

RESILIENCE UNDER CRISIS: FOOD SECURITY IN INDIA DURING THE COVID-19 PANDEMIC

Pramod E K¹, Dr. Y C Ibrahim², Dr. Suresh Babu P A³

Assistant Professor Dept. of Economics, Govt Arts & Science College, Calicut. (Research Scholar,

Dept. of Economics, Govt College, Kodenchery, affiliated to University of Calicut)
Associate Professor, Dept of Economics, Govt College, Kodenchery, affiliated to University of Calicut

Assistant Professor, Dept. of Economics, Govt Arts & Science College, Calicut, affiliated to University of Calicut

Abstract

The COVID-19 pandemic posed unprecedented challenges to food security worldwide, with India being particularly vulnerable due to its vast population, economic disparities, and reliance on agriculture. This paper examines the multifaceted impacts of the pandemic on India's food security, focusing on disruptions to supply chains, loss of livelihoods, and the heightened vulnerabilities of marginalized populations. It also evaluates government interventions such as the Public Distribution System (PDS) and Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Atma Nirbhar Bharat Abhiyan (ANBA), FCI's liberalised Open Market Sales Scheme (OMSS), as well as the critical role played by community organizations and NGOs. Despite significant efforts, the crisis exposed systemic gaps in food distribution and nutritional security, especially for migrant workers, urban poor, and women. The paper highlights key lessons learned, including the importance of resilient supply chains, decentralized governance, and targeted policy measures. It concludes with actionable recommendations for strengthening India's food security systems to withstand future crises, emphasizing the need for a holistic and inclusive approach to ensure no one is left behind.

Keywords

Food Security, COVID-19 Pandemic, Supply Chain Disruptions, Livelihood Losses, Marginalized Populations, Public Distribution System (PDS), Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Nutritional Security, Decentralized Governance, Crisis Resilience, Open market Sales Scheme, Atma Nirbhar Bharat Scheme, One Nation One Ration Card.

1.Introduction

Food security, defined as the ability of individuals to access sufficient, safe, and nutritious food to meet their dietary needs and preferences for a healthy life, is a fundamental aspect of human development and economic stability. In a country like India, with its vast and diverse population, achieving food security has always been a challenge due to socio-economic disparities, regional inequalities, and the significant dependence on agriculture. The COVID-19 pandemic exacerbated these challenges, bringing unprecedented disruptions to the food

supply chain, agriculture sector, and livelihood opportunities, pushing millions to the brink of hunger and malnutrition.

India, home to nearly 1.4 billion people, faced a unique set of vulnerabilities during the pandemic. The nationwide lockdowns, intended to curb the spread of the virus, severely disrupted agricultural activities, transportation, and market access. Simultaneously, the loss of income for millions, particularly among daily wage earners, migrant workers, and informal sector employees, intensified the crisis, leading to reduced purchasing power and heightened food insecurity. Women and children, already disproportionately affected by poverty, experienced worsening nutritional outcomes during this period.

The Indian government, in collaboration with state governments and non-governmental organizations, launched several initiatives to mitigate the crisis. Programs such as the Public Distribution System (PDS), Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Atma Nirbhar Bharat Abhiyan (ANBA) and FCI's liberalised Open Market Sales Scheme (OMSS), played a crucial role in ensuring food availability for the most vulnerable populations. Community-driven efforts and grassroots innovations also emerged as vital support mechanisms.

1.1 Objective of the paper

This paper explores the multifaceted impacts of the COVID-19 pandemic on economic activity in general and food security in particular. First part of the study enquires the problems encountered by the marginalised sections of the society during this unprecedented pandemic. The second part enquires its gravity in detail and third part of this study enquires the effectiveness of government interventions to ensure food security. By examining the effectiveness of policy interventions and the challenges encountered, the study aims to highlight the lessons learned and provide recommendations for building a more resilient food security system in the future.

1.2 Methodology

It relies on a comprehensive review of secondary data sources, including government reports, policy briefs, research articles, and publications from international organizations such as the United Nations and World Bank. Statistical data on food production, distribution, and consumption patterns during the pandemic were analysed to identify trends and disruptions. Case studies of government initiatives like the Public Distribution System (PDS) and Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Atma Nirbhar Bharat Abhiyan (ANBA), FCI's liberalised Open Market Sales Scheme (OMSS) were examined to assess their effectiveness. Insights were also drawn from reports of grassroots interventions by community organizations and NGOs to understand localized responses. This mixed-methods approach provides a holistic understanding of the challenges, responses, and lessons related to food security during the pandemic.

1.3 Theoretical frame work

The study of food security during the COVID-19 pandemic can be grounded in several interconnected theoretical frameworks that examine vulnerability, resilience, and systemic responses to crises. These frameworks provide a lens through which the multifaceted impacts of the pandemic on food security in India can be analysed. The FAO's definition of food security emphasizes four pillars: availability, access, utilization, and stability. The pandemic challenged each of these pillars in India. Agricultural production (availability) faced disruptions due to supply chain breakdowns; income losses (access) reduced purchasing power, particularly for marginalized populations; nutritional quality (utilization) declined due to a lack of diverse foods; and the stability of food systems was compromised by ongoing economic and logistical uncertainties.

Resilience theory highlights the ability of systems to absorb shocks, adapt, and recover from crises. This theory is crucial for understanding how India's food systems, including agricultural production, distribution networks, and policy frameworks, responded to the COVID-19 crisis. It also helps evaluate the role of community-driven and decentralized efforts in enhancing the adaptability of food security systems. The Social Vulnerability Framework examines how socio-economic and demographic factors, such as poverty, gender, caste, and migration status, influence individuals and communities ability to cope with crises. During the pandemic, vulnerabilities were exacerbated for daily wage workers, women, children, and migrant populations, revealing systemic inequalities in food access and nutritional security.

The Institutional Theory and the governance emphasis the role of institutions in managing crises is integral to food security. This theory focuses on the effectiveness of India's government interventions, such as the Public Distribution System (PDS) and Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), and evaluates how policy decisions, resource allocation, and administrative capacities shaped outcomes during the Pandemic. The framework of Sustainable Livelihoods explores how people combine assets, capabilities, and activities to sustain their livelihoods. The pandemic disrupted livelihoods, particularly in the informal sector, directly impacting access to food. Understanding these dynamics provides insights into long-term strategies to strengthen food security. By integrating these theoretical perspectives, this study provides a comprehensive analysis of India's food security during the COVID-19 pandemic, emphasizing the need for resilient, inclusive, and adaptive systems to mitigate future crises.

1.4. Discussion

The COVID-19 pandemic has prompted extensive research on its impact on food security worldwide, with India emerging as a significant case study due to its diverse socio-economic landscape and large vulnerable population. Studies have documented how the pandemic disrupted agricultural supply chains, hampered market access, and intensified food insecurity, especially among low-income households and marginalized communities. Reports from international organizations like the World Bank and FAO highlight the economic shocks caused by lockdowns, resulting in reduced incomes and purchasing power for millions of

Indians. Scholarly analysis of India's Public Distribution System (PDS) and emergency schemes such as Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) underscores their critical role in alleviating hunger, though challenges like regional disparities and administrative inefficiencies have been noted. Community-driven responses and NGO interventions have also been highlighted for their grassroots impact in bridging gaps left by formal systems. This review synthesizes existing research to provide a nuanced understanding of the pandemic's multifaceted effects on India's food security, focusing on lessons for enhancing resilience in future crises. The study discusses all these issues based on three objectives mentioned above in three sections 2, 3 and 4

2. From Crisis to Collapse: How Pandemics Hit Marginalized Groups Hardest

The COVID-19 pandemic exposed and deepened existing inequalities, disproportionately affecting marginalized populations worldwide. From daily wage workers in India struggling to survive lockdowns, to the widening rural-urban food security gap, the crisis highlighted vulnerabilities within already fragile systems. Disrupted supply chains compounded these challenges, delaying critical food and resource deliveries. Women and children faced heightened nutritional insecurity, while migrant workers and urban poor communities bore the brunt of economic and social disruptions. These challenges also revealed significant regional disparities in food security outcomes, demanding urgent attention to build resilience and address the inequities exposed by the pandemic.

2.1 The Hardest Hit: Lockdowns and the Struggles of India's Daily Wage Workforce

The lockdowns imposed during the COVID-19 pandemic had a devastating impact on incomes and livelihoods, particularly for daily wage workers. As economic activities came to a halt, millions of workers in the informal sector, who rely on daily earnings for survival, lost their jobs overnight. Industries such as construction, hospitality, retail, and small-scale manufacturing, which heavily employ daily wage laborers, faced prolonged shutdowns, leaving workers without income or job security. Migrant workers were particularly affected, with many forced to return to their native villages under challenging conditions. The loss of livelihoods not only reduced access to basic necessities like food but also pushed many households into deeper poverty, exacerbating social and economic inequalities. The crisis underscored the need for stronger social protection measures, such as direct cash transfers and employment guarantees, to support vulnerable populations during such disruptions.

2.2 Feeding Divide: How the Pandemic Widened Rural and Urban Gaps in Food Security

The COVID-19 pandemic highlighted significant rural-urban disparities in food accessibility in India. Urban areas, heavily reliant on supply chains for food, faced shortages and price surges due to disrupted transportation and logistical networks during lockdowns. Low-income urban households, particularly those in informal settlements, struggled to access affordable and nutritious food. In contrast, rural areas experienced a different set of challenges. While food production continued in many regions, farmers faced difficulties in selling their produce due to market closures and transportation restrictions, leading to wastage and income

losses. At the same time, many rural households had better access to staple foods through self-production, mitigating some of the immediate impacts. These disparities underscored the uneven vulnerabilities across rural and urban settings, emphasizing the need for targeted interventions to ensure equitable food access and strengthen both rural and urban food systems against future disruptions.

2.3 Disrupted Deliveries: Understanding Supply Chain Breakdown and Logistical challenges in the distribution of food.

During the COVID-19 pandemic, India experienced significant supply chain disruptions and logistical challenges in the distribution of food. The nationwide lockdowns and restrictions on movement severely impacted both the production and transportation of food. With agricultural workers unable to reach farms and food processing units forced to shut down due to labour shortages and health concerns, there were widespread disruptions in food production. Additionally, transportation networks, including trucks and railways, faced delays and were hindered by restrictions on inter-state movement, creating bottlenecks in the supply chain. This led to shortages of essential items in markets and inflated food prices, particularly in rural areas where access to food was already limited. The closure of wholesale markets and difficulty in distributing perishable goods like fruits and vegetables exacerbated the problem. To address these issues, the government implemented measures such as the relaxation of transport restrictions for food supplies and increased support for farmers, but the logistical challenges highlighted the vulnerabilities in India's food distribution system.

2.4 Fragile Futures: Addressing Nutritional Insecurity in Women and Children During Crises

The COVID-19 pandemic exacerbated the already concerning issue of malnutrition and dietary deficiencies in India, particularly among children and women. The disruptions in supply chains, reduced household incomes, and restricted access to nutritious food during the lockdowns led to an increase in food insecurity. Many families, especially those in rural areas, struggled to access adequate food due to movement restrictions and economic hardships. The closure of schools also exacerbated the problem as it suspended the mid-day meal programs, which are a critical source of nutrition for children. With rising unemployment and economic distress, many households resorted to cheaper, less nutritious foods, leading to deficiencies in essential vitamins and minerals, such as iron, vitamin A, and protein. Women, especially pregnant and lactating mothers, were disproportionately affected by this decline in nutritional intake, resulting in increased rates of anaemia, stunted growth in children, and higher maternal mortality. The pandemic highlighted the deep-seated challenges of malnutrition in India and underscored the need for a more comprehensive and accessible nutrition support system to address these deficiencies, particularly during crises.

2.5 Vulnerable Populations: The plight of migrant workers, urban poor, and marginalized communities.

During the COVID-19 pandemic, vulnerable populations in India, including migrant workers, the urban poor, and marginalized communities, faced significant hardships. Migrant

workers, many of whom had travelled from rural areas to urban centres for work, were left stranded as lockdowns were imposed. With transportation halted and jobs lost, they endured hunger, lack of shelter, and unsafe travel conditions as they tried to return to their native villages. The urban poor, who lived in overcrowded slums, faced the dual challenges of limited access to healthcare and sanitation, making them highly susceptible to the virus. Marginalized communities, including those from lower castes, indigenous groups, and religious minorities, often lacked access to government relief and healthcare services, exacerbating their vulnerabilities. These populations experienced heightened exposure to the pandemic's socio-economic consequences, underscoring the need for targeted interventions and support systems to protect their rights and well-being during such crises.

2.6 Vulnerable Populations: Regional disparities in food security outcomes

Vulnerable populations in India, such as low-income households, marginalized communities, and rural populations, often face significant challenges in accessing sufficient and nutritious food, leading to regional disparities in food security outcomes. The country's food security situation varies widely across different states and regions, with rural areas, especially those in drought-prone or conflict-affected regions, facing greater food insecurity. Poor infrastructure, limited access to markets, and low agricultural productivity contribute to the vulnerability of these populations. In contrast, urban areas, while experiencing their own challenges, tend to have better access to food through markets and government programs. Furthermore, marginalized groups, including Dalits, Adivasis, and religious minorities, often face systemic barriers to food access, further deepening regional inequalities. These disparities are aggravated by the impacts of climate change, economic shocks, and the COVID-19 pandemic, which disrupt food supply chains and exacerbate existing inequalities in access to food. Addressing these regional disparities requires comprehensive policy interventions, including improved agricultural practices, better food distribution networks, and targeted social protection programs.

3 Pandemic Shocks: Unpacking the Crisis in Depth

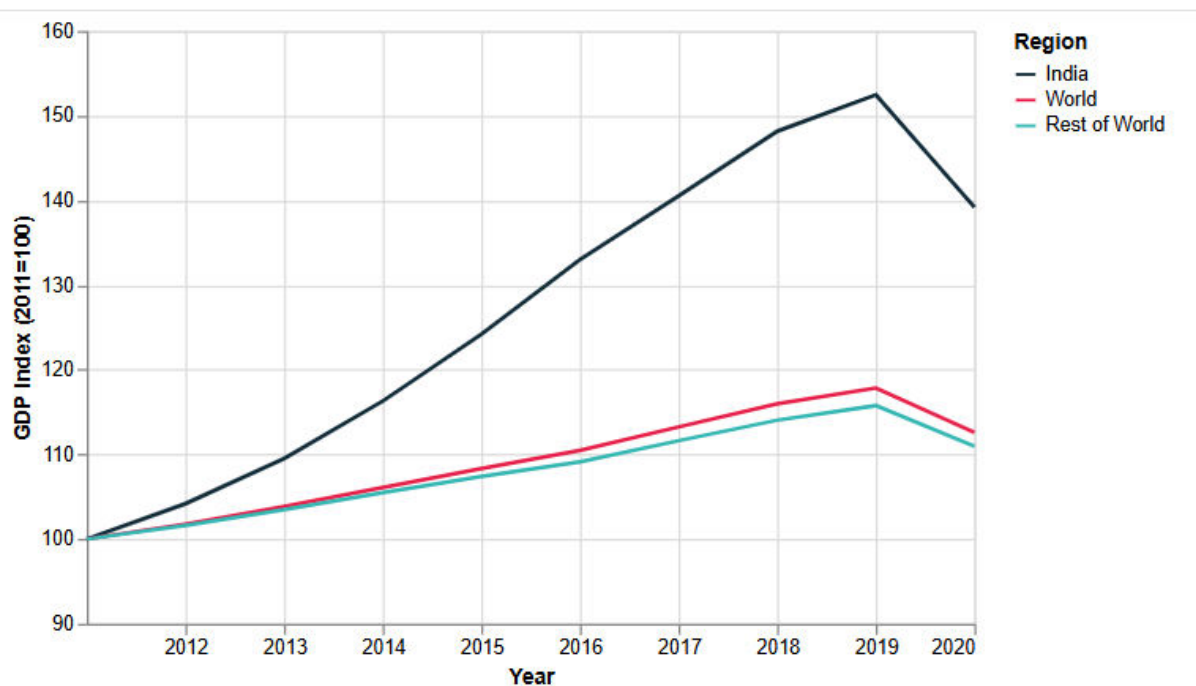
The COVID-19 pandemic unleashed widespread economic shocks, disrupting livelihoods and consumption patterns across India. As economic activities ground to a halt during lockdowns, sectors dependent on mobility and daily wage labour suffered immensely, creating ripples that affected millions. Monthly consumption expenditure declined sharply, reflecting reduced incomes and rising financial insecurity among households. This crisis underscored the vulnerabilities in India's economic structure, highlighting the need for robust policies to mitigate such disruptions and protect marginalized communities.

3.1 Economic Ripples of a Pandemic: COVID-19's Impact on India's Economic Activities

The COVID-19 pandemic triggered significant economic disruptions in India, severely impacting income and food security across the nation. In the post-independence period, India's national income has declined only four times before 2020 – in 1958, 1966, 1973 and 1980 – with the largest drop being in 1980 (5.2%). This means that 2020-21 is the worst year in terms

of economic contraction in the country's history, and much worse than the overall contraction in the world (Figure 1).

Figure 1. Impact of the COVID-19 Pandemic on GDP Growth: India vs. World



Source: World Economic Outlook, International Monetary Fund, April 2021.

The COVID-19 pandemic led to a significant contraction in India's economy during the 2020-21 financial year, with its GDP decline among the sharpest globally, particularly striking given its robust growth in 2019. While economies worldwide have been hit hard, India has suffered one of the largest contractions. During the 2020-21 financial year, the rate of decline in GDP for the world was 3.3% and 2.2% for emerging market and developing economies. Table 1 summarises macroeconomic indicators for India, along with a reference group of comparable countries and the world. The unemployment rate in India rose to 7.1% in 2020, reflecting a relatively poor performance compared to the world average and a reference group of economies with similar per capita incomes, where unemployment was mitigated by proactive labour market policies. India's response in terms of fiscal measures for social safety and health sectors was notably modest compared to other nations. While its non-health sector allocations were comparable to peer economies, its health sector spending was less than half that of the reference group. Alarming, the 2021 budget showed no real increase in health sector allocations when adjusted for inflation, highlighting challenges in addressing pandemic-induced economic and social stresses effectively.

Table 1: Summary of key macroeconomic indicators

	India	Reference group	World

GDP at constant prices 2019 (% change)	4.00%	3.60%	2.80%
GDP at constant prices 2020 (% change)	-7.30%	-2.20%	-3.30%
Unemployment rate 2019 (% of total labour force)	5.30%	5.50%	5.40%
Unemployment rate 2020 (% of total labour force)	7.10%	6.40%	6.50%
Above-the-line additional health sector fiscal measures in response to Covid-19 (% of GDP)	0.40%	0.90%	1.20%
Above-the-line additional non-health sector fiscal measures in response to Covid-19 (% of GDP)	3.00%	2.80%	7.80%

Source: Data on gross domestic product, constant prices (percentage change) is obtained from the World Economic Outlook Database April 2021

3.2 Pandemic Disruptions: The state of monthly consumption expenditure

The data on monthly consumption expenditure in India reveals the substantial impact of the COVID-19 pandemic, with a significant shift toward lower expenditure categories between 2019 and 2020. At the all-India level, the proportion of individuals spending "Rs 1,000 or below" rose from 6% in December 2019 to 9% in December 2020, while the share spending "Rs 2,400 or below" increased from 52.1% to 62.6% during the same period. The trend is similar for August, where those in the "Rs 2,400 or below" category increased from 48.2% in 2019 to 64.4% in 2020. The data also highlights disparities between rural and urban areas. Rural regions saw sharper increases in lower consumption brackets, with individuals spending "Rs 2,000 or below" rising from 44.4% in December 2019 to 55.2% in December 2020. In urban areas, this increase was from 25.7% to 35.7%. A similar rural-urban disparity is evident in August data, where rural individuals spending "Rs 1,000 or below" doubled from 6.4% to 12.5%, compared to a rise from 2.3% to 5.5% in urban areas. These trends indicate a severe contraction in consumer spending during the pandemic, likely due to job losses, reduced incomes, and heightened economic uncertainty. The rural population appears more affected, possibly reflecting the deeper economic vulnerabilities in these areas and limited access to social safety nets.

Table 2: Percentage of individuals by monthly consumption expenditure

	All-India	All-India	Urban	Urban	Rural	Rural
	Dec-19	Dec-20	Dec-19	Dec-20	Dec-19	Dec 20
Rs 1,000 or below	6	9	3	5.4	7.5	10.9

Rs 1,600 or below	23.5	31.6	14.5	21.7	27.9	37
Rs 2,000 or below	38.3	48.3	25.7	35.7	44.4	55.2
Rs 2,400 or below	52.1	62.6	37.9	49.5	59	69.7
Sample size	4,33,021	4,99,879	2,78,759	3,31,809	1,54,262	1,68,070
	Aug-19	Aug-20	Aug-19	Aug-20	Aug-19	Aug-20
Rs 1,000 or below	5	10	2.3	5.5	6.4	12.5
Rs 1,600 or below	21	33.6	12	22.5	25.5	39.5
Rs 2,000 or below	34.9	50.3	21.9	37.1	41.3	57.5
Rs 2,400 or below	48.2	64.4	33.4	51.3	55.5	71.5
Sample size	570592	477237	362417	321100	208175	156137

Source: Consumer Pyramids Household Survey (CPHS) for December 2019 and December 2020, and for August 2019 and August 2020.

Lockdowns and movement restrictions disrupted supply chains, leading to reduced agricultural output and inefficiencies in food distribution systems. Millions of workers in the informal sector, particularly daily wage labourers, experienced job losses and income reductions, directly diminishing their purchasing power and access to food. Vulnerable populations, including women, children, and migrant workers, were disproportionately affected, exacerbating existing inequalities in food access and nutritional quality. The pandemic also highlighted the fragility of India's food systems, with disruptions in markets, logistical networks, and rural-urban linkages compromising stability. Government measures like the Public Distribution System (PDS) and schemes such as the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) provided temporary relief, but the crisis underscored the urgent need for resilient, inclusive, and adaptive food security frameworks to safeguard against future economic shocks.

4 Policy Responses and Initiatives

Addressing hunger and malnutrition requires a multifaceted approach, especially in times of crisis like the COVID-19 pandemic. In India, the government has implemented a range of policy responses and initiatives to combat food insecurity and ensure equitable access to essential nutrition. The Public Distribution System (PDS) has long served as a cornerstone of food security, complemented by targeted measures such as the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), which provided free food grains to vulnerable populations during the pandemic. Initiatives like the Open Market Sales Scheme (OMSS) and the Atma Nirbhar

Bharat Package (ANB) further extended support to migrants and stranded individuals, highlighting the government's commitment to inclusive food distribution. Meanwhile, the One Nation One Ration Card (ONORC) scheme empowered mobility by enabling beneficiaries to access their entitlements seamlessly across states. Beyond centralized efforts, state governments introduced localized innovations to address region-specific challenges, and grassroots interventions led by communities and NGOs played a pivotal role in addressing hunger and malnutrition at the community level. Together, these initiatives underscore a comprehensive strategy to tackle food insecurity and build resilience among India's most vulnerable populations.

4.1 Public Distribution System: A Pillar of Government Efforts to Combat Hunger

During the COVID-19 pandemic, the Indian government implemented several policy responses and initiatives to safeguard food security, with the Public Distribution System (PDS) playing a central role in ensuring access to essential food for vulnerable populations. The government expanded the coverage of the PDS under the Pradhan Mantri Garib Kalyan Yojana (PMGKY), which provided free rations to more than 80 million people, including 5 kg of wheat or rice and 1 kg of pulses per family, in addition to the regular entitlement. This expansion was crucial for supporting low-income households and migrant workers who were hit hardest by the lockdown. Additionally, the government introduced measures to streamline the distribution process, such as the use of direct transfers and digital platforms to avoid crowding and ensure safety. However, challenges like incomplete coverage, delays in the distribution process, and issues of quality and accessibility in remote areas remained. Despite these challenges, the PDS acted as a lifeline for millions during the crisis, illustrating the importance of social safety nets in times of national emergencies. These policy interventions highlighted the need for a robust food security system and demonstrated the potential of PDS in mitigating food insecurity during crises.

4.2 Fighting Hunger in Crisis: The Impact of Pradhan Mantri Garib Kalyan Anna Yojana

The Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) was one of the key government initiatives aimed at addressing food insecurity during the COVID-19 pandemic in India. Launched in March 2020, PMGKAY was designed to provide free food grains to the poorest and most vulnerable sections of the population, ensuring they had access to basic nutrition during the crisis. Under the scheme, around 80 crore beneficiaries received 5 kilograms of wheat or rice per person per month, in addition to their regular entitlements under the National Food Security Act (NFSA). Furthermore, 1 kilogram of pulses was also distributed per household every month for free. The scheme was extended multiple times, with the government allocating additional funds to support its implementation. This initiative was vital for addressing the widespread economic disruption caused by lockdowns, which left millions of migrant workers and low-income households without livelihoods. By ensuring continued access to food, PMGKAY helped mitigate the immediate impact of the pandemic on food security, contributing significantly to the relief efforts. However, while the initiative helped many, challenges related to distribution, exclusion errors, and access in remote areas highlighted the need for further strengthening of food assistance systems.

The analysis of beneficiary coverage under the National Food Security Act (NFSA) and Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) during the pandemic highlights extensive outreach across India. A total of 795.3 million beneficiaries, including 238.05 million families under the Antyodaya Anna Yojana (AAY) received food grains under these schemes. Uttar Pradesh recorded the highest number of beneficiaries, with 1,471.92 lakh individuals, followed by Bihar (871.16 lakh) and Maharashtra (700.17 lakh), reflecting the large populations and poverty levels in these states. States with smaller populations, such as Goa (5.32 lakh) and Mizoram (6.68 lakh), showed much smaller numbers of beneficiaries. Similarly, Union Territories like Lakshadweep and Chandigarh had limited coverage, with 0.22 lakh and 2.75 lakh beneficiaries, respectively. The data reflects an equitable approach, ensuring coverage across diverse regions. However, states like Andhra Pradesh, with 268.22 lakh beneficiaries, showed relatively lower beneficiary numbers compared to similarly sized states like Tamil Nadu (364.69 lakh), highlighting regional variances in implementation.

The comprehensive beneficiary coverage under PMGKAY demonstrates the scheme's effectiveness in addressing food insecurity during the pandemic. The data also provides critical insights into the scale and logistics of large-scale public distribution systems, emphasizing the importance of efficient execution to ensure equitable food security in times of crisis.

4.3 Government Initiatives: Open Market Sales Scheme (OMSS)

In addition to the subsidized and free food grains distributed under central government schemes, the Government of India extended support to States and Union Territories (UTs) through the FCI's liberalized Open Market Sales Scheme (OMSS). This initiative enabled States and UTs to procure additional quantities of food grains to address the needs of non-NFSA (National Food Security Act) ration card holders, as well as to supply NGOs and charitable organizations engaged in providing cooked meals or dry rations to underserved populations. Under the scheme, FCI supplied food grains to States and UTs at a subsidized rate of Rs21 per kilogram for wheat and Rs 22 per kilogram for rice. By June 2020, approximately 13 lakh metric tonnes (LMT) of food grains were distributed under this mechanism, benefiting an estimated 26 crore individuals. Through Open Market Sale Scheme (Domestic) (OMSS (D)) 2021-22, a total quantity of 60.08 Lakh MT of wheat and 7.87 Lakh MT of rice have been sold in the open market till 1st tender of December, 2021.

4.4 Government Initiatives: Atma Nirbhar Bharat Package (ANB) for Migrants/Stranded Migrants

To address the challenges faced by migrants and stranded individuals who were unable to access subsidized food grains under the National Food Security Act (NFSA) or State Public Distribution System (PDS) schemes, the Government of India launched the Atma Nirbhar Bharat Package (ANBP). This initiative granted States and Union Territories (UTs) full discretion to identify beneficiaries and ensure the distribution of additional rations. Under ANBP, the Department of Food and Public Distribution (DFPD) allocated approximately 8 lakh metric tonnes (LMT) of food grains (7 LMT of rice and 1 LMT of wheat) for free distribution. Beneficiaries were entitled to receive 5 kilograms of food grains per person per

month for two months (May and June 2020) during the peak of the COVID-19 crisis. This distribution period was later extended by two months, up to August 31, 2020.

To implement the scheme effectively, States and UTs undertook extensive efforts to identify the maximum number of eligible migrants and stranded individuals. These groups included those in transit, quarantine centres, labour camps, construction sites, and other vulnerable locations. Identification efforts were supported by labour departments, district administrations, civil society organizations, and NGOs. Based on surveys, States and UTs estimated that approximately 2.8 crore migrants and stranded individuals would benefit from the scheme.

Distribution mechanisms included Fair Price Shops, special distribution centres set up along major roads and highways, quarantine centres, shelter homes, labour camps, and mobile vans. These efforts resulted in the identification and provisioning of free food grains to an average of 2.74 crore migrants and stranded individuals, achieving a success rate of approximately 98%. This comprehensive approach highlighted the critical role of interdepartmental collaboration and community engagement in mitigating food insecurity during the pandemic.

4.5 Empowering Mobility: The Impact of ONORC on Migrant Food Security

The One Nation One Ration Card (ONORC) initiative, launched in April 2018 as part of the Integrated Management of Public Distribution System (IMPDS) scheme, aims to achieve nationwide portability of ration cards under the National Food Security Act, 2013. The primary objective is to enable beneficiaries to access their allocated quota of highly subsidized food grains from any Fair Price Shop (FPS) across India without requiring a new ration card. This was facilitated by integrating the existing Public Distribution System (PDS) infrastructures of States and Union Territories (UTs) with centralized government systems.

Realising the immense potential of One Nation One Ration Card (ONORC) plan during crisis period, its implementation was announced on 30th June 2020 and has since become an integral part of the Atma Nirbhar Bharat Abhiyan (ANBA) thereby empowering migrants to seamlessly access PDS entitlements anywhere in the country. Beneficiaries from these States/UTs can access their entitlements from any fully digital FPS through Aadhaar-based biometric authentication. This ensures seamless and transparent access to food grains, particularly benefiting migrant workers and other mobile populations. As a result, after May 2020, another 22 States/UTs have been added under ONORC plan covering nearly 69 crore (86%) NFSA beneficiaries in 32 States/UTs. The scheme has recorded significant adoption, with approximately 1.5 to 1.6 crore portability transactions being conducted monthly, including intra-state transactions. These portability transactions account for 4%-5% of the total monthly distribution of food grains under the PDS, highlighting the initiative's effectiveness in enhancing food security and reducing barriers for mobile beneficiaries.

4.6 Beyond the Centre: State-Level Measures and Innovations in Public Distribution System

During the COVID-19 pandemic, several state-specific measures and innovations emerged in India to address the unique challenges faced by different regions in ensuring food security and supporting vulnerable populations. While central government initiatives like the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) were crucial, state governments adapted these policies and introduced innovative solutions tailored to local needs. For example, in Tamil Nadu, the state government distributed free groceries to millions of households and implemented a door-to-door delivery service to ensure that the elderly and disabled could access food without leaving their homes. In Odisha, the government utilized the Public Distribution System (PDS) to provide additional rations to marginalized groups, including migrant workers, and worked closely with NGOs to set up community kitchens. Kerala, known for its robust welfare programs, set up a comprehensive network of community kitchens, offering free meals to vulnerable populations, including migrant workers stranded in urban centres. Rajasthan took an innovative approach by leveraging its extensive network of cooperative societies to distribute food grains and provide additional nutritional support to vulnerable families. These state-specific measures were vital in reaching out to diverse communities, filling gaps in the broader national strategy, and ensuring that food security interventions were responsive to the regional and socio-economic realities of each state.

4.7 Community and NGO Interventions: Grassroots efforts to address hunger and malnutrition.

During the COVID-19 pandemic, grassroots organizations, local governments, and non-governmental organizations (NGOs) played an essential role in addressing hunger and malnutrition in India. These community-based interventions were vital in reaching populations that were often excluded from formal food security programs. NGOs such as Oxfam India, Save the Children, and ActionAid India partnered with local governments to implement food distribution networks, ensure access to nutritional support, and provide emergency relief to marginalized communities. Through innovative solutions like community kitchens, doorstep delivery of rations, and support for migrant workers, these organizations addressed immediate food insecurity, especially in urban slums and rural areas. Furthermore, local governments collaborated with civil society groups to mobilize resources and ensure that essential services, including health and nutrition, reached the most vulnerable groups, such as women, children, and the elderly. These partnerships also focused on raising awareness about hygiene, nutrition, and the importance of sustainable food systems, helping to mitigate the long-term impact of the pandemic on public health and food security. The collective efforts of NGOs and local governments demonstrated the power of community resilience in the face of a global crisis.

4.8 International Aid and Cooperation: Role of international organizations in supporting food security in India.

During the COVID-19 pandemic, international organizations played a crucial role in supporting food security in India, especially for vulnerable populations. The World Food Programme (WFP), in collaboration with the Food and Agriculture Organization (FAO), provided technical expertise, financial aid, and logistical support to strengthen food distribution

systems and ensure continued access to food in affected areas. These organizations worked closely with the Indian government to scale up food assistance programs, such as the distribution of emergency rations and nutrition support for children, pregnant women, and lactating mothers. The WFP's India Country Brief highlighted the exacerbated food insecurity caused by disruptions to supply chains and rising poverty rates during the pandemic. Additionally, international donors, such as the United Nations and the European Union, provided financial support to bolster the National Food Security Act (NFSA) and other government schemes, ensuring that food relief reached the most marginalized populations. These global partnerships were vital in addressing immediate needs and in laying the groundwork for long-term food security strategies in the post-pandemic era.

5. Building Resilience: Lessons and Innovations for Future Preparedness

India's response to the food security challenges posed by the COVID-19 pandemic demonstrated both strengths and areas for improvement. Key takeaways include the critical role of the Public Distribution System (PDS) in providing a safety net for millions, supported by emergency initiatives like the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), which distributed free rations to vulnerable households. These programs showcased the importance of leveraging existing infrastructure to deliver timely assistance. However, gaps in coverage, inefficiencies in targeting, and regional disparities highlighted the need for more inclusive and adaptive frameworks. The proactive role of community organizations and NGOs in addressing immediate hunger underscored the value of decentralized and grassroots efforts in crisis management. Additionally, the pandemic revealed the vulnerability of supply chains to disruptions, emphasizing the need for investments in logistics and digital solutions to enhance resilience. Overall, the experience underscored the importance of preparedness, collaboration, and innovation in building food security systems capable of withstanding future shocks.

India witnessed several successful interventions during the COVID-19 pandemic that can be scaled or replicated to strengthen food security systems. The PMGKAY, which provided free food grains to over 800 million people, stood out as a large-scale initiative that mitigated hunger during the crisis. The ONORC scheme, enabling migrant workers to access their rations anywhere in the country, demonstrated the potential of technology-driven solutions to enhance accessibility. In addition, community kitchens organized by state governments, NGOs, and local volunteers, such as Tamil Nadu's Amma Canteens and Kerala's Kudumbashree network, offered low-cost or free meals to the needy. Innovative delivery mechanisms like doorstep delivery of ration in states such as Delhi and Odisha reduced barriers to access for the elderly and differently-abled. These interventions highlight the importance of combining policy innovation, technology, and community participation to address food security challenges effectively. Scaling such initiatives can create more resilient and inclusive food systems in India.

6. Challenges and Gaps

Despite significant efforts to address food security during the COVID-19 pandemic, persistent challenges in food distribution and accessibility remain. One major issue was the uneven coverage and targeting of welfare schemes, with many eligible households excluded due to outdated beneficiary lists and lack of access to ration cards, particularly among migrant workers and informal sector employees. Regional disparities in the efficiency of the Public Distribution System (PDS) further exacerbated inequities, with some states experiencing logistical delays and others reporting food grain wastage. Limited infrastructure in rural and remote areas hindered last-mile delivery, while urban areas faced unique challenges in catering to informal settlements with high population densities. Additionally, systemic inefficiencies such as corruption, pilferage, and inadequate monitoring diluted the impact of government interventions. Vulnerable groups, including women and children, often faced reduced access to nutritious food, highlighting gaps in addressing dietary diversity and nutritional security. These persistent issues underline the need for targeted reforms, robust infrastructure, and improved transparency to ensure equitable food distribution and accessibility.

The COVID-19 pandemic exposed several institutional limitations and governance challenges in ensuring food security in India. A significant issue was the lack of coordination between central and state governments, which often resulted in delays in implementing key welfare programs and inconsistencies in their execution across states. The abruptness of the lockdown measures further strained existing systems, revealing the inadequacy of preparedness for large-scale disruptions. Bureaucratic inefficiencies, such as cumbersome documentation processes and outdated beneficiary databases, excluded many eligible individuals, particularly migrants and informal workers, from accessing essential food aid. Corruption and leakages in the Public Distribution System (PDS) highlighted weaknesses in monitoring and accountability mechanisms. Moreover, the pandemic underscored gaps in decentralization, where local governments often lacked sufficient autonomy, resources, or technical capacity to address the unique challenges of their communities effectively. These governance issues emphasized the need for streamlined intergovernmental coordination, enhanced institutional capacity, and the adoption of technology-driven solutions to build a more robust and responsive food security system.

7. Recommendations

To build resilience against future crises and ensure sustainable food security, several key recommendations are proposed. Strengthening food security systems through improved infrastructure, expanded coverage, and efficient delivery mechanisms is essential for mitigating the impact of emergencies. Enhancing agricultural productivity and resilience, particularly in the face of climate change, can ensure a stable and sufficient food supply. Leveraging technology and innovation in food distribution, such as digitization and advanced logistics, can improve efficiency and transparency in public distribution systems. Additionally, targeted policy measures addressing nutritional security, particularly for vulnerable populations such as women and children, are crucial to combat malnutrition and dietary deficiencies. These

strategies collectively aim to establish a robust and equitable framework for food security and nutrition in the long term.

8. Conclusion

The COVID-19 pandemic profoundly impacted India's food security landscape, exposing vulnerabilities in supply chains, livelihoods, and access to essential nutrition, particularly among marginalized populations such as migrant workers, the urban poor, women, and children. Disruptions in supply chains and widespread livelihood losses intensified food insecurity, disproportionately affecting the most vulnerable groups. The Public Distribution System, complemented by initiatives like the PMGKAY, played a critical role in mitigating the crisis, ensuring food availability for millions. Community organizations also stepped in to bridge gaps, addressing immediate needs and reinforcing localized efforts. Despite these interventions, challenges remain, particularly in ensuring nutritional security and building resilience for future crises. The findings underscore the importance of decentralized governance, technological innovation, and inclusive policy measures to strengthen food systems. A holistic approach that integrates agricultural productivity, efficient food distribution, and targeted nutritional programs is essential. Moreover, prioritizing the needs of vulnerable groups and fostering community partnerships are vital for equitable food security. These insights highlight the need for a robust and inclusive framework to enhance India's resilience against future crises and ensure long-term food and nutritional security for all.

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