

ORIGINAL ARTICLE

Food Insecurity During Covid-19 Pandemic Among People Residing in Underprivileged Areas of South Delhi

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ABSTRACT

Context: The recent coronavirus disease related lockdown has threatened each component of food security. **Aims:** The present study assessed the household food insecurity during Covid -19 lockdown among people residing in underprivileged areas of South Delhi. **Methods and Material:** Study was conducted on mothers and caregivers of low-birth-weight children from July 2020 to October 2020. Their household food insecurity was assessed using the Household Food Insecurity Access Scale (HFIAS). **Statistical analysis used:** Descriptive analysis, including proportions and frequencies were used to measure sociodemographic factors and food insecurity. Chi-square test was used to examine the distribution of households in terms of various challenges faced during the lockdown. Results were reported to be significant at p value < 0.05. **Results:** Results showed food insecurity among 64.5% households as a result of the pandemic, with majority of them being moderately food insecure (46.4%) and a small proportion facing severe (7%) food insecurity. The battle against coronavirus and the ensuing imposed quarantine resulted in anxiety and uncertainty about food availability in this population. Majority of respondents experienced limitations in the variety of food consumed. Challenges faced during the lockdown among food insecure households were higher as compared to food secure households. **Conclusion:** There is a need for more evidence-based research to understand the drivers of food insecurity and establish ways to overcome the insecurities.

Keywords: Food security, Covid-19, Lockdown, Indian, Coronavirus

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INTRODUCTION

As per the World Food Summit (1996), food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.^[1] The National Food Security Act, 2013 of

India seeks to ensure food and nutritional security by ensuring affordable access to sufficient quantities of high-quality food.^[2]

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Due to the COVID-19 (SARS-CoV-2) pandemic which started in March 2020, the Indian government, in all earnest, announced a nationwide lockdown in order to contain this pandemic that mandated most people to confine themselves to their houses.^[3] Unfortunately, the government did not anticipate that the sudden lockdown would pose a threat to the food security of the nation. This pandemic resulted in temporary food insecurity particularly among the most vulnerable segment of the population including migrant labourers, daily wagers, street vendors and small businessmen. An artificial food insecurity was created due to restriction on movement of food commodities between states. In addition, the closure of fair price shops upon which the large migrant population subsisted further aggravated food insecurity amongst these people. The lockdown increased unemployment, migration, and displacement among the population which enormously disrupted the food supply chain, thus creating a food crisis in India.^[4] Though the government tried to compensate for the food insecurity of the population with free meals and other schemes^{[4],[5]}, the unexpected lockdown during COVID-19 pandemic intensified the already established challenges with food security.^[6] This pandemic was perhaps an unprecedented humanitarian challenge affecting the general public in terms of food security.^[7] The present study therefore attempts to assess the food insecurity arising as a result of nationwide lockdown during Covid-19 pandemic among population residing in underprivileged areas of South Delhi, India.

SUBJECTS AND METHODS

Study Participants

The study was conducted on mothers and caregivers of children belonging to a longitudinal study cohort of low-birth-weight children residing in the underprivileged areas of Delhi from July 2020 to October 2020. Keeping in line with the safety measures of minimizing physical contact, the data was collected through a telephonic survey during the extended phase of lockdown, when restrictions were eased by the government. Of a total of 411 participants belonging to the cohort; 390 were traced telephonically, from which 383 who agreed to participate were enrolled in the present study. A prior date and time was fixed with the mother or caregiver for the telephonic call. Only those mothers or caregivers responsible for food handling, preparation and distribution in the household were included in the study. Mothers and caregivers, who were not telephonically available or refused to participate were excluded (n=7). The study was approved by the Institutional Ethics Committee of Institute of Home Economics (University of Delhi) (Ethical Clearance Number-IHE/2018/1146). Verbal consent for participation was

obtained from the participants, before the commencement of the study.

Sample Size Calculation

Sample size calculation was based on food insecurity prevalence data from India (Supplementary Table 1).^{[8],[9],[10]} With 95% confidence interval and accounting for an attrition rate of 10%, a sample size of 383 was adequate for the study.^[11]

Sociodemographic Characteristics

The socio-demographic information including details pertaining to parental education and occupation, house ownership, number of rooms and challenges faced during lockdown were obtained through telephonic calls using a predesigned, pretested interviewer administered structured questionnaire.

Assessment of Household Food Insecurity

Household food insecurity was assessed using the Household Food Insecurity Access Scale (HFIAS), a standard tool developed by Food and Nutrition Technical Assistance Project/United States Agency for International Development (FANTA/ USAID).^[12] HFAIS comprises a set of nine questions that covers three domains of food insecurity. The first domain included anxiety and uncertainty, the second, insufficient quality of food and lastly, the third domain comprised of insufficient food intake and its physical consequences.^[12]

Answers to questions were elicited from the mother/caregivers with a recall period of one month. Each response was dichotomous (yes/no). Every "yes" as a response to any of the events (question) was scored as 1 and the frequency of occurrence of that event was then further questioned. Similarly, if a household responded "no" to an event, the response was scored as 0. The total summative score of nine questions was computed to estimate the overall HFAIS score of the household. Higher the HFIAS score, greater is the food insecurity. Households that responded "no" to all the questions, resulting in a total score as 0, were defined as 'food secure'. If they responded "yes" to any of the questions they were classified as food insecure (i.e., HFIAS score more than or equal to 1). Thus, on the basis of HFIAS scores, food insecure households were categorized as mildly, moderately or severely food insecure.^[12]

STATISTICAL ANALYSIS

Data collected was double entered into Microsoft Excel, subsequently cleaned and statistically analyzed using STATA (version-13). Descriptive analysis, including proportions and

frequencies were used to measure sociodemographic factors and food insecurity. Chi-square test was used to examine the distribution of households in terms of various challenges faced during the lockdown. Results were reported to be significant at a p -value < 0.05.

RESULTS

Socio Demographic Profile

Table 1 presents the socio demographic profile of the participants from food secure and food insecure households.

Characteristics	Total (n=383)	Food Secure (n=136)	Food Insecure (n=247)	p -Value [¶]
House ownership				
Own house	270(70.5)	101(74.3)	169(68.4)	0.23
Rented accommodation or living with relatives	113(29.5)	35(25.7)	78(31.6)	
Number of rooms				
1-2	290(75.7)	105(77.2)	185(75)	0.857
3-4	83(21.7)	28(20.5)	55(22.3)	
>4	10(2.6)	3(2.2)	7(2.7)	
Mother's education				
None or pre-primary	61(16)	18(13.3)	43(17.4)	0.273
Primary or middle	141(36.9)	47(34.8)	94(38.1)	
Secondary or senior secondary	133(34.8)	48(35.5)	85(34.4)	
University	47(12.3)	22(16.3)	25(10.1)	
Mother's occupation				
Housewife	319(83.5)	113(83.7)	206(83.4)	0.999
Self employed	11(2.9)	4(3)	7(2.8)	
Salaried employment	49(12.8)	17(12.6)	32(13)	
Others (Daily wager, student)	3(0.8)	1(0.7)	2(0.8)	
Father's education[†]				
None or pre-primary	28(7.3)	12(8.8)	16(6.5)	0.131
Primary or middle	110(28.7)	33(24.3)	77(31.2)	
Secondary or senior secondary	175(45.7)	59(43.4)	116(47)	
University	60(15.7)	28(20.6)	32(13)	
Father's occupation[†]				
Self employed	77(20.1)	30(22)	47(19)	0.381
Daily wager	53(13.9)	17(12.5)	36(14.6)	
Salaried employment	234(61.1)	85(62.5)	149(60.3)	
Unemployed	9(2.3)	1(0.7)	8(3.2)	
Note: *n(%); [¶] Chi-square test was used to compute p -values; [†] No response for fathers education and occupation=10.				

Seventy percent of the participants owned their houses, comprising 1-2 rooms. Most of the women (80%) were housewives. Majority of the parents in the household had primary or middle level education (46% males and 37% females). There were no significant differences in the sociodemographic characteristics of the food secure and food insecure households.

Prevalence of Household Food Insecurity

The overall prevalence of food insecurity during the lockdown due to COVID-19 pandemic was 64.5%. Based on the frequency of occurrence of food insecurity, participants were further categorized as mild, moderate and severely food insecure as shown in Table 2. Of the food insecure households (247) almost half of them (47%) faced moderate food insecurity, while 11% and 7% were found to be mildly and severely food insecure, respectively.

Challenges Faced During Lockdown

Of a total of 383 households included in the study, 269 households faced challenges such as health problems/COVID infection ($p=0.029$), loss of job, or financial difficulties. Table 3 depicts the various difficulties faced by these

households. More than half of the food insecure households reported financial difficulties due to salary cuts, reduction in rental income and loss of jobs.

Components of the Household Food Insecurity Access Scale (HFIAS)

The household food insecurity prevalence was assessed across the three domains i.e., anxiety and uncertainty (question 1), insufficient quality (questions 2-4) and insufficient food intake (questions 5-9) (Table 4). Each question was administered to 383 households. Out of a total of 383 households, a third of the respondents faced feelings of anxiety and uncertainty. Regarding food quality, more than half of the households were either not able to eat the preferred kind of food or had limited variety of foods due to a lack of resources. However, in spite of the food insecurity faced during this lockdown, only one participant reported having insufficient food throughout the day.

DISCUSSION

According to the Food and Agricultural Organisation (FAO), food insecurity is a multidimensional concept that includes availability, access, utilisation and stability.^[1] The recent coronavirus disease related lockdown affected each of these

HFIAS Category	Total in Each Category, n (%)
FOOD SECURE	
Category-1 (Food Secure)	136 (35.5)
FOOD INSECURE	247 (64.5)
Category-2 (Mildly Food Insecure Access)	42 (11)
Category-3 (Moderately Food Insecure Access)	178 (47)
Category-4 (Severely Food Insecure Access)	27 (7)
Note: *n(%).	

Households faced challenges	Total (n=269)	Food Secure (n=59)	Food Insecure (n=210)	p-Value
• Health problem/ COVID-19 infection	24(8.9)	10(16.9)	14(16.4)	0.029 †
• Financial difficulties	161(59.8)	33(55.9)	128(60.9)	0.725
– Lost job	76(28.2)	12(20.3)	64(30.4)	0.242
– Family dispute/Death in family	8(2.9)	4(6.7)	4(1.9)	0.062
Note: *n(%); †Statistically significant findings; Chi-square test was used to compute p-values				

Table 4: Household Food Insecurity Access Scale (HFIAS) Components Among Households in the Past Four Weeks				
HFIAS components	Yes	Frequency of occurrence*		Often
		Rarely	Sometimes	
DOMAIN-1: Anxiety and uncertainty regarding the household food supply:				
Q1. Did you worry that your household would not have enough food?	135	6 (1.6)	56 (14.6)	73 (19.1)
DOMAIN-2: Insufficient Quality (includes variety and preferences of the type of food):				
Q2. Were you or any of your household member not able to eat the kinds of foods you preferred because of the lack of resources?	193	16 (4.2)	86 (22.4)	91 (23.8)
Q3. Did you or any household member have to eat a limited variety of foods due to lack of resources?	216	15 (4)	78 (20.4)	123 (32)
DOMAIN-3: Insufficient food intake or quantity of food:				
Q4. 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?	111	12 (3.1)	43 (11.2)	56 (14.7)
Q5. Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	40	6 (1.6)	20 (5.2)	14 (3.6)
Q6. Did you or any household member have to eat fewer meals in a day because there was not enough food?	41	6 (1.6)	17 (4.4)	18 (4.7)
Q7. Was there ever no food to eat of any kind in your household because of lack of resources to get food?	7	2 (0.5)	3 (0.8)	2 (0.5)
Q8. Did you or any household member go to sleep at night hungry because there was not enough food?	3	2 (0.5)	1 (0.23)	0 (0)
Q9. Did you or any household member go a whole day and night without eating anything because there was not enough food?	1	0 (0)	1 (0.3)	0 (0)
Note: *n(%).				

components. The present study provides data on food insecurity during Covid-19 pandemic among people residing in underprivileged areas of South Delhi using a reliable and valid household food insecurity tool- The Household Food Insecurity Access Scale.^[12] The study showed food insecurity among more than fifty percent households during the period of lockdown due to the pandemic, with the majority of them

being moderately food insecure and a small proportion with severe food insecurity. Additionally, a large part of the population experienced limitations in the variety of food followed by anxiety and uncertainty about food availability.

These findings are consistent with another study done during this period.^[13] Yet another survey by The Civil Society

Supplementary Table 1: Sample size calculation based on prevalence of household food insecurity in India		
S. No..	Food Insecurity Prevalence	Sample Size Calculated for the Present Study (including an attrition rate of 10%)*
1.	31.7% ^[8]	367
2.	8.5% ^[9]	131
3.	15% ^[10]	215
Note: *Formula used: $N = 4pq/d^2$		

Organisation (CSO) showed that more than half of the households had reduced the frequency and amount of food intake during these tough times. It was seen that there was a large dependence on the Public Distribution System (PDS) of the government.^[14] Global evidence also reported a substantial increase in the prevalence of food insecurity during the pandemic.^[15-19]

The lockdown resulted in perilous ramifications on food security, particularly amongst the poor and vulnerable population. It posed new challenges to the food supply chains and food consumption patterns. Disruption in accessibility of food due to quarantine, sealed borders, delayed transportation, closure of schools providing mid-day meals and public distribution system (PDS) further amplified the already existing food insecurity to an alarming extent. This was exacerbated with food shortages and sharply rising prices, which overwhelmingly affected both the urban dwellers and the poor.^[20] Majority of the people residing in these areas were involved in work pertaining to the informal sector which was suspended during this period. The loss of jobs and ensuing financial constraints affected the purchasing power for food.^[21] The fear of being infected with Covid and an imposed quarantine restricted their movement resulting in a further deterioration of the quality and quantity of food consumed. Their dietary and nutritional intake was affected. In addition, the population resorted to low cost, non-perishable, readily available packaged foods, low in micronutrients and high in empty calories as an adjustment to ensure food security.^[22]

To counter the increased prevalence of food insecurity during the phases of unlock, the government and the non-profit organisations stepped forward by distributing meals to the needy.^[23] Though this alleviated food insecurity to a certain extent, a large proportion of the participant were still food insecure. The amount of grains given were minimal and the reach and utilization of such initiatives remains an area to be explored.^[13] Therefore, the four pillars of the food security system, namely, availability, access, stability, and utilisation of food were all impacted by the nationwide lockdown.^[1]

However, the limitations of the study include its method of data collection- telephone based study.

CONCLUSION

This study provides evidence on the implications of coronavirus pandemic on household food insecurity among underprivileged areas of South Delhi. Our findings suggest that Covid-19 pandemic resulted in increased food insecurity during the mandated lockdown. Moreover, challenges faced during the lockdown were found to be worse among food insecure households as compared to food secure households. The study indicates a dire need to not only scale up but act promptly to implement supportive programmes and transform the food systems to provide nutritional support in such unprecedented times. In addition, distribution system needs to be revamped so that aid can reach people in emergencies like this to avoid stress and anxiety that was seen in this population. This study contributes to the growing literature of food insecurity and Covid, but as the battle against corona continues, there is a need for more evidence-based research to understand the extent of penetration of coronavirus into our social and economic system.

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