sup> The food supply system must also take into account things that can be safely kept and renovated. Moreover, it can also assist to mobilize food banks, non-governmental

organizations, community groups and private charity during a shutdown time (families stay at home) (Galanakis, 2020). Furthermore, strong balanced diet is necessary while food waste is reduced across the supply chain and local agricultural capacity creation through house gardening and urban farming is encouraged. In order to mitigate food and nutrition insecurity during the current crisis, the strengthening of food stored, processed and distributed commodities is also important.<sup>[37]</sup>

Farmers also require support, for example, through e-commerce network, to improve their productivity and facilitate the production of products.<sup>[38]</sup> A additional technique for addressing food resilience can ensure effective delivery of short food supply chains while locking down. Policymakers should also analyse carefully the extensive repercussions on regional cross-border commerce of export control measures and constraints. In order to ensure food safety for families in the near term (next 12 months), farmers must receive a reliable supply of seed and other production inputs, and provide producers with a short-term supplement in a manner ensuring that the maximum output is maintained. The food chain representatives should assist address the short- and medium-term issues without sacrificing policy long-term goals. Some EU governments are already Support for farmers and fruit and vegetables dealers by taking ad hoc measures that impede maintenance of works; tax exemption and penalty reduction; and temporary lending facilities to deal with liquidity crises.<sup>[39]</sup> The Committee on Agriculture welcomed the plans of the Commission to assist the agricultural sector in more focused measures such as the provision of private storage, the activation of crisis reserve to assist the agricultural sectors in the post-COVID period, with the purpose of making these steps easier. Reassigning non-use farm funds to the



consequences of the crisis in rural areas to more flexible and simpler European agriculture, including access to low-interest loans or guarantees, as well as favorable payment schedules, to cover up to €200,000 in operational costs. Furthermore, MEPs in EU countries dealing with agricultural food from the EU Rural Development Fund increased crisis support for the worst-affected farmers and small and medium businesses on June 19th. Farmers and SMEs might get up to €7,000 and €50,000 each, respectively. The sharing of information to guarantee that seasonal employees who are vital to planting, tending and harvesting are nevertheless.

## CONCLUSION

The corona virus continues to harm the human life and the global economy since it is unknown the conclusion of the epidemic. The carriage of COVID-19 remains perceptible among persons until a vaccine is produced. Despite the decrease in agricultural commodity prices, the COVID-19 spread continues to threaten the global food supply chain with economic disturbances, harsh restrictions on food access, a scarcity of agricultural labor, and fears that the food supplier will be moved between sites. While several nations have enacted strategies to mitigate the pandemic's influence on food supply chain performance, substantial concerns remain. Many studies provide ways to decrease the supply chain's direct or indirect effect (e.g., the EU commitment to support producers with production inputs, and other essential materials). Nonetheless, it is widely assumed that coronavirus repercussions would have both acute and long-term ramifications, particularly in impoverished countries suffering from extreme poverty, food shortages, illness, and so on. FAO and IFAD have been tasked with a pressing strategy to help distressing countries in this respect. The authors also feel that further

research is needed to focus on how to increase the resilience of the farmers to recovery and how to steer food systems for sustainable and resilient catastrophes, especially in poor countries.

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**HOW TO CITE:** Rohit Kumar Gupta, Nishant Kumar, Anish Raj Bhagat, Ujjawal Gupta, Hemant Kumar Prajapati, Global Food Supply Chain Challenges During The COVID-19 Pandemic: A Review, *Int. J. of Pharm. Sci.*, 2025, Vol 3, Issue 8, 2379-2387. <https://doi.org/10.5281/zenodo.16927094>

