International Journal of Community Medicine and Public Health
Singh SP et al. Int J Community Med Public Health. 2025 Jul;12(7):3120-3130
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20252106

Original Research Article

Food insecurity during COVID-19 pandemic amongst migrant households of an urban village in Delhi

Suraj Prakash Singh*, Anita Khokhar, Aritrik Das

Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Received: 09 April 2025
Revised: 05 June 2025
Accepted: 06 June 2025

***Correspondence:**
Dr. Suraj Prakash Singh,
E-mail: drsurajprakashsingh@gmail.com

ABSTRACT

Background: The COVID-19 pandemic and associated lockdowns disrupted economic activities and supply chains, leading to rising prices, widespread unemployment, and increased food insecurity. Migrant households, particularly those residing in overcrowded, unplanned urban settlements and working in the unorganized sector, were among the most vulnerable. Assessing food insecurity in this population is essential to guide targeted interventions and policy responses.
Methods: A cross-sectional study was conducted in December 2020, between two lockdowns, among migrant households in Aliganj, an urban village in Delhi. Households that had migrated to the area within the past 365 days were eligible. A total of 96 households were selected using systematic random sampling. Data were collected using a pre-designed, pre-tested, semi-structured, interviewer-administered questionnaire in Hindi, which included the household food insecurity access scale (HFIAS). Data analysis was performed using SPSS version 26 and R software.
Results: More than half (55.2%) of the migrant households experienced some level of food insecurity, with 14.6% classified as severely food insecure. Lower household income was significantly associated with higher odds of food insecurity. Other contributing factors included irregular employment and larger household size.
Conclusions: Food insecurity was highly prevalent among migrant households in the urban village of Aliganj during the COVID-19 pandemic. These findings highlight the urgent need for social safety nets, food assistance, and targeted policy measures to protect vulnerable migrant populations during crises.

Keywords: Food insecurity, HFIAS, Transients and Migrants COVID-19, Urban village

INTRODUCTION

To contain the spread of the COVID-19 virus, India had announced a countrywide lockdown on 24th March 2020, where all the activities except the essential services were prohibited throughout the country.[1] This was further extended till 31st May, and thereafter eased in a phased manner.[2,3]

Further, in 2021 due to a sudden rise in COVID-19 cases and shortage of healthcare resources, national capital region of Delhi went into graded lockdown and curfews between April to June, 2021. Both of these lockdowns were marked by a large-scale migration of poor households and families who had been working in cities and towns. Due to the sudden shutting down of all non-essential activities, disappearance of financial opportunities and fear of infection and survival in cities amidst suspected long term economic shut down, the hordes of migrants chose to walk down to their towns and villages. The migrants who stayed put had to withstand loss of jobs, financial and food insecurity, hunger, evictions from rented accommodations, including and not limited to COVID-19 infection and its outcomes, and catastrophic health expenditure.[4] Pandemic disrupted food supply chains, destabilized food prices and negatively affected food security [5]

Due to the disrupted food supply chains, rise in food prices of staple items likely to have reduced access to staple food. Further, sudden global negative impact of the pandemic and the lockdown resulted in a loss of jobs across the country, which further limited households' ability to purchase food.[6]

The reduced access to food not only affects the availability of food to the households, but also drastically limits the variety of food items they can purchase, forcing them to shift their preferences and reduce portion sizes, and in extreme cases, go without food if they cannot afford it at the prevailing prices. Which in long term negatively affects the nutrition and health outcomes of the households' members.

The segments of the workforce most likely to be impacted are the vulnerable groups, less educated low–wage workers, and those self-employed or working in unorganized sectors.[7,8]

The effects of food insecurity tend to be worse especially for women who while being the primary food-related decision makers, are at a risk of eating less and budgeting her own needs before anyone else in the family during a crisis. As observed in rural India, pandemic not only reduced women's food availability but also their food diversity at household.[9]

India with around 246.5 million undernourished people, already shares a quarter of the global hunger burden.[10] It is also represented poorly on indicators of child wasting, stunting and mortality, as per the Global Hunger Index, which ranked India 107 out of 121 countries in 2022.[11]

Also, Global Food Security Index, has ranked India 68th out of 113 countries in the world. This index provides a common framework for understanding the root causes of food insecurity by looking at the dynamics of food systems around the world, including affordability, availability, quality and safety, and sustainability and adaptation.[12]

The government of India in an attempt to mitigate these disastrous effect of lockdown on economy and food security, had implemented an urgent relief package valued at rupees 1.7 lakh crore (US$22.6 billion), including both direct to bank transfer of money, and food support of 5 kg cereals and 1 kg pulses through public distribution system (PDS) to the eligible households.[13] Impact of these interventions though observed in few states and rural area, remains to be seen amongst migrants living in urban unorganized settings.[14,15]

That is why it is important attempt to identify those most at risk of food insecurity and severe hunger in a vulnerable population so that households which need immediate assistance can be quickly identified, effective policies to prevent such scenarios can be designed, and resources can be allocated at the earliest before hunger and malnutrition in its worst forms manifest in the time of such a crisis.

With that background, the current study was envisaged and conducted with the objective to find out the prevalence of food insecurity during COVID-19 pandemic amongst migrant households of an urban village in Delhi, along with the associated factors of food insecurity in the population.

METHODS

The study was conducted in Aliganj, an urban health training centre (UHTC) under the department of community medicine at Safdarjung Hospital. This area primarily serves a population of around six thousand inhabitants, most of whom are migrants from other states and villages. The research was a cross-sectional study carried out over one month in December 2020, between two national lockdowns. The study population consisted of migrant households in Aliganj village, Delhi. The sample size was determined based on a previous study by Saxena et al conducted in tribal high-migration communities in Rajasthan, which reported a 64% prevalence of inadequate food availability during the COVID-19 lockdown.[16] Using this prevalence rate, along with a z-value of 1.96 and a 10% margin of error, the initial sample size was calculated. Additionally, a 10% non-response rate was factored in, resulting in a final sample size of 96 households.

The study included women above 18 years of age who were responsible for purchasing and managing food for their migrant households. In cases where the household consisted solely of male members, men above 18 years who were primarily involved in buying and cooking food were also included. This criterion ensured that the study captured the perspectives of individuals directly handling food security and dietary challenges within migrant families.

Systematic random sampling was done to select the study participants, based on an existing sampling frame having 1,668 households in Aliganj.

Definitions

Food insecurity

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutrition food to meet their dietary needs and food preferences for an active and healthy life.[17]

Migrant household

If the entire household, as now being enumerated has moved to the place of enumeration during the last 365 days preceding the date of survey, it will be considered as a migrant household. If one member of the household has

moved ahead of other members to the present household and others have joined later (but all of them during the reference year) such households will also be considered as migrant households. Where some members of the household were born or married into households which have moved, during the last 365 days, the entire household is to be treated as migrated to the place of enumeration.[18]

Study tool

The household food insecurity access scale (HFIAS) developed by FAO was used to measure household food insecurity.[19]

The scale consists of nine questions concerning participants experiences with food scarcity, the associated inconvenience, and their behavioural responses to it. Each question inquires if a particular condition of food insecurity is experienced in a household (yes/no), and when affirmative, what is its frequency of occurrence (rarely/sometimes/often.) Response scores range from a minimum of 0 to a maximum of 27, with no being scored 0, rarely 1, sometimes 2 and often as 3. Based on their affirmative responses and scores the HFIAS categorizes households as food secure, mildly food insecure, moderately food insecure and severely food insecure, viz.:

Food-secure

A household was labelled 'food-secure' when the members 'rarely', in the past four weeks, worried about not having enough food and had replied 'no' to question number 2 to 9.

Mildly food-insecure

The members of the household worried about not having enough food sometimes or often, and/or were unable to eat preferred foods, and/or ate a more monotonous diet than desired, and/or ate some foods considered undesirable but only rarely.

Moderately food-insecure

The household members sacrificed quality more frequently by eating a monotonous diet or undesirable foods sometimes or often, and/or had started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes.

Severely food-insecure

The individuals in the household had to cut back on meal-size or number of meals often, and/or experienced any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating).

The scale also provides food insecurity (access) status for three domains viz., anxiety and uncertainty about the household food supply, insufficient quality (includes variety and preferences of the type of food) and insufficient food intake and its physical consequences.

A recall period of four weeks was taken to assess food insecurity. A questionnaire containing questions regarding socio-demographic data and questions related to food insecurity including the HFIAS Scale was administered in Hindi via an interviewer. Socio-economic status was calculated as per revised Kuppuswamy Scale, 2019.

Statistical methods

Data entry was done in Microsoft Excel spreadsheets using variable coding. Data were verified by double entry and proofreading. Data cleaning and analysis were done using licensed SPSS software (version 21). All the variables were analysed using descriptive statistics to calculate frequency, mean, range, etc. Bivariate analysis was done for determining an association between the presence of food insecurity, and other associated factors. Statistical tests of significance for the difference between proportions, i.e. Chi-square test and Fisher's exact test were applied and the calculated results were considered significant at a p value <0.05. For the variable found significant on bivariate analysis were considered for Binary logistic regression.

Ethical issues

Each eligible subject was explicitly explained about the purpose of the study by the investigator and informed consent was obtained before inclusion. Approval from the institutional ethical committee of VMMC and Safdarjung Hospital was taken before the start of the study. Privacy of subjects and confidentiality of information was maintained, and this was also explained to the subjects before inclusion.

RESULTS

The study included a total of 96 migrants households living in an urban village of Delhi, who were interviewed and accessed regarding their food security.

The mean age of respondents interviewed for the study was 36.1±11.2 years, with a median =33 years, majority of which were females (84, 87.5%). The mean BMI of respondents was 23.8±4.4 kg/m^2, which was above normal for Indians (BMI>22.9 kg/m^2). A total of 85 (88.5%) of respondents were married, almost all 89 (92.7%) had a nuclear family and 79 (82.3%) were Hindu by religion. A total of 23% were SC or ST, and 32.3% were OBC by caste.

Majority of heads of households (60, 62.5%) and respondents (51, 53.1%) had high school or less

education. For every earning member in the households, 31.3% had one or lesser number of non-earning dependents, for 19.8% households there were 1 to 2 dependents, for 31.3% 2 to 3 dependents, and for rest 17.7% households there were more than 4 non-earning dependents for each earning member. The mean income of a household in the study was INR 15,610.4±11,575.4. Almost half (52, 54.1%) were middle class and rest belong to lower class as per modified Kuppuswamy scale. Only 2 (2.1%) participants had BPL card, and 25 (26%) had a ration card. Majority of the households 81 (84.4%) had come from one of the 8 empowered action group (EAG) states (Table 1).

Table 1: Distribution of study households as per socio-demographic characteristics (n=96).

Characteristics	Number (%)
Age of respondent (in completed years)	
18 to 24	10 (10.4)
25 to 34	41 (42.7)
35 to 44	26 (27.1)
45 to 59	11 (11.5)
60 and above	8 (8.3)
Mean =36.1±11.2 years, Median =33 years, Range =47 years	
Sex of respondent	
Female	84 (87.5)
Male	12 (12.5)
BMI of respondent (kg/m^2)	
Under weight	9 (9.4)
Normal weight	36 (37.5)
Overweight	51 (53.1)
Mean BMI =23.8±4.4 kg/m^2, median BMI =23.0 kg/m^2	
Marital status of respondent	
Married	85 (88.5)
Single or widowed or separated	11 (11.5)
Type of family	
Nuclear	89 (92.7)
Joint	7 (7.3)
Religion	
Hindu	79 (82.3)
Other religion	17 (17.7)
Caste	
General	43 (44.8)
Other backward class	31 (32.3)
Scheduled class and scheduled tribe	22 (22.9)
Education of head of the household	
Illiterate	8 (8.3)
High school or less	60 (62.5)
Intermediate or more	28 (29.2)
Education of respondent	
Illiterate	31 (32.3)
High school or less	51 (53.1)
Intermediate or more	14 (14.6)
Number of non-earning household members per earning member	
≤1	30 (31.3)
1 to 2	19 (19.8)
2 to 3	30 (31.3)
≥4	17 (17.7)
Income category (INR)	
≤5,000	8 (8.3)
5,000-10,000	23 (24.0)
11,000-20,000	49 (51.0)
>20,000	16 (16.7)

Continued.

Characteristics	Number (%)
Mean income =INR 15,610.4 ± 11,575.4, median income =INR 15,000	
Socio-economic class as per Modified Kuppuswamy Scale 2019	
Middle	52 (54.1)
Lower	44 (45.9)
Below poverty line card holder	
No	94 (97.9)
Yes	2 (2.1)
Ration card holder	
No	71 (74.0)
Yes	25 (26.0)
Native state	
Empowered action group (EAG) states	81 (84.4)
Others	15 (15.6)

Table 2: Distribution of study households as per their response of HFIAS scale (n=96).

	No Number (%)	Rarely Number (%)	Sometimes Number (%)	Often Number (%)	Total Number (%)
In the past four weeks, did you worry that your household would not have enough food?	63 (65.6)	6 (6.3)	9 (9.4)	18 (18.8)	96 (100.0)
In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	51 (53.1)	5 (5.2)	10 (10.4)	30 (31.3)	96 (100.0)
In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	48 (50.0)	2 (2.1)	14 (14.6)	32 (33.3)	96 (100.0)
In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	58 (60.4)	3 (3.1)	11 (11.5)	24 (25.0)	96 (100.0)
In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	69 (71.9)	4 (4.2)	14 (14.6)	9 (9.4)	96 (100.0)
In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	65 (67.7)	4 (4.2)	10 (10.4)	17 (17.7)	96 (100.0)
In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	84 (87.5)	3 (3.1)	7 (7.3)	2 (2.1)	96 (100.0)
In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	89 (92.7)	3 (3.1)	3 (3.1)	1 (1.0)	96 (100.0)
In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	91 (94.8)	2 (2.1)	3 (3.1)	0 (0.0)	96 (100.0)

Table 3: Distribution of study households as per domain of food insecurity (n=96).

	Domains of food insecurity (access)	Absent Number (%)	Present Number (%)
Domain 1	Anxiety and uncertainty about the household food supply	79 (82.3)	17 (17.7)
Domain 2	Insufficient quality (includes variety and preferences of the type of food)	84 (87.5)	12 (12.5)
Domain 3	Insufficient food intake and its physical consequences	80 (83.3)	16 (16.7)

The study found that 18 (18.8%) of the households often worried during the last 4 weeks that they would not be having enough food, 30 (31.3%) of the households often had to limit their food preferences because of lack of resources, and 32 (33.3%) households often had to limit their variety of food. A quarter (24, 25%) of the households had to often eat some food that they did not want to because of limited resources, and 9 (9.4%) households had to often eat smaller food portions during the last four weeks in the pandemic.

A total of 27 (28.1%) households sometimes or often had fewer meals, 9 (9.4%) households sometimes or often did not have any food to eat, 4 (4.2%) household had to sleep hungry sometimes or often, and there were 3 (3.1%) households where during the last 4 weeks the members went a whole day and night without food sometimes (Table 2).

When the households food security was accessed on domains, we found that 17 (17.7%) households bore anxiety and uncertainty about the household food supply, 12 (12.5%) households had insufficient quality of food, including variety and preferences of the type of food, and 16 (16.7%) households had insufficient food intake and its physical consequences (Table 3).

We found the mean HFIAS score of the student population was 6.2±7.0, with median HFIAS score of 3.

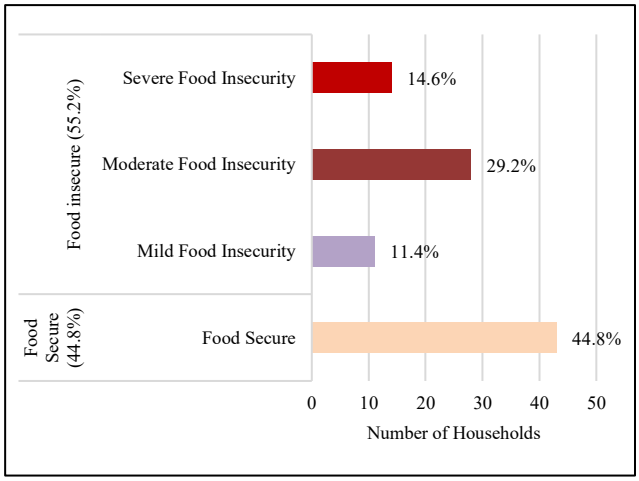

Figure 1: Distribution of households as per prevalence of food insecurity (n=96).

A total of 43 (55.2%) households had no food security, while rest 43 (44.8%) were food secure. Amongst those who did not have food security, 14 (14.8%) had severe food insecurity, 28 (29.2%) had moderate food insecurity, and 11 (11.5%) had mild food insecurity (Figure 1).

During episodes of food insecurity due to the COVID-19 pandemic, 22% of the households borrowed money to deal with it and 10.4% used their savings or restricted their non-food expenses. Many households received some kind of assistance, either in the form of food or cash, from their employers, family, friends, community, NGOs working in the area or religious institutions. A total of 7.3% households were helped by the ration received through government public distribution system (PDS) where they got grains, pulses, sugar, etc. Few residents (3.1%) also had to delay paying their rent to deal with the crisis. Other mechanisms included getting a second job or asking help from others (Figure 2).

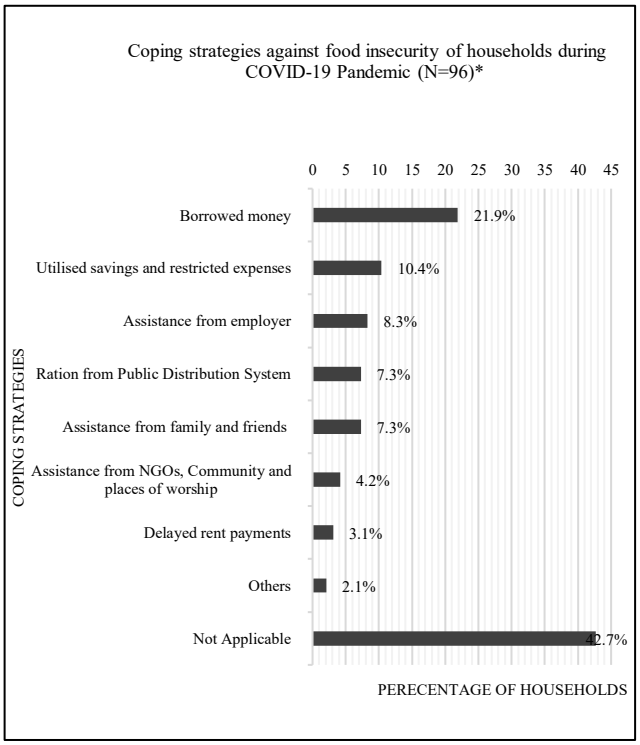

Figure 2: Distribution of households as per their coping strategies against food insecurity during COVID-19 pandemic (n=96)*.

* Not mutually exclusive.

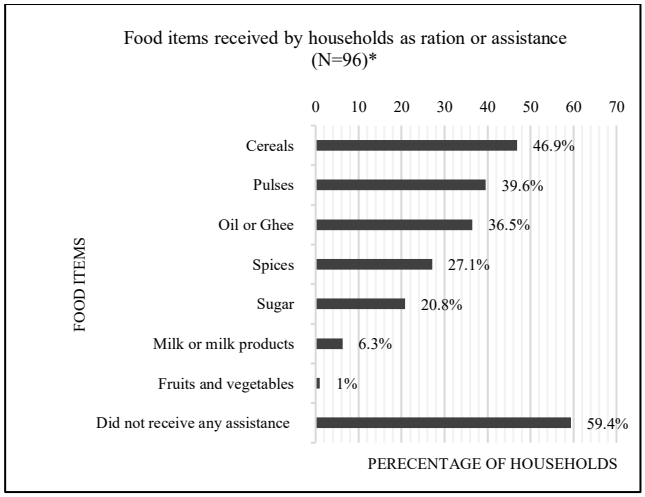

Figure 3: Distribution of households as per food items received by them as ration or assistance during COVID-19 pandemic (n=96)*.

* Not mutually exclusive.

When asked what all food items they received in ration through PDS or other sources, majority of the households received cereals like wheat or rice, pulses, oil or ghee, sugar and spices. Households also received milk or milk products, and fruits and vegetables but only a few of them (Figure 3).

Those migrant households which did not receive any kind of food assistance cited main reasons of lack of ration card (25%) and not getting it despite submitting their documents for the same (13.5%). Other reasons included lack of local identity document or card, not being present at home as they had gone to their native state, lack of awareness about such assistance, or inability to come from work to get it. A few households also said their house was excluded when it was distributed or the PDS supervisor informed them the ration was over when they reached (Figure 4).

Table 4: Distribution of study households as per association of food security with socio-demographic characteristics (n=96).

Characteristics	Food secure	Food insecure	Total	P value
Age of head of household (in completed years)				
18 to 24	6 (60.0)	4 (40.0)	10 (100)	0.19#
25 to 34	22 (53.7)	19 (46.3)	41 (100)	
35 to 44	7 (26.9)	19 (73.1)	26 (100)	
45 to 59	4 (36.4)	7 (63.6)	11 (100)	
60 and above	4 (50.0)	4 (50.0)	8 (100)	
Sex of head of the household				
Female	35 (41.7)	49 (58.3)	84 (100)	0.10*
Male	8 (66.7)	4 (33.3)	12 (100)	
BMI of respondent				
Under weight	6 (66.7)	3 (33.3)	9 (100)	0.08#
Normal weight	18 (50.0)	18 (50.0)	36 (100)	
Overweight	19 (37.3)	32 (62.7)	51 (100)	
Marital status of head of household				
Married	42 (49.4)	43 (50.6)	85 (100)	0.02#
Single or widowed or separated	1 (9.1)	10 (90.9)	11 (100)	
Type of family				
Nuclear	43 (48.3)	46 (51.7)	89 (100)	0.02#
Joint	0 (0.0)	7 (100)	7 (100)	
Religion				
Hindu	38 (48.1)	41 (51.9)	79 (100)	0.16*
Other religion	5 (29.4)	12 (70.6)	17 (100)	
Caste				
General	17 (39.5)	26 (60.5)	43 (100)	0.39*
Other backward class	17 (54.8)	14 (45.2)	31 (100)	
Scheduled class and scheduled tribe	9 (40.9)	13 (59.1)	22 (100)	
Education of head of the household				
Illiterate	2 (25.0)	6 (75.0)	8 (100)	0.57#
High school or less	28 (46.7)	32 (53.3)	60 (100)	
Intermediate or more	13 (46.4)	15 (53.6)	28 (100)	
Education of respondent				
Illiterate	12 (38.7)	19 (61.3)	31 (100)	0.51*

Continued.

Characteristics	Food secure	Food insecure	Total	P value
High school or less	23 (45.1)	28 (54.9)	51 (100)	
Intermediate or more	8 (57.1)	6 (42.9)	14 (100)	
Number of non-earning household members per earning member				
≤1	16 (53.3)	14 (46.7)	30 (100)	0.10*
1 to 2	4 (21.1)	15 (78.9)	19 (100)	
2 to 3	16 (53.3)	14 (46.7)	30 (100)	
≥4	7 (41.2)	10 (58.8)	17 (100)	
Income category				
≤5000	2 (25.0)	6 (75.0)	8 (100)	0.01#
5000-10000	5 (21.7)	18 (78.3)	23 (100)	
11000-20000	25 (51.0)	24 (49.0)	49 (100)	
>20000	11 (68.8)	5 (31.3)	16 (100)	
Socio-economic class as per Modified Kuppuswamy Scale 2019				
Middle	28 (53.8)	24 (46.2)	52 (100)	0.05*
Lower	15 (34.1)	29 (65.9)	44 (100)	
Below poverty line card holder				
No	42 (44.7)	52 (55.3)	94 (100)	1.00#
Yes	1 (50.0)	1 (50.0)	2 (100)	
Ration card holder				
No	29 (40.8)	42 (59.2)	71 (100)	0.19*
Yes	14 (56.0)	11 (44.0)	25 (100)	
State of origin				
Empowered action group (EAG) states	36 (44.4)	45 (55.6)	81 (100)	0.87*
Others	7 (46.7)	8 (53.3)	15 (100)	
Total	43 (48.8)	53 (55.2)	96 (100)	

*Chi-square test #Fisher-exact test

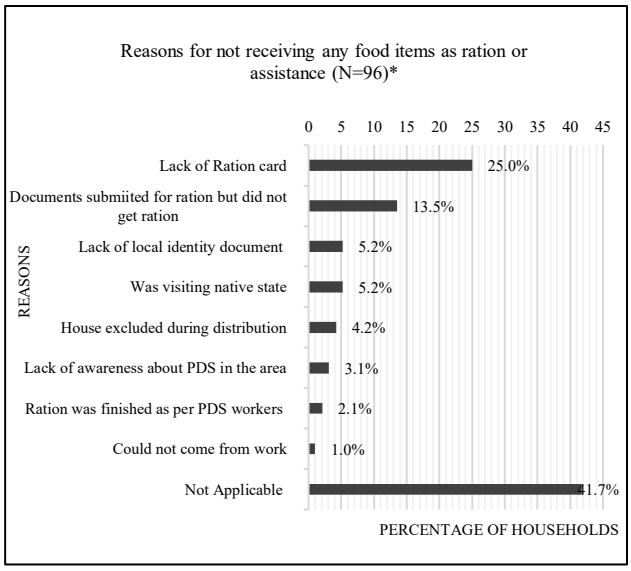

Figure 4: Distribution of households as per their reasons for not receiving any food item as ration or assistance during COVID-19 pandemic (n=96)*.

* Not mutually exclusive.

When the households were enquired about security of various food items for the coming weeks, maximum food security was observed for cereals fruits and vegetables, pulses and spices. There were 7.3% households where none of the food items was present in required amount to last coming weeks (Figure 5).

The study found marital status of respondent had a statistically significant association with food security, with single, widowed or separated households more likely to be food insecure ($p<0.05$). Similarly, statistically significant association of food security was found with type of family, household income and socio-economic status (Table 4).

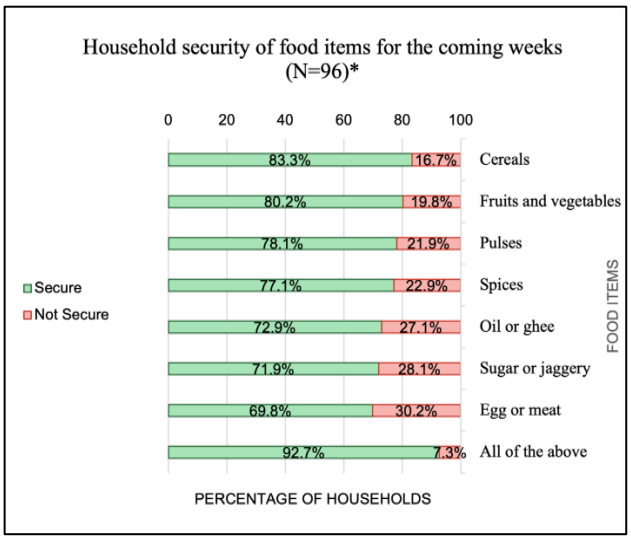

Figure 5: Distribution of households as per security of food items for the coming weeks (n=96)*.

* Not mutually exclusive.

Table 5: Binary logistic regression output (odds ratio scale) for associated factors of food insecurity (n=96).

Variable	Number (%)	Odd's ratio	SE	P value
Marital status of head of household				
Married	85 (88.5)	0.26	0.869	0.13
Single or widowed or separated	11 (11.5)	Reference		
Income category				
≤5000	8 (8.3)	5.73	0.82	0.03*
5000-10000	23 (24.0)	2.36	0.66	0.20
11000-20000	49 (51.0)	5.74	1.12	0.12
>20000	16 (16.7)	Reference		
Socio-economic class				
Lower	44 (45.9)	1.08	0.52	0.88
Middle	52 (54.1)	Reference		

*Statistically significant

Out of the factors which had a statistically significant association with food security, only household income category was found to have significant odds for being food insecure ($p<0.05$), with households earning less than INR 5000 per month having 5.73 times Odds of being food insecure when compared to households earning more than INR 20,000 per month. Married households had 0.26 Odds in comparison to single, widowed, or separated head of households; and households belonging to lower socio-economic class had 1.08 times odds when compared to middle class, though both were statistically insignificant ($p>0.05$) (Table 5).

As there were no food secure households having a joint family, which led to a falsely high OR they were omitted from the regression analysis.

DISCUSSION

The study had aimed to find out the prevalence of food insecurity during COVID-19 pandemic amongst migrant households of an urban village in Delhi, along with its associated factors.

The study found that 55.2% of the migrant households were food-insecure, of which, 29.2% were moderately insecure, 11.4% were mildly insecure and rest had severe food insecurity. There have not been many studies assessing food insecurity in Delhi or inmigrant population, a few studies have come from other parts of India and world; most of which reported a higher food insecurity in their population when compared to Delhi.

Nguyen et al (Uttar Pradesh) in their longitudinal study amongst mothers of children less than 2 years of age, had found that food insecurity reached 80% during COVID-19 pandemic.[20] The proportion of mild, moderate and severe food insecurity was 20%, 30% and 30% respectively; with the proportions of mild and severe food insecurity being considerably more in compared to Delhi.[20] The higher proportion of food insecurity reported amongst mothers in the study by Nguyen et al., is reflective of high pre-existing food insecurity in their population which got further exacerbated during the pandemic. In contrast, Padmaja et al (Hyderabad) in a study amongst urban and peri-urban population reported 43% deterioration of food security status during pandemic using a different scale, namely food insecurity experience scale. They further found that 25% of the households experienced mild food insecurity and 17% households moderate food insecurity.[21] There is more in resonance with findings of the current study.

Anxiety and uncertainty about food supply was reported in 45% of households by Nguyen et al (Uttar Pradesh), while insufficient quality and quantity were reported in 78% and 42% households respectively.[20] With the study population of Nguyen et al being already disposed towards food insecurity, while having less avenues for assistance for food in comparison to a migrant population of Delhi, their number are significantly higher. This could also likely be the reason for the higher number reported in the study by Jeyakumar et al (Chhattisgarh) during the pandemic, who found that 42% of non-tribal population worried about not having enough food, 43% had to limit the preference, 39.5% had to limit the variety of food, and around 14% participants had to go to bed hungry and same remained hungry during day and night.[22] In contrast the current study found anxiety and uncertainty about food in 17.7% population, insufficient quality in 12.5% and insufficient food intake in 16.7% of migrant population of Delhi. Even when compared to other middle-income countries, the food security experienced by migrants of Delhi though significant, alarming and requiring intervention, is lesser in prevelance.[23]

There were multiple ways the migrant dealt with the household food insecurity, from borrowing money, liquidating savings, budgeting non-food expenses, delaying rent payments, to taking help from family, friends, employers, and even taking refuge in religious institutions like Gurudwara or a Church. A significant

succour to their sufferings was provided by government ration supply through PDS system and even NGOs or local good Samaritans, underscoring the need for building resilient communities that can face such crisis together, than waiting for vertical supply of good to alleviate sufferings during such a crisis. The current population majorly received cereals, pulses, oil or ghee, spices and sugar. Those who did not receive any such assistance cited mainly absence of a ration card as the reason for not getting it. Other reasons such as lack of response from PDS workers or complete ration supply being exhausted, highlights the needs for strengthening the PDS system and food grains supply, especially in the wake of any such future crisis. Especially since the households still at the time of study were not confident about their future food security, with at least 16.7% not having enough cereals for the coming weeks and 7.3% not having food security for any food group for the coming weeks. The maximum insecurity of cereals, vegetables and milk in the current study also reflects the general finding amongst poor urban migrant population even before pandemic as reported by Chinnakali et al (Delhi) where they found that the maximum expense out of household earning was incurred on cereals (21.4%), vegetables (19.3%) and milk (16.2%) as proportion of household earning.[24]

We found the coping strategies against food insecurity were similar everywhere. The coping mechanisms used by mothers in the study by Nguyen et al (Uttar Pradesh) were reducing their non-food expenses, borrowing money or selling jewellery to obtain food.[20] Which was similar to what Padmaja et al. (Hyderabad) found in urban and peri-urban population, and as reported in the current study.[21]

We found statistically significant association of food insecurity with marital status of head of household, income and socio-economic class. Association of food insecurity with financial security and income has been reported in multiple studies, before and during the pandemic, with income being the most important contributor towards the risk as well as protection against food insecurity.[22,25,26] This shows that policy decisions which strengthen social security schemes, and job and pay security, can together act a safety net against food insecurity for the poor households.

The study strength included its robust scientific methodology and the opportunity to assess food insecurity between two consequent lockdowns in Delhi, capturing population snapshot during a unique time and settings not seen in a recent past.

Its limitation being that as the study was done in Aliganj area only, the results cannot be extrapolated to other areas.

CONCLUSION

More than half (55.2%) of migrant households of Aliganj, Delhi were not food secure, with 14.6% households having severe food insecurity. Households earning was inversely associated with odds of being food insecure.

Recommendations

Public distribution system of India needs to be strengthened with adequate supply of food grains and enhanced umbrella to cover both vulnerable households and the households which are at risk of being food insecure during a crisis.

Further, there were only two households having a BPL card in the urbanized village covered under the study. Poor communities need to be sensitized to obtain a BPL card so that food insecurity can be addressed in a better way in future.

ACKNOWLEDGEMENTS

Authors would like to extend their gratitude to all the households who contributed to the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee, having number IEC/VMMC/SJH/Thesis/2019-10/06

REFERENCES

1. Ministry of Home Affairs (GOI). Government of India issues Orders prescribing lockdown for containment of COVID-19 epidemic in the country. Available from: https://pib.gov.in/newsite/PrintRelease.aspx?relid=200655. Accessed on 25 April 2020.
2. Ministry of Home Affairs. Lockdown measures for containment of COVID-19 pandemic in the country to continue to remain in force up to May 3, 2020. Available from: https://pib.gov.in/PressReleasePage.aspx?PRID=1614481. Accessed on 2 July 2020.
3. Ministry of Home Affairs. Revised Consolidated Guidelines of Ministry of Home Affairs. Available from: https://pib.gov.in/PressReleasePage.aspx?PRID=1614611. Accessed on 2 July 2020.
4. Rasul G, Nepal AK, Hussain A, Maharjan A, Joshi S, Lama A, et al. Socio-economic implications of COVID-19 pandemic in south Asia: emerging risks and growing challenges. Front Sociol. 2021;6:1.
5. Abu Hatab A, Krautscheid L, Boqvist S. COVID-19, livestock systems and food security in developing countries: a systematic review of an emerging literature. Pathogens. 2021;10(5).
6. Pak A, Adegboye OA, Adekunle AI, Rahman KM, McBryde ES, Eisen DP. Economic consequences of the COVID-19 outbreak: the need for epidemic preparedness. Front Public Health. 2020;8.
7. Pouliakas K, Branka J. EU jobs at highest risk of COVID-19 social distancing: will the pandemic

exacerbate labour market divide? SSRN Electr J. 2021.
8. Fana M, Torrejón Pérez S, Fernández-Macías E. Employment impact of COVID-19 crisis: from short term effects to long terms prospects. J Industr Business Econom. 2020;47(3):391-410.
9. Gupta S, Seth P, Abraham M, Pingali P. COVID-19 and women's nutrition security: panel data evidence from rural India. Econom Polit. 2022;39(1):157-84.
10. The State of Food Security and Nutrition in the World 2024-Financing to end hunger, food insecurity and malnutrition in all its forms. Rome. FAO, IFAD, UNICEF, WFP and WHO. 2024.
11. Von Grebmer K, Bernstein J, Wiemers M, Reiner L, Bachmeier M, Hanano A, et al. Global hunger index: Food systems transformation and local governance. Bonn, Germany; and Dublin, Ireland: Welthungerhilfe; and Concern Worldwide; 2022.
12. Economist Intelligence Unit (EIU). Global food security index 2022. 2022 Available from: https://foodsecurityindex.eiu.com/. Accessed on 16 July 2023.
13. Ministry of Finance. Finance Minister announces Rs 1.70 Lakh Crore relief package under Pradhan Mantri Garib Kalyan Yojana for the poor to help them fight the battle against Corona Virus. PIB. 2020. Available from: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1608345#. Accessed on 16 July 2023.
14. Kumar A, Mishra AK, Saroj S, Rashid S. Government transfers, COVID-19 shock, and food insecurity: Evidence from rural households in India. Agribusiness. 2022;38(3):636.
15. Varshney D, Kumar A, Mishra AK, Rashid S, Joshi PK. India's COVID-19 social assistance package and its impact on the agriculture sector. Agric Syst. 2021;189:103049.
16. Saxena A, Amin A, Mohan SB, Mohan P. Food insecurity in tribal high migration communities in Rajasthan, India. Food Nutr Bull. 2020;41(4):513-8.
17. Summit WF. Rome declaration on world food security and world food summit plan of action. Italy: FAO; 1996.
18. Organisation NSS. Migration in India, 2007-08: NSS 64th Round, July 2007-June 2008. Vol. 533. National Sample Survey Office, Ministry of Statistics and Programme; 2010.
19. Coates J, Swindale A, Bilinsky P. Household food insecurity access scale (HFIAS) for measurement of food access: indicator guide: version 3. Washington, D.C.: FHI 360/FANTA; 2007.
20. Nguyen PH, Kachwaha S, Pant A, Tran LM, Ghosh S, Sharma PK, et al. Impact of COVID-19 on household food insecurity and interlinkages with child feeding practices and coping strategies in Uttar Pradesh, India: a longitudinal community-based study. BMJ Open. 2021;11(4):e048738.
21. Padmaja R, Nedumaran S, Jyosthnaa P, Kavitha K, Abu Hatab A, Lagerkvist CJ. COVID-19 impact on household food security in urban and peri-urban areas of Hyderabad, India. Front Public Health. 2022;10:814112.
22. Jeyakumar A, Dunna D, Aneesh M. Loss of livelihood, wages, and employment during the COVID-19 pandemic in selected districts of Chhattisgarh in India, and its impact on food insecurity and hunger. Front Public Health. 2022;10(May):1-9.
23. Syafiq A, Fikawati S, Gemily SC. Household food security during the COVID-19 pandemic in urban and semi-urban areas in Indonesia. J Health Popul Nutr. 2022;41(1):1-8.
24. Chinnakali P, Upadhyay RP, Shokeen D, Singh K, Kaur M, Singh AK, et al. Prevalence of household-level food insecurity and its determinants in an urban resettlement colony in north India. J Health Popul Nutr. 2014;32(2):227.
25. Padmaja R, Nedumaran S, Jyosthnaa P, Kavitha K, Abu Hatab A, Lagerkvist CJ. COVID-19 Impact on household food security in urban and peri-urban areas of Hyderabad, India. Front Public Health. 2022;10(May):1-15.
26. Chinnakali P, Ravi PU, Deepa S, Kavita S, Manpreet K, Arvind KS, et al. Prevalence of household-level food insecurity and its determinants in an urban resettlement colony in North India. J Health Popul Nutr. 2014;32(2):227-36.

Cite this article as: Singh SP, Khokhar A, Das A. Food insecurity during COVID-19 pandemic amongst migrant households of an urban village in Delhi. Int J Community Med Public Health 2025;12:3120-30.