

Security in Times of Insecurity: A Study on Food Security among Economically Weaker Section Households of Delhi, India

Uma¹, Shubhangi Singhal²

¹ Department of Economics, Lakshmibai College, University of Delhi, Delhi, India

² Vivekananda School of Business,, Vivekananda Institute of Professional Studies, Pitampura, Delhi, India

ARTICLE INFO

DOI:

10.61081/vjr/14v2i104

Correspondence

ShubhangiSinghal
shubhu.singhal96@
gmail.com

Keywords

Cash transfer,
COVID-19, Food
benefits, Food security,
Government policy,
Households,

How to cite:

Uma, & Singhal, S.,
(2024). Security in
Times of Insecurity:
A Study on Food
Security among
Economically Weaker
Section Households
of Delhi, India.
Vivekananda Journal
of Research,
14(2), 145-154

ABSTRACT

The pandemic affected all sections of society across caste, class, region, and state, but it disproportionately affected the poor, daily wage workers, migrant workers, and small and marginal workers. The targeted provision of food and cash was the greatest need of the hour to minimize the pain and agony of the desperate people of the country. The aim of this study is to evaluate the impact of food security on the livelihoods of Delhi's EWS households during such insecure times. Simultaneously the paper also focuses on cash assistance extended by the Government and NGOs during the pandemic and its impact on the lives of the people of Delhi. The purpose of the study is to evaluate the effectiveness of the government's distributive strategy in addressing the exceptional food and financial crises brought on by health. The results of this study will be a great addition to the policy formulation and implementation process. Academics, faculty, and academics will undoubtedly have a better knowledge of the pandemic's after effects on Delhi residents' quality of life as well as the government's attempts to alleviate the dire circumstances.

INTRODUCTION

COVID-19 has affected all sections of society across castes, classes, regions, and states. Needless to say, it disproportionately affected the poor, daily wage workers, migrant workers, small and marginal workers, women, and children. The food security challenges are grave, especially for workers in the informal sector during the tough time. A shortfall in income due to job loss and lockdowns significantly affected the households of millions of workers across the states. Workie *et al.*, (2020) opined that vulnerable groups including landless labourers, wage earners, and small-scale farmers have been obstructed from their day-to-day work and faced the worst hit among all. Starvation, malnutrition, cutting-edge nutrition,

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and surviving on one meal a day were the realities of many households. Thousands of workers walked miles to reach their hometowns to save their lives. Reverse migration has resulted in imbalances in cities and rural areas. Productivity was affected and need for the food and cash increased to survive in rural as well as urban areas. People experienced food insecurity, monetary crunch, health havoc, and losing their near and dear ones due to severe crises at different levels. The targeted provision of food and cash was the greatest need of the hour to minimize the pain and agony of the desperate people of the country. This was more required in poor households in the country. The Wire Staff (2020), reported that the government publicized a few actions to control food-led insecurity and to strengthen local food production.

The information retrieved from website of Pradhan Mantri Garib Kalyan Package (PMGKP) says that 'to assist the poorest of the poor the Central Government has announced a comprehensive relief package of Rs. 1.70 lakh crore under the scheme Pradhan Mantri Garib Kalyan Yojana (PMGKY) / Package in March 2020.'

The objective of the study is to check on the ground level the food insecurity among households before and after the implementation of government policy on the provision of various resources on account of COVID-19 (Pradhan Mantri Garib Kalyan Yojana Package and Direct Benefits Transfer) and to assess the efficacy of food distribution and cash transfer plans of the government. The aim is also to check the extent to which they reach EWS households in Delhi.

LITERATURE REVIEW

COVID-19 was a threat to not only life but also livelihood. Several authors studied the period from a different perspective. The COVID-19 related lockdown brought inequality to the economy, and it has widened the gap between rich and poor. (Ahmed Mushfiq Mobarak, 2020) The first lockdown was imposed from March 25 to June 8, 2020. Thereafter, multiple lockdowns were imposed, sometimes on a national level and sometimes on the state level looking at the severity of the crisis. Reardon *et al.* (2020) stressed the challenges faced by the government in mitigating

the food crisis and disruption of the food supply chain during the pandemic. Totally *et al.*, (2020) find the unavailability of free rations, and groceries due to the unavailability of food stocks and the imposition of lockdown between 7 and 9 April, 2020. The authors surveyed 6915 households. In another survey conducted between April 27, 2020 and May 2, 2020 by Vikas Anvesh Foundation (2020), it was reported that people received food rations through PDS. Narayan (2021) analyzed the available stock of food grains in India and concluded that the government should expand the public distribution system. A similar study was conducted by Gupta & Mishra (2018), remarking that people belonging to the lower socioeconomic class in the Uttar Pradesh region of India have more accessibility to PDS ration. Another study was conducted by Azim Premji University (2020) in mid-April, 2020. A total of 3970 respondents, including 331 farmers participated in the survey. Jaacks *et al.*, (2021) opined that COVID-19 has augmented the economic and nutritional divide due to pandemic-related disturbances to food production and food insecurity. It has affected landless and small/marginal farmers the most. Summerton (2020) identified four distinctive dimensions of food security; the physical availability of food, economic and physical access to food, food utilization and the stability of these three dimensions over some time.

Chaudhry *et al.* (2020) found that the benefits have not reached all eligible families and have missed a large percentage of the poorest people. Duflo & Banerjee (2020) asserted that the government's current offering equates to 'small potatoes'. Sinha (2021) opined that under PMGKY measures such as food and cash, transfers were based on transfers to existing beneficiaries under schemes. The article goes on to say that although there have been some challenges in obtaining cash transfers because of limitations on transportation and barriers to banking, it is well known that the PDS's distribution of food grains has offered some respite. Numerous flaws in these schemes were noted by the author. None of these programs were available to everyone, and there was no efficient way to connect with the excluded.

Suresh *et al.* (2022) discovered a shift in the outline of food consumption during the COVID time, with

higher consumption of subsidized staple foods. Kunduri, Roy & Sheikh (2021) confer on the Delhi government's efforts to provide food security and food-related benefits during COVID-19. Bhagat *et al.* (2020) stated that there were many challenges migrants faced during the spread of COVID-19 due to the nationwide lockdown. Lack of food, basic securities, health care, financial distress, transportation to return to their home, and psychological aid were among the issues that many internal migrants experienced. Drèze & Somanchi (2021) opined that food deprivation was most intense during the national lockdown and it continued throughout the year. Choudhury *et al.* (2020) find that the COVID-19 crisis highlighted the need to provide food security to migrants around the world. Ration card portability, the primary strategy for ensuring food security in India, has gained national attention when the Supreme Court of India recommended on April 28, 2020, that the Central Government immediately adopt the policy nationwide. The authors address the effects of intra-state and inter-state ration card portability on people's capacity to move about during a lockdown. They noted that although the official policy of interest (India's ration card mobility) worked well within state lines, it was unable to control migration across states. The authors go on to say that ration shops and civil society organisations' food distribution contributed to a decrease in both intra- and inter-state mobility.

Agarwal (2021) observed the gendered impact of COVID-19 on livelihood, intra-household dynamics, vulnerabilities related to food insecurity, depletion of savings and assets, and social isolation. According to a study by Azeez, Negi, Rani, and AP (2021), women migrant workers and their families are in a terrible position. The authors also highlighted the need for urgent policy implementation and strengthening social security measures. Dev & Sengupta (2020) feel a need for the optimal design of the cash transfer programmes in terms of targeted recipients, amounts, and duration, as some of the informal workers and other vulnerable groups do not have Jan Dhan accounts but they are in need of cash assistance. Abhishek *et al.* (2020) believed that controlling the pandemic will be difficult if its food system collapses. Ravallion (2020) felt that the immediate policy challenge is to restore food supplies and the purchasing

power of poor households without exposing them to greater risk from the virus. Nguyen *et al.* (2021) found that Household Food Insecurity (HFI) in India increased sharply from 21% in December 2019 to 80% in August 2020, with 62% of households changing the status from food secure to insecure over this period. In contrast, to children in food-secure households, the authors found that children in households experiencing food insecurity either recently or continuously were less expected to have a changed diet. Mishra & Rampal (2020) discuss the damage to lives caused by COVID-19 and hunger with implications for food insecurity, nutritional status, productivity, education, and wage earnings. Sengupta & Jha (2020) opined that government social protection measures at the time of the COVID-19 pandemic resemble a drop in an ocean of trouble.

In addition to India, food insecurity has been researched in many economies, including Malaysia, the U.S.A., Kenya, Bangladesh, Nepal, etc. Studies have found that during the COVID phase in 2020, 17 million people in the U.S.A. were food insecure which was the direct result of unemployment caused by COVID-19 (Gundersen *et al.*, 2020). Béné *et al.* (2021) studied the impact of COVID-19 on food insecurity in the global context. The study found that in about 62 countries, the most affected parameter of food insecurity is both financial and physical accessibility of food which was disturbed. Niles *et al.* (2020) studied a population that was constantly food insecure in contrast to those who were newly food insecure due to the pandemic. The results revealed that the coping strategies of both groups were different from one another.

There is negligence in assessing food insecurity pre- and post-COVID period among EWS households in India. Similar research has been carried out in various other neighbouring countries. Singh *et al.* (2021) conducted research on low-income and disadvantaged families in the context of food insecurity during COVID-19 in Nepal and found it to be a serious problem. They suggested that relief plans and policies for providing food security should be directed toward families in need of such protection to prevent them from chronic hunger and malnutrition. Rahman *et al.* (2022) studied that even after the government of Bangladesh, people are continuing to face food insecurity.

Their study concluded that necessary modifications to the policy were necessary.

To make people cash secure, the Government of India extended the benefits of Direct Benefits Transfer (DBT) to millions of citizens whose livelihood was impacted due to the pandemic. According to data from the Government of India DBT reached 2.19 crores were transferred under the DBT scheme in a single day. This was achieved using modern digital payment technology.

METHODOLOGY

DATA SOURCE

The study was conducted through a questionnaire survey. This survey was conducted in April 2022 on 150 EWS households in Delhi on a random sampling basis. Households have been categorized on the basis of their annual income slab as mentioned by MOHUA which is of annual income below Rs. 3,00,000. A pre-pilot study (n=10) was conducted for the self-administered questionnaire through which parameters and understanding were assessed. Slight adjustments were done to the questions' design and formulation. A respondent, on behalf of his/her household, answered directly to the researchers. The questions were meant to assess if food insecurity prevailed in such households before the government provided various benefits by the government on account of pandemic. The article targeted to check the efficacy of the policy for the provision of food and Direct Benefits Transfer (DBT) for the provision of cash among such households in an attempt to provide food and cash security. The targeted area was the North-West region of New Delhi (Pitampura Gaon, Shakurpur, Jahangirpuri and Keshav Puram).

FOOD SECURITY

The data were collected in the month of April, 2022 using Food Insecurity Experience Scale (FIES). It is the only prevailing household food security assessment method that ensures comprehensive comparability of the measures (Cafiero, Viviani, and Nord, 2018). It is the official tool used by the Food and Agriculture Organisation of the United Nations (FAO) to provide estimates of the prevalence of food insecurity. In light of COVID-19, FAO-VoH updated the scale,

which was then modified for the study's objectives.³ This scale was used for 8 questions with dichotomous responses of "yes" or "no" associated with the food-related behaviors and experiences correlated with the difficulty in accessing food in uncertain times due to restraints on resources. The questions vary from "being worried about not having enough food to eat" to "going hungry for a whole day," as shown in Table 1. Scores as to 0= No and 1= Yes were stipulated and were summated for each respondent. Each question was labeled to facilitate easy interpretation. These are (i) worried (ii) wealthy (iii) few foods (iv) skipped (v) ate less (vi) ran out (vii) hungry (viii) whlday. These labels have been used in many similar studies (Sheikomar, Dean, Ghattas & Sahyoun, 2021; Gaitán-Rossi, Vilar-Compte, Teruel & Pérez-Escamilla, 2021). Individuals were categorised based on the types of food insecurity they had. It was classified as Moderate or Severe Food Insecure (MSFI) if the raw score was between 4-8, and not MSFI if the raw score was between 0-3. (Ballard, Kepple & Cafiero, 2013)

Adapted Food Insecurity Experience Scale from Food and Agriculture Organization of the United Nations- Voice of Hungry.

DEMOGRAPHIC AND SOCIOECONOMIC DATA

Data regarding household size, annual income, highest and lowest levels of education in the household, state of origin, state of residence, accommodation type, and difficulties faced during COVID-19 due to limited resources were collected in order to identify the Economically Weaker Section (EWS) households for the study.

DATA ANALYSIS

Data was divided into two parts for analysing. As per the objectives of the paper, first, we determined whether the respondents were Moderate or Severe Food Insecure or not before the government provided them with food and cash benefits. Rasch Model was used to estimate the level of insecurity among respondents (Nord, 2014) and to verify the reliability of the 8-questions scale. The Rasch model (Rasch, 1960), for dichotomous items assumes that the response of a person to an item is stochastically independent of all other item responses for the same and other persons and that the probability of a positive response to an item is equal to

TABLE 1: ADAPTED FOOD INSECURITY EXPERIENCE SCALE (FIES).

Before the government gave you food or cash benefits during COVID, was there a time when-		
Q1. You or others in your household were worried you would not have enough food to eat because of a lack of money or other resources?	WORRIED	1 = Yes 1 = Yes
Q2. You or others in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?	HEALTHY	0 = No 1 = Yes
Q3. You or others in your household ate only a few kinds of foods because of a lack of money or other resources?	FEW FOOD	0 = No
Q4. You or others in your household had to skip a meal because there was not enough money or other resources to get food?	SKIPPED	0 = No
Q5. You or others in your household ate less than you thought you should because of a lack of money or other resources?	ATE LESS	1 = Yes
Q6. Your household ran out of food because of a lack of money or other resources?	RAN OUT	0 = No
Q7. You or others in your household were hungry but did not eat because there was not enough money or other resources for food?	HUNGRY	1 = Yes
Q8. You or others in your household went without eating for a whole day because of a lack of money or other resources?	WHL DAY	1 = Yes

$$P(X_{vi}=1) = \frac{\exp(\theta_{vi} - \beta_i)}{1 + \exp(\theta_{vi} - \beta_i)} \quad v=1, \dots, n; i=1, \dots, k$$

Where, θ_{vi} is a parameter characterizing the person and β_i is an item parameter

The model’s assumptions were evaluated in Jamovi Project, version-1.6.23,⁴ where the adapted eight questions of the FIES questionnaire were evaluated with the help of infit statistics, and person reliability of the scale was used to assess the potential to differentiate different levels of food insecurity among respondents/ participants. (Al-Khouja, Weinstein, Ryan & Legate, 2022) used Jamovi software for Rasch analysis as well. The dichotomous (Yes/No) questions stipulated the values of 0 and 1 for No and Yes, respectively. This data was analyzed using Dichotomous Rasch Model. After the assumptions of the FIES were substantiated, food insecurity was ascertained by totalling up the raw scores for each respondent.

Further, second part of the analysis includes additional data collected employing a questionnaire survey. The purpose was to review the efficacy of the government policy of food and cash benefit transfer in the context of COVID-19 and to what extent were the respondents aware of this policy. It also analysed if the food insecurity among respondents that prevailed during COVID-19 before the implementation of the policy was curbed after the benefits were extended to these households. Additionally, the questions also aimed to analyze the role of NGOs in the provision of such benefits during the time of COVID-19. Analysis was done using Descriptive Statistics in SPSS.

RESULTS

Out of the 225 houses that were contacted, 75 chose not to take part in the study, resulting in a final sample of 150 households.

Rasch Model reliability in FIES was 0.706, which is greater than the threshold of 0.70 making the model fit to use. This is also corroborated by the p-value, which is greater than 0.01 or 0.05 implying that there is no statistically significant deviation from what the Rasch Model explains (Table 2). The study also measured the Q3 Correlation Matrix (Table 3) which is the correlation coefficient of residuals. In our analysis, none of the values is equal to or greater than 0.3, indicating that the assumption of local independence of Rasch Model measurement has been met and not violated or compromised.

This helps demonstrate confidence in the results with conviction. Item Statistics (Table 4) shows the Infit statistics and Rasch Model parameters. Rule-of-thumb lower and upper limits for acceptable mean square fit values have been set by many researchers to 0.7 and 1.3, which is very stringent. (Linacare, 2017) gave a detailed description in his research on cut-off numbers suggesting the values between 0.-1.5 as acceptable. In our analysis, Infit values were acceptable, as all values were in the range of 0.5-1.5. Table 4 also shows the Measure/Item Severity, which assesses how difficult or easy those items are and S.E. Measure shows the precision of the measures that we have calculated based on proportions (not displayed in the table).

TABLE 2: EVALUATION OF MODEL FIT.

	Person Reliability	MADaQ3	p-value
scale	0.706	0.150	1.000

The raw scores for food insecurity were separated into two categories of 0-3 and 4-8 and the total percentage of respondents falling into the category of MSFI (Moderate or Severe Food Insecure) was ascertained as displayed in figure 1 below:

The graphical representation of the data collected shows that about 92 per cent of the respondents consisted of the classification of MSFI before the implementation of the government policy of food distribution.

TABLE 3: EVALUATION OF Q3 CORRELATION MATRIX.

	Worried	Healthy	Few foods	skipped	Ate- less	Ran out	hungry	whlday
Worried	—							
Healthy	-0.160	—						
Few food	-0.010	0.000	—					
skipped	-0.102	-0.025	-0.094	—				
Ate less	-0.019	0.008	-0.295	0.026	—			
Ran out	0.179	-0.453	0.054	-0.392	-0.077	—		
hungry	0.099	-0.058	-0.402	-0.374	-0.120	0.062	—	
whlday	-0.363	0.201	0.167	-0.230	-0.180	-0.273	-0.078	—

TABLE 4: VALUATION OF THE ASSUMPTIONS OF THE RASCH MODEL OF THE FOOD INSECURITY EXPERIENCE SCALE.

Item	Measure	S.E. Measure	Infit	Outfit
Worried	-2.13105	0.581	0.693	0.558
Healthy	-0.96192	0.507	0.724	0.501
Few food	-1.22631	0.521	0.811	0.519
skipped	-0.00880	0.474	1.269	1.471
Ate less	-2.13105	0.581	0.844	1.489
Ran out	-1.22631	0.521	1.199	0.964
hungry	0.65300	0.468	1.029	0.922
whlday	0.65300	0.468	0.907	0.733

To understand the general characteristics of the population, the following demographic and socioeconomic data were collected:

Table 5: Demographic and Socioeconomic characteristics of EWS Households.

Household Characteristic	N (%) N = 150
State of Origin Agra 1 (0.7%) Bihar 13 (8.6%) Delhi 116 (76.9%) Madhya Pradesh 2 (0.14%) Nepal 2 (0.14%) Uttar Pradesh 16 (13.52%)	
State of Current Residence Delhi 150(100%)	
Annual Income Less than Rs.50,000 23 (15.3%) Rs.50,000- 1,00,000 73 (48.7%) Rs. 1,00,000-1,50,000 37 (24.7%) Rs.1,50,000-2,00,000 12(8%) Rs. 2,00,000-2,50,000 2(1.3%) Rs. 2,50,000- 3,00,000 3(2%)	
Lowest level of education done by member of the family Illiterate 138 (92%) Primary Education 7 (4.7%) Secondary Education 1 (0.7%) Post-Graduation 4 (2.7%) Graduation	

The data regarding annual income indicate that all the households selected belonged to Economically Weaker Sections (EWS) of the areas of Delhi. Bivariate Analysis was done to assess the

relationship between annual income of households and MSFI scores. Data on annual income was collected in bands ranging from 0 to 3,00,000. The midpoint of these ranges was determined for analysis. It was found that both variables have a negative correlation of -0.109 . However, the significance value larger than the significance level of 0.05 signifies that the correlation isn't significant, and the relationship is due to fluke. This means that respondents' food insecurity and annual income do not correlate whatsoever.

Pilot testing of the self-administered questionnaire (n=45) was done using SPSS. Cronbach's Alpha value was calculated to be 0.801 that falls under category of good reliability. The awareness level of respondents regarding government policy of food distribution and direct benefits-transfer was analyzed using Descriptive Analysis. It was also found that 97.3% of the households were aware of such policies, while only 74.7% of households received the benefits of the Pradhan Mantri policy and 18% received cash benefits under Direct Benefits Transfer (DBT) policy.

It was also analyzed that only 22.7% of the households agreed that they received food benefits from NGOs while only 2% agreed to receive cash benefits during pandemic.

The government's food distribution policy mentions the distribution of wheat/food grains and rice of 5kg per person on a monthly basis. This was also analyzed by way of a questionnaire and the result was that most of the households got wheat, rice, and pulses in the range of 4-5kgs

An open-ended question was asked from respondents in the end, which was in reference to obtaining their opinion on how the food insecurity can be curbed during the ongoing phase of COVID-19.

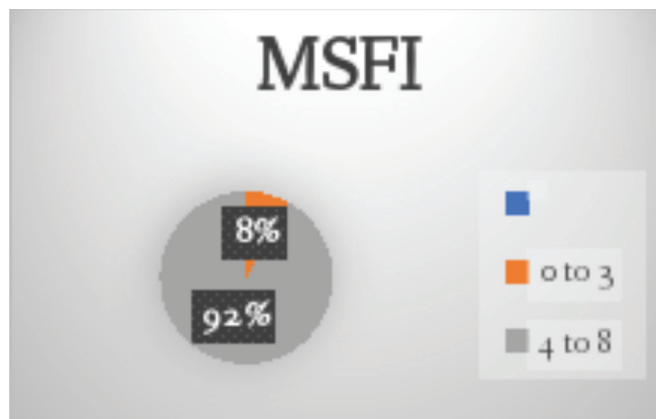


Figure 1: Graphical representation of the data collected.

What was the quantity of following food items supplied per person by the government to you on monthly basis?

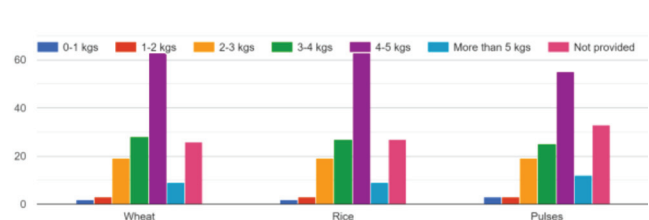


Figure 2: Graphical representation of the Food items supplied per person by the government on monthly basis.

Their answers summed up in several responses as: (i) the government is required to improve the implementation of the policy (ii) they should release more funds toward the policies aiming to provide resources to those whose livelihoods have been impacted (iii) it should introduce a more comprehensive policy which has a wider reach (iv) the government should do something in the domain of unemployment to curb food insecurity (v) there might have been black marketing of the resources provided by the government which could not reach the needy and were used for minting money and this area should be focussed for better reach of food and cash benefits (vi) rather than setting up stalls in government schools and ration shops, they should be set up near every area in open space (vii) awareness should be increased as to where the food is being distributed.

CONCLUSION

It can therefore be concluded from the analysis, that the large number of families were moderately or severely food insecure before the government policy implementation of, “Pradhan Mantri Garib Kalyan Ann Yojana” during pandemic. As per the findings of the questionnaire survey, it was found that the major population of the survey was aware of the prevailing food and cash benefits provided by the government. It was also analyzed that respondents who received food benefits felt secure after the implementation of the government policy as they received an adequate amount of food-grains, wheat, and pulses as given under the policy regime. In contrast, the government policy of Direct Benefits Transfer of cash provision during COVID-19 was not found to be successfully implemented. Respondents also agreed that the government had more reach to them than NGOs and only a few respondents agreed to having received benefits from the NGOs.

LIMITATION AND FUTURE SCOPE

The study was conducted on 150 households only due to the constraints of time as well as restrictions and the ascending number of pandemic incidents in the Capital. It was also seen that many reached were not willing to share their personal details as such their annual income or whether they received

benefits or not. They felt as if this deprived them of their benefits. Due to the unavailability of data related to annual income, it became difficult to identify the target population of EWS households, which resulted in a limited amount of sample data for the study. The study also had field study limitations because the researchers surveyed door-to-door to collect the data.

Future researchers can increase the sample size and targeted areas. The target population can also be protracted to Low-Income and BPL households, as the benefits of the policy were also extended to them. This study is based on evaluating the efficacy of “Pradhan Mantri Garib Kalyan Ann Yojana” and Direct Benefits Transfer policies of the Government of India. Future researchers could evaluate the policy of PMGKY Package as whole instead of taking into consideration its components. This would help provide additional data on the efficiency of other benefits provided by the Government under the policy.

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