

**Knowledge and Practices regarding COVID-19 Prevention among students of selected
Madrasas in Cox's Bazar, Bangladesh.**

Final Report of Summative Learning Project (SLP) presented to the BRAC James P Grant
School of Public Health, BRAC University.

Student: Camilla Megusa Blasius

ID Number: 22167018

Email: camillablasius94@gmail.com

Main Supervisor: Professor Malabika Sarker

Designation: Associate Dean

Email: malabika@bracu.ac.bd

Co-Supervisor: Dr. Mohiuddin Ahsanul Kabir Chowdhury

Designation: Assistant Professor of Public Health, Asian University for Women

Email: makmohit1928@gmail.com , ahsanul.chowdhury@auw.edu.bd

Mentor: Mushfiqur Rahman

Designation: Deputy Research Coordinator, JPGSPH

Email: mushfiqur.rahman@bracu.ac.bd

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Abstract

Introduction

The adherence to COVID-19 preventive practices can be influenced by the level of knowledge regarding prevention practices. This study assessed the knowledge and practices of COVID-19 prevention among Madrasa students in Cox's Bazar, Bangladesh.

Method

This cross-sectional study was conducted using face to face structured questionnaire that collected responses from 917 Madrasa students who attended six different Madrasas in six different unions of two upazilas of Cox's Bazar District. Participants were recruited through convenience sampling and interviewed after acquiring informed consents and assents. Level of knowledge and practices were scored using frequencies (percentages) and chi-square test was performed in STATA® 17. Logistic regressions were used to find associations between knowledge and practices and the demographics of the study population.

Findings

Among 917 students, 73.72% were females and 26.28% were males from Classes 6-9 with secondary education. Overall, it was found that students with inadequate knowledge of COVID-19 prevention was at 47.33% when compared to them having adequate practices of COVID-19 prevention which was 65.98%.

The most significant finding was class 9 having adequate practices of COVID-19 prevention in both the adjusted (1.7) and unadjusted (2.08) odds ratios with less than 0.05 p-values. Handwashing and wearing of facemasks were common among them. There was no statistical difference between males and females. However, statistically significant differences were found in knowledge and practice levels relating to their different Madrasas and upazilas with weak associations.

Conclusion

This study showed inadequate knowledge for the COVID-19 preventive measures among both male and female students in the Madrasa institutions studied. Positively, they had adequate practices of COVID-19 prevention. Their adherence to COVID-19 practices may depend on their level of knowledge of prevention and some other factors worth studying in future.

1. Introduction

Coronavirus disease (COVID-19) has been a global public health issue. Many studies performed since the beginning of the pandemic have contributed to knowledge about COVID-19 virus' transmission and prevention. The way people are receiving messages about COVID-19 prevention and adhering to these messages to prevent against this infectious disease varies from person to person. Some global studies that assessed knowledge, attitude and practices relating to COVID-19 prevention looked mostly at higher education students in universities and colleges (Berihun et al., 2021; Kabiri et al., 2021).

A lot of studies relating to Asia and South East Asia, looked at knowledge, attitude and practices about COVID-19 prevention among adults and university or college students (Anand, 2021; Adli et al., 2022). In Bangladesh, several studies performed on knowledge, attitude, and practice (KAP) concerning COVID-19 were among university students who live in urban locations (Ferdous et al., 2020; Rahman, 2021).

Ferdous et al. (2020) found that 48% out of the total 71.2% of the students had accurate knowledge, such as how COVID-19 is transmitted. Majority of them had higher education level and also live in urban areas. About 62% of all participants had positive attitudes, such as seeing the importance of wearing facemasks in crowded places. About 55% of them had frequent COVID-19 prevention practices, such as washing hands frequently using water and soap (Ferdous et al., 2020). Significant associations were found between socio-demographic factors such as higher education, being older, monthly family income, and frequent prevention practices with positive attitudes (Ferdous et al, 2020). Again, this is a study about university students and not the primary or secondary students.

In Bangladesh, there are limited KAP studies on primary (grades 1-5) and secondary (grades 6-10) students in both government and private education institutions (Kumar et al., 2021). There are very limited to no studies done at Madrasas, where a Madrasa is an Islamic education institution in Bangladesh that prioritizes Islamic teachings (Hussain, 2018).

There are two main types of Madrasa institutions, the Aliya Madrasa and Qawmi Madrasa. The former is recognized by the Bangladesh government while the latter does not follow the national curriculum and is still mostly unrecognized. A large number of orphans are students at Qawmi

madrastas. Generally, a lot of students in madrastas are orphans and students who come from underprivileged families where their family members cannot afford school fees, textbooks or transport costs if they were to attend government or other private education institutions (Hussain, 2018; DhakaTribune, 2018). Being Madrasa students and less privileged, no evidence is also available about their KAP of COVID-19 prevention.

COVID-19 is an important topic because this disease is infectious that it can be easily spread from person to person and is caused by SARS-CoV-2 virus (World Health Organization, n.d.). Secondly, Madrasa students are the least fortunate students compared to the students attending the government and other private education institutions, in terms of learning opportunities and other factors such as being orphans (Hussain, 2018; DhakaTribune, 2018). Finally, there is a gap of evidence specifically about knowledge, attitude and practices relating to COVID-19 prevention among Madrasas.

1.1 Research question

The research question was about assessing the level of knowledge and practices relating to COVID-19 prevention among grades 6-9 Madrasa students of Cox's Bazar Sadar and Pekua sub-districts of Cox's Bazar District, Bangladesh. Following the students' exposure to previously and current COVID-19 messages at the time of the study, the general objective assessed knowledge and practices along with their associated factors (demographics). Specific objectives were to identify common knowledge and practices of COVID-19 prevention, identify common factors associated with knowledge and practices of COVID-19 prevention, and also to identify differences between the knowledge and practices of COVID-19 prevention and their associated factors. The intention of this study was to share findings with decision makers and those concerned relating to the Madrasas and COVID-19 prevention.

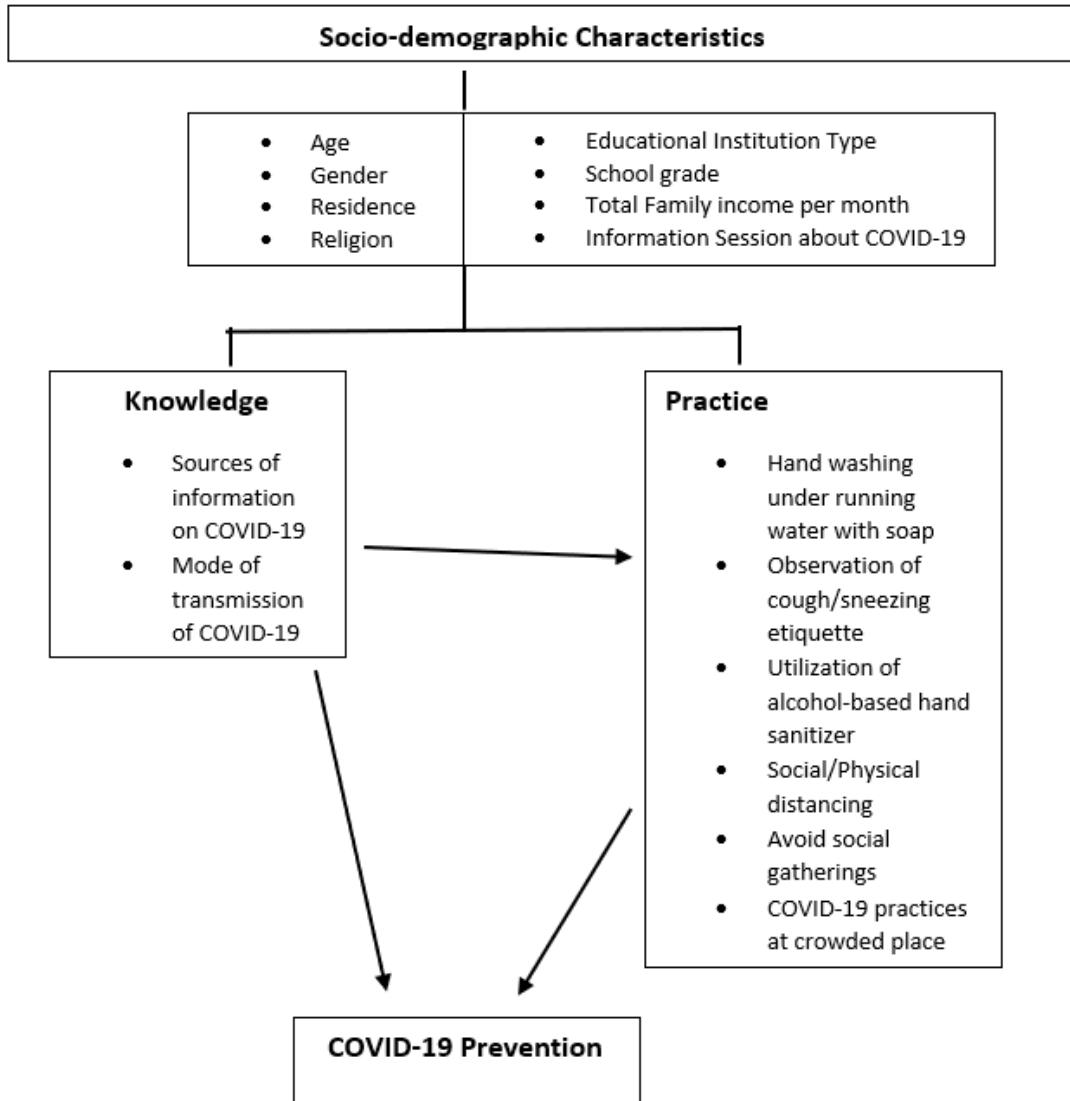


Figure 1: Knowledge and Practice Conceptual Framework

(Kumar et al., 2021; Ferdous et al., 2020; Hussain, 2018)

2. Methodology

2.2 Study design

An institutional-based cross-sectional study was conducted among selected madrasas in Cox's Bazar Sadar and Pekua sub-districts which are also called upazilas, in Cox's Bazar District of Bangladesh.

2.3 Study setting

This study was conducted on an existing COVID-19 study project implemented by BRAC, called the Community Support Team (CST) Cox's Bazar Project which came to an end in December 2022. Only two sites, Cox's Bazar Sadar and Pekua Upazilas (sub-districts) were involved in the study. They were randomly selected out of the total 6 sites of the BRAC CST Cox's Bazar Project.

As the CST project was coming to an end, this study took advantage of the same study setting and population due to the limited time. A total of 6 Madrasas, namely Golzar Madrasa, Ishakhali Islamia Dakhil Madrasa, PM Khali Adarsha Dhakhil Madrasa, Pekua Anwarul Ulum Alim Madrasa, Bottoli Shafiqua Dakhil Madrasa and Rajakhali Shundari Para Azgaria M U Dak participated in this study. Each upazila had 3 participating Madrasas.

2.4 Study population

Study participants were both boys and girls who were in grades 6-9 or equivalent in the selected Madrasas in Cox's Bazar. These Madrasas in Pekua and Cox's Bazar Sadar had previously conducted information sessions on COVID-19 prevention through support from BRAC CST Cox's Bazar Project. In order for the students to be considered for the study, they must be in grades 6-9, attended the selected schools and must have received some information about COVID-19 prevention from their Madrasas. Students who did not satisfy these inclusion criteria were excluded from the study.

2.5 Study sample and sampling

The sampling frame was the list of Madrasa students for each school estimated to be 2,500 students in total for all participating Madrasas. However, due to limited time, small budget, same study population and available information shared including readily available sample as the CST Cox's Bazar Project, convenience sampling method was chosen and applied to get the study participants.

Out of the 1,102 boys and girls from class 6-9 who completed the survey, only 917 were included in the analysis after excluding the incomplete responses.

2.6 Tool Development

The study tool was a set of structured knowledge and practice questionnaires developed by the researchers first in English, then translated to Bengali and both versions pre-tested. These questions, both in English and Bengali were then reviewed by the Institutional Review Board (IRB) of James P Grant School of Public Health, BRAC University. After revising few questions based on IRB's feedback, the questions were merged with the main CST Project set of questionnaires. This is to simplify the data collection process as the study population and dates for data collection were the same as for the existing CST Project that this study rode on.

2.7 Data Collection Procedure

Paper-based structured questionnaire was provided to Madrasas by research assistants who were trained by the BRAC CST Project on how to collect data from the students. Since this study's questions were merged with the existing CST Project study questions, the same research assistants collected data for both studies at the same time after the teachers and students signed the consent and assent forms to participate. Questionnaire was administered to each student in each class during one of the students' class sessions based on their exposure and current knowledge and practices of COVID-19. Instructions were given by the research assistants for each of the participating school prior to the students filling the questionnaire in class. It took 4 days to complete data collection in all the study sites. Some translations from English to Bengali occurred to further explain questions when students did not really understand the questions. The data collected were then transferred to Survey CTO server which was password protected.

2.8 Data Analysis

All the data collected were saved into STATA® format and shared for data cleaning and analysis using STATA® 17 statistical software. From the 1,102 respondents, only 917 continued to data analysis after the incomplete responses were excluded.

Frequencies (and percentages) were obtained for the study population demographics using descriptive statistics and chi-square. Since age was the only continuous variable, it was reported using mean and standard deviation (SD) while the rest of the variables were categorical and were reported as counts (n) and proportions (%) by gender, including awareness of COVID-19.

To assess knowledge and practices of COVID-19 prevention among students, a frequency and percentage table was used by using chi-square test. There were total of six knowledge questions which were divided into two domains. Domain I were '*knowledge of COVID-19 transmission*' and domain II, '*knowledge of COVID-19 prevention*'. Each question weighs one mark if answered correctly by the students. No mark was allocated to wrong answers and 'I don't know responses', of which three out of the six knowledge questions had the latter responses while the other three had 'Yes' and 'No' responses. Knowledge questions had an overall total of 6 points. A cut-off score of $\geq 65\%$ was considered as students having adequate knowledge and $< 65\%$ considered as having inadequate knowledge. For this study, the Bloom's cut-off point was used with some adjustments made (Khan et al., 2021).

Similarly, practices also had two domains with a total of six questions and six points. Domain I and II had '*practices of handwashing*' and '*practices of facemask wearing*', respectively. Assignment of percentage scores are similar to knowledge questions. Practices had only 'Yes' and 'No' responses.

The main dependent variables were 'knowledge' and 'practice' of COVID-19 prevention. Demographics such as age, gender, education or grade, school, union and upazila were the main independent variables. In order to graphically show adequate/inadequate knowledge and adequate/inadequate practices of COVID-19 prevention by the demographics and find relationships between them, a composite scoring was done in STATA® and four new variables (knowledge, knowledge level, practice and practice level, were created using the knowledge and practice questions. Both simple and multiple logistic regressions were then used to find the unadjusted and adjusted odds ratios, confidence intervals and p-values of the associations.

2.9 Ethical Considerations

Approval for this study was received from the IRB Committee of the James P Grant School of Public Health, BRAC University, prior to going out to the field for data collection. Informed consent forms and informed assent forms were taken from the teachers of the grades 6-9 or equivalent and from the students being the study participants prior to administering the questionnaire. Students' confidentiality was maintained throughout data collection with voluntary participation. Both, the teachers and students were informed of any future study that will involve using the students' collected data. In this case, it was made known to them that the

students' data will be deidentified before sharing for research purposes and stored in a securely password protected database. This is to ensure that the privacy, confidentiality and anonymity issues are taken care of.

3. Findings

The demographic details of the students and awareness of COVID-19 in frequency (n), percentages (%) and by gender (male and female) are displayed in Table 1. Unsurprisingly, all 917 (100%) students already heard about COVID-19 prior to this study. Among all the Madrasa students' who were aware of COVID-19, they had a combined mean age of 13.85 years (SD \pm 1.57) with more than half of them being female (73.72%). Number of respondents varies between classes, institutions, and upazilas.

Out of the 6 classes, more student respondents came from class 6 and equivalent (n=278, 30.32%). Students attended six different Madrasas with a high number of them from PM Khali Adarsha Dhakhali Madrasa who responded to the questionnaire (n=221, 24.1%). PM Khali Union had the same number of respondents to PM Khali Adarsha Dhakhali Madrasa. From the two upazilas, slightly more students are from Madrasas within Cox's Bazar Sadar Upazila (n=482, 52.56%).

The least number of respondents for each demographic were from class 9 and equivalent (n=195, 21.26%) which is the highest education status, Ishakhali Islamia Dakhil Madrasa (n=83, 9.05%), Pokkhali Union (n=83, 9.05%) and Pekua Upazila (n=435, 47.44%).

The total level of knowledge, and by gender of the study population is shown in Table 2. The common knowledge of COVID-19 prevention among the students were '*facemask should be worn in public and crowded places*' (n=768, 83.75%) and '*COVID-19 preventive vaccines stops the spread of the virus*' (n=634, 69.14%). Less than half of the students (n=440, 47.98%) know knowledge about '*someone who had COVID-19 previously can get it again*' (n=440, 47.98%). Practice of COVID-19 prevention on the other hand, had many students who answered four questions correctly above 65%. In order of common practice, Madrasa students adhered more to '*washing hands frequently, sometimes or when needed*' (n=855, 93.24%), followed by '*wearing a facemask when going outside home*' (n=792, 86.37%), '*washing hands before touching eyes,*

nose and mouth’ (721=78.63%) and *‘washing hands after blowing nose, coughing or sneezing into hands*’ (n=625, 68.16%). Students had good practice results than knowledge.

Table 1: Background Characteristics of the study population and COVID-19 awareness by gender

	Total n = 917 (100%)	Male n = 241 (26.28%)	Female n = 676 (73.72%)
Age (mean ± SD), years	13.85 ± 1.57	14.11 ± 1.72	13.76 ± 1.51
Education Status (in grade %)			
Class 6 and equivalent	278 (30.32%)	75 (31.12%)	203 (30.03%)
Class 7 and equivalent	217 (23.66%)	63 (26.14%)	154 (22.78%)
Class 8 and equivalent	227 (24.75%)	61 (25.31%)	166 (24.56%)
Class 9 and equivalent	195 (21.26%)	42 (17.43%)	153 (22.63%)
Madrassa Institution (school %)			
Golzar Madrasa	174 (19.41%)	37 (15.35%)	141 (20.86%)
Ishakhali Islamia Dakhil Madrasa	83 (9.05%)	23 (9.54%)	60 (8.88%)
PM Khali Adarsha Dhakhil Madrasa	221 (24.10%)	65 (26.97%)	156 (23.08%)
Pekua Anwarul Ulum Alim Madrasa	184 (20.07%)	61 (25.31%)	123 (18.20%)
Bottoli Shafiqua Dakhil Madrasa	122 (13.30%)	36 (14.94%)	86 (12.72%)
Rajakhali Shundari Para Azgaria M U Dak	129 (14.07%)	19 (7.88%)	110 (16.27%)
Union (%)			
PM Khali	221 (24.10%)	65 (26.97%)	156 (23.08%)
Pokkhali	83 (9.05%)	23 (9.54%)	60 (8.88%)
Jalalabad	178 (19.41%)	37 (15.35%)	141 (20.86%)
Pekua	184 (20.07%)	61 (25.31%)	123 (18.20%)
Taitong	122 (13.30%)	36 (14.94%)	86 (12.72%)
Rajakhali	129 (14.07%)	19 (7.88%)	110 (16.27%)
Upazila (%)			
Cox's Bazar Sadar (Urban)	482 (52.56%)	125 (51.87%)	357 (52.81%)
Pekua (Rural)	435 (47.44%)	116 (48.13%)	319 (47.19%)
COVID-19 Awareness			
Ever heard of Coronavirus or COVID-19?	917 (100%)	241 (26.28%)	676 (73.72%)

By gender, there was not much differences in the percentages of knowledge and practice level of COVID-19 prevention between male and female students, despite majority of the studnets who responded to the questionnaire were females (n=676, 73.72%). Table 2a in the Annex 1, provides more detailed information about the level of COVID-19 preventive knowledge and practices.

When comparing levels of knowledge and practices of COVID-19 prevention among the students and by upazilas using descriptive statistics, level of knowldege was low for both Cox's Bazar Sadar

Table 2: Level of COVID-19 Preventive Knowledge and Practice among male and female students of Madrasas

		Cut-off % for Knowledge, n=917 (%)		
		Adequate Knowledge (Yes, \geq 65%)		
		Inadequate Knowledge (No, $<$ 65%)		
No	Knowledge (correct responses)	Male	Female	Total
Domain I: Knowledge of COVID-19 Transmission				
1	COVID transmits through air.	139 (57.68%)	382 (56.51%)	521 (56.82%)
2	COVID transmission can be prevented by avoid spaces that are closed, crowded...	101 (41.91%)	227 (33.58%)	328 (35.77%)
3	Someone who had COVID-19 previously can get it again.	114 (47.30%)	326 (48.22%)	440 (47.98%)
Domain II: Knowledge of COVID-19 Prevention				
4	Facemask should be worn in public and crowded places.	205 (85.06%)	563 (83.28%)	768 (83.75%)
5	Avoid crowded spaces.	94 (38.00%)	276 (40.83%)	370 (40.35%)
6	COVID-19 preventive vaccine stops the spread of the virus.	161 (66.80%)	473 (69.97%)	634 (69.14%)
		Cut-off % for Practice, n=917 (%)		
		Adequate Practice (Yes, \geq 65%)		
		Inadequate Practice (No, $<$ 65%)		
No	Practice (positive responses)	Male	Female	Total
Domain I: Practice of COVID-19 Prevention: Handwashing				
1	I wash my hands before touching eyes, nose and mouth.	190 (78.84%)	531 (78.55%)	721 (78.63%)
2	I wash my hands after touching a surface or object that is dirty.	100 (41.49%)	244 (36.09%)	344 (37.51%)
3	I wash my hands after blowing nose, coughing, or sneezing into hands.	168 (69.71%)	457 (67.6%)	625 (68.16%)

4	I wash my hands frequently, sometimes, or when needed.	225 (93.36%)	630 (93.20%)	855 (93.24%)
Domain II: Practice of COVID-19 Prevention: Facemask wearing				
5	I wear a face mask when I have to go outside home.	207 (85.89%)	585 (86.54%)	792 (86.37%)
6	I wear a mask when I feel like wearing one.	80 (33.20%)	219 (32.40%)	399 (32.61%)

(61.41%) and Pekua (31.72%). However, level of practice was high for Cox’s Bazar Sadar (77.59%) and low for Pekua (53.10%). This is displayed by the bar graph in Figure 1 below.

Not shown in the graph was the total knowledge level of 47.33% (n=434) indicating an inadequate knowledge overall for both upazilas while practices of COVID-19 preventive behaviours was adequate at 65.98% (n=605), very slight increase above the halfway mark.

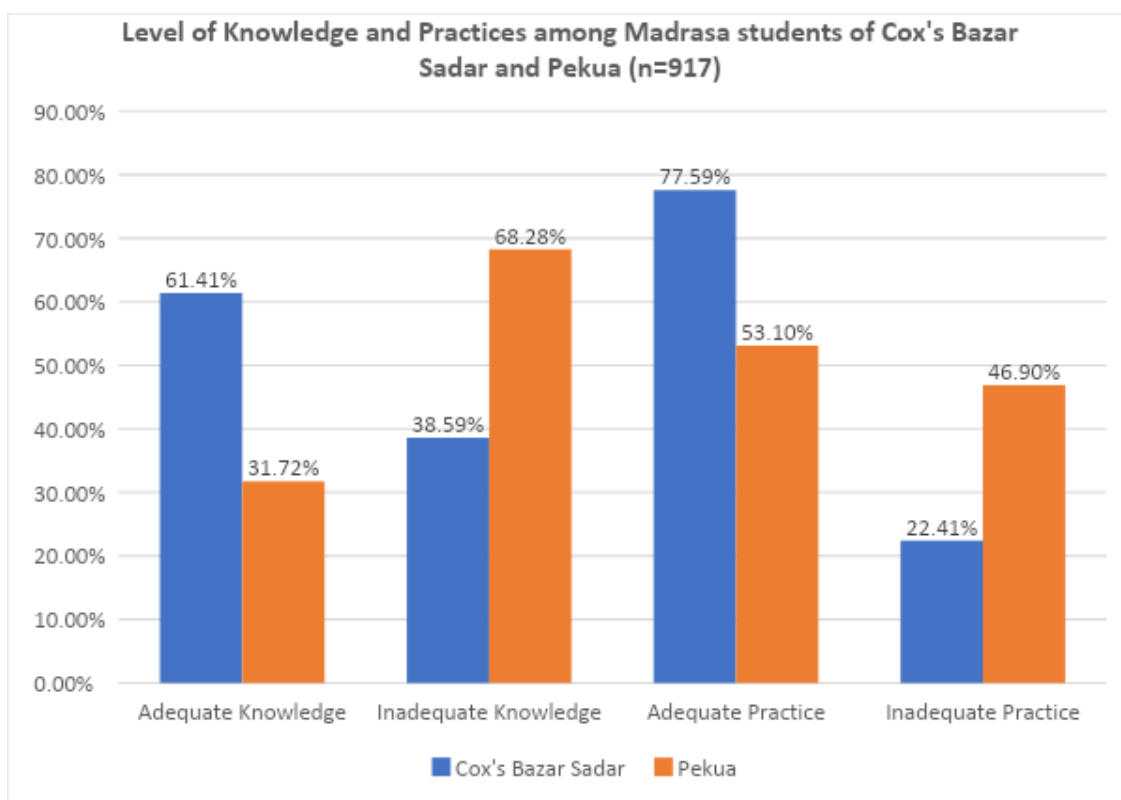


Figure 1: Level of Knowledge and Practices among Madrasa students

Knowledge and practice levels of COVID-19 prevention and demographics of age, gender, education, Madrasas and upazilas were regressed to find associations. It was found that, there

were statistically significant associations between education status or class of students and their level of practices of COVID-19 prevention.

For education status, while holding class 6 and equivalent as the reference value, students in class 7 and equivalent were 0.68 times (p-value = 0.04) less likely to have adequate level of practices of COVID-19 prevention than students in class 6 for the unadjusted odds ratio (OR). In other words, students in class 7 and equivalent were 32% less likely to have adequate level of practices of COVID-19 prevention than students in class 6. The class 7 adjusted OR of 0.64 (p-value 0.028) means that, students in class 7 were 0.64 times (or 36%) less likely to adequately practice COVID-19 prevention when other variables were held constant.

Table 4: Relationships of Knowledge and Practices with demographics along with unadjusted and adjusted odds ratios

	Knowledge				Practice			
	Unadjusted (crude) OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value	Unadjusted OR (95%CI)	P-value	Adjusted OR (95% CI)	P-value
Age range (in Years)								
10-15 years	Ref				Ref			
16-20	0.917 (0.698, 1.204)	0.531	0.936 (0.646, 1.357)	0.727	1.119 (0.838, 1.493)	0.447	0.960 (0.655, 1.408)	0.836
Gender								
Male	Ref				Ref			
Female	0.957 (.713, 1.285)	0.771	1.000 (0.729, 1.373)	0.999	0.951 (0.696, 1.299)	0.752	0.869 (0.620, 1.217)	0.413
Education Status (in grade %)								
Class 6 and equivalent	Ref				Ref			
Class 7 and equivalent	0.801 (0.561, 1.145)	0.224	0.838 (0.569, 1.233)	0.369	0.681 (0.472, 0.982)	0.040	0.641 (0.432, 0.952)	0.028
Class 8 and equivalent	0.810 (0.570, 1.152)	0.242	0.812 (0.538, 1.226)	0.322	0.939 (0.649, 1.357)	0.737	0.857 (0.559, 1.313)	0.478
Class 9 and equivalent	1.129 (0.783, 1.628)	0.517	1.446 (0.887, 2.357)	0.139	1.703 (1.124, 2.580)	0.012	2.078 (1.225, 3.525)	0.007
Madrasa Institution (school %)								
Golzar Madrasa Ishakhali	Ref				Ref			
Islamia Dakhil Madrasa	0.893 (0.523, 1.524)	0.678	0.875 (0.509, 1.504)	0.630	1.421 (0.656, 3.0728)	0.372	1.394 (0.638, 3.042)	0.405
PM Khali Adarsha	0.908 (0.604, 1.363)	0.640	0.900 (0.597, 1.358)	0.616	0.429 (0.263, 0.699)	0.001	0.414 (0.252, 0.681)	0.001

Dhakhil Madrasa								
Pekua Anwarul Ulum Alim Madrasa	0.443 (0.291, 0.678)	0.00 0	0.443 (0.290, 0.679)	0.00 0	0.259 (0.158, 0.424)	0.00 0	0.249 (0.150, 0.411)	0.000
Bottoli Shafiqua Dakhil Madrasa	0.287 (0.177, 0.467)	0.00 0	0.254 (0.153, 0.421)	0.00 0	0.195 (0.114, 0.332)	0.00 0	0.153 (0.087, 0.268)	0.000
Rajakhali Shundari Para Azgaria M U Dak Madrasa	0.102 (0.057, 0.181)	0.00 0	0.099 (0.556, 0.177)	0.00 0	0.198 (0.117, 0.335)	0.00 0	0.189 (0.111, 0.324)	0.000
Upazila (%)								
Cox's Bazar Sadar (Urban)	Ref				Ref			
Pekua (Rural)	0.292 (1.325, 1.912)	0.00 0	1	NA	0.327 (2.796, 4.290)	0.00 0	1	NA

Still holding class 6 as the reference value, class 9 was 1.7 times (p-value 0.012) more likely (or 30% more likely) to have adequate practices of COVID-19 prevention than class 6. Adjusting for other variables, class 9 was 2.08 times (or 92%) more likely to have adequate practices of COVID-19 prevention than class 6. There were no statistically significant associations found between the individual demographics of age, gender and the level of knowledge of COVID-19 prevention.

Golzar Madrasa when held as the reference point, PM Khali Adarsha Dhakhil Madrasa was 0.43 times (p-value = 0.001) less likely to practice COVID-19 prevention than Golzar Madrasa. When adjusting for confounders, PM Khali Adarsha Dhakhil Madrasa was 0.41 times (also p-value = 0.001) less likely to practice COVID-19 prevention than Golzar Madrasa, with not much difference between the two ratios.

For Pekua Anwarul Ulum Alim Madrasa, Bottoli Shafiqua Dakhil Madrasa and Rajakhali Shundari Para Azgaria M U Dak Madrasa, all three Madrasas have statistically significant associations (all p-values = 0.000) of having < 1-times knowledge on the prevention of COVID-19 and practices on the prevention of COVID-19 when Golzar Madrasa was the reference point for the crude odds ratios (CORs). While holding the other variables constant for the adjusted odds ratios, the results and values were still similar to the CORs. Ishakhali Islamia Dakhil Madrasa showed no statistically significant findings at all.

Only the COR was estimated for the level of knowledge of COVID-19 prevention for the upazilas. When having COX's Bazar Sadar Upazila as the reference point, students in Pekua were 0.29 times or 71% (p-value = 0.000) less likely to know preventive ways of COVID-19 than students in Cox's Bazar Sadar. Pekua was also 0.33 times or 67% (p-value = 0.000) less likely to practice COVID-19 prevention than Cox's Bazar Sadar. There were no associations found for both the knowledge and practices of COVID-19 preventions when adjusting for the ORs because there was collinearity found for the two upazilas and also, knowledge and practices both had ORs of 1. Unions were excluded from the regression due to more collinearity.

4. Discussion

COVID-19 pandemic and its responses have been around since it started but now with less effort put into the responses as the situation is improving. However, COVID-19 messages are still being disseminated for peoples' knowledge and positive attitude and behaviour towards minimising the risk of transmission and to prevent COVID-19. Not everyone remembers the COVID-19's important messages and applies them in practice. Such continues to happen in institutions and public places (Alam et al., 2021; Saha et al., 2022). This study found a similar situation for the adequacies of knowledge and practices of COVID-19 prevention for students attending the Madrasas.

Eventhough, all students in the studied Madrasas previously heard about COVID-19 and received information sessions at their institutions, less than 50% of the students had adequate knowledge of COVID-19 prevention. There were insufficient evidence available for the study population (Madrasa students) to support the finding of less than 50% of the students, who had adequate knowledge. Some studies that looked at school students in much higher education levels found more students having adequate knowledge of COVID-19 (Ferdous et al., 2020; Kumar et al., 2021). This can depend on many factors including the type of COVID-19 messages they have been exposed to and type of knowledge questions asked in the surveys. Similar situation can also apply to practices of COVID-19 prevention.

In practices relating to COVID-19 prevention, 65% of the students adhered to practices of handwashing and facemask wearing domains. Students demonstrated hand washing and facemask wearing as positive behaviour overall as these two practices were common during COVID-19 and many institutions adopted them as part of their guidelines to practice. This is

similar to what many other studies found globally and locally in Bangladesh (Kumar et al., 2021; Ferdous et al., 2020; Hussain, 2018).

Knowing the inadequate knowledge level of COVID-19 prevention among Madrasa students can mean different things. It may mean knowledge was not well absorbed by the Madrasa students. Either they forgot information related to the knowledge questions asked, instructions during administration of the questionnaire were unclear, or they were not told about information or messages related to the knowledge questions asked during data collection. Overall, they had a low support and inadequate knowledge on COVID-19 transmission and prevention. This can also mean that practicing positive behaviour does not necessarily mean that they clearly understood the reasons for handwashing and facemask wearing. It is quite difficult to compare these findings to other sources as studies specifically for Madrasa students were very limited. Other demographics can be easily compared.

Knowledge and practice levels can vary by demographics or socio-demographic characteristics. Looking at gender and level of knowledge and practices, there was not much difference between the percentage scores regardless of more females who participated in the study. Statistically, there were no significant associations found between gender and levels of knowledge and practices of COVID-19 prevention for this study population. Other factors tested to find associations were age, education, Madrasa institution and upazila. Age had non-statistical findings.

Despite of the majority of the students who participated in the study were from Class 6, the results showed no association between the education status (class) of students and their knowledge level. Only two classes, class 7 and class 9 demonstrated statistically significant associations between class and practice level of COVID-19 prevention. Class 7 had a weak association of COR 0.68 (p-value = 0.04) and an adjusted OR of 0.64 (p-value = 0.028). The most significant finding and a strong association was found between class 9 and practice level of COVID-19 prevention. Class 9 had COR 1.7 (p-value = 0.012) and an adjusted OR of 2.08 (p-value = 0.007). This evidence can be support by Ferdous et al. (2020), where they found students of higher education tend to have good knowledge and practices of COVID-19 prevention.

From the 6 Madrasa institutions, it was found that only 3 Madrasas, namely Pekua Anwarul Ulum Alim Madrasa, Bottoli Shafiqua Dakhil Madrasa and Rajakhali Shundari Para Azgaria M U Dak Madrasa had weak associations between both knowledge and practice levels of COVID-19 prevention and these institutions. Only one, PM Khali Adarsha Dhakhil Madrasa had a weak association between practice levels of COVID-19 prevention and the institution. However, when it comes to the upazilas where the Madrasas were located, students who attended Madrasas in Cox's Bazar Sadar were more likely to have adequate knowledge than those who lived in Pekua. Cox's Bazar Sadar is an urban upazila while Pekua is a rural upazila. This finding is supported by Ferdous et al. (2020) and Rahman (2021) who found significant associations between urban students and frequent practices of COVID-19 prevention. For this study, Madrasa students also demonstrated adequate level of practices in washing hands frequently.

The main findings of this study were not anticipated especially for the level of knowledge which was inadequate after COVID-19 responses have been provided for almost three years, both globally and nationally in Bangladesh. Bangladesh has good coverage of COVID-19 messages being disseminated nationally to communities and institutions. However, the knowledge and practices of COVID-19 prevention varies from place to place and institution to institution. Madrasas, being the educational institutions for young Islamic students, are known to be the underprivileged institutions when it comes to government support for education. The study proved that the selected Madrasas studied had inadequate COVID-19 prevention knowledge than the prevention practices.

4.1 Implications

COVID-19 is an infectious disease that can spread easily from one person to another. Understanding it and knowing the positive behaviour of how to prevent the spread of coronavirus is important. The real reasons for the inadequate COVID-19 preventive knowledge among the Madrasa students studied are needed to be explored. At this stage it is not known if COVID-19 is a new disease and quite difficult to understand by the students. Whether the strategy used in delivering messages to the Madrasas were inadequate and not applicable, students were from underprivileged backgrounds or other reasons. This is a great gap and this study itself is a strength as it contributes to knowledge about the Madrasa students. For this particular study population, there is very limited evidence out there regarding their knowledge and practice level of COVID-19 prevention. More study is need for the Madrasas and their students. This finding

may assist the Madrasas and those organizations supporting them with COVID-19 prevention related interventions.

4.2 Limitations

There are many limitations for this study. Firstly, this study was riding on top of an existing study which was good and seen as an opportunity to reach the same study population and sites given the limited time. However, there was very limited time given to design the study prior to data collection. Secondly, the research topic was chosen and given based on the current ongoing BRAC CST Cox's Bazar Project. This may have contributed to not designing the research questionnaire well for the students.

Another reason would be the English questions being translated into Bengali which was found that some of the translated English words had distorted meanings in Bengali. The research assistants or those involved in data collection were different people from the researchers and they had never met before. Data collection was not done by the researchers.

Data analysis was done by the researcher who is new to STATA® statistical software and analyzing a real dataset for the first-time using STATA®. Some appropriate tests may have been missed or inappropriate tests used. Finally, there are not a lot of specific literatures to support the process of this research for the Madrasas and the current study findings. Findings were compared with different study populations with similar demographics.

5. Conclusion

The current study assessed the knowledge and practices of COVID-19 prevention among the Madrasa students in Cox's Bazar District. It found students to have inadequate knowledge on COVID-19 prevention and adequate practices of COVID-19 prevention. The most significant finding was class 9 having adequate practices of COVID-19 prevention and a strong association. In addition, there were no differences in knowledge and practice levels between male and female students. Demographic variables such as few Madrasas and upazilas were significantly related to adequate knowledge and practices of COVID-19 prevention among the Madrasa students which were weak associations. Practices of handwashing and facemask wearing improved among the students as these were the most common practices during COVID-19 responses or interventions. More study is need to really understand the knowledge, attitude and practices of COVID-19 prevention among the Madrasas and their students in order to better assist them.

References

- Adli, I., Widyahening, I. S., Lazarus, G., Phowira, J., Baihaqi, L., A., Ariffandi, B., Putera, A., M., Nugraha, D., Gamalliel, N., and Findyartini, A. (2022). Knowledge, attitude, and practice related to the COVID-19 pandemic among undergraduate medical students in Indonesia: A nationwide cross-sectional study. *PLoS ONE*, *17*(1), e0262827. <https://doi.org/10.1371/journal.pone.0262827>
- Alam, S., Khan, S., Ahsan, A., and Khan, I. A. (2021). A Cross-Sectional Survey of Knowledge, Attitude and Practice (KAP) Among the MBBS Students after a Year of COVID-19 Outbreak. *Trends in Medical Research*, *16* (2), 30-36. <http://doi.org/10.3923/tmr.2021.30.36>
- Anand, P., Subudhi, S. and Shridevi, K. (2021). Knowledge, Attitude and Practices regarding Covid and its Prevention among High School Students in Urban Field Practice area of a Private Medical College. *International Journal of Contemporary Medical Research*, *8*(7), G10-G16. <http://dx.doi.org/10.21276/ijcmr.2021.8.7.9>

- Berihun, G. Walle, Z., Teshome, D., Berhanu, L., Abebe, M., Ademas, A., Gizeyatu, A., Keleb, A, Malede, A., Atikilt, G. Teym, A and Adane, M. (2021). Knowledge, Attitude, and Preventive Practices Towards COVID-19 Among Students of Ethiopian Higher Education Institutions. *Journal of Multidisciplinary Health Care*, 14, 2123-2136. <https://doi.org/10.2147/JMDH.S322495>
- DhakaTribute. (2018). What are madrasa students actually learning? Retrieved on November 4, 2022 from <https://archive.dhakatribune.com/opinion/special/2018/01/19/madrasa-students-actually-learning>
- Ferdousi S., S., Ferdousi, S., Rahman, M., M., Khan, M., H., Rahman S., M., M., Fahim, F., R., and Naafi, S. M. (2020). Knowledge, Attitude and Practices Towards COVID -19 Among University. Level Students in Bangladesh. *Bangladesh Medical Research Council*, 46, 154-160. <https://doi.org/10.3329/bmrcb.v46i3.52249>
- Hussain, A., A. (2018). State, Qawmi Madrasas and Children in Bangladesh: From a Social Protection Perspective (Thesis). *ResearchGate*. Retrieved from https://www.researchgate.net/publication/346923994_State_Qawmi_Madrasas_and_Children_in_Bangladesh_From_a_Social_Protection_Perspective
- Kabiri, M., Baffoe, Poku, S. A., Ofori, E. K., Adusei, K. O., and Pupilampu, P. (2021). Knowledge, Attitude and Practices of COVID-19 Prevention among Adults 18 Years and Above in Kintampo North Municipality, Ghana. *Journal of Infectious Diseases and Epidemiology*, 7(9), 7:228. <http://doi.org.10.23937/2474-3658/1510228>
- Kumar, B., Pinky, S., D. and Nurudden, A., Md. (2021). Knowledge, attitudes and practices towards COVID-19 guidelines among students in Bangladesh. *Social Sciences & Humanities Open*, 4(1), 100194. <https://doi.org/10.1016/j.ssaho.2021.100194>
- Rahman Md., M., Jhinuk, J., M., Nabila, N., H., Yeasmin, M., T., M., Shobuj, I., A., Tammim, H., S., Sayma, H., Faruk, F., and Shah, S., H. (2021). Knowledge, Attitude, and Practices towards COVID-19 during the Rapid Rise Period: A Cross-Sectional Survey among Public University Students of Bangladesh. *SciMedicine Journal*, 3(2). <http://dx.doi.org/10.28991/SciMedJ-2021-0302-4>

Saha, M., Saha, G., and Islam, M. (2022). Knowledge, attitude, and practice of Bangladeshi residents during COVID-19 pandemic. *PLOS Global Public Health*, 2(5): e0000407. <https://doi.org/10.1371/journal.pgph.0000407>

World Health Organization (n.d.). Coronavirus disease (COVID-19). Retrieved on November 11, 2022 from https://www.who.int/health-topics/coronavirus#tab=tab_1

Annexes

Annex 1: Table 2a: COVID-19 Preventive Knowledge among male and female students of Madrasas

No.	Knowledge	Male			Female			Total			P-value
		Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know	
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
		N = 917 (%)									
Domain I: Knowledge of COVID-19 Transmission											
1	COVID transmits through air.	139 (57.68%)	102 (42.32%)		382 (56.51%)	294 (43.49%)		521 (56.82%)	396 (43.18%)		0.753
2	COVID transmission can be prevented by avoid spaces that are closed, crowded...	101 (41.91%)	140 (58.09%)		227 (33.58%)	449 (66.42%)		328 (35.77%)	589 (64.23%)		0.021

3	Someone who had COVID-19 previously can get it again.	114 (47.30%))	79 (32.78%))	48 (19.92%))	326 (48.22%))	145 (21.45%))	205 (30.33%))	440 (47.98%))	224 (24.43%))	253 (27.59%)	0.000
Domain II: Knowledge of COVID-19 Prevention											
4	Face mask should be worn in public and crowded places.	205 (85.06%))	23 (9.54%))	13 (5.39%))	563 (83.28%))	43 (6.36%))	70 (10.36%))	768 (83.75%))	66 (7.20%))	83 (9.05%)	0.025
5	Avoid crowded spaces.	94 (39.00%))	147 (61.00%))		276 (40.83%))	400 (59.17%))		370 (40.35%))	547 (59.65%))		0.620
6	COVID-19 preventive vaccine stops the spread of the virus.	161 (66.80%))	30 (12.45%))	50 (20.75%))	473 (69.97%))	49 (7.25%))	154 (22.78%))	634 (69.14%))	79 (8.62%))	204 (22.25%)	0.046