

Status and view toward COVID-19 and mental health among vulnerable group: A cross-sectional rapid survey among rickshaw pullers of Bangladesh

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ABSTRACT

Bangladesh has experienced the hardest coronavirus disease 2019 (COVID-19) impact on the socio-economic sector. The underprivileged group, rickshaw pullers, faced extreme situations due to the pandemic. This rapid cross-sectional study was conducted among 190 rickshaw pullers of Dhaka city. Knowledge, attitude, and practice (KAP) survey was carried out to evaluate their view and COVID-19 response level. Descriptive statistics were calculated. Statistical analyses such as Kruskal–Wallis or Mann–Whitney U tests, Spearman's rank correlation, the linear regression model, Chi-square test, and Fisher's exact test were performed where appropriate. The majority of them rated the high impact of COVID-19 on their income and mental health. Age, living with family, accommodation type, income, and COVID-19 infection history were found as associating factors with these impacts. A large number of the study population demonstrated low knowledge level (42.63 percent), moderate attitude level (57.37 percent), and moderate practice level (58.95 percent) toward COVID-19 and the vaccination. Positive attitude could reduce their mental health concern due to the pandemic. The study population mostly used their surrounding people as the main source of COVID-19 information. However, digital media have played a crucial role to disseminate authentic information. Ensuring better socioeconomic conditions

can help these highly vulnerable people to be effectively prepared and respond against the pandemic.

Keywords: COVID-19, informal settlement, Dhaka city, rickshaw pullers, vaccination

INTRODUCTION

On March 11, 2020, World Health Organization (WHO) declared coronavirus disease 2019 (COVID-19) as a pandemic.^{1,2} More than 200 countries have already experienced the severe impact of this pandemic.^{1,3,4} Along with the health impact, this pandemic has been spilled over other socioeconomic sectors of the world. The developing countries in the South-Asian part such as Bangladesh, India, and Pakistan have received the hardest COVID-19 impact,^{5,6} where India recorded the second highest registered COVID-19 cases. Bangladesh recorded its first COVID-19 case on March 8, 2020, and⁶ declared lockdown on March 23, 2020, which was then lifted at the end of May 2020,⁷ but with limited movement. During the long-term lockdown and limited movement, many sectors experienced an uncertain situation.

The capital megacity Dhaka had the hardest COVID-19 hits. It became the country's epicenter of the pandemic. This city is the central hub of most of the activities of the country.⁸ People migrated to

this city to earn their living. Climate change is also one major driver for this migration. People living in coastal areas sometimes lose their land due to the negative impact of climate change. They moved to this city. However, this city is also very competitive to get a job. Rickshaw pulling is one of the informal earning sectors for many people in this city.⁹ Even with the poor socioeconomic status,¹⁰ they do not have other things to do with limited skill. Rickshaws have become a major transport mode in this city. About 60 percent of the city residents used rickshaw for their daily transportation.¹¹ It was estimated that approximately 1.5 million rickshaw pullers and their families living in the city depend on this informal earning.¹ However, COVID-19 has placed an unprecedented situation for this transport sector. A large part of the city road was empty due to the COVID-19-induced lockdown. Besides, due to the long-term shut down of educational institutions and limited earning sources, many people left Dhaka. These triggered extreme situations for one of the most disadvantageous groups, the rickshaw pullers. They have experienced direct health impact along with the severe circumstances in their daily income. Many rickshaw pullers were also found to leave the city along with low-income people.¹² Rickshaw pullers and their family members depending on this earning were placed in an extreme uncertain situation due to the pandemic.

Despite the high risk of COVID-19 impact among the rickshaw pullers, no notable study has been found to assess their condition and views toward the pandemic, except one qualitative study.¹³ To the best of our knowledge, our study is the first attempt to evaluate this group's status and view toward COVID-19 and vaccination through knowledge, attitude, and practice (KAP) survey. KAP survey has already been successfully applied in several COVID-19 studies.^{3,14,15} Through this survey, we can examine the response level of a group quantitatively. We can determine the gap in the knowledge, attitude, and practices part through a standardized questionnaire. This study also intended to identify the associating factors with the KAP domain. We also considered the impact on earning and mental

health concern among the rickshaw pullers during the pandemic. The general people of Bangladesh have already experienced psychological issues due to the long-term pandemic.¹⁶ They have experienced depression, anxiety, and stress during the pandemic.¹⁶ University students were also found with mental health problem due to the pandemic in Bangladesh.¹⁵ One study¹³ described the impact of COVID-19 on the mental health among the rickshaw pullers. However, they interviewed a small portion (11 respondents) of this vulnerable group. It has opened the scope for further study about the mental health problem among this group during the pandemic. It is also necessary to determine the associating factors for the mental health issue among these rickshaw pullers. Our study has evaluated the association between the socioeconomic condition and the mental health concern due to the pandemic. We also determined the KAP level as an associating factor for mental health concern due to COVID-19. The findings of the study can assist national and international organizations to adopt a holistic approach for effective pandemic response and recovery efforts.

MATERIALS AND METHODS

Study design and ethical issues

This cross-sectional study was designed to examine the perception about COVID-19 and vaccination among rickshaw pullers of Bangladesh. It also considered the impact of COVID-19 on mental health among this group. Several interview sessions were performed among this group. Precautionary measures were strictly followed during the interview session. The study was a part of a research project¹⁴ approved by the Research Ethics Committee of the Bangladesh University of Professionals, Dhaka, Bangladesh. All ethical issues were maintained. This research had minimal risk. Because of the high illiteracy rate among the respondents and minimal risk, only verbal consents were taken before the interview. There was no incentive granted for the respondents. They were assured that the responses would be used only for research purposes. They had complete freedom to withdraw or not to perform the interview session.

Survey instruments and data collection

This study employed an extended version of a previously used structured questionnaire.^{14,15} Questions regarding vaccination have been incorporated into the extended version. The questionnaire was pre-tested in a pilot survey consisting of 20 rickshaw pullers. Results from the pilot survey were not considered in the main data analysis. Cronbach's Alpha value for KAP was calculated as 0.70, 0.75, and 0.67, respectively. The accepted Cronbach's Alpha value is >0.60 ^{17,18} for the internal consistency and validation of a questionnaire. Sociodemographic information, COVID-19 infection history, perception on the impact of COVID-19 on earning and mental health, and the KAP section were in the questionnaire. The 3-point Likert scale (large, medium, and low; highly, moderately, and lowly) was applied in case of the impact on monthly income and the concern about mental health during COVID-19. It should be noteworthy that the mental health concern was evaluated only from the respondents' self-rated perception level on their mental health due to the pandemic. There was no psychological/psychometric test used for this purpose. A total of 24 items were in the KAP section. There were nine close-ended items regarding basic knowledge of COVID-19 and vaccination with Yes, Maybe, and No responses (scoring 1, 0.5, and 0, respectively), six close-ended items with 5-point Likert scale for attitude measurement, and 10 close-ended items with the binary (Yes/No) responses in the practice section.

A rapid KAP survey was conducted from January 31, 2021 to February 8, 2021. A purposive sampling technique was employed. University students were recruited to conduct the interview session. They visited rickshaw stations in Dhaka city for this purpose. Data were carefully double checked. The interview session was conducted in the local Bengali language. It also considered the cultural appropriateness and respondents' understanding level. For instance, COVID-19 was called coronavirus only, which was a common term for them.

Data analysis

RStudio (version 1.2.5042; Boston, MA) was used for all statistical analyses.¹⁹ Data were not found

normally distributed after performing the normality tests (Shapiro–Wilk and Kolmogorov–Smirnov tests). Median and interquartile range were calculated for continuous skewed data whereas frequency and percentage were measured for noncontinuous data. Kruskal–Wallis or Mann–Whitney U tests, Chi-square, and Fisher's exact tests were performed where appropriate. Dunn's test with Bonferroni correction (for adjusted p value) was carried out for the post-hoc analysis. Spearman's rank correlation was performed to examine the correlation in the KAP domain. Linear regression analysis and ANOVA were also considered to determine the predictors of practice and overall KAP. For all statistical analyses, 0.05 α level was employed. We followed the cutoff scores to categorize the KAP domain level as high, moderate, and low based on the quartile value. Details can be found elsewhere in previous studies.^{14,15,20}

RESULTS

Sociodemographic and academic information

A total of 217 rickshaw pullers were approached where 16 of them were not agreed to participate and 11 respondents left the interview session without completing it. Finally, a total of 190 rickshaw pullers were found to be considered in data analysis. Thus, the response rate was 87.56 percent. We considered only the perception-based study among an underprivileged group in Bangladesh. The minimum number of respondents was calculated as 139 (based on 95 percent CI and 10 percent nonresponse rate).²¹ Table 1 presents that the majority of rickshaw pullers were from the 26–35 age group (40.53 percent) followed by 36–50 (34.21 percent) and 18–25 (17.37 percent) age groups. Most of them were married (82.11 percent) whereas the majority of the respondents were living with their family (60.00 percent). In case of the number of family members, majority of them had 2–5 members. Most of the respondents were living in slum areas (89.47 percent) whereas 85.26 percent had been in Dhaka city for more than 5 years. The monthly income of 53.16 percent of the participant rickshaw pullers was <5000 BDT (Bangladeshi Taka, 1 USD = 84.800 BDT²²) during COVID-19. Only 4.21 of the participants tested for

Table 1. Association of sociodemographic information and COVID-19 infection history with the negative impact on earning and mental health concern among rickshaw pullers				
Features	Frequency (n)	Percentage	Negative impact on earning during COVID-19 (median (IQR))	Concern about mental health due to COVID-19 (median (IQR))
1. Age group (years)			*	**
18–25	33	17.37	3.0 (1.0)	2.0 (2.0)
26–35	77	40.53	3.0 (1.0)	3.0 (1.0)
36–50	65	34.21	3.0 (1.0)	3.0 (1.0)
>50	15	7.89	3.0 (0.0)	3.0 (0.0)
2. Marital status				
Married	156	82.11	3.0 (1.0)	3.0 (1.0)
Single	34	17.89	3.0 (1.0)	3.0 (1.75)
3. Living with family			**	**
Yes	114	60.00	3.0 (1.0)	3.0 (2.0)
No	76	40.00	3.0 (0.0)	3.0 (1.0)
4. Family members				*
More than 5	54	28.42	3.0 (1.0)	3.0 (1.0)
2–5	115	60.53	3.0 (1.0)	3.0 (1.0)
No	21	11.05	3.0 (0.0)	3.0 (0.0)
5. Living unit			***	***
Building	20	10.53	2.0 (1.25)	1.0 (1.25)
Slum area	170	89.47	3.0 (1.0)	3.0 (1.0)
6. Living in Dhaka				
<=5 years	28	14.74	3.0 (1.0)	3.0 (1.25)
>5 years	162	85.26	3.0 (1.0)	3.0 (1.0)
7. Monthly income (BDT [#]) during COVID-19			***	***
<5000	101	53.16	3.0 (0.0)	3.0 (0.0)
5000–9999	79	41.58	2.0 (1.5)	2.0 (2.0)
10000–14999	10	5.26	1.5 (1.0)	1.0 (1.0)
8. COVID-19 test				
Yes	08	4.21	3.0 (0.0)	3.0 (0.25)
No	182	95.79	3.0 (1.0)	3.0 (1.0)
9. COVID-19 infection history			***	***
Yes	02	1.05	2.5 (0.5)	2.5 (0.5)
Maybe	119	62.63	3.0 (0.0)	3.0 (0.0)
No	69	36.32	2.0 (2.0)	2.0 (2.0)

*p < 0.05; **p < 0.01; ***p < 0.001; #BDT= Bangladeshi Taka (1 USD = 84.800 BDT).

COVID-19, whereas 1.05 percent confirmed that they had COVID-19 infection before. However, the majority of them perceived (62.63 percent) that they might have COVID-19 infection already.

Negative impact on earning and mental health perception during COVID-19

Among the respondents, 66.84 percent and 18.42 percent rated the large and moderate COVID-19

negative impact on their monthly income, respectively, whereas 62.10 percent and 17.37 percent were highly and moderately concerned with their mental health, respectively, due to COVID-19. Table 1 illustrates the association of these impacts with their sociodemographic and COVID-19 infection history. Age group was significantly associated with both impacts. Post-hoc analysis identified that the >50 age group was significantly more affected than the youngest 18–25 age group. Participants living with their families were significantly less affected compared to the participants without their families. Similarly, participants who had family members were significantly less concerned about their mental health. In case of living unit, respondents who were living in slum areas reported significantly more impact both on the income and mental health due to COVID-19. A strong significant association was determined between monthly income and perceived impact. Post-hoc analysis demonstrated that the respondents with lower monthly income (<5000 BDT) experienced a significantly high impact on their monthly income during COVID-19. They also rated significantly high concern about their mental health due to the pandemic. Participants' COVID-19 infection history also reported a significant association with these impacts. Post-hoc analysis determined these associations when compared

the confirmed and perceived infection history with no infection history. Participants who had already been infected or perceived their infection were significantly more affected regarding their income and mental health.

COVID-19-related knowledge

Table 2 summarizes the basic knowledge status regarding COVID-19. The majority of the respondents (73.68 percent) knew the fatal behavior of COVID-19 whereas a large proportion (71.05 percent) failed to respond correctly to the main clinical symptoms (fever, fatigue, and dry cough) of COVID-19. They correctly identified that the early treatment is useful for the recovery process (72.11 percent), severe cases normally develop among old people with chronic illness (86.32 percent), COVID-19 spread through infected person's respiratory droplets (97.89 percent), and the activities (wear the medical mask, avoid crowded place, and regular hand wash) can prevent COVID-19 infection (94.74 percent). However, an enormous proportion of the respondents did not know about the available COVID-19 vaccine (55.26 percent) and asymptomatic cases of this disease (52.11 percent). The majority of them (87.89 percent) also did not aware of the emergency helpline number 333 for COVID-19-related support in Bangladesh.

Table 2. Knowledge regarding COVID-19 among rickshaw pullers

Statements	Expected answers (n (percent))	Unexpected answers (n (percent))
Death due to COVID-19	140 (73.68)	50 (26.32)
Main clinical symptoms of COVID-19	55 (28.95)	135 (71.05)
Early supportive treatment can help to recover in most patients	137 (72.11)	53 (27.89)
Vaccine available for COVID-19	85 (44.74)	105 (55.26)
Old people with chronic illness normally develop severe cases	164 (86.32)	26 (13.68)
Asymptomatic infected person can infect others	91 (47.89)	99 (52.11)
Coronavirus can spread via respiratory droplets of infected person	186 (97.89)	04 (2.11)
Wear general medical mask, avoid crowded places, and regular wash hand can prevent people from COVID-19	180 (94.74)	10 (5.26)
The helpline number for COVID-19-related support in Bangladesh is 333	23 (12.11)	167 (87.89)

Attitude toward COVID-19

Table 3 presents the attitudes of the study participants toward COVID-19. The majority of them agreed (>50 percent) that COVID-19 would finally be controlled, and Bangladesh would also win in this long-term battle. However, a large number of respondents also reported as neutral or disagree regarding enough communication with the organizations for COVID-19 support, taking COVID-19 vaccine (for both free and with cost), and the efficacy of this vaccine.

Preventive practices toward COVID-19

Table 4 illustrates that majority of the study participants followed regular hand wash practices

(90.53 percent), avoid touching eyes, nose, and mouth (76.84 percent), covering mouth and nose with bent elbow or tissue when cough or sneak (91.58 percent), wearing the mask (97.89 percent) and change or wash clothes after return from outside (97.89 percent), calling local health authorities to follow the instruction for medical care (73.68 percent), and following the latest information from trusted sources (97.89 percent). However, many of them did not maintain a 1 meter distance from others (78.95 percent). They also did not avoid crowded places (74.21 percent). Only 44.74 percent of respondents reported that they followed self-isolation with minor symptoms.

Table 3. Attitude toward COVID-19 among rickshaw pullers

Statements	*SA (n (percent))	*A (n (percent))	*N (n (percent))	*DA (n (percent))	*SDA (n (percent))
COVID-19 will finally be successfully controlled	13 (6.84)	133 (70.00)	42 (22.11)	02 (1.05)	0 (0.00)
Bangladesh will win in the battle against COVID-19	12 (6.32)	113 (59.47)	61 (32.11)	04 (2.11)	0 (0.00)
I have enough communication and support from government, nongovernment, health, and social organization for any emergency support for coronavirus issue	02 (1.05)	09 (4.74)	12 (6.32)	135 (71.05)	32 (16.84)
I will take COVID-19 vaccine even I need to pay for it	06 (3.16)	74 (38.95)	58 (30.53)	51 (26.84)	01 (0.53)
I will take COVID-19 vaccine only if free of cost	19 (10.00)	94 (49.47)	32 (16.84)	40 (21.05)	05 (2.63)
I believe that COVID-19 vaccine can reduce my future infection	01 (0.53)	86 (45.26)	101 (53.16)	02 (1.05)	0 (0.00)

*SA = strongly agree, A = agree, N = neutral, DA = disagree, and SDA = strongly disagree.

Table 4. Preventive practices toward COVID-19 among rickshaw pullers

Statements	Yes (n (percent))	No (n (percent))
Regular hand washing with alcohol-based hand rub or soap and water	172 (90.53)	18 (9.47)
Maintain or try to maintain 1 meter (3 feet) distance from others	40 (21.05)	150 (78.95)
Avoid crowding or crowded places	49 (25.79)	141 (74.21)
Avoid touching your eyes, nose, and mouth	146 (76.84)	44 (23.16)
Cover mouth and nose with bent elbow or tissue when cough or sneak and then dispose the tissue and wash your hands immediately	174 (91.58)	16 (8.42)
Stay home and self-isolate even with minor symptoms such as cough, headache, mild fever, until recover	85 (44.74)	105 (55.26)
Wear mask when go outside	186 (97.89)	04 (2.11)
Wash or change clothes when return from outside	186 (97.89)	04 (2.11)
Call in advance the local health authority and follow the directions for medical care early particularly in COVID-19 pandemic	140 (73.68)	50 (26.32)
Follow the latest information from trusted sources, such as WHO or your local and national health authorities	186 (97.89)	04 (2.11)

Source of COVID-19 information

Figure 1 presents that most of the study population received COVID-19-regarding information from their community people and family members (53.68 percent) followed by electronic media such as TV and radio (43.16 percent).

Correlation in KAP domain

A significant positive correlation ($p < 0.001$) was determined between knowledge and attitude. Linear regression analysis demonstrated knowledge as a significant predictor ($p < 0.001$) of preventive practice. This analysis also identified knowledge, attitude, and practices as significant predictors of overall KAP. ANOVA test for both regression analyses also confirmed the significant associations ($p < 0.001$).

KAP domain toward COVID-19

Table 5 presents the significant association results of sociodemographic information and source of COVID-19 information with KAP domain level. The majority of the study population reported a low knowledge level (42.63 percent) followed by a moderate knowledge level (36.32 percent). Respondents living in the building reported significantly high knowledge level (50.00 percent) compared to the participants living in slum areas (17.65 percent). For better analysis, the source of COVID-19 information was divided into media and people formats. Participants receiving information from media reported a significantly high

knowledge level (31.82 percent) than the participants who had information from people only (11.76 percent).

The majority of the participants showed a moderate attitude level (57.37 percent) followed by a low attitude level (27.37 percent). Participants from the building reported a significantly high attitude level (35.00 percent) compared to the slum area's participants (12.94 percent). A strong significant association was also determined between monthly income and attitude level. High-earned participants (1000–14999 BDT) reported significantly high attitude level (50.00 percent) compared to the low-earned participants (4.95 percent).

The majority of the study population reported moderate practice level (58.95 percent) and low practice level (25.79 percent). Participants with their families postulated significantly high practice level (18.52 percent) compared with the participants without their families (10.53 percent). Interestingly, respondents from the building reported significantly low practice level (60.00 percent) than the respondents from the slum area (21.76 percent). In the case of monthly income, mid-range earning participants (5000–9999 BDT) reported significantly low practice level (36.71 percent) compared to the lowest-earning (>5000 BDT) participants (16.83 percent). Respondents who used people for COVID-19 information reported a significantly high practice level (15.69 percent) than the respondents who used digital media (14.77 percent).

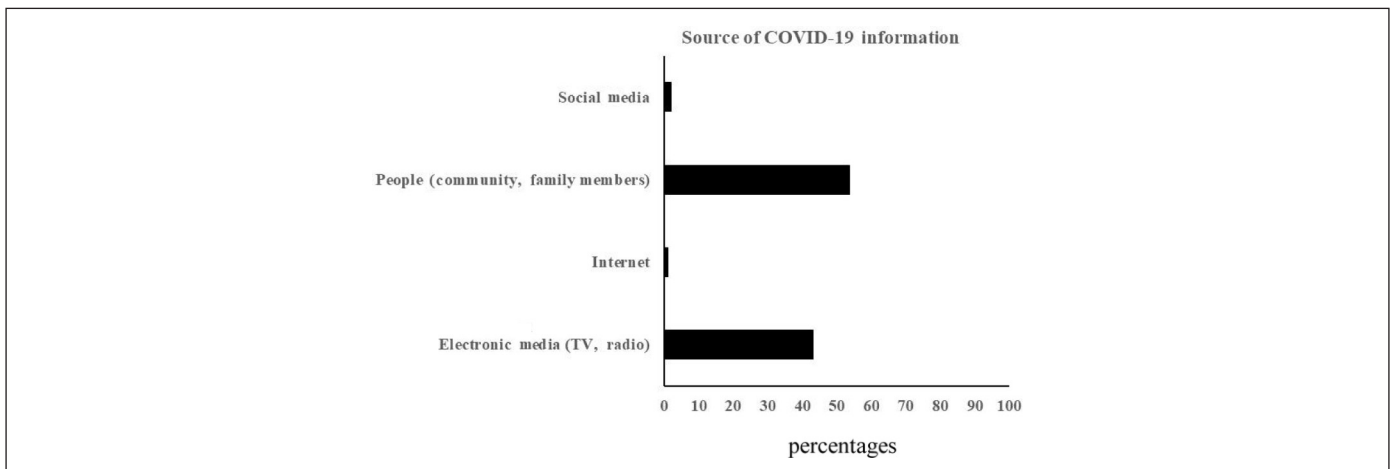


Figure 1: Source of COVID-19 information among rickshaw pullers.

Table 5. Significant association of sociodemographic information and source of COVID-19 information with KAP domain level among rickshaw pullers

Characteristics	Score level (n (percent))		
	High	Moderate	Low
Knowledge level	40 (21.05)	69 (36.32)	81 (42.63)
1. Living unit**			
Building	10 (50.00)	04 (20.00)	06 (30.00)
Slum area	30 (17.65)	65 (38.24)	75 (44.12)
2. Source of COVID-19 information**			
Media (electronic, social, and Internet)	28 (31.82)	26 (29.55)	34 (38.64)
People (community and family members)	12 (11.76)	43 (42.16)	47 (46.08)
Attitude level	29 (15.26)	109 (57.37)	52 (27.37)
1. Living unit**			
Building	07 (35.00)	06 (30.00)	07 (35.00)
Slum area	22 (12.94)	103 (60.59)	45 (26.47)
2. Monthly income (BDT#) during COVID-19***			
<5000	05 (4.95)	64 (63.37)	32 (31.68)
5000–9999	19 (24.05)	41 (51.90)	19 (24.05)
10000–14999	05 (50.00)	04 (40.00)	01 (10.00)
Practice level	29 (15.26)	112 (58.95)	49 (25.79)
1. Living with family*			
Yes	21 (18.42)	58 (50.88)	35 (30.70)
No	08 (10.53)	54 (71.05)	14 (18.42)
2. Living unit***			
Building	03 (15.00)	05 (25.00)	12 (60.00)
Slum area	26 (15.29)	107 (62.94)	37 (21.76)
3. Monthly income (BDT#) during COVID-19*			
<5000	17 (16.83)	67 (66.34)	17 (16.83)
5000–9999	11 (13.92)	39 (49.37)	29 (36.71)
10000–14999	01 (10.00)	06 (60.00)	03 (30.00)
4. Source of COVID-19 information**			
Media (electronic, social, and internet)	13 (14.77)	43 (48.86)	32 (36.36)
People (community and family members)	16 (15.69)	69 (67.65)	17 (16.67)
Overall KAP level	43 (22.63)	92 (48.42)	55 (28.95)
1. Monthly income (BDT#) during COVID-19*			
<5000	15 (14.85)	55 (54.46)	31 (30.69)
5000–9999	23 (29.11)	33 (41.77)	23 (29.11)
10000–14999	05 (50.00)	04 (40.00)	01 (10.00)
2. Source of COVID-19 information*			
Media (electronic, social, and internet)	27 (30.68)	41 (46.59)	20 (22.73)
People (community and family members)	16 (15.69)	51 (50.00)	35 (34.31)

*p < 0.05; **p < 0.01; ***p < 0.001; #BDT = Bangladeshi Taka (1 USD = 84.800 BDT).

In the case of overall KAP level, 48.92 percent and 28.95 percent of the respondents demonstrated moderate and low KAP levels, respectively. The highest-earning respondents showed a significantly high KAP level (50.00 percent) compared to the lowest-earning respondents (14.85 percent). Similarly, respondents who reported media as a source of COVID-19 information showed a significantly high KAP level (30.68 percent) compared to the respondents who used people as a source of information (15.69 percent).

Table 6 summarizes the results of significant association of sociodemographic information and source of COVID-19 information with KAP domain score. Respondents living in the building reported significantly better knowledge scores than the slum area's respondents whereas high- and mid-earned respondents (10000–14999 and 5000–9999 BDT) demonstrated significantly high attitude scores than the lowest-earned respondents (<5000 BDT). In the case of using the source of COVID-19 information, participants using digital media reported both significantly high knowledge and attitude scores compared to the participants who used people.

Association between KAP level and mental health concern

Table 7 illustrates the association between KAP level toward COVID-19 and mental health concern

due to COVID-19 among the respondents. Only attitude level was found to be the significant associating factor. Post-hoc analysis determines that the high attitude level toward COVID-19 was significantly associated with the low concern of mental health due to COVID-19.

DISCUSSION

Our findings revealed the poor condition of rickshaw pullers of Bangladesh due to the COVID-19 pandemic. It confirms that the pandemic has exacerbated their existing vulnerable condition in terms of socioeconomic status. COVID-19 has already created an overwhelmingly negative impact on socioeconomic condition throughout the world. The rickshaw pullers are one of the most underprivileged groups based on their socioeconomic condition. Thus, we can justify the importance of evaluating the association of socioeconomic condition and mental health concerns among this group due to the pandemic. The rickshaw pullers perceived severe adverse mental health conditions due to this pandemic, which corresponds to another study.¹³ Many of them had large families with very poor earning (<60 USD per month) due to the pandemic. A study²³ already identified the huge impact on earning during the pandemic, particularly on poor laborers. They were living mostly in slum areas due to the cheapest accommodation cost in this megacity.

Table 6. Significant association of sociodemographic information and source of COVID-19 information with KAP domain score among rickshaw pullers

Features	Knowledge (median (IQR))	Attitude (median (IQR))	Practice (median (IQR))	Overall KAP (median (IQR))
1. Living unit	*			
Building	7.25 (1.50)	21 (4.25)	6 (2.00)	33.75 (4.0)
Slum area	6.5 (1.00)	20 (3.00)	7 (1.00)	33.25 (3.38)
2. Monthly income (BDT [#]) during COVID-19		**		
<5000	6.5 (1.00)	19 (2.00)	7 (1.00)	33.0 (3.0)
5000–9999	6.5 (1.00)	20 (2.00)	7 (2.00)	33.5 (4.0)
10000–14999	6.75 (1.25)	21.5 (2.00)	7.5 (1.75)	35.0 (4.62)
3. Source of COVID-19 information	*	**		
Media (electronic, social, and internet)	6.5 (1.50)	20 (2.00)	7 (2.00)	33.5 (3.5)
People (community and family members)	6.5 (1.00)	19 (2.00)	7 (1.00)	32.5 (3.25)

*p < 0.05; **p < 0.01; ***p < 0.001; #BDT = Bangladeshi Taka (1 USD = 84.800 BDT).

Table 7. Association between KAP level regarding COVID-19 and mental health concern among rickshaw pullers

Features	Concern about mental health due to COVID-19 (median (IQR))
1. Knowledge level	
High	3.0 (2.00)
Moderate	3.0 (1.00)
Low	3.0 (1.00)
2. Attitude level	*
High	2.0 (2.00)
Moderate	3.0 (1.00)
Low	3.0 (1.00)
3. Practice level	
High	3.0 (1.00)
Moderate	3.0 (1.00)
Low	3.0 (2.00)

*p < 0.05; **p < 0.01; ***p < 0.001.

It can support another study,²³ which also mentioned the slums as a feasible accommodation place for rickshaw pullers. Even though, pulling rickshaws do not require special skill and it has been supporting a large number of unskilled and illiterate people to escape from poverty,⁹ the long-term pandemic has placed this group in an unprecedented situation. Due to the lockdown and striction of movement, they were unable to run their informal job regularly.¹³ The marginalized group of the society has experienced extreme living conditions.

This study also found that the older rickshaw pullers were in a more difficult situation than the younger group. As already mentioned, it does not require special skills, the old unskilled group might be dependent only on this job. Besides, COVID-19 was found to be severe for the older group. The findings also revealed that living with the families support mentally, which also corresponds to our recent COVID-19 study among general people of Bangladesh.¹⁴ This study identified that many of the study population perceived that they were already infected by coronavirus. During the interview session, they described that they had some fever-like symptoms. However, they were not interested to go for the COVID-19 test. Our study found that this group was more affected both financially and mentally due to the

pandemic. The Bangladesh government declared the lockdown and then limited movement for the general people to control the pandemic.⁷ Bangladesh police specially monitored the situation in Dhaka city. This might make it difficult for the infected or symptomatic individual to go outside. They might have the sufferings due to the fear of infection and poverty. Besides, studies already found the mental health impact due to COVID-19 among general people of Bangladesh.^{14,16}

This study also revealed that this mostly illiterate, deprived group had poor knowledge and attitude regarding COVID-19. They knew that people could die due to COVID-19, however, they were unable to determine the main clinical symptoms of the disease. It should be noteworthy that these rickshaw pullers did not well aware of the mass COVID-19 vaccination plan of the government.²⁴ It also corresponds to the results in the attitude section where most of them were not interested to take the vaccine even free of cost. They were also not aware of the efficacy level of the vaccination. Authority should consider it seriously for the effective vaccination campaign. They also did not have sufficient knowledge about asymptomatic cases of COVID-19. It contradicts our recent study on general people of Bangladesh¹⁴ where the majority of the sample population knew it. A huge proportion

of the study population did not know the emergency number 333 for COVID-19 support in Bangladesh. It also supports previous studies.¹⁴ Similar results were found in the attitude section where people disagreed about their communication and support from the authority. Our study urges the authority to initiate more campaigns to reach this one of the most vulnerable groups in society. Our findings also found that this group normally received COVID-19 information from their surrounding people. Electronic media was also found to be important to this group. Our study also found that the rickshaw pullers who used people for their COVID-19 information did not receive authentic knowledge. They were also found to have a poor overall KAP level than the rickshaw pullers who used digital media for their COVID-19 information. Authority may consider the effective communication method for this group. They can recruit and then train the influential people from this group, who can then disseminate authentic information to them. It can also help in motivating these underprivileged groups toward the pandemic-controlling effort.

Our study interestingly found the study population reported that they followed several preventive practices on regular basis. We conducted a face-to-face interview session where people might be shy to report their lacks in practicing those precautionary measures. Besides, the government has strict instructions to wear a mask and follow hand washing on regular basis. However, they reported that they were unable to avoid crowded places. Dhaka is one of the most densely populated areas²⁵⁻²⁷ where it is normally difficult to maintain social distance specially for regular goers like rickshaw pullers. They were also unable to follow self-isolation with minor symptoms. Rickshaw pullers depend on their daily basis income. If they fail to work for few days, it can immensely impact their income. Authority should initiate a special budget to support this group, which may not only assist them financially and mentally, but this group can also then follow the required preventive practices properly.

This study found a strong correlation between knowledge and attitude. However, both knowledge and attitude of human behavior must be properly translated into the practices. The socioeconomic

condition has played a significant role in better COVID-19 response. People having better accommodation places, better earning, having family, and access to digital media have played as substantial factors to evaluate their COVID-19 preparedness and response level.

This study also determined attitude level as an associating factor for mental health concern due to COVID-19. The rickshaw pullers who reported high attitude level toward COVID-19 were less concerned about their mental health due to COVID-19. Positive attitude toward the system and health behavior against the pandemic might increase the confidence level, which might also reduce their concern about the mental health.

Our study followed the purposive sampling technique, which might not be completely free of response bias. The small sample size might not reflect the whole rickshaw puller community of the country. We conducted face-to-face interviews where the respondents might have shyness to answer some questions regarding the health behavior accurately. However, the tremendous support from the respondents made this study successful. This study could open the scope for further study. Authority could also integrate the information into their comprehensive policy to reduce the vulnerability of poor people. Other international organizations could also get substantial information for effective pandemic control efforts.

CONCLUSION

Poverty is one of the major drivers of vulnerability. Rickshaw pullers are one of the vulnerable groups living in an urban area. COVID-19 pandemic has a direct health impact. However, the devastating impact of this pandemic has also been experienced in socioeconomic sectors. The long-term COVID-19-induced lockdown period and limited movement could place the transport sector in an unbearable situation. Limited passengers and commodities movement have immensely affected the earning of rickshaw pullers. The direct health impact and uncertain socioeconomic condition placed this group vulnerable both physically and mentally. It has been observed that the psychological impact usually has been ignored during and after

any disaster.²⁸ This study also revealed the attitude as an associating factor for the mental health issue. If people can have better confidence on the system and regulations that can ensure the safety, it can also reduce the psychological trauma due to the ongoing emergency situation. Effective awareness campaign regarding COVID-19, along with financial support, could reduce the vulnerability. The Bangladesh government has already provided an emergency budget to support the poor people. However, this budget should have more coverage that can support a large number of poor people like rickshaw pullers. If the authority can ensure the better socioeconomic status of this group, they can be prepared and then respond properly against the pandemic.

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