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### Financial Impact of COVID-19 on the Livelihood of Urban Poor: A Study on Dhaka Metropolis Slum Dwellers of Bangladesh

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#### ABSTRACT

This research explored urban slum dwellers' financial repercussions during COVID-19 in Bangladesh. The study investigated financial implications using 51 attributes grouped in seven categories related to work/jobs, wage/earning, stakeholders, savings/expenditure/debt, food, family well-being, and offspring. The study noted that during Covid-19 households are affected in almost all the attributes and areas. Notable attributes are surpassed expenditure over income, more spending, no more saving, spending from savings, more spending due to commodity price hikes, reduced income due to lockdown, reduced other income-generating activities, difficulty in payment of utility and other bills, extra fare to reach workplaces, more spending on transportation, failure to repay loans, family members living without required medical care/services, and work scarcity. Financial implications related to savings, expenses, and debt are the highest concern for the slum dwellers, followed by family well-being, work/job, wage/income, and stakeholder related financial implications. Least impacted implications are food and offspring related. Overall, Covid-19 ruthlessly impacted the financial wellbeing of the households responding to this survey.

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*Keywords: COVID-19, family well-being, financial insecurity, income loss, slum dwellers, Bangladesh*

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#### 1. Introduction

Coronavirus disease 2019 (COVID-19), is the most challenging crisis the world has ever faced (Yang & Wang 2020). The virus has disrupted lifestyles, livelihoods, regular outdoor and household activities, working patterns and environments, and the physical and mental wellbeing of people. As of July 2022, there have been 546,357,444 confirmed cases and 6,336,415 losses of lives in the world (WHO 2022). Observations led many to believe that low-income countries are more invulnerable to COVID-19; however, this has been proved to be a misconception (Roy, 2020). Although it primarily emerged as a fatal,

dangerous public health problem, COVID-19 also caused global economic upheaval, and its ubiquitous prevalence transcends all segments of the society and economy across nations and cultures. As a result, the pandemic has impacted lives and livelihoods of everyone in this world; however, it is the poorer and underprivileged groups of society who became the worst victims of this pandemic-induced economic and financial shock (Ria et al., 2020; Sharma & Mahendru, 2020).

While the developed world could extend relatively better support to the disadvantaged population with their well-established social security systems, in developing countries like Bangladesh economically vulnerable people were left with deep uncertainties despite the government's sincere efforts in terms of expanded social protection programs, stimulus packages, and reliefs (Bacil & Soyer, 2020). Initially, the response of Bangladesh's government

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to the COVID-19 pandemic has been nationwide lockdown in two phases, prolonged school closures, mobility and transport restrictions, and limitations on religious and political gatherings (Wilder-Smith, & Freedman, 2020). Such shutdown adversely affected almost every sector of the economy and disrupted the socio-economic situation of people and livelihoods (Kumar et al., 2021, Genoni, et al., 2020). Wasima & Rahman (2022) and Kamruzzaman (2020) found that the poorest and informal sector of the economy (85.1% of total employment of Bangladesh) with minimal or no savings bore the ultimate brunt of the pandemic.

Bangladesh experienced a slow progress of COVID-19 from its first detection on 8 March 2020 until April 2020. Since then, the cumulative confirmed cases along with fatality began to grow gradually (Islam, et al., 2020), reached a peak on 4 July 2020, and then started to decline with sporadic rises and falls. The detection rate was much lower until mid-February 2022. However, the proportion started to grow at a geometric rate from the end of February and reached a peak in April. More than 1,980,974 infection and 29,174 death cases have been registered till now (WHO 2022). While urban slums have been recognized as potential risky hives for the spread of viral respiratory infections (Hasan et al., 2022), a majority of the slum residents in Bangladesh face serious financial consequences due to COVID-19 (Bacil & Soyer, 2020; Islam et al., 2020).

As the livelihood of informally employed slum people largely depends on temporary jobs with everyday travel, COVID-19's induced mobility restrictions hit hard in terms of income losses and disrupted necessities, and heightened their suffering ruthlessly (Hossain, 2021; World Bank, 2022). However, the economy started to rebound after the initial shock and lifting of lockdowns in FY 2021. According to Bangladesh Economic Outlook (June 21, 2022) the GDP growth picked up to 7.2% in FY 2022, and per capita income was reported at \$2,591 (ADB, 2021). This was partly due to faster growth in manufacturing activity. These figures prove that the overall economy of the country has shown strong resilience and has been relatively quick in recovering the unexpected loss in this journey with the global pandemic. In this backdrop, it becomes imperative to analyze the degree of lasting impact of the pandemic and to unveil the real situation of the poorest cluster of society.

Dhaka, the capital of Bangladesh, holds more than

1.1 million slum dwellers who are deprived of modern amenities (Hossain, 2020). The households include maids, rickshaw pullers, taxi drivers, guards, garment workers, etc. Slum residents of each age, gender, education, and income group are at higher risk of financial setback due to Covid-19 since they were already in a precarious situation without much work and income (Banik, Rahman, Sikder, & Gozal 2020). They dare to move places with minimum precautions for their livelihood (Mollah & Islam, 2020). So, the question arises, what made the slum residents so daring to face the virus in a very difficult situation of work, income, and livelihood. To understand such issues, it is important to know what this unprivileged group's financial implications were during the Covid-19 period.

The broad objective of this research is to find out the financial impact on the livelihood of slum inhabitants of Bangladesh due to COVID-19. The study is confined to the slums of Dhaka city, the capital of Bangladesh. The slums of Dhaka accommodate a majority of the bottom-of-the-pyramid people. Though Dhaka slum dwellers do not represent the slums of the entire country, their structure, mobility, versatility, income, and dynamism are unique and worth researching. A study about the slum residents of the whole country is outside the scope of this work. By understanding the views of this group, the government, ministry of health and family welfare of Bangladesh, and NGOs can improve health risk communication as well as strengthen the foundation of public health governance.

## II. Methods

The study used both primary and secondary data as well as relevant literature appraisals. The primary data was collected through a structured questionnaire survey of slum dwellers. A combination of convenience, quota, and judgmental sampling were used for sample selection (n=381) with a significance level of 5%, precision of 5%, and a proportion of 50%. The questionnaire was pretested with 20 respondents. Secondary data was collected from various journal articles, reports, and relevant studies to understand the financial implications of slum dwellers in Bangladesh due to COVID-19 pandemic. A rigorous literature survey was undertaken to understand

the necessity and application of such a perception-based study on slum residents of Dhaka metropolis. A coordination schema was developed to identify the parameters, simple variables, complex variables, and values. The variables were identified through literature review and consultation with knowledgeable persons, health experts, NGO workers, etc. The survey questionnaire was designed based on this schema.

The survey contained 51 questions about the financial implications of COVID-19, grouped into seven categories related to A) Work/Jobs, B) Salary/Wage, C) Stakeholders/ customers, D) Savings/expenditure/debt, E) Food, F) Family well-being, and G) Offspring. A single question H) about the overall financial implications of COVID-19, is treated in the analysis as the dependent variable. The questions contain ordinal data statements (focusing the variables) using a 5-point Likert scale to explore the financial implications of COVID-19. The variables are designed in statement form in negative tone. The respondents are asked to respond to each question using the scale 1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree.

Table 1 reports the group categories and results of reliability tests. High Cronbach's alpha for overall (0.915  $\geq$  0.7) and group responses except for group E (food-related implications) suggests that the variables had acceptable internal consistencies among them and are reliable.

The questionnaire contained nominal data questions to determine different demographic attributes of the respondents. Mean index analysis, ANOVA<sup>1</sup>, correlation, and t-test, are incorporated to analyze the data. The study used face validity to identify the study variables.

### III. Literature Review

#### A. Urban slums in Bangladesh - A harsh reality

World Bank (2022) data showed that around 47.2% of the urban population of Bangladesh live in slums (around 5.3 million people) of which around 2.23 million are in metropolitan area slums. The average density of these urban slums is 1,104 persons/km<sup>2</sup> (Rahaman et al., 2020, Akter et al., 2021). The major contributing factors behind these huge settlements are unplanned urbanization, lack of proper housing policies, poor distribution of utility and sanitation services, etc., (Uddin, 2018). Most of the slum dwellers are bottom-of-the-pyramid people with mean earnings below TK. 10,000 (\$ 118) per month with destitute livelihood status (Rahman et al., 2022). These overcrowded slums lack COVID-19 safety measures, required quarantine measures, social distancing, and lockdown strategy (Mamun & Fatima 2020; Sakamoto, Begum, & Ahmed, 2020, Wilkinson, 2020). Mamun & Fatima (2021) observed that slum dwellers do not have a very clear idea about COVID-19, its causes, prevention mechanisms, etc.

In such dense urban slum reality, implementation of WHO's IPC guidelines on social distancing, handwashing, or isolation to combat the pandemic have almost been impossible, ineffective, and unsuccessful (Akter et al., 2021; de Groot & Lemanski, 2020; Molina-Betancur et al., 2020; Ndi et al., 2021; Obasi & Anierobi, 2021). As a result, this huge population with their extremely destitute living conditions has been identified as a potential reservoir for the spread of COVID-19 (Hasan et al., 2021, World Bank, 2022, Kumar et al., 2021). Surprisingly, the reality was the opposite. No reliable study has been found to verify whether COVID-19 has affected these

**Table 1.** Categories and Reliability Test Results of Survey Questions

Survey Question Groups	Groupwise and Overall Cronbach's Alpha
A. Work & job-related implications	Group A (8 items) 0.711
B. Wage & salary related implications	Group B (9 items) 0.831
C. Customer related financial implications	Group C (6 items) 0.798
D. Savings, expenditures & debt implications	Group D (9 items) 0.804
E. Food related implications	Group E (7 items) 0.507
F. Family well-being implications	Group F (9 items) 0.760
G. Offspring related implications	Group G (3 items) 0.689
H. Overall financial implications	Overall (52 items) 0.915

overcrowded settlements more than other areas (Zaman, Hossain, & Matin, 2022). On the downside, although research supports that slum dwellers have somehow been able to tackle this deadly, contagious disease with minimum fatality (Zaman et al., 2022), it is evident in several studies that this poorer cluster of society has become the worst victim of COVID-induced financial turmoil and shutdown.

## B. Abrupt income and job loss

To tackle the first wave of pandemic, Bangladesh imposed a nationwide shutdown (26 March - 31 May 2020), with all works suspended and movement restricted. In this unprecedented situation, both formal and informal businesses were severely hampered (Shammi et al., 2020). As a result, slum people lost their job/income completely, and the life of approximately 18 million informal workers along with their families fell under serious uncertainty. According to Islam et al (2020), the informal sector faced a loss of 11.1 million jobs economywide during the 1st lockdown. In urban areas it was 1.08 million. As a consequence, average income in the urban slums plunged by more than 80% and a total of 63% of slum dwellers became unemployed with per capita income fallen by 82% from Tk. 108 (\$1.30) to BDT 27 (\$0.32) per day (Sakamoto et al., 2020, Kamruzzaman, 2020, Khan, 2022, Billah & Billah, 2021, Hossain, 2021).

Sumiya et al. (2022) and Sohel et al. (2022) indicated that in June, 94.3 percent of the Dhaka slum dwellers were worried about unemployment and reduced earnings. A previous survey found a 75% income decline in urban slum respondents (Rahman, et al., 2020). Another study claimed that the daily income of day laborers, Rickshaw pullers, transport workers and so on was reduced by 64.37 percent (Kumar et al., 2021). A BRAC study team revealed that 88% of informal sector workers experienced an income drop, among which wage level of urban informal workers was highest in monetary terms (Morshed, et al., 2021). In another survey, 50% of the urban informal respondents experienced reduced earnings during lockdown, when the income level of 47% of respondents dropping to zero (Islam, et al., 2020).

The scenario of lost jobs and income was similar nationwide. As claimed by Rahman et al (2022), after the initial shock of radical drop of income, the situation

started to improve gradually. But during second lockdown (August 2021), income faced another hit as evidenced by per capita daily income, which was found 23 percent lower than its pre-COVID level in September 2021. They also claimed to find an indication of shift in occupations, i.e., only 54% of employees had retained their jobs. The rest moved to more vulnerable occupations including unskilled laboring (8%), rickshaw pulling (4%), and unemployment (11%) as of August 2021.

Such devastating livelihood effects were also found in the Bengaluru and Patna slums of India where most slum dwellers lost their jobs for several months (Downs-Tepper, Krishna, & Rains, 2021). Khambule (2020) pointed out that in South Africa, less educated, low-income people, Black African, female, and marginalized populations were disproportionately affected by losing their sources of income. Similar findings were claimed by a study in Colombia, where 78% of the new poor that emerged during the pandemic were informal workers and 82% resided in urban areas (Cuesta & Pico, 2020). Also, in Thailand, around 95% of the informal sector workers experienced a drastic fall in income (Komin et al., 2021).

## C. Food insecurity, general well-being, and other socio-economic issues

As an obvious consequence of such financial shock due to unexpected job loss and wage decline, the urban poor had to withstand unimaginable suffering in terms of food insecurity, starvation, inaccessible healthcare, sanitation, and other well-being (Akter et al. 2021, Firoj et al., 2021). According to Rahman et al. (2020), urban slum dwellers faced a 28% reduction in food expenditure. 24% of the respondents could not afford 3 meals a day in the 1st lockdown, and during the 2nd lockdown in August 2021 it was 16%. Many people were found to reduce their consumption of nutritious food (no meat, milk, and reduced fruit intake) and increase consumption of cheaper, high-calorie food like rice and potatoes (Rahman et al., 2022, Ruszczyk et al., 2020). According to Fattah et al. (2022), the pandemic affected 74.67% of the respondents' food habits, 95.33% of respondents' child education, and deteriorated basic services. Similar socio-economic impact has been found in several other studies globally (Nuwematsiko et al. 2022, Chauhan & Arora, 2020, Nyadera, 2020, de Groot & Lemanski, 2020).

#### D. Survival/coping strategies

At the advent of the pandemic, FAO (2020) identified the COVID-19 crisis to have significant impacts on the unemployment and underemployment levels of informal workers who, in turn, would end up with negative coping strategies such as forced sale of assets, high interest loans from informal moneylenders, or resorting to child labor. The gradual erosion of financial capacity compelled the vulnerable slum dwellers to follow similar survival strategies such as taking loans, reducing expenses, consuming less food, forced selling of land, jewelry and goods, support from relatives and neighbors, and government relief (Sohel et al., 2022, Morshed et al., 2021, Rahman, et al., 2020). All these resulted in exhausted savings, and non-food expenditures (such as rent and utility payments, non-emergency medical costs, educational expenses) were delayed (Rahman et al., 2022). A consistent rise in outstanding loans also implies negatively affected long-term financial capacity (Hossain, 2021; Rusczyk et al., 2021; Soheli et al., 2022, Downs-Tepper et al. (2021).

#### E. Emergence of “New Poor”

In a study, Rahman et al. (2020) claimed that since the advent of the pandemic in 2020, poverty levels have increased by 12.5% and a category of ‘new poor’ has been emerging, which is supported by Kumar et al (2021). Further, The South Asian Network on Economic Modelling (SANEM) found that households below the poverty line and extreme poor had increased from 21.6% in 2018 to 42% in 2020 and from 8.4% in 2018 to 28.5% in 2020 respectively. Six million jobs are estimated to have been lost (Dhaka Tribune, July 15, 2022). A nationwide joint study of PPRC–BIGD (Rahman et al., 2020) has estimated that the percentage of “new poor” was 18.54% in May 2022.

### IV. Data analysis and Findings

#### A. Demographic Features of the Respondents

This study surveyed 381 slum dwellers of which 303 (79.5%) are male and 78 (20.5%) are female. Of the

total respondents 68 (17.8%) are single and the rest 313 (82.2%) are married. In addition, 108 (28.3%) have a nuclear family<sup>2</sup> and 273 (71.7%) live in a joint or extended family<sup>3</sup> structure. Education-wise 55 (14.4%) have no formal education, 136 (35.7%) have primary education, 102 (26.8%) have secondary education, 77 (20.1%) have secondary education and the rest 11 (10.0%) have other educational expertise (e.g., vocational, trade certificates). In terms of occupation, 154 (40.4%) are different types of informal workers, 41 (10.8%) are rickshaw pullers, 39 (10.2%) are drivers, 36 (9.4%) are day laborers, 27 (6.2%) are shopkeepers, 24 (6.3%) are maids, 20 (5.2%) are housewives and the rest 40 (13.8%) have other professions. The average age of the respondents is 33.44 years with a standard deviation of 9.37 years (the age range is 15 years to 80 years). The average monthly income of the respondents is Tk. 12,170.13 (\$143.18) with a standard deviation of Tk. 5,292.98 (\$62.27) and range of Tk. 1000 (\$12) to Tk. 40,000 (\$471). Of the total respondents, 49 (11.3%) have no regular income.

#### B. Analysis of Financial Implications of COVID-19

As described already, slum dwellers’ financial status during COVID-19 is analyzed by 51 independent variables (specific implications) and one dependent variable (overall implication). The overall financial impact of COVID-19 was examined with the statement “COVID-19 impacted negatively the financial wellbeing of my family”. The respondents mentioned that COVID-19 ruthlessly impacted the financial wellbeing of their family: 48.6% agreed with the statement and 42.5% strongly agreed. The mean response was  $\mu=4.30$  ( $\sigma=0.25515$ ), significantly different from 3.00 (neutral) at the 5 percent confidence level.

The 51 independent and their mean responses are reported in the Appendix table. The variables are grouped into seven categories focusing on different finance related implications. Responses to the questions are analyzed and tested for understanding the financial implication of Covid-19 on their family, grouped by category, are reported below.

##### 1. Work/Job related implications

The work/job related implications during COVID-19 contain eight simple variables (Table 2). It is noted that

the slum dwellers strongly agreed to each of the implications. But the most emphasized ones are reduced income generating activities ( $\mu=4.10$ ), not getting enough work ( $\mu=4.0$ ), and increased job insecurity ( $\mu=3.97$ ). Next emphasized ones are going to hometown as no jobs available ( $\mu=3.82$ ), shift from a higher position to a lower position ( $\mu=3.76$ ), increased work burden ( $\mu=3.76$ ), job lost ( $\mu=3.76$ ), and part-time job lost ( $\mu=3.71$ ). Overall, it can be said that during COVID-19, the slum dwellers had serious work/job related implications ( $\mu=3.85$ ).

### 2. Earning (Wage/Income) related implications

The earning related implications (wage/salary/others) during COVID-19 contain nine repercussions (Table 3). The survey respondents reported family income reduction ( $\mu=3.99$ ), salary curtailment ( $\mu=3.90$ ) and major income loss in comparison to the pre-pandemic period ( $\mu=3.89$ ) as the leading implications. These are followed by no annual increment ( $\mu=3.85$ ), no regular income ( $\mu=3.80$ ),

reduced tips ( $\mu=3.77$ ), lost overtime pay ( $\mu=3.76$ ), no festival bonuses ( $\mu=3.75$ ) and more income reduction among females than males ( $\mu=3.69$ ). Overall, it can be said that during COVID-19, the slum dwellers have serious income related implications ( $\mu=3.82$ ).

### 3. Stakeholder/customer related implications

The stakeholder related implications during COVID-19 have six consequences (Table 4). The study tried to identify the respondents' perception regarding different institutional scenarios that have financial implications on their livelihood. The important one is government lockdown ( $\mu=4.11$ ), followed by reduced business activities ( $\mu=.82$ ), decreased purchase power of the customers ( $\mu=3.79$ ), reduced number of customers ( $\mu=3.73$ ), reduced number of passengers ( $\mu=3.69$ ) and closure of educational institutions ( $\mu=3.66$ ). Overall, it can be said that during COVID-19, the slum dwellers had severe stakeholder related implications ( $\mu=3.80$ ).

**Table 2.** Work/Job related implications

Variables	$\mu$	Respondents who	
<b>A. Work/Job related implications</b>	<b>3.85</b>	Agreed	Strongly agreed
1) Other income generating activities reduced	4.10	239 (62.7%)	99 (26.0%)
2) Not getting enough work	4.00	265 (69.6%)	68 (17.8%)
3) Job insecurity increased	3.97	184 (48.3%)	107 (28.1%)
4) Go to my hometown as no job available	3.82	237 (62.2%)	53 (13.9%)
5) Shifted from a higher- to a lower-level job	3.76	233 (61.2%)	51 (13.4%)
6) Increased work burden	3.76	241 (63.3%)	50 (13.1%)
7) Lost my job/livelihood	3.71	213 (55.9%)	56 (14.7%)
8) Lost my part time job	3.71	225 (9.1%)	53 (13.9%)

**Table 3.** Earning related implications

Variables	$\mu$	Respondents who	
<b>B. Wage/Salary related implications</b>	<b>3.82</b>	Agreed	Strongly agreed
1) Family/household income reduced	3.99	266 (70.3%)	66 (17.3%)
2) Salary curtailed	3.90	250 (65.6%)	62 (16.3%)
3) The family lost more than 50% of pre-pandemic period income	3.89	275 (72.2%)	45 (11.8%)
4) Not received annual increment	3.85	221 (58.0%)	75 (19.7%)
5) No regular income for months	3.80	250 (65.6%)	48 (12.6%)
6) Tips has reduced	3.77	218 (57.2%)	56 (14.7%)
7) Lost my overtime pay	3.76	250 (65.6%)	43 (11.3%)
8) Not received festival bonuses	3.75	216 (56.7%)	62 (16.3%)
9) Household income reduced more among females than males	3.69	225 (59.1%)	48 (12.6%)

**Table 4.** Stakeholder related implications

Variables	$\mu$	Respondents who	
		Agreed	Strongly agreed
<b>C. Stakeholder related financial implications</b>	<b>3.80</b>		
1) Income reduced due to lock down announced by government	4.11	252 (66.1%)	90 (23.6%)
2) Income reduced as business activities have slowed down	3.82	248 (65.1%)	48 (12.6%)
3) Income reduced since purchasing power of customers decreased	3.79	249 (65.4%)	48 (12.6%)
4) Income reduced due to a smaller number of customers	3.73	253 (66.4%)	34 ( 8.9%)
5) Income reduced since the number of passengers using rickshaw, CNG driven auto rickshaw decreased	3.69	237 (62.2%)	33 ( 8.7%)
6) Income reduced since educational institutions are closed	3.66	232 (0.9%)	33 ( 8.7%)

#### 4. Savings, Expenditures and Debt related implications

The savings/expenditure/debt related implications during COVID-19 have nine concerns (Table 5). The important ones are expenditure surpassed income ( $\mu=4.14$ ), spending more as all food price increased ( $\mu=4.14$ ), no more savings ( $\mu=4.13$ ), spending from savings ( $\mu=4.11$ ), and spending more due to commodity price hike ( $\mu=4.11$ ). Others include extra fare to reach workplace ( $\mu=4.08$ ), increased transportation fare ( $\mu=4.04$ ), failed to repay

loan ( $\mu=4.04$ ), and taking loan at high interest rate from informal sector ( $\mu=3.81$ ). Overall, it can be said that during COVID-19, the slum dwellers have grave savings/expenditure/debt related implications ( $\mu=4.07$ ).

#### 5. Family food related implications

The food related implications during COVID-19 have seven attributes (Table 6). The important ones are difficulty in arranging three meals a day ( $\mu=3.97$ ), consuming less

**Table 5.** Savings, expenditures, and debt related implications

Variables	$\mu$	Respondents who	
		Agreed	Strongly agreed
<b>D. Savings, Expenditure &amp; Debt related implications</b>	<b>4.07</b>		
1) Expenditure surpassed income	4.14	264 (69.3%)	91 (23.9%)
2) Spend more since price of all food items increased	4.14	246 (64.6%)	101 (26.5%)
3) Cannot save any more	4.13	256 (67.2%)	93 (24.4%)
4) Spending from my savings	4.11	273 (71.7%)	81 (21.3%)
5) Spend more due to commodity price hike	4.11	271 (71.1%)	83 (21.8%)
6) Pay extra fare to reach workplace	4.08	245 (64.3%)	90 (23.6%)
7) Spend more as transportation fare increased	4.04	269 (70.6%)	70 (18.4%)
8) Failed to repay loan	4.04	268 (70.3%)	71 (18.6%)
9) Take loan from informal sources at high interest rate	3.81	227 (59.6%)	51 (13.4%)

**Table 6.** Family well-being related implications

Variables	$\mu$	Respondents who	
		Agreed	Strongly agreed
<b>E. Food related implications</b>	<b>3.74</b>		
1) Facing difficulties to arrange daily meals	3.97	278 (73.0%)	38 (10.0%)
2) Consuming less protein & healthy food	3.90	279 (73.2%)	39 (10.2%)
3) Consuming less quantity of food	3.86	282 (74.0%)	32 ( 8.4%)
4) Cannot purchase baby food	3.82	246 (64.6%)	44 (11.5%)
5) Cannot purchase enough supplies/items	3.75	249 (65.4%)	38 (10.0%)
6) Sometimes family members need to starve	3.60	244 (64.0%)	17 ( 4.5%)
7) Family members are living on dry food only	3.28	140 (36.7%)	20 ( 5.2%)

amount of protein and healthy food ( $\mu=3.90$ ), consuming less amount of food ( $\mu=3.86$ ), and not being able to purchase baby food ( $\mu=3.82$ ). Others include not being able to purchase enough supplies/items ( $\mu=3.75$ ), starving sometimes ( $\mu=3.60$ ), and living on dry food ( $\mu=3.28$ ). Overall, it can be said that during COVID-19, the slum dwellers have some concern for food related implications ( $\mu=3.74$ ).

### 6. Family Well-being related implications

The family well-being related implications during COVID-19 has nine traits (Table 7). The important attributes in this group are difficulty in payment of utility bills ( $\mu=4.09$ ), and family members are without required health care services ( $\mu=4.02$ ). These are followed by not being able to purchase cleanliness/hygiene kits ( $\mu=3.96$ ), walk to places instead of transport ( $\mu=3.94$ ), sending family to village ( $\mu=3.94$ ), and failure to pay house/ shop/ stall rent ( $\mu=3.85$ ). Other least agreed attributes are selling valuables (ornaments, property, etc.) to survive (3.73), selling source of income/ livelihood (3.54), and becoming homeless ( $\mu=3.53$ ). Overall, it can be said that during COVID-19, the slum dwellers have serious concern for

family well-being related implications ( $\mu=3.84$ ).

### 7. Offspring related implications

The offspring related implications during COVID-19 has three attributes (Table 8). Here the responses are quite diverse: in one case they agreed, in one case they disagreed and in one case the response is indifferent. The respondents agreed regarding involving minor family members in odd jobs ( $\mu=3.70$ ); but they disagreed that they need to sell their newborn baby for being unable to pay the hospital bills ( $\mu=2.86$ ). They were indifferent regarding getting their underaged girl married ( $\mu=3.04$ ). Overall, it can be said that during COVID-19, the slum dwellers have some concern for offspring related implications ( $\mu=3.20$ ).

## C. Demographic Differences in the Responses

### 1. Gender

Opinions regarding financial implications during

**Table 7.** Family well-being related implications

Variables	$\mu$	Respondents who	
		Agreed	Strongly agreed
<b>F. Family well-being related implications</b>	<b>3.84</b>		
1) Difficulty in payment of utility and other bills	4.09	263 (69.0%)	84 (22.0%)
2) HH living without required medical care/services for not being able to bear healthcare cost	4.02	257 (67.5%)	76 (19.9%)
3) Not able to purchase cleanliness/ hygiene kits (mask, sanitizer, soap, etc.)	3.96	283 (74.3%)	53 (13.9%)
4) Walk to my work and other places instead of using transport	3.94	290 (76.1%)	39 (10.2%)
5) Had to send my family to village	3.94	235 (61.7%)	72 (18.9%)
6) Failed to pay house/shop/stall rent for months	3.85	252 (66.1%)	49 (12.9%)
7) Sell my valuables (ornaments, property, etc.) to survive	3.73	258 (67.7%)	28 ( 7.3%)
8) Sell source of income/ livelihood (rickshaw, autorickshaw, van, photocopy machine, etc.)	3.54	221 (58.0%)	17 ( 4.5%)
9) Family became homeless	3.53	182 (47.8%)	38 (10.0%)

**Table 8.** Offspring related implications

Variables	$\mu$	Respondents who	
		Agreed	Strongly agreed
<b>G. Offspring related implications</b>	<b>3.20</b>		
1) Involve minor family members in odd jobs to tackle economic hardship	3.70	253 (66.4%)	31 (8.1%)
2) Got my underaged girl married to combat insecurity of food	3.04	137 (36.0%)	16 (4.2%)
3) Sell our newborn baby for not being able to pay hospital bills	2.86	5 (17.1%)	23 (6.0%)

COVID-19 from male (n=303) and female (n=78) respondents were found to be significantly different between genders at a 5% level for thirteen specific attributes. The attributes where the responses are different are i) Shifted from a higher-level job to lower-level job (3.71 vs. 3.97), ii) Lost overtime pay (3.70 vs. 3.96), iii) Not received annual increment (3.81 vs. 4.04), iv) Not received festival bonuses (3.66 vs. 4.08), v) Income reduced more among females than males (3.63 vs. 3.88), vi) Income reduced due to lockdown (4.07 vs. 4.24), vii) Needed to take loan from informal sources at high interest (3.77 vs. 3.96), viii) Failed to repay loan (4.00 vs. 4.18), ix) Difficult to arrange three meals a day (3.87 vs. 4.33), x) could not pay shop/house/stall rent (3.8 vs. 4.04), xi) Family became homeless (3.49 vs. 3.72), xii) Got my underaged daughter married (2.99 vs. 3.26), xiii) COVID-19 negatively impacted the financial wellbeing of the family (4.24 vs. 4.51). As noted, in each of these cases the females are found to agree more strongly than the males. Overall, it can be said that in the majority of cases the responses are not different.

## 2. Marital status

Opinions regarding financial implications during COVID-19 from single (n=66) and married (n=315) respondents were found to be significantly different at a 5% level for fourteen attributes. These attributes are: i) Work burden increased (3.53 vs. 3.81), ii) On average family lost 50% of pre-pandemic income (3.62 vs. 3.95), iii) Less customers are coming (3.47 vs. 3.78), iv) Purchasing power of customer reduced (3.50 vs. 3.85), v) Spend more since price of all food item including rice has increased (3.97 vs. 4.18), vi) Difficult to arrange three meals a day (3.57 vs. 4.05), vii) Consuming less quantity of food (3.65 vs. 3.91), viii) Cannot purchase baby food (3.36 vs. 3.92), ix) Consuming reduced amount of protein and healthy diet (3.76 vs. 4.07), x) Family members need to starve (3.26 vs. 3.67), xi) Needed to sell source of income /livelihood (3.24 vs. 3.60), xii) Could not pay shop/house/stall rent for months (3.64 vs. 3.89), xiii) Sell valuables to survive (3.42 vs. 3.79), xiv) Got my underaged daughter married off to combat insecurity of food (2.67 vs. 3.12). As noted, in each of these cases the married are found to agree more strongly than the single respondents. Overall, it can be said that in the majority of cases the responses are not different.

## 3. Family type

Based on family type (i.e., nuclear<sup>1</sup> or joint<sup>2</sup>), respondents differ in 12 attributes (out of 52) regarding financial impact during COVID-19. The attributes on which the nuclear (n=108) and joint (n=273) family members significantly differ ( $\alpha = 5\%$ ) are i) go hometown as there is no job at capital (3.59 vs. 3.90), ii) income reduced due to lockdown (4.28 vs. 4.04), iii) spend more as price of all food item i/c rice has increased (4.28 vs. 4.09), iv) consuming less quantity of food (3.74 vs. 3.91), v) cannot purchase baby food (3.68 vs. 3.88), vi) family members need to starve (3.38 vs. 3.68), vii) not being able to purchase hygiene kits (4.12 vs. 3.89), viii) had to send family to village (3.71 vs. 4.03), ix) needed to sell source of income/livelihood (3.34 vs. 3.61), x) sell valuables to survive (3.56 vs. 3.79), xi) involve minor family members in odd jobs (3.53 vs. 3.77), xii) COVID-19 negatively impacted the financial wellbeing of my family (4.56 vs. 4.20). In seven of the 12 cases the joint family members are more critical about financial impact. Overall, it can be said that in the majority of cases the responses are not different.

## 4. Education

Respondents having different educational backgrounds are found to possess variation in financial implications during COVID-19. The different educational levels of the respondents are i) no formal education, ii) primary, secondary, iii) higher secondary, and iv) others. Group wise testing of difference of means are done by ANOVA test<sup>3</sup>. The means of 16 attributes (out of 52) that sig-

<sup>1</sup> A nuclear family, elementary family or conjugal family is a family group consisting of a man and a woman and their children (one or more). It contrasts with a single-parent family, the larger extended family, or a family with more than two parents.

<sup>2</sup> Joint families are composed of sets of siblings, their spouses, and their dependent children. Extended families include at least three generations: grandparents, married offspring, and grandchildren.

<sup>3</sup> For ANOVA, first the results of the Levene statistic are analyzed. If a variable satisfies homogeneity of variance, then it is tested for equality of means. For the variables that do not satisfy homogeneity of variance, the Brown-Forsythe and Welch robust tests for the equality of means are conducted. Usually, both yield results in the same direction. If Brown-Forsythe and Welch tests do not yield the same results regarding equality of means, the Post Hoc multiple comparisons (Games-Howell) are checked to ensure the difference in means values. There are many Post Hoc multiple comparison tests. One group is for variables that satisfy homogeneity of variance.

nificantly differ with different educational backgrounds are i) Lost part time job, ii) Job insecurity increased, iii) Not received annual increment, iv) Not received festival bonuses, v) Tips I used to get reduced, vi) Household income reduced more among females than males, vii) Educational institutions are closed, viii) Number of passengers using rickshaw, auto-rickshaw decreased, ix) Needed to take loan from informal sources at high interest, x) Consuming less quantity of food, xi) Not being able to purchase hygiene kits, xii) Could not pay shop/house/stall rent for months, xiii) Family became homeless, xiv) Had to involve minor family members in odd jobs to tackle economic hardship, xv) Got my underaged daughter married off to combat insecurity of food, and xvi) COVID-19 negatively impacted the financial wellbeing of my family. As noted in most cases where there are differences the less educated (no formal education, primary, others) are more financially affected during COVID-19.

#### *5. Profession*

Respondents having different professions are found to have different types of financial implications during COVID-19. Profession wise the respondents are housewife (20), worker (154), day laborer (36), driver (39), shop-keeper (27), rickshaw puller (41), maid (24), and others (40). The study noted that slum dwellers of different occupations have significantly different financial implications regarding 29 attributes during COVID-19. These include i) Lost job/livelihood, ii) Lost part time job, iii) Job insecurity increased, iv) Shifted from a higher-level job to lower-level job, v) Work burden increased, vi) Needed to go to hometown as there is no job at capital, vii) Salary has been curtailed, viii) Lost my overtime pay, ix) Not received annual increment, x) Not received festival bonuses, xi) Family/household income reduced, xii) Tips reduced, xiii) Household income reduced more among females than males, xiv) Educational institutions' closer reduced earning, xv) Decreased number of passengers using rickshaw, auto-rickshaw affected income, xvi) Income reduced due to lockdown, xvii) Spending from my savings, xviii) Spend more as commodity price hiked, xix) Spend more since price of all food item includ-

ing rice has increased, xx) Needed to take loan from informal sources at high interest, xxi) Difficult to arrange three meals a day, xxii) Cannot purchase baby food, xxiii) Family members need to starve, xiv) Could not purchase enough supplies/items, xxv) Difficulty in payment of utility and other bills, xxvi) Could not pay shop/house/stall rent for months, xxvii) Family became homeless, xxviii) Had to involve minor family members in odd jobs to tackle economic hardship, and xxix) COVID-19 negatively impacted the financial wellbeing of my family. The study noted that in each of the above-mentioned cases the day laborer, rickshaw puller, and maid are comparatively more affected than other professionals.

#### *6. Age*

Pearson's correlation is conducted to observe the correlation between financial implications during COVID-19 and age of the respondents. The statistically significant correlation coefficients indicate very weak association of financial implications of COVID-19 with age. Among all the variables representing slum dwellers' financial implications during COVID-19, only ten are found significantly correlated to age at 5% level. These include i) Lost part time job, ii) Needed to go to hometown as there is no job at capital, iii) Not received annual increment, iv) Spend more as commodity price hiked, v) Spend more since price of all food item including rice has increased, vi) Cannot purchase baby food, vii) Walk to my work and other places, viii) Sell my valuables to survive, ix) Got my underaged girl married, and x) COVID-19 negatively impacted the financial wellbeing of my family. Except for three attributes, all variables are positively related to age.

#### *7. Monthly income*

Pearson's correlation of the financial implications of slum households during COVID-19 and monthly income show that 21 of the 52 variables have a statistically significant correlation at 5% level, of which 17 are negative and 4 are positive. The variables with a negative relationship with income include i) Job insecurity has increased, ii) Not getting enough work, iii) Shift from a higher-level job to a lower-level job, iv) Lost my overtime pay, v) Tips has reduced, vi) HH income reduced more among females than males, vii) Income reduced due to lock

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Another for those that do not satisfy the condition. One commonly used test for the first group is "Turkey" and one such test for the second group is "Games-Howell".

down, viii) Spending from my savings, ix) Spend more since price of all food items including rice increased, x) Needed to take loan from informal sources at high interest rate, xi) Consuming less quantity of food, xii) Family members need to starve, xiii) Difficulty in payment of utility and other bills, xiv) Living without getting required medical care/services, xv) Not being able to purchase hygiene kits, xvi) Walk to my work & other places, and xvii) Family became homeless. The variables with a positive relationship with income include i) Less customers are coming, ii) Spend more as commodity price hiked, iii) Could not purchase enough supplies/items, iv) COVID-19 negatively impacted the financial wellbeing of my family.

## V. Conclusion

The research attempted to dig into different financial aspects of Dhaka metropolis slum dwellers during COVID-19. Specifically, this study tried to explore slum residents' financial implications using 51 attributes grouped in seven categories related to work/job, wage/earning, stakeholder, savings/expenditure/debt, family food, family well-being, and offspring. The primary data is collected through a pre-tested structured questionnaire survey of 381 slum dwellers.

Of the 51 specific implications excepting one (got my underaged girl married), the overall mean values of the variables are significantly different from 3 (neutral). In the rest of the cases the respondents agreed with the statements except one (sell our newborn baby) which they disagreed with. The study noted that the most agreed ( $\mu \geq 4$ ) variables are (i) expenditure surpassed income (4.14), (ii) spending more (4.14), (iii) no more savings (4.13), (iv) spending from savings (4.11), (v) more spending due to commodity price hike (4.11), (vi) income reduced due to lock down (4.11), (vii) other income generating activities reduced (4.10), (viii) difficulty in payment of utility and other bills (4.09), (ix) pay extra fare to reach workplace (4.08), (x) spend more on transportation (4.04), (xi) failed to repay loan (4.04), (xii) family members are living without required medical care/services (4.02), (xiii) not getting enough work (4.0).

Further groupwise analysis shows that only the group

mean of "Offspring" is not significantly different from 3 (Indifferent) at 5% level. Overall, group means are found significantly different at 5% level of significance. As noted, saving/expense/debt related financial implication (4.07) is the major concern for the slum dwellers followed by family wellbeing implication (3.90). Next in the queue are Work/Job (3.85), Wage/Income (3.82) and Stakeholder (3.80) related financial implications. Least impacted implications are Food (3.74) and Offspring/Property (3.37).

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## Appendix

**Table 1.** All Indices and their Means

Variables	$\mu$	Variables	$\mu$
<b>A. Work/Job implications</b>		I have to spend more as transportation fare has increased	4.04
I have lost my job/livelihood	3.71	My expenditure surpassed income	4.14
I have lost my part time job	3.71	I have to spend more since price of all food items including rice increased	4.14
My job insecurity has increased	3.97	I have to pay extra fare to reach workplace	4.08
I am not getting enough work	4.00	I had to take loan from informal sources at high interest rate	3.81
I have to shift from a higher level job to a lower level job	3.76	I failed to repay loan	4.04
My work burden increased	3.76	<b>E. Food-related implications</b>	
My other income generating activities reduced	4.10	Facing difficulties to arrange three meals a day	3.97
I had to go my hometown as no job available	3.82	Consuming less quantity of food	3.86
<b>B. Wage/Salary implications</b>		Cannot purchase baby food	3.82
My salary has been curtailed	3.90	Consuming reduced amount of protein and healthy food	3.90
I have no regular income for months	3.80	My family members are living on dry food only	3.28
I have lost my overtime pay	3.76	Sometimes my family members need to starve	3.60
I have not received annual increment	3.85	Cannot purchase enough supplies/items	3.75
I have not received festival bonuses	3.75	<b>F. Family well-being implications</b>	
My family/ household income reduced	3.99	I have difficulty in payment of utility and other bills	4.09
Tips I used to get has reduced	3.77	My family members are living without required medical care/ services for not being able to bear healthcare cost	4.02
Household income reduced more among females than males	3.69	I am not being able to purchase cleanliness/ hygiene kits (mask, sanitizer, soap, etc.)	3.96
On average, the family lost more than 50% of prepandemic period income	3.89	I have to walk to my work and other places instead of using transport	3.94
<b>C. Stakeholder-related financial implications</b>		I could not pay house/shop/stall rent for months	3.85
My income reduced due to less number of customers	3.73	My family became homeless	3.53
My income reduced since educational institutions are closed	3.66	I had to send my family to village	3.94
My income reduced since purchasing power of customers decreased	3.79	I had to sell source of income/livelihood (rickshaw/ autorickshaw/ van/ photocopy machine, etc.)	3.54
My income reduced since the number of passengers using rickshaw, CNG driven autorickshaw decreased	3.69	I have to sell my valuables (ornaments, property, etc.) to survive	3.73
My income reduced due to lock down announced by government	4.11	<b>G. Offspring-related implications</b>	
My income reduced as business activities have slowed down	3.82	I had to involve minor family members in odd jobs to tackle economic hardship	3.70
<b>D. Savings, expenditure &amp; debt-related implications</b>		My wife and I decided to sell our newborn baby for not being able to pay hospital bills	2.86
I cannot save any more	4.13	I got my underaged girl married to combat insecurity of food <sup>a</sup>	3.04
I am spending from my savings	4.11	<b>H. Overall financial implication</b>	
I have to spend more as commodity price hiked	4.11	Overall, COVID-19 impacted negatively the financial wellbeing of my family	4.30