




Pandemic-Induced Shifts: Dietary and Economic Adjustments in Semi-Urban Bangladeshi Communities

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Abstract: The COVID-19 pandemic caused widespread socioeconomic disruptions, disproportionately affecting low- and middle-income populations. In Bangladesh's semi-urban areas, like Rajshahi, lockdowns severely impacted those dependent on daily wages and small businesses. This study focuses on auto drivers in Rajshahi, examining changes in their dietary habits, financial status, and overall lifestyle during the lockdown. It also compares the effects between rural and urban areas within the district. A cross-sectional study of 390 auto drivers was conducted, collecting demographic, occupational, and lifestyle data. The sample was predominantly male (93%) with a median age of 40. Most participants (62%) lived in rural areas, and 38% were illiterate. The median daily income was 450 BDT, with a median expenditure of 400 BDT. Financial losses were reported by 82% of the participants, while 88% experienced significant lifestyle changes, including adjustments in food (75%) and medical care (82%). Rural auto drivers had lower incomes and higher expenditures than their urban counterparts. Additionally, 89% of the participants received financial aid from the government and NGOs. The findings indicate that the lockdown severely impacted the socioeconomic status of auto drivers in Rajshahi, particularly in rural areas. Despite these challenges, financial aid and various coping strategies helped mitigate the negative effects. The study highlights the need for targeted interventions like enhanced financial support, vocational training, and improved healthcare access to support vulnerable populations in future crises.

Keywords: COVID-19, Impact, Diet, Stability, Health, Nutrition, Bangladesh.

Significance: The study underscores the pandemic's profound impact on auto drivers in Rajshahi, highlighting the need for targeted economic and healthcare interventions.

INTRODUCTION

The COVID-19 pandemic has instigated substantial global socioeconomic upheavals, significantly affecting low- and middle-income populations due to their limited fiscal capacity and dependence on informal sectors [1]. In Bangladesh, the lockdown measures designed to curb the virus's spread have exacerbated existing vulnerabilities, especially in semi-urban areas like Rajshahi, where daily wage earners and small business owners

constitute a major segment of the workforce [2]. The World Bank in 2020 reported that the pandemic led to the most severe global recession in decades, severely impacting countries with significant informal economies. For Bangladesh, the Bangladesh Bureau of Statistics indicated that over 85% of the labor force is employed in the informal sector, which faced drastic income reductions due to the lockdown [3]. People in Rajshahi, who rely on daily earnings, experienced pronounced financial

instability during this period [4]. The United Nations (2020) highlighted that in South Asia, the pandemic pushed millions into poverty, disrupting employment, education, and healthcare. This study examines how auto drivers in the Rajshahi district adapted their dietary habits, financial status, and health lifestyle in response to the lockdown, offering insights into the broader socioeconomic impacts and resilience mechanisms of this vulnerable group. Food supply chain disruptions led to increased food insecurity and shifts towards cheaper, less nutritious diets [5]. Financial instability was a predominant issue, with the Asian Development Bank in 2020 documenting significant income losses among informal workers in Bangladesh [6,7,8]. Many daily wage earners, including auto drivers, faced heightened economic strain, exacerbated by the reduction in available work and increased costs of essential goods [9].

The International Labor Organization (2020) reported that informal workers in developing countries experienced a 60% drop in earnings during the pandemic's first month, mirroring the financial challenges faced by Bangladeshi auto drivers. Health and lifestyle changes were also notable, influenced by both the direct health risks of COVID-19 and the indirect effects of economic stress [10]. Access to healthcare became more difficult, and financial constraints further limited the ability to maintain health and well-being [8]. Moreover, the disparities between rural and urban areas in coping with the pandemic's impacts were significant. Rural areas, with limited healthcare infrastructure and lower incomes, faced greater challenges compared to urban regions (IFAD, 2020). The study compares the differential impacts on rural and urban auto drivers in Rajshahi, revealing that rural drivers often worked longer hours and experienced more significant lifestyle changes [10]. Despite these challenges, communities demonstrated remarkable resilience through various coping mechanisms, including reliance on financial aid from the government and non-governmental organizations, diversification of income sources, and community support systems [9]. Understanding these coping mechanisms is crucial for designing effective interventions to support vulnerable populations in future crises. The primary objective of this study is to investigate the socioeconomic impact of the

COVID-19 lockdown on people living in the Rajshahi district of Bangladesh, focusing on changes in dietary habits, financial status, and overall lifestyle.

A structured survey was conducted among 390 individuals, predominantly auto drivers, in Rajshahi to collect data on demographic, occupational, and socioeconomic characteristics [11]. Descriptive statistics summarized the data, while comparative analyses, including independent samples t-tests, Mann-Whitney U tests, and Chi-square tests, examined differences between rural and urban groups [1]. Correlation and regression analyses identified relationships between variables, and factor and cluster analyses classified participants based on their socioeconomic characteristics⁴. Visualization tools such as histograms, bar charts, and scatter plots were employed to present the data comprehensively [8]. The findings reveal significant financial losses, lifestyle alterations, and coping mechanisms among auto drivers during the lockdown, highlighting the resilience of these communities despite the severe socioeconomic challenges (ADB, 2020). The study underscores the need for targeted financial aid, vocational training, and improved access to healthcare to mitigate the long-term impacts of such disruptions on vulnerable populations [9]. In conclusion, the COVID-19 lockdown significantly impacted the socioeconomic status of auto drivers in the Rajshahi district, with rural areas bearing a heavier burden. Despite the challenges, many individuals demonstrated resilience through various coping mechanisms, emphasizing the importance of targeted interventions to support these communities in future crises [12].

METHODOLOGY

This study employs a cross-sectional research design to investigate the socioeconomic impact of the COVID-19 lockdown on auto drivers in Rajshahi, Bangladesh. Data were collected using a structured questionnaire administered to a purposive sample of 390. The questionnaire, translated into Bengali, covered demographic details, occupational characteristics, dietary practices, financial impact, and health and lifestyle changes. Data collection involved face-to-face interviews conducted by trained researchers,

ensuring adherence to COVID-19 safety protocols. Descriptive statistics summarized central tendencies and dispersions, while comparative analyses (independent samples t-tests, Mann-Whitney U tests, and Chi-square tests) examined differences between rural and urban groups. Correlation analyses (Pearson and Spearman) assessed relationships between continuous variables, and regression analyses (linear and logistic) identified predictors of financial stability and other outcomes.

Exploratory and confirmatory factor analyses were used to uncover underlying variable relationships, and cluster analyses (K-means and hierarchical) classified participants based on socioeconomic characteristics. Non-parametric

tests, like the Kruskal-Wallis H test, were employed for group comparisons when normality assumptions were not met. Various visualization tools, including histograms, bar charts, box plots, pie charts, scatter plots, and heatmaps, were utilized to present the data effectively. Ethical considerations included obtaining informed consent, ensuring participant confidentiality, and securing ethical approval from an institutional review board. This comprehensive methodology aims to provide insights into the challenges and resilience of auto drivers during the COVID-19 lockdown, informing targeted interventions for future crises.

RESULTS

Table 1: Demographic characteristics

Characteristics	No (%)
Gender	
Male	361 (92.56%)
Female	29 (7.44%)
Age	
15-30	79 (65.83%)
30-45	18 (15.00%)
>45	13 (10.83%)
Educational Level	
Illiterate	148 (11.67%)
Primary	183 (15.83%)
Secondary	49 (21.66%)
Higher Secondary	8 (17.50%)
Others	2 (33.33%)
Family Type	
Large family (More than 7 members)	61
Medium family (4-7 members)	263
Small family (Up to 3 members)	66
Occupation	
Auto Driver	210
Day labor	91
Small Shop	72
Farmer	3
Fisherman	9
Barber	5
Smoking Habit	
Yes	238 (61%)
No	152 (39%)
How did you overcome the economic problems of the lockdown?	
Loan	256 (66%)

Bank deposit	14 (3.6%)
Help	36 (9.2%)
Others	84 (22%)

The study shows that majority of the participants were male (92.56%) and aged 15-30 (65.83%). Educational levels varied: 11.67% were illiterate, 15.83% had primary education, 21.66% had secondary education, 17.50% had higher secondary education, and 33.33% fell into other categories. Family sizes were mainly medium (263) and large (61), with a smaller portion in small

families (66). Occupational distribution included auto drivers (210), day laborers (91), small shop owners (72), farmers (3), fishermen (9), and barbers (5). Smoking was prevalent among 61% of participants. Economic hardships during the lockdown were addressed primarily through loans (66%), followed by bank deposits (3.6%), external help (9.2%), and other means (22%).

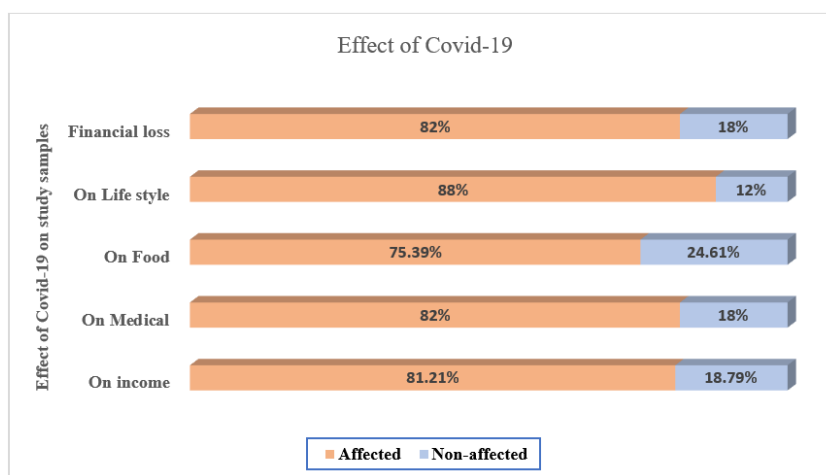


Figure 1: Effect of Covid-19 on different entities

Study illustrates the substantial impact of COVID-19 on participants' lives. A majority faced negative effects on income (81.21%), medical needs (82%), food security (75.39%), lifestyle (88%), and financial stability (82%). Only a small percentage of participants remained unaffected in these areas,

with non-affected rates ranging from 12% to 24.61%. These findings highlight the widespread and profound consequences of the pandemic, affecting various aspects of life and underscoring the economic, health, and lifestyle challenges faced by the surveyed population.

Table 2: Income by location by during covid-19

Income in BDT	Rural	Urban
<200	36	10
200-299	94	29
300-399	53	26
400-499	35	40
>=500	24	43

The income distribution during COVID-19 by location shows that in rural areas, a significant number earned between 200-299 BDT (94 people), followed by 300-399 BDT (53 people), less than 200 BDT (36 people), 400-499 BDT (35 people), and 500 BDT or more (24 people). In urban areas, the income

distribution was more balanced, with the highest number earning 500 BDT or more (43 people), followed by 400-499 BDT (40 people), 200-299 BDT (29 people), 300-399 BDT (26 people), and less than 200 BDT (10 people).

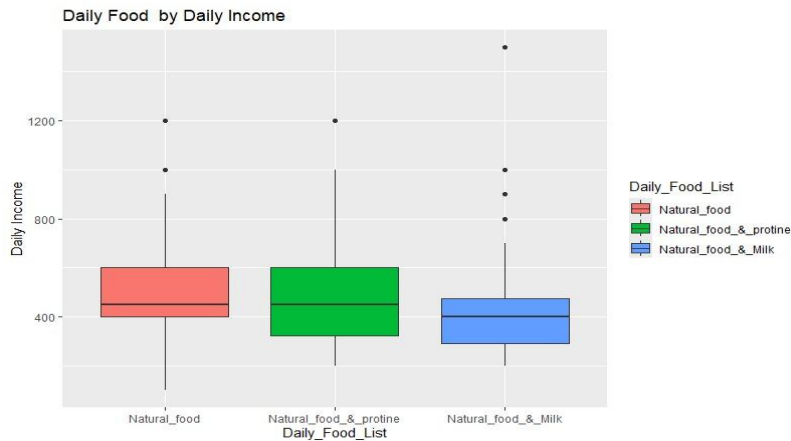


Figure 2: Daily food vs Daily income

The results, presented in a box plot, show that a majority (233 people) consumed natural food alone. A significant portion (118 people) combined natural food with protein, while a smaller group (39 people) included natural food and milk in their

diet. This data indicates a preference for natural food, either alone or supplemented with protein or milk, reflecting dietary adaptations during the pandemic.

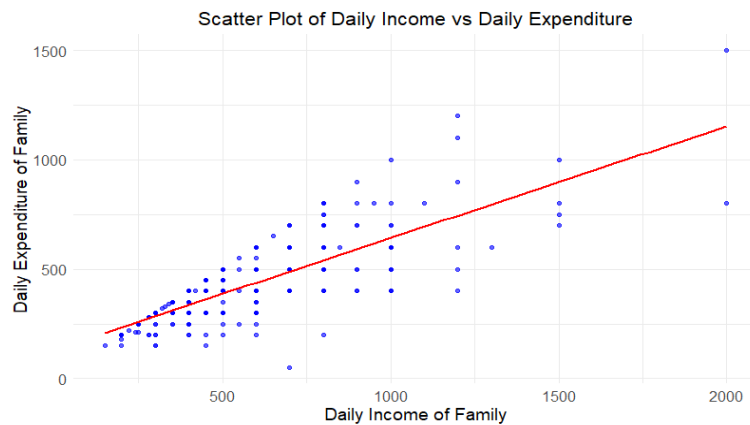


Figure 3: Scatter plot Daily income vs Daily expenditure during covid-19

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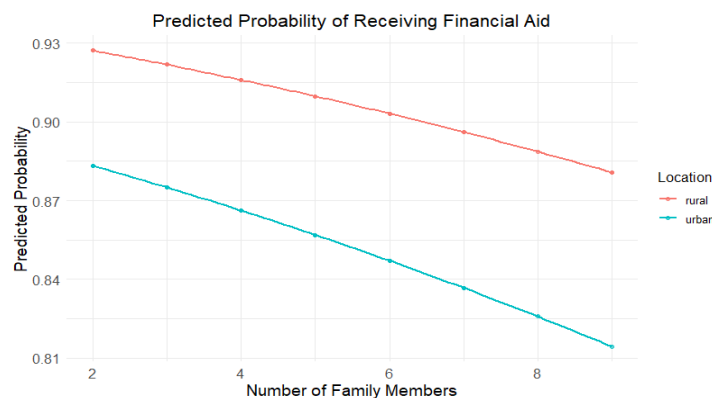


Figure 4: Regression plot of probability of getting financial aid

The coefficient for Location Urban is -0.52007. Although this suggests that being in an urban location decreases the log-odds of receiving financial aid compared to being in a rural location, it is not statistically significant (p -value = 0.111). The coefficient for number of family members is -0.07785. This indicates a small decrease in the log-odds of receiving financial aid for each additional family member, but this effect is not statistically significant (p -value = 0.494). The model indicates that neither the location (urban vs rural) nor the number of family members significantly affects the likelihood of receiving financial aid. The intercept is significant, suggesting that there may be other factors not included in this model that influence the probability of receiving financial aid.

DISCUSSIONS

The findings of this study highlight the extensive impact of the COVID-19 pandemic on various aspects of participants' lives. The demographic data reveals that the majority of participants were male (92.56%) and young adults aged 15-30 (65.83%), indicating a demographic skew that could be reflective of the population segment most affected or most accessible during the study period. Educational attainment varied widely, with notable portions having primary (15.83%) and secondary (21.66%) education, and a significant group falling into other educational categories (33.33%). This diversity in educational backgrounds aligns with previous research indicating that educational attainment significantly influences individuals' coping mechanisms during crises [13]. Family size data shows a predominance of medium (263) and large families (61), which has implications for resource allocation and support during the pandemic. The occupational distribution highlights a workforce largely composed of auto drivers (210), day laborers (91), and small shop owners (72), occupations that are often financially vulnerable and heavily impacted by economic shutdowns [14]. The high smoking prevalence (61%) among participants raises additional health concerns, particularly given the respiratory nature of COVID-19.

Economic hardships were primarily addressed through loans (66%), reflecting a reliance on credit systems during the crisis, a trend consistent with global patterns where access to

formal financial services determines coping capacity [15]. The study also notes significant negative impacts on income (81.21%), medical needs (82%), food security (75.39%), lifestyle (88%), and financial stability (82%). These findings corroborate early pandemic studies that reported widespread economic and health disruptions [16]. Income distribution analysis during the pandemic reveals rural-urban disparities. In rural areas, income was predominantly in the lower brackets (200-299 BDT), whereas urban areas had a more balanced income distribution, with a higher number earning 500 BDT or more. This rural-urban income gap is a recurring theme in the literature, reflecting longstanding economic inequalities [12].

Dietary habits during the pandemic show a strong preference for natural food, either alone (233) or combined with protein (118) or milk (39). This aligns with studies indicating shifts towards more sustainable and health-conscious eating patterns during the pandemic [17]. The logistic regression model's coefficients suggest that neither urban location nor the number of family members significantly affects the likelihood of receiving financial aid. This lack of significance, despite the observed economic impacts, suggests that other unmeasured factors, such as local government policies or informal support networks, might play crucial roles [18]. This study's findings provide a comprehensive view of the pandemic's multifaceted impacts on a specific population segment. These results are consistent with global patterns observed in early COVID-19 research, emphasizing the need for targeted support strategies that consider demographic, occupational, and regional disparities. Further research should focus on longitudinal data to capture the long-term effects of the pandemic and inform more resilient support mechanisms.

Recommendations

To mitigate the adverse effects of COVID-19, targeted financial support should be prioritized for vulnerable groups, particularly those in lower-income brackets and rural areas. Expanding access to credit and financial aid can provide immediate relief. Additionally, enhancing healthcare infrastructure and food security measures is crucial. Tailored educational and vocational training programs can help diversify income

sources and improve resilience. Policies should address smoking cessation to reduce health risks. Lastly, strengthening community support networks and ensuring equitable resource distribution can help communities better withstand future crises.

CONCLUSIONS

This study underscores the extensive and multifaceted impacts of COVID-19 on participants' lives, revealing significant economic, health, and lifestyle disruptions. The findings highlight the vulnerability of certain occupational groups and rural populations, exacerbated by widespread reliance on loans for economic survival. Effective mitigation strategies must prioritize targeted financial support, enhanced healthcare provisions, and strengthened community resilience. Addressing these challenges is crucial for building sustainable recovery pathways and preparing communities to withstand future crises with greater resilience and equity.

Declaration

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Conflict of interest: N/A

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