INDONESIAN JOURNAL OF ECONOMICS, SOCIAL, AND HUMANITIES
ijesh.unri.ac.id

Pandemic, Job loss, Food consumption, Child health: Impact of (COVID-19) on the livelihood of marginal income people in Bangladesh

Mst. Noiyan Tara[1], Rashed Ahmed[1], Md. Shamimul Islam[1], S. M. Atiquzzaman Mulla[1], & Md. Minhaz Uddin[2]

[1]Department of Economics, Comilla University, Cumilla-3506, Bangladesh
[2]Department of Economics, Sheikh Fazilatunnesa Mujib University, Jamalpur- 2000, Bangladesh

* noiyan19@yahoo.com

Article Info

Received : 2022-07-24
Accepted : 2023-01-30
Published : 2023-01-31

Key words: marginal people; covid-19; income; consumption; child health

Abstract

The study is to understand the livelihood-related impact on the marginalized people due to the outburst of the COVID-19 pandemic. This paper also investigates the effects on child health of the vulnerable households who lost their work or job during these crisis moments. Following the fisher sampling method, 348 respondents are interviewed for quantitative and qualitative data. In this study, 20 districts from 7 divisions of Bangladesh are covered. Among the respondents, 90% said that the COVID-19 pandemic negatively impacts their livelihood due to income loss. This study also found that 50% of people (respondents) lost their jobs, and almost 90% of people revealed that their income level declined due to COVID-19. As a result, their dietary patterns changed significantly. Due to inadequate food consumption and marginal income, people face an acute health crisis, especially child health. They declined their food intake, ultimately maintaining their partial expenditure by borrowing from financial institutions and relatives. The empirical evidence shows that job loss and income reductions positively impact raising children's health vulnerability. Since the government did not support them properly, their survival will be threatened in the long run. So, the study shows that COVID-19 affects the daily income and consumption patterns of vulnerable households who live by daily earnings.

INTRODUCTION

The first COVID-19 positive case in Bangladesh was reported on 8 March 2020.[1] Just a month later, the number of affected people rose to 164. On 26 July, the total number of infected cases was 11,64,635. The World Bank (2008) defines poverty as "an inability to achieve a minimum standard of living consists of this fact. Today, more people worldwide are losing the various dimensions for a minimum standard of living. Due to the lockdown from March 2019, many people lost their jobs, and the new entrepreneurs became heartless to start their businesses, so unemployment became severe. Especially for lower-income people who live hand to mouth face acute crises to maintain personal socio-economic needs, such as food, medicine, and shelter. Understanding that poverty revolves around "income' is vital for emergency lockdowns such as the ones that happened during the COVID-19 pandemic. Here, the lack of income is crucial in determining all subsequent harm. However, the problem statement of this study explores that the international labor organizations predicted that about 24.7 million jobs would be disappeared due to COVID-19 in developed and developing countries. Bangladesh is also one of them that will be affected higher than anyone. So the COVID-19 is a health crisis, but it

1 Daily star, 9 March 2020.

DOI: https://doi.org/10.31258/ijesh.5.1.1-19

© **2023** Tara et al.

could also be a food security problem if proper measures are not taken. It is noticeable that they face acute job loss that also affects human activities and the economy and affects compulsory food systems and all sorts of agricultural activities that induce an increase in hunger and malnutrition, which causes the deterioration of child health. So it is high time to think about food consumption and child health of low-income families.

Moreover, the novel coronavirus disease 2019 (COVID-19) would badly affect the livelihood of almost half of the global workforce living in rural and urban areas (Chowdhury et al., 2021). Due to the severity of the COVID-19 pandemic, many low and middle-income groups have lost their jobs and other income sources in Bangladesh. The unemployment rate increased more than 10% at the end of 2020 in return for 5.2% seen in 2019. In this sense, regardless of their socio-economic situation, all countries need to take measures that would balance the demand for health safety and the livelihood requirement of their people. Recent statistics of the international labor organization state that because of the COVID-19 pandemic, 50% of the global workforce may lose their livelihood, as 1.6 billion workers in the informal economy are at immediate risk of losing their income source. In these circumstances, these families face food crises and health risks, especially child health (Akseer et al., 2020; Rahman & Majumder, 2020; Osendarp et al., 2021; Nguyen et al., 2021; (Rahman et al., 2020a; Rahman et al., 2020b; Majumder et al., 2021). The income and employment loss have not affected all segments of the country at an equal ratio. ILO estimates that women and the young faced employment crises during the pandemic. COVID-19 affected various regions of Bangladesh in various ways, as was found in a study conducted by the World Bank. Urban areas are more severely affected than rural areas in the poverty rate. This inequality happened due to a more significant number of urban workers depending on those activities severely affected by the pandemic (Majumder et al., 2020; Rahman & Habib, 2021; Titumir, 2021; Islam & Inan, 2021; Majumder et al., 2022). Due to job loss, pandemic-induced adverse economic shocks forced to decrease dietary quality.

In addition, many people are restricting food intake those are marginalized households. For example, about 90% of people with job loss reported a decline in food consumption.[2] In addition, many maternity and childcare services problems during the COVID-19 pandemic. Surprisingly, non-institution births rise at a remarkable rate. Sometimes they face life threatened due to the unavailability of doctors and medicinal facilities. In marginalized households, young children face malnutrition because of dietary patterns. Since COVID-19 is a continuous phenomenon in our country, the employment status is affected in a significant way, and the labor market is very unstable. An investigation of the marginal income people suggests that losing jobs declined their daily income and consumption pattern as well as their health, especially young health.

LITERATURE REVIEW

Several reports, newspapers, research papers, and online resources were broadly reviewed to get an idea about the labor market, job loss, and impact on the livelihood and earlier findings of the researcher. In addition, the ongoing problem of the labor market and effects on the consumption level, such as food and child health, are considered from previous research work. However, the global impact of the COVID-19 pandemic is increasing daily on the poor due to job loss and other shocks to income and diminished livelihood.[3] Sumner et al. (2020) predicted that about half a billion people might fall into poverty in the worst-case scenario. More than 300 million full-time jobs are expected to be lost worldwide in the 2nd quarter of 2020. Genoni et al. (2020) state that the substantial labor market impacts both at the extensive and intensive margin, with essential variations across areas and gender, mainly due to the nature of occupations affected by

2 A study from CPD- Centre for policy dialogue

3 The Business standard. Hunger or coronavirus- who will get us first? Accessed May 17, 2020.

the crisis. On 30 January 2020, the World Health Organization (WHO) declared COVID-19 a global public health emergency of international concern. It projects that COVID-19 will further exacerbate poverty and abject hunger in several ways. It is argued that the overburden of the health sector causes the reallocation of resources to the health sector to save lives, which may reduce allocation to the agriculture and industrial sectors. It hampers the food production and input supply chains. More importantly, COVID-19 lockdowns and movement restrictions have increased unemployment and underemployment, severely reducing consumer purchasing power.

According to Alam et al. (2020), many people have recently become jobless, while many are in danger of losing their jobs. Significantly, the poor segment of the population with very small or no savings is the worst victim of the economic meltdown. It is estimated that COVID-19 has pushed 16.5 million people, mainly rickshaw pullers, transport workers, day laborers, street vendors, hawkers, construction labor, and hotel, motel, and restaurant employees back into poverty (Khan et al., 2020). Kesar et al. (2021) a survey of around 500 respondents results in increasing unemployment and a radical fall in earnings among informal workers. It was also found that self-employment workers were more secure than others. About half of the respondents reported not receiving any cash transfer from the state or central. Another study by Antony et al. (2020) shows that the COVID-19 lockdown led to the loss of the only income source of daily labor, and 62.2% of people said they did not have enough income to survive in lockdown.

A study in china by Qian and Fan (2020) shows that the COVID-19 pandemic increases existing social inequalities and creates a new form of disparities. The study suggests that government policies must target vulnerable and marginalized populations to minimize disparities and aid post-pandemic recovery. According to Mottaleb et al. (2020), the 2016-207 household income and expenditure survey finds that a single-day complete lockdown creates a US $64.2 million equivalent economic loss by considering the wage loss of the daily labors. After calculating the per capita food expenditure separately for formal and informal households, this study estimates a lump sum compensation package for the daily wage based on farm and nonfarm households, nearly $1 per day per household, to ensure minimum food consumption. A study on consumption and vulnerability by Bidisha et al. (2021) found that a high percentage of elderly and young children suffer from high food vulnerability.

Additionally, environmentally endangered regions such as draught, phrone, and other affected areas are more severe food crises than other regions people. According to decomposition analysis of food consumption, it is found that the marginal people like day laborers, self-employed and small business people are found highly vulnerable to necessary foods. Mohammad et al. (2021) identify the progress of the present burden of nutrition and food security in Bangladesh and also discuss the challenges of child health regarding population growth and the COVID-19 pandemic. The country is trying to minimize all types of childhood undernutrition. However, nutrition-related disease is rising dramatically because the food intake is reduced significantly. Paul et al. (2020) find that COVID-19 have a psychological livelihood-related impact on marginal income people who depend on daily earnings for their life in Bangladesh. About 94% of people said that livelihood had been severely affected due to the outburst of COVID 19. However, it is mentionable that industrial workers felt extreme stress at that time. Hossain (2021) identifies that the unemployment rate increased radically in urban and rural areas. So growth-oriented policies are not sufficient to remove extreme poverty. It needs to take employment-oriented economic policies to create more jobs and reduce poverty and inequality. However, this research investigates the livelihood and child health impacts of lower-income households. We mean the lower income group who depend on their daily income for their living. We expect this study to suggest that authorities take proper steps for the marginal income people during and after the pandemic.

Gaps of earlier research state that there is little research in this field as it is a recent issue. Most of the work is done with secondary data. With The emergence of the COVID-19 pandemic, Bangladesh needs more measures to address the complexity of the low-income family's food crisis and child health. In Bangladesh, focusing on these issues, there is not sufficient research. It is very tough to find any paper in Bangladesh that shows the present situation of the lower-income people's food consumption and child health. This gap inspires me

to do this study on the livelihood of lower-income people (especially daily income people). This study will provide clear knowledge about Bangladesh's consumption and child health issues.

The Present Situation of COVID-19 in Bangladesh

The COVID-19 pandemic is part of the worldwide pandemic of Coronavirus disease 019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV-2). The virus was confirmed to have spread to Bangladesh on 20 March. On 8 March 2020, by the countries epidemiology institute IEDCR. Since then, the pandemic has spread day by day over the nation, and the affected peoples have rapidly increased.

1. Current Employment Scenario in Bangladesh

About 13% of people have become unemployed due to the COVID-19 pandemic, according to the Bangladesh Institute of Development Studies (BIDS). The local micro, small and medium enterprises (MSMs) sector, due to lockdowns imposed to curb the spread of the deadly virus, faced a loss estimated as of taka 92,000 crore. In addition, according to an ADB report, job postings in the most extensive online job-matching sites, including bdjobs.com, chakri.com, job.com.bd, and all jobsbd.com, have declined since the COVID-19 outbreak in Bangladesh. Another report, jointly published by the International Labor Organization (ILO) and ADB on 18 August, predicted that an estimated 1,117,000 to 1,675,000 youth in Bangladesh might be unemployed in 2020 due to the massive disruption in economic activities and labor markets caused by the COVID-19 outbreak.

In Bangladesh, the youth unemployment rate may grow more than double to 24.8% in 2020 due to the new job losses from 11.9% in 2019, mentioned the report "talking the COVID-19 youth employment crisis in Asia and pacific". The slum people in the cities and rural areas who depend on daily earnings for their livelihood are some of the worst victims of COVID-19 (Sakamoto et al., 2020).

Table 1. Estimates from Various Sources of Permanent Impactful Job Loss

Source	Unemployed (in a million)	Individuals impacted financially (in a million)
World Bank	7	28
Asian Development Bank (ADB)	4	16
Policy Research Institute of Bangladesh	12	58
Centre for research and information Dhaka	6	24
Centre for Policy Dialogue	6	24
Power and participation Research Centre	-	70
News interviews	-	50

Source: Kamal et al. (2020)

A mid nationwide lockdown to stem the spread of the coronavirus, hundreds of thousands of low-income workers in Bangladesh are protesting in Dhaka, Chittagong, and elsewhere demanding food and unpaid wages. Low-income groups, including daily labor and garment workers, are badly affected groups. They became jobless due to the nationwide lockdown, which began on 26 March and extended on 5 May 2020; it was the first wave of COVID-19. To cope with income losses, in the urban areas, 69% of households reduced their food consumption the same number of people took help from their friends. 8% of the household received government help, while 42% used their savings.[4]

[4]. Business standard (2020)

2. Employment Scenario during COVID-19 Period

Table 2. Employment Scenario during the COVID-19 Period

Year	Value (Parentage)
2019	64.6
2020	63.1
2021	62.9
2022	63.3
2023	63.5

Source: *International Labor Organization (2022)*

3. Working Hours Lost Due to COVID-19

Table 3. Working hours lost due to COVID-19

Year	Value (Parentage)
2020	11.9
2021	7.4
2022	2.3

Source: *International Labor Organization (2022)*

Covid-19 affect significantly in the world labor markets. By comparing the labor market scenario of the world economy by 2020 and 2021, it is very clear that there was a vast drop in the labor force participation rate, and workers lost their working hours too. From ILO, in the case of Bangladesh, there was a 64.6% labor force participation rate in 2019, but it reduced to 63.1% in 2020 and 62.9% in 2021. In 2022, it is seen that the labor force participation rate will increase slightly and expected that increasing will continue the following year. Table 3.3, ILO summarized the picture of working hours lost due to the COVID-19 crisis; from the working hour data provided by ILO, there are significant dropouts in the working hour of the worker. In 2020, it was 11.9%, but in the later years, 2021 and 2022, working hours dropped 7.4% and 2.3%, respectively.

Research Questions and Objectives

Considering the above discussion about the question of COVID-19 impacts on lower-income people's livelihood, such as food consumption, child education, and other general issues, we arise some questions that need a quick solution:

1. How is the livelihood of lower-income people affected by the outbreak of COVID-19?
2. How much food consumption and child health are affected due to their job loss?
3. What will be possible expectations and solutions to maintain standard livelihood?

Objectives of the Study

From the above questions, this study attempts to find the adverse impact on lower-income people (especially daily workers) due to COVID-19 outburst in Bangladesh.

1. To examine the factors that affect the livelihood of marginal income people
2. To identify how food consumption is affected due to job loss
3. To investigate the way of affecting child health badly
4. To identify the expected end possible solution to overcome this crisis.

METHODOLOGY

1. Sampling Design and Data Collection

This study relies upon both primary and secondary data. Primary data were collected from a laborer who lost their job, the cause of COVID- 19. The sample was selected following a random sampling procedure. As the study is based on the labor market, the primary data was collected from the workers. Workers may be rickshaw pullers, farmers, daily workers, transport

workers, or any other worker who works daily in any office or shopping center. Secondary data were collected from journals, newspapers, and other online sources.

2. Sample Size

We can use Fisher's (1922) and Fisher's (1934) general formulas to determine the sample size for an unknown population. This formula is effective and commonly used in modern research. In this method, the confidence interval of 95% and significance level of 5% have been considered. An estimated Z score is also needed to estimate the sample size. Whatever,

$$S = \frac{Z^2 \times P(1-P)}{M^2}$$

$$S = \frac{Z^2 \times P(1-P)}{M^2}$$

$$= \frac{(1.96)^2 \times 0.60\ (1-0.60)}{(0.05)^2}$$

$$= 384.16$$

$$= 385$$

Moreover, by the estimation of the Fisher method, the sample size of this study was 385.

3. Analytical Design

This study used several statistical and econometric tools to analyze and present the results. Some forms of mean, percentage, and maximum-minimum value of the different explanatory variables were used to understand the description of the variables. Then the structural equation model (SEM) was used to analyze the responsiveness of the livelihood of the lower-income people, and the reliability test was estimated to explore food consumption and other determinants of effects on child health. Finally, the estimated result of the study and some policy recommendations has been provided.

4. Data analysis Technique and Presentation

Both statistical and econometric tools have been used to analyze and present the collected data. After collecting the primary data, editing, sorting, and coding have been done carefully and then finalized for analyzing these data for obtaining results. The finalized data were analyzed statistically and empirically with the help of different computer programs (e.g., SPSS, AMOS Excel). Then the findings from the analysis were presented with tabular graphical and several technical forms for better understanding.

5. Reliability Test (RT)

The Reliability Test (RT) investigation allows for a focus on the properties of estimation scales and the factors that create the scales. There are not many important points to remember. What constitutes satisfactory alpha qualities is debatable. Many sources consider. Seven to be marginally satisfactory, but as we saw here, the consistency of action can frequently be improved or devalued for a scale with an alpha of around this value. Because of the various scale changes, the preceding interaction is potentially suspected. The more changes are made, the greater the risk that the outcome will not be replicated in another case. It may be hasty to dispose of things without some hypothetical explanation for why the thing does not perform well. It may be very prudent to keep things only for hypothetical reasons (i.e., despite the fact that the outcomes recommend the thing might be dropped). A cycle like this would ideally be used with a smaller pilot informational collection that would later be replicated with a larger report planned to be distributed. It is also important to remember that things may underperform because they are linked to another development rather than because they are fundamentally

"awful" things. Factor logical methodologies are better suited to determining whether there are various basic structures. However, the Reliability test system computes various commonly used proportions of scale dependability. It provides information about the connections between individual items on the scale.

6. Structural Equation Model (SEM) Specification

The structural Equation Model (SEM) is a relapse examination utilized to gauge the connection between dependent and independent variables. The structural path analysis was developed to measure the COVID-19 impact on overall macroeconomic determinants like as income, employment, and consumption pattern. However, the analysis developed an estimation considering child health as a dependent variable.

The econometric model specification is shown in the following functional form:

$$CH = f(Effect_Job, JobLost, REDI + FOC) \quad (1)$$

$$CH_i = \beta_0 + \beta_1 Effect_Job_i + \beta_2 JobLost_i + \beta_3 REDI_i + \beta_4 FOC_i + u_i \quad (2)$$

Where,

CH = Child Health Vulnerability in COVID-19 period, (latent variable).

Effect_Job = The COVID-19 effect on the job as well as the job market (observed variable).

JobLost = Loss of the job due to COVID-19 (observed variable).

REDI = Reduction of income due to COVID-19 (observed variable).

FOC = Food consumption, impact on food consumption during COVID-19, (observed variable).

u_i = Represent the error term.

7. Area of Data Collection

This study covered 20 districts from eight divisions of Bangladesh, and the map represents the survey districts of this study.

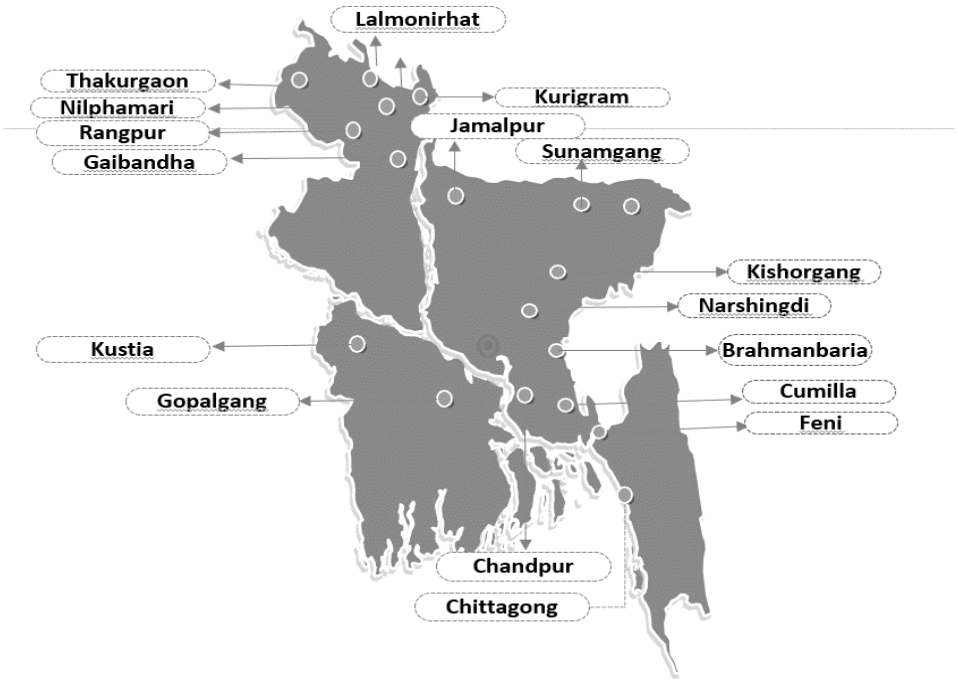


Figure 1. Area of Data Collection

Table 4. Survey District

NO	District	Frequency	Percentage	Cumulative Percentage
1	Cumilla	50	14.36782	14.36782
2	Brahmanbaria	30	8.62069	22.98851
3	Gopalgong	12	3.448276	26.43678
4	Netrokona	11	3.16092	29.5977
5	Kushtia	14	4.022989	33.62069
6	Chandpur	20	5.747126	39.36782
7	Feni	20	5.747126	45.11494
8	Gaibandha	17	4.885057	50
9	Jamalpur	16	4.597701	54.5977
10	Kishorgang	25	7.183908	61.78161
11	Kurigram	20	5.747126	67.52874
12	Lalmonirhat	13	3.735632	71.26437
13	Narshingdi	22	6.321839	77.58621
14	Nilphamari	18	5.172414	82.75862
15	Rangpur	20	5.747126	88.50575
16	Sunamgang	10	2.873563	91.37931
17	Thakurgaon	15	4.310345	95.68966
18	Vola	15	4.310345	100
	Total	348	100	

Source: Author's calculations from field survey 2022

8. Analytical Design

This study used several statistical and econometric tools to analyze and present the results. Some forms of mean, percentage, and maximum-minimum value of the different explanatory variables will be used to understand the variables' description. Then the structural Equation

Model is used to analyze the responsiveness of the livelihood of the lower-income people and food consumption as well as child health. Finally, the estimated result of the study and some policy recommendations is provided.

9. Data Analysis and Results Presentation

Both statistical and econometric tools are used to analyze and present the collected data. After collecting the primary data, data is edited and coded carefully and then finalized for analyzing these data to obtain results. The finalized data is analyzed statistically and empirically with the help of different computer programs (e.g., SPSS, Amos, Stata, Excel). Then, the findings are presented with tabular graphical and several technical forms for better understanding. Finally, the results from the analysis are explained analytically.

RESULT ANALYSIS

1. Descriptive Statistics of the Study

We estimated the frequency and percentage of respondents in descriptive statistics by analyzing survey data. A total of 348 respondents were interviewed from the different districts of the country from June 2021 to May 2021. Our targeted respondents were marginal or lower-income people such as hawkers, transport workers, small business people, hotel and restaurant workers, construction workers, farmers, and other day laborers. We conducted 34 questions face to face by randomly chosen respondents.

1.1. Age group and educational qualifications of the respondents

Most of the respondents are men; this study set up an age limit minimum of 18 years and no maximum limit age. The table shows that the highest numbers of people are in the age category of 25-35. The Second highest age category is 36-45, which indicates that about two-thirds of respondents are young people who work daily, temporarily, and contractual. Surprisingly, about 40% of people have no education, and 25% have only primary education. Almost 30% of people have secondary education, while 5% have higher secondary plus tertiary education.

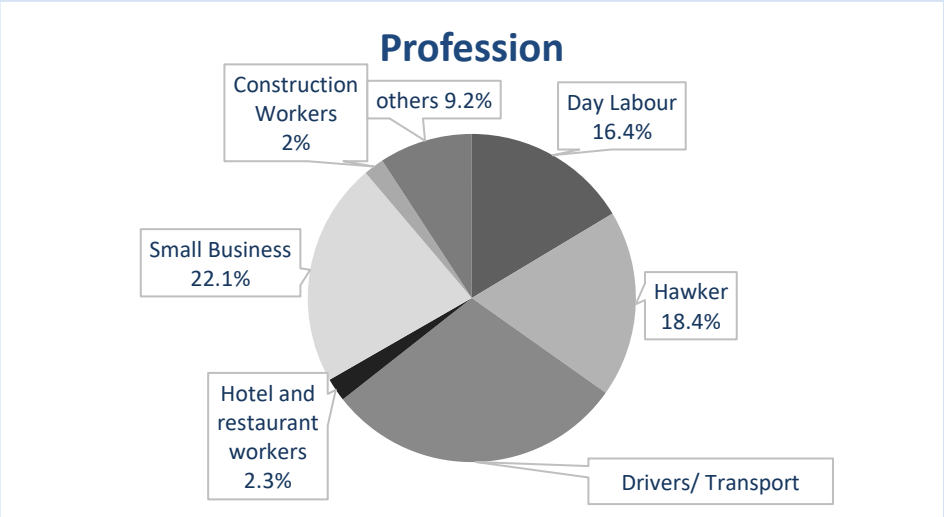
Table 5. Age and Qualifications of the Respondents

Categories	Groups	Frequencies	Percentage	Cumulative percentage
Age group	18-25	56	16.1	16.1
	26-35	124	35.6	51.7
	36-45	86	24.7	76.4
	46-55	56	16.1	92.5
	56-65	23	6.6	99.1
	Above 65	3	.9	100.0
	Total	348	100.0	
Education	No Education	137	39.4	39.4
	Primary Education	87	25.0	25.0
	Secondary Education	104	29.9	29.9
	Higher Secondary Education	16	4.6	4.6
	Bachelor's Degree	3	.9	.9
	Diploma	1	.3	.3
	Total	348	100.0	100.0

Source: Author's calculations from field survey 2022

1.2. Profession of the respondents

The pie chart shows that the survey covered a wide range of professional diversity such as Hawker, driver's ad transport workers, hotel and restaurant workers, small business people, construction workers, and other daily workers. The pie chart explains the percentage distributions of the most affected type of daily workers. Where the green color represents the transport workers (29.6%), the red color represents hawkers (18.4%), the yellow color represents small businessmen (22%), the blue color represents day labor (16.4%), and the rest of the consists some other profession consisting construction, hotel & restaurants workers.

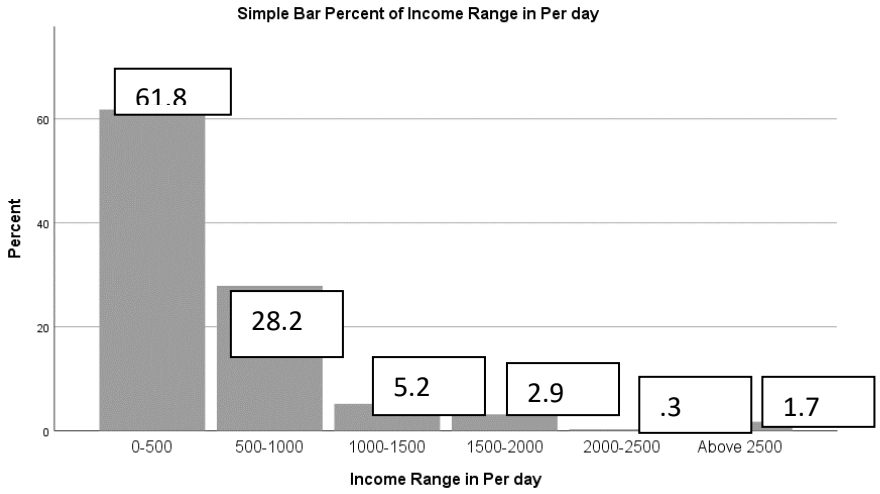


Source: Author's calculations from field survey 2022

Figure 2. Professions of the Respondents

1.3 Income range of the respondents

The above bar graph shows that about 61.8% of people earned less than 500 takas during the lockdown of the COVID-19 period. Others, 28.2% of people earned between the range of 500-1,000 taka, and the rest, 10%, earned more than 1,000 taka. It is manifested in the figure that most marginal people lost their income during the lockdown, and it was a crisis to maintain their basic needs.



Source: Author's calculations from field survey 2022

Figure 3. Income Range of the Respondents

1.4. Primary income source of households

The table shows that about 72% of people are self-employed in non-agriculture, mostly collected data from urban and suburban areas. Only 13% of people were self-employed in Agriculture, Causal labor in agriculture and regular or salaried person. It is also mentionable that about 15% of people are engaged in the non-agriculture sector.

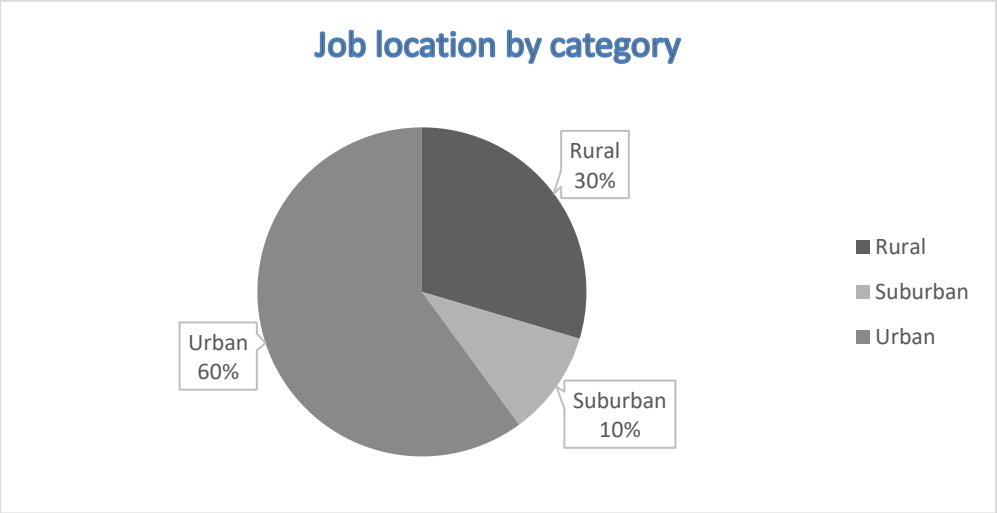
Table 6. Income Source of Households

	Frequency	Percent	Cumulative Percent
Self-employed in agriculture	16	4.6	4.6
Self-employed in non-agriculture	251	72.1	76.7
Regular wage/salary	14	4.0	80.7
Casual labor in agriculture	16	4.6	85.3
Casual labor in non-agriculture	51	14.7	100.0
Total	348	100.0	

Source: Author's calculations from field survey 2022

1.5. Job Location of the Respondents

The pie charts show that about 60% of worker live in urban areas as our targeted people were hawker, daily laborers, transports workers, small businessman, and construction workers. About 30% of people live in rural areas, and the remaining 10% live in suburban areas.



Source: Author's calculations from field survey 2022

Figure 4. Job Locations

1.6. Impact on job and income during lockdown

The table shows that from 348 respondents, 177 people said they lost their job during the COVID-19 period, and 171 said that they did not affect their job. However, it is manifested from the table that although 50% of people said that they had a job, but their income level decreased very noticeably. Almost 90% of people said that income declined during the outburst of COVID-19. Only 10% of people said their income level remained the same or increased due to job security.

Table 7. Impact on Job

Variable	Response	Frequency	Percentage
Do you lose your job during COVID-19?	Yes	177	50.9
	No	171	49.1
Is your income decrease during the lockdown?	Yes	313	89.9
	No	35	10.1

Source: Author's calculations from survey respondents

1.7. Support of households for maintaining expenditure of livelihood

Table 6.4 shows that only 13.8% of people got relief from the government and other sources. This economic disruption has far-reaching consequences for lower-income people, as the government restricted mass people not to go out from home for work. Many people did not get any support from any sources; among these people, 71% managed their living expenses by borrowing from relatives or institutions. Other 29% of people lead their lives by reducing daily expenses or from their previous savings. However, most had little or no savings.

Table 8. Support of Households

Variable	Response	frequency	percentage
Do you think that your livelihood changed due to COVID-19?	Yes	316	90.8
	No	32	9.2
Do you have any support from the government or other sources?	Yes	49	13.8
	No	299	85.9
Do you borrow from relatives or institutions?	Yes	247	71.0
	No	101	29.0

Source: Author's calculations from field survey 2022

1.8. Consumption and health issues of the respondents

The above figure shows the effect of the consumption pattern due outburst of COVID 19. It manifests that about 45% of people said the consumption pattern decreased in the lockdown. Other 54% of people said they had no change in that period. Regarding the health crisis, about 45% of people agree that they faced a severe health crisis, and 54% said that they did not face any problem. Regarding child health, about 63% of people said their child's health deteriorates significantly due to the global pandemic.

Table 9. Consumptions and health issues of respondents

Variable	Response	Frequency	Percentage
Do you think that your Consumption pattern declined due to COVID-19?	Yes	158	45.4
	No	190	54.6
Do you face any health problems due to the outburst of COVID-19?	Yes	159	45.7
	No	188	54.0
Do you feel that your child's health deteriorates due to COVID-19?	Yes	221	63.5
	No	127	36.5

Source: Author's calculations from field survey 2022

1.9. Factors that affect the livelihood of each household

This survey is carried out by considering three important factors of livelihood of the respondents such as drinking water, shelter, and sanitation facilities. It is observed from the stated information that only 20% of people had hygienic drinking water. About 80 % of people drank semi-hygienic water, which threatened child health. From our survey, it is seen that about

63.5% of people live in a permanent house, and the rest, 36.5% of people live in floating and temporary houses. In the case of the sanitation scenario, it is clear that only 4.6 % of people used safety latrines, and about 95.1% of people used flash anywhere, which was very unhygienic for public health.

Table 10. Factors that Affecting Livelihood

Particulars	Types	Frequency	Percent	Cumulative Percentage
Drinking water	Hygienic	70	20.1	20.1
	Semi hygienic	278	79.9	100.0
Shelter	Permanent	221	63.5	63.5
	Temporary	127	36.5	100.0
Sanitation	Flash to the pit latrines	16	4.6	4.6
	Flash to anywhere	331	95.1	99.7
	Hanging	1	.3	100.0
	Total	348	100.0	

Source: Author's calculations from field survey 2022

2. Empirical Result Analysis

2.1 Reliability Test Result

Cronbach's Alpha was considered to measure the reliability test of the components used in SEM path analysis. Table 6.7 explains the reliability statistics result, and the reliability statistics confirm the strength of the structural equation model. This test considers the value of Cronbach's Alpha which is indicated highest value. From Table 6.7, the value of Cronbach's Alpha is 0.534, affirming the estimate of further regression through SEM analysis.

Table 11. Reliability Statistics

Cronbach's Alpha	N of Items
.534	5

Source: Author's Estimation

2.2. Model Fit Evidence

Table 6.8 represents the model that fits the evidence of SEM analysis. The CMIN statistics show the CMIN value of 8.493 for the default model. The probability value of the CMIN statistics shows the significance, and the significance level is 0.014, at a 5% level. CMIN/DF shows the value of 4.246; that result is significant at a 5% level, indicating the discrepancy.

Table 12. Model Fit Evidence: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	8	8.493	2	.014	4.246**
Saturated model	10	.000	0		
Independence model	4	186.936	6	.000	31.156

Note: ** shows the 5% significance level

Table 6.9 shows the root mean square residual (RMR) and goodness of fit (GFI) results when the expected RMR is zero or close to zero. The RMR result in this estimation is 0.008, which is a widely accepted and appropriate value for the model evidence. However, the goodness of fit (GFI) result shows the highest value to explain model fit. The factor used to explain the dependent factors as much as possible is determined by the value of GFI. This model's estimated GFI value is 0.988, which is an acceptable and well-fitting result. The PGFI and AGFI results are 0.198 and 0.940, respectively, indicating that there is no inconsistency in the result estimation.

Table 13. Model Fit Evidence: RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.008	.988	.940	.198
Saturated model	.000	1.000		
Independence model	.113	.816	.693	.490

Source: Author's Estimation.

Baselines comparison proof has been introduced in Table 6.9. In this stage, this study considers measures like NFI, RFI, IFI, TLI, and CFI. The choice measure is to get the worth of those rules near 0.90 or more than 0.90 given the best fit record to clarify the free factor for subordinate factors. Be that as it may, NFI is additionally called Delta 1, the worth of NFI is 0.955, RFI known as rho1 which is 0.864, IFI insights known as Delta2 and the worth is 0.892, and the consequence of TLI is known as rho2 with the worth of 0.892. The CFI esteem is 0.964 for the default model.

Table 14. Model Fit Evidence: Baseline Comparisons

Baseline Comparisons					
Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.955	.864	.965	.892	.964
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000
FMIN Statistics					
Model	FMIN	F0	LO 90	HI 90	
Default model	.024	.019	.003	.056	
Saturated model	.000	.000	.000	.000	
Independence model	.539	.521	.403	.661	
RMSEA Statistics					
Model	RMSEA	LO 90	HI 90	PCLOSE	
Default model	.097	.037	.168	.091	

Source: Author's Estimation**.**

Table 15. Model Fit Evidence: Minimum AIC Value

Model	AIC	BCC	BIC	CAIC
Default model	24.493	24.726	55.310	63.310
Saturated model	20.000	20.292	58.522	68.522
Independence model	194.936	195.053	210.345	214.345

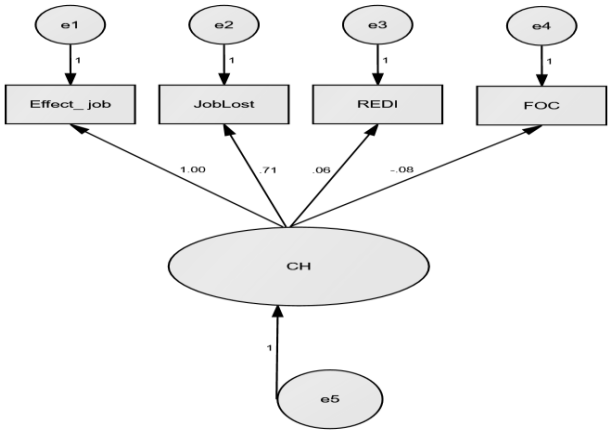
Source: Author's Estimation

The FMIN proof is additionally introduced in Table 6.10, and the FMIN measurements thought about those rules like F0, LO 90, and HI 90 to decide the model fit. The choice measures are to get the worth of those rules near to (0) or at the degree of importance of 10%. In any case, the FMIN result is 0.02, F0 is 0.19, LO 90 is 0.00, and HI 0.056 for the default model. The trial of RMSEA insights considered the importance level 5% to 10% and better to decide esteem near nothing (0) for all cases. In this review, the aftereffect of RMSEA measurements is 0.097, L0 90 is 0.37, HI 90 IS 0.056, and PCLOSE is 0.091 for the default model. Those results are fulfilling the predictable rules of dynamic interaction. Table 5 shows the worth of AIC, which is thinking about the base value to decide the model. The base AIC esteem is 24.493, resolved by the SEM assessment.

2.3. Result of SEM Path Analysis

Unstandardized Coefficients Estimates

COVID-19 creates an impact on all sectors of the economy. The impact of this pandemic on Bangladesh's economy is not a simple issue; there is a greater chance of creating vulnerability in economic actions. This study implies SEM analysis to investigate the impact of COVID-19 through its effect on jobs, job loss, income reduction, and food consumption impact on child health vulnerability. The Unstandardized coefficients estimates show that COVID-19 impact on the job, known as the job effect, has a positive impact on child health vulnerability, and job loss influence reduce income both factor has a positive impact on child health vulnerability. The effect influences food consumption that is directly related to child health where the COVID-19 impact on food consumption, specifically less food consumption has been able to create child health vulnerability due to COVID-19 crisis.



Source: Author's Estimation

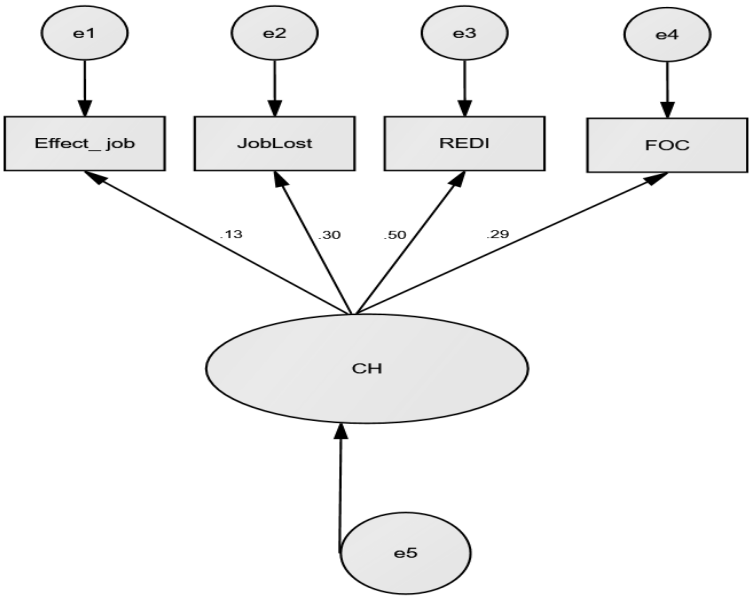
Figure 5. Unstandardized Coefficients Estimates

Standardized Coefficients Estimates

COVID-19 effect on the job has emphasized the risk of job looseness for marginal people. In that case, standardized coefficients show how COVID-19 influenced child health vulnerability through the perspective of unemployment, income reduction, and food consumption. The impact of COVID-19 on jobs known as job effects, such as less promotion, job grading, devaluation, salary cut, and over-duty, has impacted child health. The coefficient of the variable effect-job is 0.13, which explains that one additional burden in the job market has raised the child's health vulnerability by 0.13%, and this outcome is significant at a 5% level. The coefficient of the variable job loss is 0.30, which explains that one additional chance of job loss in the job market has raised the child's health vulnerability by 0.30%, which is significant at a 5% level. In that case, the job loss impacts income because marginal people are the most vulnerable group to maintain their food consumption, which is the key factor for raising child health vulnerability.

The coefficient of the variable reduction of income due to COVID-19 represented by REDI is 0.50, which explains that one additional unit of income reduction has raised the child health vulnerability by 0.50%. This result is significant at the 5% level confirmed by the CMIN value. In that case, a reduction in income creates inconsistent food consumption. Inconsistent food consumption is a key factor that raises child health vulnerability in Bangladesh. Whatever the impact of food consumption to explain the child health vulnerability shows the result of SEM

analysis; one additional household food consumption shortage has raised the child health vulnerability by 0.29%, with a considered 5% level of significance.



Source: Author's Estimation

Figure 6. Standardized Coefficients Estimates

However, in children, the most dangers presented by the COVID-19 emergency are not those of the actual illness but rather its incidental losses like an economic crisis. These incorporate deficient sustenance with a gamble of both overweight and underweight, dependence on screens, absence of tutoring, psychological wellness sway, social segregation, declining inoculation rates, and medical care. COVID-19 has created major financial unrest and has upset vocation exercises (job loss) for a large number of individuals around the world, especially those working in the casual economy. Developed nations, including the richest, have seen stunning scenes of thousands of frantic people lining up for extended periods, a large number of weeks, to get free food packages; most are weak people given from middle and marginal people. However, the COVID-19 pandemic has disintegrated key determinants of wellbeing and created significant disturbances all over the planet. Children, albeit less straightforwardly impacted by the virus, are addressing a weighty cost through the circuitous impacts of the emergency, including less than stellar eating routine, inconsistent food consumption, emotional wellness sway, social detachment, dependence on screens, and absence of tutoring and medical care, especially among weak gatherings. This paper is pointed toward examining the possible effect of these macroeconomic determinants during COVID-19 on child health and way of life.

However, the overall measure shows that COVID-19 impacts jobs and those impacts are responsible factors for the job loss of a worker. It is a simple issue that when a worker loses the job, he or she has the problem of income reduction, which is a key factor of inconsistent food consumption. In the summary of the analysis, insufficient food consumption is one of the key conscientious factors to increasing child health vulnerability in Bangladesh during the COVID-19 pandemic.

CONCLUSION AND RECOMMENDATIONS

The COVID-19 outbreak was considered a global health crisis, which substantially turned into an economic discrepancy on a large scale worldwide. The crisis directly affects our job market, and all public services eventually largely affect the marginal income people. New job opportunities and existing job facilities were negatively impacted during that period. The severity of the pandemic extended almost one and half years. COVID-19 has accentuated the scenario of some vulnerable people like Hawker, Construction workers, transport workers, and small businessman, especially those who earn daily. This study ensures that COVID-19 badly affected their daily income; as a result, severe food crises are faced by these vulnerable people. Some stimulus packages were offered to the affected people but were negligible for vulnerabilities. This study confirms that most lower-income people did not get government or other institutional facilities. So they had to borrow from financial institutions or relatives, which was also burdensome in the long run. During the pandemic, the dietary pattern of lower-income people changed significantly; as a result, public health deteriorated. In the case of child health, mental and physical health are affected significantly. The overall livelihood of these marginal people also falls threatened because they do not get any hygienic water and accommodation facilities from the government of Bangladesh. In the above view, government policy decisions should be immediately designed in employment and the labor market. There need to be enhanced cash transfer to the lower-income on the victimized household. In the end, the impact of COVID-19 was not only limited to the urban area; it also spread to rural areas. The government must allocate a high budget to ensure safety net programs and child health. From the empirical findings, this study recommended that people be more aware of COVID-19 and post-COVID-19. The marginal people need government and logistic support to recover from this crisis. The consumption level should be maintained at a subsistence level. The legal authority should concentrate on job security and sustainable job and ensure alternation income sources. Reducing income levels has caused health vulnerability. Government compensation has played a vital role in maintaining sustainable income levels and health care facilities among the marginal group.

REFERENCES

Alam, M. S., Ali, M. J., Bhuiyan, A. B., Solaiman, M., & Rahman, M. A. (2020). The impact of covid-19 pandemic on the economic growth in Bangladesh: a conceptual review. American Economic & Social Review, 6(2), 1-12.

Akseer, N., Kandru, G., Keats, E. C., & Bhutta, Z. A. (2020). COVID-19 pandemic and mitigation strategies: implications for maternal and child health and nutrition. The American journal of clinical nutrition, 112(2), 251-256.

Antony, P. T. L., Rani, L., Brundha, M. P., & Priya, J. (2020). Problems faced by daily laborers during covid-19 lockdown-a questionnaire survey. International Journal of Current Research and Review, 12(19 Special Issue).

Bidisha, S. H., Mahmood, T., & Hossain, M. (2021). Assessing food poverty, vulnerability and food consumption inequality in the context of COVID-19: A case of Bangladesh. Social Indicators Research, 155(1), 187-210.

Chowdhury, P., Paul, S. K., Kaisar, S., & Moktadir, M. A. (2021). COVID-19 pandemic related supply chain studies: A systematic review. Transportation Research Part E: Logistics and Transportation Review, 148, 102271.

Fisher, R. A. (1922). On the mathematical foundations of theoretical statistics. Philosophical transactions of the Royal Society of London. Series A, containing papers of a mathematical or physical character, 222(594-604), 309-368.

Fisher, R. A. (1934). The effect of methods of ascertainment upon the estimation of frequencies. Annals of eugenics, 6(1), 13-25.

Genoni, M. E., Khan, A. I., Krishnan, N., Palaniswamy, N., & Raza, W. (2020). Losing Livelihoods.02004.0458.v1

Hossain, M. I. (2021). COVID-19 impacts on employment and livelihood of marginal people in Bangladesh: Lessons learned and way forward. South Asian Survey, 28(1), 57-71.

Islam, M. N., & Inan, T. T. (2021). Exploring the fundamental factors of digital inequality in Bangladesh. SAGE Open, 11(2), 21582440211021407.

Kesar, S., Abraham, R., Lahoti, R., Nath, P., & Basole, A. (2021). Pandemic, informality, and vulnerability: Impact of COVID-19 on livelihoods in India. Canadian Journal of Development Studies/Revue canadienne d'études du développement, 42(1-2), 145-164.

Kamal, A. H., Huda, M., Dell, C., Hossain, S., & Ahmed, S. (2020). Translational strategies to control and prevent spread of COVID-19 in the Rohingya refugee camps in Bangladesh. Global Biosecurity, 2(1).

Khan, A., Khwaja, A., & Jawed, A. (2020). Navigating Civic Spaces During a Pandemic: Pakistan Report.

Mohammad, A., Goli, V. S. N. S., & Singh, D. N. (2021). Discussion on 'Challenges, opportunities, and innovations for effective solid waste management during and post COVID-19 pandemic, by Sharma et al. (2020)'. Resources, Conservation, and Recycling, 164, 105175.

Majumder, S., Rahman, M., Layla, F., & Abedin, M. Z. (2020). Forecasting the Impact of COVID-19 on Remittance Inflows in Selected South Asian Countries. Frajana and Abedin, Mohammad Zoynul, Forecasting the Impact of COVID-19 on Remittance Inflows in Selected South Asian Countries (11 July 2020).

Majumder, S. C., Rahman, M. H., & Martial, A. A. A. (2022). The effects of foreign direct investment on export processing zones in Bangladesh using Generalized Method of Moments Approach. Social Sciences & Humanities Open, 6(1), 100277.

Majumder, S. C., Rahman, M. H., & Debbarman, S. (2021). Factors influencing maternal mortality in Cumilla city corporation, Bangladesh. .International Journal of Scientific Reports, 7(7), 346-354.

Mottaleb, Khondoker Abdul, Mohammed Mainuddin, and Tetsushi Sonobe. "COVID-19 induced economic loss and ensuring food security for vulnerable groups: Policy implications from Bangladesh." PloS one 15.10 (2020): e0240709.

Nguyen, P. H., Kachwaha, S., Pant, A., Tran, L. M., Ghosh, S., Sharma, P. K., ... & Menon, P. (2021). 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, 11(4), e048738.

Osendarp, S., Akuoku, J. K., Black, R. E., Headey, D., Ruel, M., Scott, N., ... & Heidkamp, R. (2021). The COVID-19 crisis will exacerbate maternal and child undernutrition and child mortality in low-and middle-income countries. Nature Food, 2(7), 476-484.

Paul, A., Sikdar, D., Hossain, M. M., Amin, M. R., Deeba, F., Mahanta, J., ... & Nath, T. K. (2020). Knowledge, attitudes, and practices toward the novel coronavirus among Bangladeshis: Implications for mitigation measures. PloS one, 15(9), e0238492.

Qian, Y., & Fan, W. (2020). Who loses income during the COVID-19 outbreak? Evidence from China. Research in Social Stratification and Mobility, 68, 100522.

Rahman, M. H., & Majumder, S. C. (2020). Feasibility of NGO initiatives in SME, rural benefits and challenges: A case study in Cumilla, Bangladesh. Journal of Economic Info, 7(1), 26-39.

Rahman, M. H., & Habib, A. (2021). Impact of Economic and Noneconomic Factors on Inflow of Remittances into Bangladesh: Application of Robust Least Squares Method. Finance & Economics Review, 3(1), 51-62.

Rahmana, M. H., Majumder, S. C., Hossain, M. N., & Nahrin, R. (2020a). Factors Influencing Infant and Child Mortality: A Case Study of Cumilla District, Bangladesh. The International Journal of Social Sciences World (TIJOSSW), 2(2), 40-55.

Rahman, M. H., Majumder, S. C., & Rana, M. Z. (2020b). The Reasons Behind the Shift of Patients from Public to Private Hospitals: Evidence from Public Hospitals in Cumilla City Corporation. International Journal of Public Policy and Administration Research, 7(2), 69-78.

Sakamoto, M., Begum, S., & Ahmed, T. (2020). Vulnerabilities to COVID-19 in Bangladesh and a reconsideration of sustainable development goals. Sustainability, 12(13), 5296.

Titumir, R. A. M. (2021). Poverty and inequality in Bangladesh. In Numbers and Narratives in Bangladesh's Economic Development (pp. 177-225). Palgrave Macmillan, Singapore