

Livelihoods and Food Security under the COVID-19 Pandemic : A Study with Reference to South Kolkata in the West Bengal State of India

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Abstract

The COVID-19-led prolonged pandemic has affected all countries around the globe, including India. The present article is intended to examine the impact of the COVID-19 pandemic on the livelihoods and food security of marginal workers in informal sectors in South Kolkata, West Bengal, India, using primary data. Along with simple descriptive statistics, tables, and graphs, the study uses the Gini coefficient, Lorenz curve, and binary logistic model to analyse livelihoods and food security. The result shows that most of the low-paid marginal workers of the informal sector became vulnerable by losing their livelihoods and being forced to engage in the non-experienced job of selling daily necessities during the COVID-19 pandemic. The squeeze of occupational diversity followed by remarkable income reduction (60%) leads to an increase in the degree of poverty (40–60%) and a lower consumption expenditure on food (57%), education (77%), and health (72%). At that time, food insecurity doubled, from 21 percent chronic food insecurity to 40 percent transitory food insecurity. Though inequality in income and food consumption is reduced, inequality in education and health care increased. Along with some inclusion and exclusion errors, the government's social security measures provided great support to achieve food security for poor and vulnerable households in this COVID-19 pandemic crisis period.

Key words : *COVID-19 pandemic, food security, inequality, informal sector, livelihoods*

1. Introduction

The prolonged pandemic situation of the corona virus has massively affected the economy, society, and culture across the world (Tobish 2020). Thus, the uncertainty arising from the recent pandemic has led to changes in livelihood and access to food for a large section of people around the globe, particularly in India. In reality, the poor, the low-income group, and even a large proportion of the middle class have suffered much under this situation since their livelihoods were affected (Bhagat et al. 2020; Harris et al. 2020), particularly the poor income groups who feel insecure about accessing food (Papademetriou et al. 2010; Fan 2020; Roy et al. 2020). Livelihoods are sacrificed under this pandemic and vulnerable sections of the society were not able to meet their basic necessities. As a result, malnutrition and hunger arose. In this context, Mahapatra (2020) mentioned in the Oxfam report that

121 million people in India suffered from starvation because of high rate of unemployment, shortage of food, and disruption of the supply chain. The government of India has shown solidarity by supporting measures in this time of crisis by providing various medical and health care facilities and economic measures for the poor and vulnerable people in this pandemic situation. However, millions of migrants did not get these benefits (Anwar et al. 2020). These were not sufficient to protect their livelihoods and entrench nutrition vulnerability (Padhee 2020). In this respect, Nobel laureates Banerjee and Duflo (2020) suggested that the government should have been much bolder with the social transfer package scheme, which could have helped eradicate poverty (Evan and Popova 2014).

Most research has been done on livelihood patterns under the Corona pandemic at the national and international levels. But there is a lack of regional and micro level studies in the existing literature. This study intended to examine how pandemic effects livelihoods among marginal workers in the informal sector in South Kolkata, West Bengal. The specific objectives are to analyse the impact of the Corona pandemic. These are as follows : i) occupation, ii) income and consumption, iii) inequality, and iv) food security.

The rest of the study is arranged in six sections. The literature review has been discussed in Section 2. Section 3 describes material and methods followed by results in section 4, discussion in section 5 and conclusion in section 6.

2. Literature Review

Livelihood refers to the capacity to acquire necessities in order to satisfy the basic needs of households. By livelihood we mean different ways meeting daily needs and sources of earnings (Chambers and Conway 1992). Livelihood is a concept that comprises the assets, the activities, and the access through which living is gained (Ellis 2000). Carney (1998) also mentioned capabilities, both material and resource assets comprise livelihood (Campbell et al. 2002), and means of living activities are also necessary. Nayyar (2020) observed that lives and livelihoods are correlated. However, the stability of livelihoods is disturbed by shocks and stresses (Speranza 2014; Chambers and Conway 1992).

Over the years, food security has been defined in many ways. The definition of food security given by the Food and Agricultural Organization (FAO) is mostly cited. According to this definition, by food security, we mean the accessibility of nutritious food in sufficient amount to the entire population at any time so that people can meet their balanced diet and food requirements (FAO 2008). This definition has three pillars, namely; availability, accessibility, and absorption, which relate to many dimensions like hunger and deprivation, malnutrition, health and hygiene, chronic food insecurity, transitory food insecurity, entitlements, human rights, and social and cultural preferences. In this paper, we simply focused on hunger by examining access to food. If a household secures at least two square meals a day for all its members, the household is treated as food secure. Hossfelt et al. (2018) realized that if households do not have enough food to be healthy and active, they are treated as food insecure. Bene (2000) observed that food insecurity arises from two reinforced issues, such as, structural issues and shocks for low and middle-income groups.

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Sarah and Mehrul (2004) found a correlation between food security and livelihood security and state that food security is the outcome derived from livelihood security.

Our food security system and supply chain have also been affected by this pandemic (Summerton 2020). Foods were sold at mounting prices; fresh vegetables were unavailable; if sometimes available, they were beyond the reach of the common people; and there was panic buying and hoarding of essential food items, particularly potatoes, onions, ginger, etc. (Pothan 2020). In some cases, the people were being forced to consume low-quality staple foods due to their poverty (World Bank 2020). Some undernourished people committed suicide in this pandemic situation (Mardones et al. 2020). In India, the labourers of the informal sector were worst affected by the pandemic (Pandey 2020; Chandrasekhar et al. 2020). They need social protection, which includes basic necessities as well as economic security (Bhagat et al. 2020). In a study, it was observed that direct government intervention in health and education during the pandemic will indirectly reduce income inequality in society (Das et al., 2021).

3. Material and Methods

3.1 Database

For this study, we collected primary data from four areas of South Kolkata, namely, Garia, Tollyganj, Anandapur, and Ballygunge, from May 2020 to December 2020. These areas were chosen purposely for the study as people of the area were severely affected by the COVID-19 pandemic and were situated in the vicinity of our residence. During the lockdown period, normal surveys were not possible. It was also difficult to collect phone numbers from pandemic-affected, poor, and marginalized sections of the population. People were only allowed to go outside to purchase or sell daily necessities. Therefore we targeted collecting data from people coming into the market. At least two or three days in a week during market hours, by maintaining COVID-19 protocols, every day 2 to 4 people were interrogated who had free time and were willing to give an interview. We followed the random sampling method for data collection. In this way, we were able to collect information from 194 respondents. Out of 194 samples, 75 from Garia, 75 from Ballygunje, 71 from Tollygunje, and 73 from Anandapur were collected. For the interview, we used a structured questionnaire consisting of socio-economic-demographic characteristics of respondent's households before and during pandemic. Occupation, income, food and non-food consumption expenditure, access to number of meals, accessibility of central and state government social security schemes like free rations, free cooking gas, cash transfers, etc. Were items of enquiry.

3.2 Research instruments

In this paper, we applied simple descriptive statistics, tables, and graphs to show the impact of the COVID-19 pandemic on the lives and livelihoods of people in South Kolkata. At the same time, we used the Gini coefficient and Lorenz curve to examine inequality in the distribution of income and expenditure before and during the corona virus pandemic. We

measured food security in terms of a household's access to two square meals a day for all its members. To examine the impact of the pandemic on households' access to food, a logistic regression model was estimated. where the dependent variable Y_i (access to two square meals a day or not) is binary. Typically, it involves two categories: If all the members of a respondent household accessed at least two square meals a day, it was coded as $Y = 1$ (yes response), and if they were unable to access two square meals a day (no response), it was coded as $Y = 0$. The model has been specified in the present study as follows :

$$P_i = P(Y_i) = F(C_i) = \frac{1}{(1 + e^{-C_i})}$$

$$\log[\text{odds}] = C_i = \alpha + \sum \beta_k X_{ki} + \gamma D_i, \text{ where } \frac{P_i}{1 - P_i} = \text{odds}$$

and P_i denotes the probability of 'yes' response, and $(1 - P_i)$ denotes the probability of 'no' response.

$F(C_i)$ = CDF of the logistic function; e = base of natural logarithms; C_i indicates the predictor variable; D represents dummy explanatory variables (e.g., SC/ST = 0, General/OBC = 1), and X represents quantitative explanatory variables.

4 Results

The results section of the study is divided into five parts. At first, we analysed the occupational patterns of households prior to and during the corona virus pandemic in Section 4.1, followed by their income and consumption patterns in Section 4.2. Poverty and inequality in income and consumption among the sample households were analysed in Sections 4.3 and 4.4. In the last section (section 4.5), a logistic regression model was estimated to identify the impact of the COVID-19 pandemic on access to food.

4.1 Changes in Occupational Pattern

The socio-economic characteristics of the sample households are presented in Table 1. Most of the respondents (42.55%) were middle-aged (41–60 years). The second major category (38.3%) was young people (21–40 years), and the rest (19 percent) of the respondents were older than 60 years (Table 1). Among social categories, most of the respondents belonged to the general caste, and the least percentage of respondents were scheduled tribes (ST). Scheduled caste (SC) people comprise the second-highest percentage of respondents. As per the educational standard, nearly half of the respondents were middle school educated; one-fourth were primary educated; and the rest were secondary or higher level educated. Among the casual labourers, most of them belonged to the scheduled caste. Most of the primary-educated populations were casual labourers.

The distribution of monthly per capita income (MPCI) shows that before the pandemic, most of the sample households belonged to low-income groups (see Table 1). The economic activities of respondents are classified into two broad categories: casual and non-casual.

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Before the pandemic, 37 percent of respondents were engaged in casual work, and 63 percent of sample respondents were engaged in non-casual work. Non-casual work was again classified into two major occupational groups: self-employed (41%), and regular salaried jobs (22%) (figure 1, panel A). Casual workers comprise daily wage labour, bus conductors, bus helpers, migrant labour, train hawkers, maid servants, sweepers, sweet shop workers, etc. Fuchkawala, pan-shop vendor, tea shop vendor, toto-driver, car driver, trolley van puller, and vegetable vendors worked as self-employed jobs. A regular salaried job comprised factory labour, such as, jute factory labour, fan factory labour, light factory labour, garment factory labour, shopping mall employee, etc. Out of regular salaried people, only 8.5 percent were employed in formal sectors (here, shopping malls). It implies that 91.5 percent of the total sample households were employed in the informal sector before the pandemic.

This situation drastically changed during the prolonged corona virus pandemic. Most of the respondents and the working members had either changed their primary occupations and were engaged in different self-employed jobs or remained jobless. Nature of their work did not permit them to work from home. They had no legal or economic security. They became vulnerable after losing their jobs during the pandemic crisis. Under the strict lockdown, only daily necessities were free from restrictions, and the vulnerable people in this situation had no option other than to engage themselves in selling daily necessities or remain unemployed. During the pandemic, 47 percent of the sample respondents were engaged in vegetable vending, whereas 53 percent were selling high-value foods like eggs, fish, meat, fruit, and milk (Figure 1, Panel B). In order to start their small business, 49 percent of households used their past savings, and 44 percent took loans from relatives or money lenders. Rest of the seven percent of respondents reported that due to lack of money to invest in business, they were forced to sell different types of leafy vegetables collected from common pool land and water resources to earn their livelihood. They are mainly women who worked as maid servants before the pandemic and lost their jobs due to fear of infection during the pandemic. There was also a squeeze on occupational diversity. In the pre-pandemic situation, people were engaged in different diversified jobs, but during the pandemic, people were forced to sell only daily necessities to earn their livelihoods.

4.2 Income and consumption pattern

We observed that the average monthly per capita income (MPCI) of respondent households drastically declined by 60 percent from Rs. 2564 to Rs. 1018 (Table 2) during the strict pandemic compared to the pre-pandemic situation. The mean difference in MPCI between these two periods is statistically significant. The decline in income is shown to be highest among the bottom 20 percent of the population (Figure 2). Before the pandemic, there were 38 percent of the population in the first two income classes; however, during the pandemic, the bottom two income classes comprised 88 percent of the population.

Most of the respondents have no prior experience in these new jobs. Hence, their earnings were affected, lowering their income. As the jobless people during the pandemic were engaged in selling daily necessities, on the supply side there were too many sellers, which reduced their profit margin. Again, as people were staying at home during lockdown,

the result was low income. Hence, on the demand side, there was less demand for goods and services. Consequently, the income of marginalized people decreased remarkably.

It was observed that the different components of expenditure also declined radically (Table 2). Average monthly per capita food expenditure (MPFE) declined by 57 percent from Rs. 1958 to Rs. 847. Majority of the population during the pandemic fell within the 2nd, 3rd, and 4th decile classes from the bottom (Figure 3). It also revealed that as the MPCFI decreases in absolute amount, the percentage of income spent on food during the pandemic increases, which follows Engel's law. The squeeze on job opportunities and the fall in income were the major reasons behind the decline in food expenditure (Rs) among marginal workers.

Education expenditure during the pandemic declined sharply by 77 percent from Rs. 135 to Rs. 31 (Table 2). More than 56 percent of the population spent zero on education (Figure 4). Health expenditures also declined by 72 percent, from Rs. 127 to Rs. 35. Nearly 46 percent of the population spent nothing on treatment during the pandemic (Figure 5). During the pandemic, households were forced to spend more on daily necessities than education and health. At the same time, educational institutions were closed during the strict lockdown. Therefore, the requirement for educational kits was low among poor households. The percentage of households spending nothing for educational purposes increases from 21 percent to 56 percent (Figure 8). This indicates the negative impact of COVID-19 on education. Children of poor and marginalized workers had no capability to look after their children's education and were great sufferers. In some cases, children were being forced to help their parents as child labour.

There were also restrictions on hospitals and health care institutions during the strict lockdown, which also lowered medical expenditure. The percentage of households with zero spending for health care and medical treatment increases from 20 percent to 45 percent (Figure 9). It also indicates the negative impact of the pandemic on health. Poor and marginalized people were facing difficulties in accessing health care facilities during the pandemic, which in turn worsened the illness of chronic patients and, in some cases, led to their deaths. Before the pandemic, respondent households were able to save 4 percent of their income; however, during the pandemic, households faced hardship in meeting food and necessities with their limited income.

4.3 Poverty :

According to the Tendulkar committee report, in urban India, if a person is unable to earn Rs 32 in a day, he or she is treated as poor (Panagariya & Mukim 2014). Whereas, according to the World Bank, if a person's earning fell below \$1.25 in a day (as per the price level of 2005), the person would be treated as poor (Ravallion et al., 2009). According to the World Bank's poverty line, poverty among sample households increases by more than 53 percent. As per Tendulkar's poverty line (inflation adjusted), the percentage of sample households lying below poverty sharply increases by more than three times, from 19.15 percent to 61.70 percent (Figure 3). The Rangarajan committee amended the poverty line of the Tendulkar committee to Rs. 1407 per capita per month for urban areas in 2014 (India Today 2014). According to this estimation, the percentage of people living below the poverty line during

a pandemic rises by approximately 60 percent. That means, in any method, the incidence of poverty increases at an intolerable rate during a pandemic.

4.4 Inequality :

The inequality of income and expenditure in this study before and during the pandemic was measured by the Gini coefficient (Table 3). Income inequality among sample households was reduced during a pandemic situation compared to a normal situation. Inequality in food expenditure was also reduced during the pandemic. However, it is very important to note that inequality in health expenditure increased during this pandemic. Similarly, inequality in education expenditures also increased during the pandemic situation. The pattern of inequality of income and expenditure is also visualised in the Lorenz curve (Figures 7, 8, 9, and 10).

4.5 Logistic Regression Model

In this section, we examined how the food security of poor and vulnerable groups was affected by this pandemic. At the micro level, food security was measured in this paper simply in terms of the number of meals accessed per day by members of households. If a household secured at least two square meals a day for all its members, it was treated as a food-secure household. Following this norm, we estimated that before the pandemic, members of 21 percent of sample households did not access two square meals per day. It indicates the chronic food insecurity that crops up due to prolonged poverty and low income. At the same time, it was also estimated that large sections of households (40%) were unable to obtain two square meals per day during the pandemic. This indicates transitory food insecurity that was perpetuated by the shocks of the COVID-19 pandemic. As a result, food insecurity in terms of access to meals doubles during a pandemic situation.

To find out the factors that affect the accessibility of at least two meals per day, we used a binary logistic model. The dependent variable was whether all the members of the respondent households consumed at least two square meals a day (yes = 1 or no = 0). We have estimated two logistic models, one for before the pandemic and another for during the pandemic. The notations and specifications of explanatory variables have been revealed in these models (see Table 4).

Interpretation of Model 1 (before the pandemic) :

The P value and R^2 of the estimated logistic model show that model 1 was overall statistically significant (Table 5). The nature of occupation, caste, education, MPCÍ, and household size are important factors responsible for that. All these factors, except household size, were positively related and statistically significant. The result indicates that if the respondents were engaged in non-casual work, the household had greater chances of accessing two meals per day. Non-SC/ST households had a higher probability of securing two square meals per day compared to SC/ST households. If the education level of the household head was higher, the family would have more chances to arrange two square meals per day for its members. Again, the monthly per capita income of a household, is the higher than the probability of getting two meals per day.

Interpretation of Model 2 (during the pandemic) :

The P value and R^2 indicate that the overall estimated logistic model 2 was statistically significant (Table 6). Out of all explanatory variables, nature of occupation, MPCII, state ration, central ration, and gas connection are statistically significant and positively related. The nature of the occupation shows that if the respondents were engaged in vegetable vending, they would have lower chances of obtaining two square meals per day compared to selling eggs, fish, meat, fruit, etc. Again, the higher the income level of a household, the higher the probability of securing two meals per day. In the pandemic situation, the central and state governments relief materials (free food grains through the public distribution system and cooking gas cylinders) made a great contribution to securing food for families. Those families that were included in the government's social security scheme have more chances to secure meals twice a day. In the pandemic situation, caste, education, household size, and cash transfers had no impact on the accessibility of food because the livelihoods of all types of households were more or less affected by the COVID-19 pandemic. Among the sample households, 60 percent obtained central rations and 73 percent obtained state rations through the public distribution system (PDS). The remaining households were excluded from PDS due to some error or problem in the identification of beneficiary households.

5. Discussion :

The results of the present study have many reflections in the literature. A study by the World Bank (2020) found that most wage earners in India became casual labourers under this pandemic. Singh et al. (2020) also found a similar result in Punjab: casual labour was mostly affected in terms of fall in income and employment during the pandemic. Some have found that urban self-employed were worst affected, and about 90 percent of respondents reported losing their employment during the pandemic (Surabhi et al. 2020; Khan et al. 2020). Daily wage earners in India have been compelled to turn into vegetable vendors under this coronavirus pandemic (Meher et al. 2020). Patnaik (2020) revealed that the per capita income of the working class declined in the pandemic situation, and the poor and vulnerable had limited opportunities, thus earning low wages (Hamiduzzaman et al. 2020). There was a sharp decline in demand for goods during the strict lockdown period (Chowdury et al. 2020). A large number of people were compelled to turn into vegetable dealers, leading to an increase in the number of suppliers (Meher et al. 2020; Srivastava 2020). Actually, loss of jobs, decline in income, and low consumption have a detrimental effect on business and trade (International Labour Organisation 2020; Arora 2020). Reductions in income during the pandemic resulted in disruptions in the accessibility of food in households (Cariappa et al. 2020). Pathak et al. (2020) have shown that millions of people in India were not able to avail of subsidised ration articles due to exclusion errors and wrong calculations. The income inequality among high-paid salaried persons and low- and very-low-paid salaried persons widened during lockdown as the latter have no option to work from home (Muggah 2020). Monthly time series of data from CMIE reveal that there has been a steady increase in unemployment in rural and urban

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areas since February 2020, when the coronavirus pandemic spread throughout the country. We see reverse migration due to this coronavirus pandemic (Sing 2020). Food insecurity and poverty among vulnerable populations in society have increased in this pandemic due to job losses (Ribeiro-Silva 2020).

6. Conclusion

We conclude that poor people, marginal workers in the informal sector, and people of low-income groups were severely affected by the COVID-19 pandemic. Most of the people in these categories had lost their jobs and were compelled to engage in selling daily necessities, in which they had no past experience, which led to a drastic decline in their earnings. A fall in income in turn perpetuates an increasing incidence of poverty and a reduction in consumption expenditures on food, education, and health care. Even if people struggled to secure two square meals a day. Inequality of income and food expenditure slightly declined, but inequality in education and health care rose. However, the central and state governments social security schemes in terms of free supply of food grains through PDS and cooking gas support vulnerable people in securing food for family members. But cash transfers to the female member were insufficient compared to the needs and income loss of the family and had no impact on securing food for the households.

7. Recommendations

Cash transfer should have continued to sustain the lives of marginal and vulnerable workers and raise aggregate demand in the market (Banerjee and Duflo, 2020). Local political parties should be loyal to reduce inclusion and exclusion errors in the beneficiary lists of the state and central governments social security schemes to secure entitlements. The revival of small and micro enterprises through the government's initiatives will be fruitful in creating massive employment opportunities, increasing income, reducing poverty, and reducing food insecurity. The agricultural sector must be given top priority to ensure sustainability in the production of food and the supply of inputs.

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Tables

Table 1: Socio-economic characteristics of occupational groups before Pandemic

	Casual Labour	Regular salaried	Self employed	Grand Total
Occupational group	72 (37.23)	43 (22.34)	79 (40.43)	194 (100)
Caste				
G	16 (22.86)	23 (52.38)	33 (42.11)	72 (37.23)
OBC	7 (8.57)	8 (19.05)	25 (31.58)	40 (20.21)
SC	39 (54.29)	12 (28.57)	19 (23.68)	70 (36.17)
ST	10 (14.29)	0 (0)	2 (2.63)	12 (6.38)
Education				
Primary	45 (62.86)	6 (14.29)	2 (2.63)	53 (27.66)
Middle	27 (37.14)	25 (57.14)	37 (47.37)	89 (45.74)
secondary and above	0 (0)	12 (28.57)	40 (50)	52 (26.6)
Age				
21-40 years	19 (25.71)	18 (42.86)	37 (47.37)	74 (38.3)
41-60 years	28 (37.14)	20 (47.62)	35 (44.74)	83 (42.55)
above 60 years	27 (37.14)	4 (9.52)	6 (7.89)	37 (19.15)
decile classes of MPCI				
0-870	9 (11.43)	8 (19.05)	21 (26.32)	38 (19.15)
870-1740	12 (17.14)	10 (23.81)	19 (23.68)	41 (21.28)
1740-2610	19 (25.71)	7 (14.29)	25 (31.58)	51 (25.53)
2610-3480	12 (17.14)	6 (14.29)	6 (7.89)	24 (12.77)
3480-4350	10 (14.29)	6 (14.29)	4 (5.26)	20 (10.64)
4350-5220	6 (8.57)	0 (0)	2 (2.63)	8 (4.26)
5220-6090	2 (2.86)	2 (4.76)	0 (0)	4 (2.13)
6960-7830	2 (2.86)	2 (4.76)	0 (0)	4 (2.13)
7830-8700	0 (0)	2 (4.76)	0 (0)	2 (1.06)
13920-14790	0 (0)	0 (0)	2 (2.63)	2 (1.06)

Source: Author's calculation from Field survey data (June 2020- December 2020)

Table 2: Change in income and expenditure structure during pandemic

	Before Pandemic			During pandemic			mean difference between before and during pandemic	
	Mean (Rs)	%	SD	Mean (Rs)	%	SD	t-value	P value
MPCI	2564.20	100.00	1925.50	1017.96	100.00	775.26	11.93	0.000
MPCFE	1957.82	76.35	1497.77	847.37	83.24	645.14	11.15	0.000
MPCNFE	242.52	9.46	212.77	104.03	10.22	87.48	7.69	0.000
MPCEE	134.74	5.25	154.07	31.42	3.09	55.86	7.36	0.000
MPCHE	127.20	4.96	152.06	35.13	3.45	61.50	5.82	0.000

Note : MPCFI= monthly per capita income, MPCFE= monthly per capita food expenditure, MPCNFE= monthly per capita non-food expenditure, MPCEE= monthly per capita education expenditure, MPCHE= monthly per capita health expenditure

Source : Author's calculation from Field survey data (June 2020- December 2020)

Table 3: Inequality among the sample households before and during coronavirus pandemic

Gini coefficient	Before pandemic	During pandemic
MPCI Gini coefficient	0.114364	0.10146
MPCFE Gini coefficient	0.185962	0.099641
MPCHE Gini coefficient	0.674361	0.99713
MPCEE Gini coefficient	0.193839	0.240243

Note : MPCFI=Monthly per capita income, MPCFE = Monthly per capita food expenditure, MPCHE = Monthly per capita health expenditure, MPCEE = Monthly per capita Education expenditure,

Source : Author's calculation from field Survey data

Table 4 : Notation, Specification of variables used in Logit estimation for two models

	Before Pandemic
Notation of Variables	Specification
Occupation	Nature of occupation : If the respondent is engaged in casual work = 0, otherwise = 1
SC/ST	If the respondent is belonging to SC or ST = 0, otherwise = 1
Household size	Number of family members
Education	Years of schooling of the respondent
MPCI	Monthly per capita income of the respondent household

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	During Pandemic
Self-employment	Nature of occupation : If the respondent is engaged in vegetable vending = 0, fruit, fish, egg meat vending = 1
SC/ST	If the respondent is belonging to SC or ST = 0, otherwise = 1
Education	Years of schooling of the respondent
MPCI	Monthly per capita income of the respondent household
Household size	Number of family members
State ration	If the households obtain Ration from state government during pandemic = 1, otherwise = 0
Central ration	If the households obtain Ration from central government during pandemic = 1, otherwise = 0
Cash transfer	If the households obtain cash benefit from central government during pandemic = 1, otherwise = 0
Gas connection	If the households obtain free gas cylinder from central government during pandemic = 1, otherwise = 0

Table 5 : Logit model 1 : Factors that affect in accessing two square meal per day before pandemic (yes = 1, no = 0)

	Coefficients	Std. Err.	Z	P>z	[95% Conf.	Interval]
Occupation	2.481605	1.208979	2.05	0.040	0.11205	4.851161
SC/ST	1.447288	0.851162	1.7	0.089	-0.22096	3.115535
Education	0.460876	0.230007	2	0.045	0.010072	0.911681
MPCI	0.001177	0.00059	1.99	0.046	2.02E-05	0.002334
Household size	-0.06947	0.24455	-0.28	0.776	-0.54878	0.409835
_cons	-4.56037	2.599426	-1.75	0.079	-9.65515	0.53441
Number of observations = 194 Prob > chi2 = 0 LR chi2(5) = 357.8 Pseudo R2 = 0.594						

Source : Author's calculation from Field survey data (June 2020- December 2020)

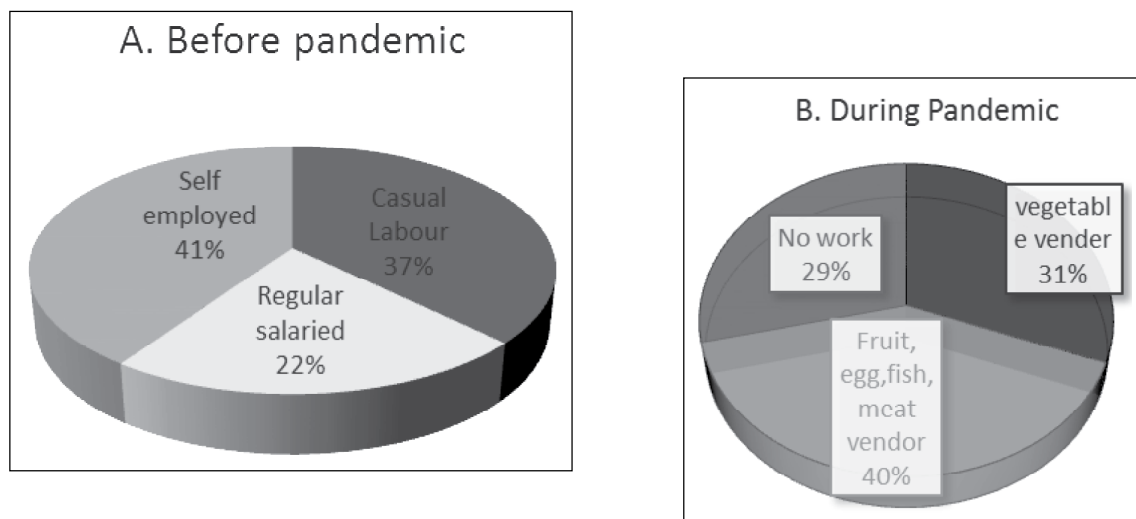
Table 6 : Logit model 2 : factors that affect in getting two square meal per day during pandemic (yes = 1, no = 0)

	Coefficients	Std. Err.	Z	P>z	[95% Conf. Interval]	
Occupation	1.92	0.86	2.24	0.025	0.24	3.60
SC/ST	1.13	0.93	1.22	0.224	-0.69	2.94
Education	0.02	0.14	0.16	0.873	-0.26	0.31
Household size	-0.16	0.28	-0.58	0.560	-0.72	0.39
MPCI	0.00	0.00	1.70	0.089	0.00	0.00
State ration	3.58	1.20	2.98	0.003	1.23	5.94
Central Ration	4.72	1.34	3.52	0.000	2.09	7.34
Cash transfer	-0.03	0.90	-0.04	0.970	-1.79	1.72
Gas connection	3.04	0.94	3.24	0.001	1.20	4.88
_cons	-8.29	2.53	-3.28	0.001	-13.24	-3.34
Number of observations = 194 Prob. > chi2 = 0.000 LR chi2(9) = 580.2 Pseudo R2 = 0.6323 Log likelihood = -423.322808						

Source : Author's calculation from Field survey data (June 2020- December 2020)

Figures

Figure 1 : Distribution of sample respondents by their occupation before and during pandemic



Source : Author's calculation from Field survey data (June 2020- December 2020)

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Fig-2 : distribution of population by income class

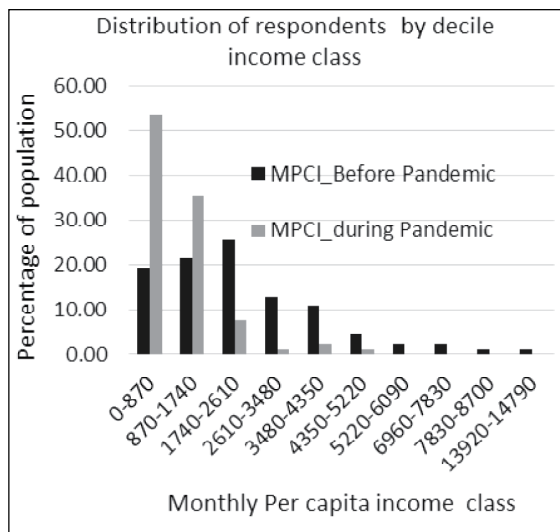
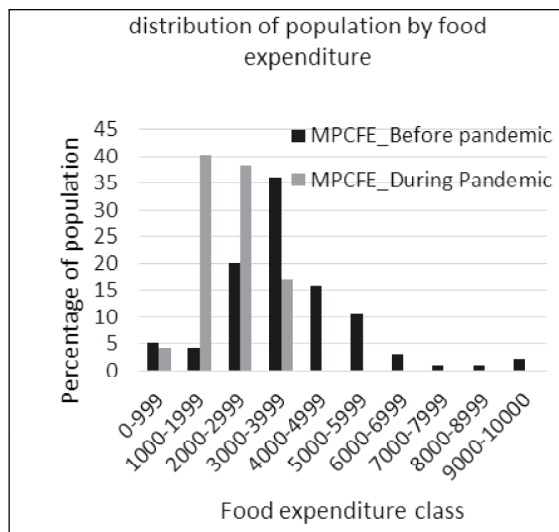


Fig-3 : distribution of respondents by food expenditure



Source : Author's calculation from Field survey data (June 2020- December 2020)

Fig 4 : Distribution of population by education expenditure

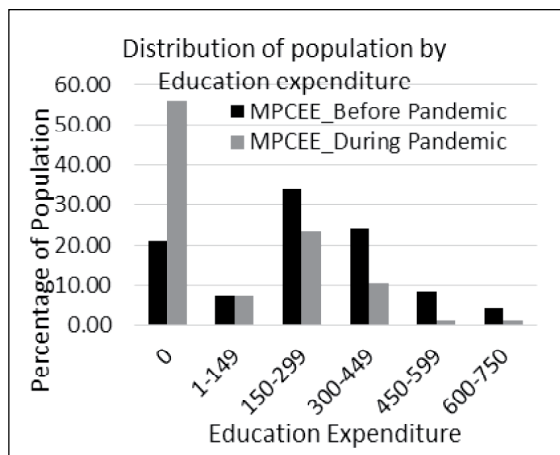
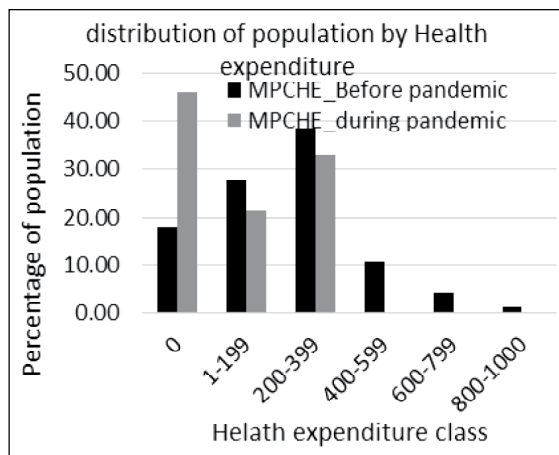
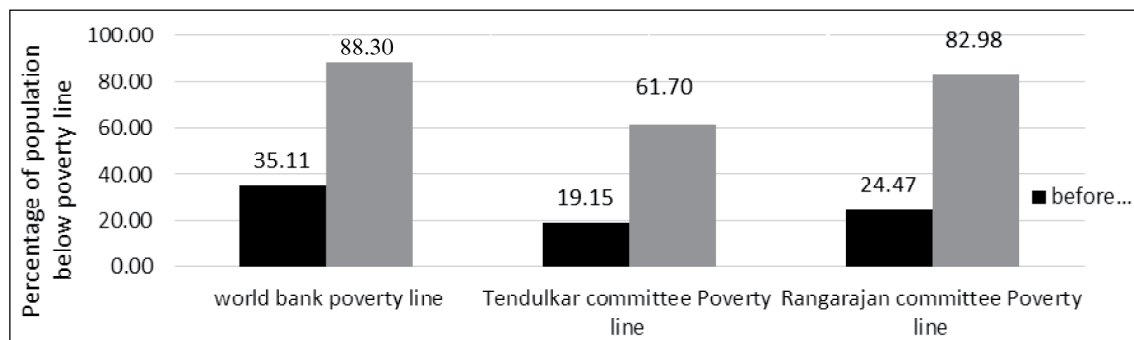


Fig 5 : Distribution of population by health expenditure



Source : Author's calculation from Field survey data (June 2020- December 2020)

Fig 6 : Percentage of people lying below poverty line



Source : Author's calculation from Field survey data (June 2020- December 2020)

Figure-7 : Lorenz curve of MPCl

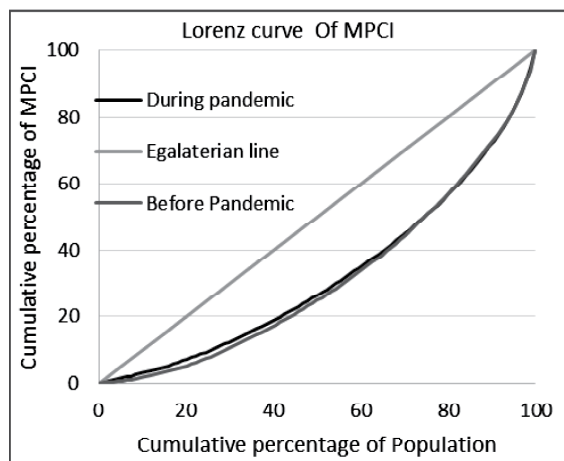
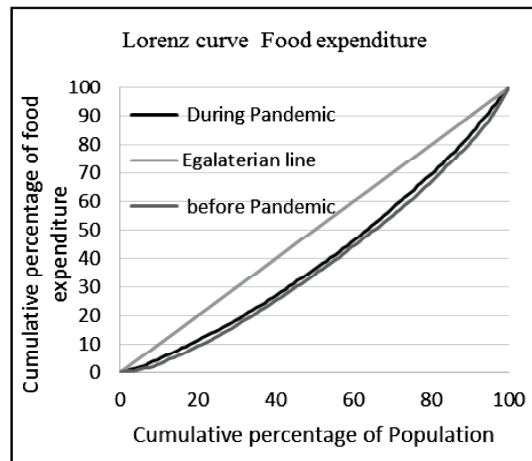


Figure-8 : Lorenz curve of food expenditure



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Fig-9 : Lorenz curve of Education expenditure

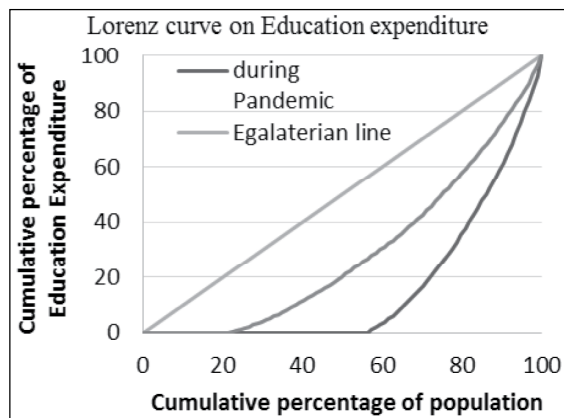
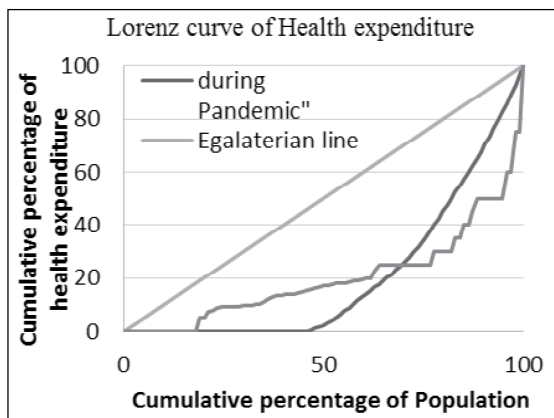


Fig-10 : Lorenz curve of health expenditure



Source : Author's calculation from Field survey data (June 2020- December 2020)

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