ASSESSING KNOWLEDGE AND PRACTICES FOR COVID-19PREVENTION AMONG STUDENTS FROM CLASS 8TH & 9TH STANDARD IN SELECTED SCHOOLS AND EQUIVALENT GRADES LEVEL OF MADRASAS IN COX BAZAR DISTRICTS, BANGLADESH.

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

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ABSTRACT

Background: Knowledge and practices are crucial cognitive components in public health, especially in health promotion and prevention (Ferdous et al., 2020).this paper examines knowledge and practice among students of 8th and 9th grade in schools and madrasas of Cox's bazar district as this will help in developing effective intervention to increase knowledge and practice among students.

Method: quantitative approach and cross-sectional design used to collect data among all student in grade 8 & 9 in schools and madrasas.

Results: it was found that students have inadequate knowledge score about covid prevention whereas adequate practice score is observed to prevent covid-19. The level of knowledge varied by sociodemographic characteristics. Females [AOR .605,95% CI: (0.484 -0.755) < 0.01] and individuals studying in 9th grade [1.307(1.024 - 1.668) p<0.05 demonstrated inadequate levels of knowledge. Whereas the students living in Pekua were having odds .630 times performing more practice about COVID-19 prevention [OR .630, 95% CI: (0.396 - 1.004)] than students living in Sadar. the study predicts that the odds of a female student being carrying out practice about COVID-19 prevention are 1.014 times [OR 1.014 95% CI: (0.687 - 1.498) than those of a male student.

Conclusion: Our findings suggest the need for effective and tailored health education programs aimed at improving COVID-19knowledge among students and to implementation and maintenance of safe practices.

Keywords: Covid-19, Knowledge, Practice, Preventive

ASSESSING KNOWLEDGE AND PRACTICES FOR COVID-19 PREVENTION AMONG STUDENTS FROM CLASS 8TH & 9TH STANDARD IN SELECTED SCHOOLS AND EQUIVALENT GRADES LEVEL OF MADRASAS IN COX BAZAR DISTRICTS, BANGLADESH.

INTRODUCTION

After more than two years, the COVID-19(Coronavirus disease) pandemic's devastating effects are still being felt around the globe causing 6 million fatalities until November 5, 2022 (Worldometer, 2022). The coronavirus spreads differently in communities, regions, and countries with different socioeconomic, political, and infra-structural contexts (Natnael et al., 2021). The virus proved deadly for people from all age groups, especially the elderly and those with compromised immune systems, and spreads through contact and airborne routes. In response to this dire situation, the World Health Organization (WHO) declared COVID-19a public health emergency of global outrage on January 30 and prompted all nations to cooperate in ceasing the virus's rapid spread (Rabbani et al., 2020).

One of the several measures taken to control the spread of virus, was to keep the academic institutions closed, therefore students do not come into close contact with each other. After taking such measures to contain spread of COVID-19, experts of different parts of the world focused on studying the knowledge of students toward COVID-19 prevention and the practice of measures. Wen et al. (2020) and Xue et al. (2021) investigated knowledge, attitude and practice of primary and middle school students of Beijing and Hubei Province of China, respectively, and found that majority of the students have knowledge about COVID-19 prevention. Wen et al. (2020) discovered that gender, area of residence, healthy lifestyle practice and health seeking behavior were significant factors with proper knowledge of COVID-19. Additionally, Xue et al. (2021) concluded that primary students had good awareness compared to secondary students. On the other hand, Feleke et al. (2022) found out that, among High and Preparatory School Students in Dessie City, Ethiopia, more than around 75% of the students have knowledge about COVID though 44% has high misconception about the disease.

Bangladesh as a South-Asian low-and middle-income country was no different in taking measures to stop the spread of coronavirus in educational institutions and several studies were conducted to assess the knowledge of students about COVID-19during that time. On March 8,

2020, the first confirmed case in Bangladesh, and gradually with time cases increased (Ferdous et al., 2020) in-order to stop spread of virus government proclaimed state of emergency due to which strict lockdown was imposed. Immediate public health protocol was implemented involving hand washing, social segregation, and lockdown procedures. Public healthcare systems in Bangladesh are not well-prepared for COVID-19 because the country has not previously experienced epidemics like COVID-19(Haque, 2020). All academic institutions were shut down as a result of rising morbidity and mortality as rest of the world (Abusaleh & Haque, 2022).

While most other nations switched to online learning, Bangladesh initially could not do so (Afroz et al., 2021). After the pandemic had been going on for a year, the Bangladesh Ministry of Education decided to reopen all educational facilities and mandate the widely accepted COVID-19 prevention measures of social withdrawal, mask use, and respiratory hygiene (Al-Zaman, 2020). Studies have been conducted in Bangladesh for assessing knowledge, attitude and practice of people regarding COVID-19 prevention and mitigation which included school students among study population. Ferdous et al. (2020) found that among 2017 students where 71% were student, approximately 52% of the total surveyed participants did not have accurate knowledge about COVID. Furthermore, the same study indicated that, 45% had less frequent [practice of COVID-19 prevention measures. Therefore, strict safety precautions are in place as schools and madrasas reopen to protect students, teachers, non-teaching staff, and the community from COVID-19(Abusaleh & Haque, 2022). In this situation, the reopening of schools presents a chance to engage students as agents of change and encourage them to adopt the suggested positive behaviors to stop the spread of COVID-19(Rabbani et al., 2020).

Through health messages and behavior modification, students' increased awareness and adoption of preventive behaviors help the general population make positive changes control (Vindegaard & Eriksen Benros, 2020). Students are more likely to use COVID-19 prevention measures correctly if they know about COVID-19and have a good attitude about it (Yesuf & Abdu, 2022). Knowledge and practices are crucial cognitive components in public health, especially in health promotion and prevention (Ferdous et al., 2020). Studies were done in different countries of the world when schools started to reopen. Handebo et al. (2021) conducted a study among students of secondary schools of north-west Ethiopia after schools were re-opened and found that only one-fourth of the surveyed students have accurate knowledge of COVID-19and the religion,

education of father, marital status, living condition and information source were significant factors associated with knowledge about COVID-19. Bangladesh also needs similar insights about the knowledge and practice related with COVID-19 among students after reopening of schools. Therefore, need to comprehend the extent of knowledge and preventive practices related to COVID-19among students in the reopened schools.

Short description of an intervention by BRAC

BRAC has implemented a spreading awareness educational project in schools and madrasas that taught students about preventive measures for COVID-19BRAC organized three meetings with the School Management committee to reach them about mask usage, social distancing, hand washing, and vaccination for the school student (Mahmud et al., 2021). BRAC has deployed 18 community mobilizers to conduct the sessions. BRAC will identify 1200 classrooms (featuring grades 6-9) in 300 educational institutes (schools and madrasas) for arranging information sessions on COVID-19 prevention followed by a quiz. Six Volunteers Coordinators have randomly selected the educational institutions and conducted follow-up visits for quality assurance. For the school children in Cox Bazar Districts, BRAC set up an intervention on the use of masks, social graces, hand washing, and vaccination. Additionally, through this we can examine the relationships between knowledge of and practice related to COVID-19- and sociodemographic factors, social support, and the source of information about them.

Rationale of the study

Even though these factors are crucial for preventing and managing COVID-19and other acute viral diseases, little is known about Bangladeshi students' understanding of and experience with COVID-19 prevention techniques. So, there is need to understand the level of knowledge and practices of COVID-19 prevention among students from 8th & 9th standard studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts as School and madrasas are considered as hotspot transmission zone for covid-19. So, there is tremendous need for knowledge improvement of students in schools and madrasas. Even there is also need to find influence of socio-demographic variables on knowledge and practices scores of 8th & 9th standards studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts. As socio demographic factors like age, gender, grade, living place etc. contribute in students' knowledge about infectious disease and understanding of prevention and control measures which leads to preventive practice for covid-19. This survey

will contribute to collecting data on these students' familiarity with and use of COVID-19 prevention techniques and further more these techniques can be scale up in country wide schools and madrasas.

Research Question:

What is the level of knowledge and practices of covid-19 prevention among students from 8th & 9th standard studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts?

Specific Research Question:

- What is the status of knowledge of Covid-19 prevention among students of 8th & 9th standard studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts?
- What is the status of practices on Covid-19 prevention among students of 8th & 9th standard studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts?
- What is the influence of socio-demographic variables on knowledge and practices scores of 8th & 9th standards studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts?
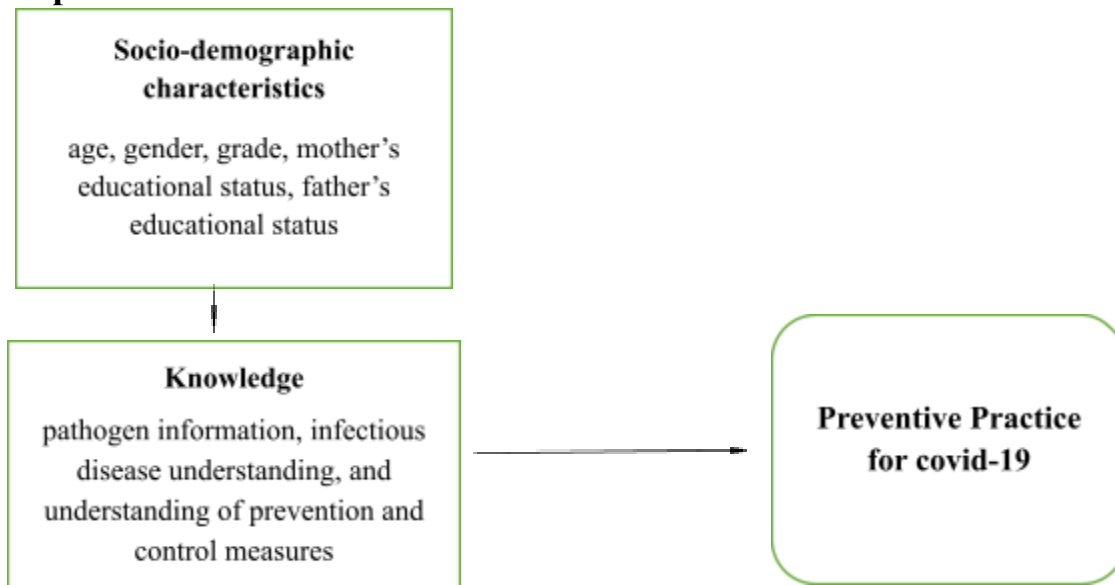
Conceptual framework:

Figure 1: The Conceptual framework is indicating the relationships between socio-demographic, knowledge and practice for prevention of covid-19.

METHODOLOGY

Study design:

This study used quantitative approach and cross-sectional design to investigate knowledge and practices regarding COVID-19 prevention among students from 8th & 9th standard studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar Districts.

Study site:

This study is part of a bigger project. So, six sub-districts were divided into high preference and low preference mask distribution. Then out of six sub-districts, two subdistricts (Cox's Bazar Sadar & Pekua) were selected for this survey randomly based on one high-performing mask distribution and 1 low mask distribution, where 3 unions from each subdistrict are selected randomly. Among all schools in those sub- district's 1 school and 1 madrasa were selected randomly from each union.

Study population:

All the students were selected from 6 schools and 6 madrasas of classes 8-9 & equivalent grades of Cox's Bazar district.

Inclusion criteria:

This study included students available during data collection.

Exclusion criteria:

• Students who weren't there when the data was collected.

• Students who were too sick to answer (because they fainted, went into a coma, or had a seizure)s

Sampling strategy and sample size:

The sample size was calculated by the formula used in WHO STEPS survey (World Health Organization, 2018) at 95% level of confidence, 5% of margin of error and 88% prevalence of knowledge among student wearing mask for prevention of covid-19. The formulation of sample

size determination: (n) = z²×p×q/r². Here, z= 1.96 (confidence interval 95%) and the design effect for the multistage cluster sampling will be considered as 1.5.

r= 0.05 (error level 5%)

p= 0.88 (88% prevalence)

q= (1-0.88) = 0.12

$(1.96)^2 {}_\times 0.88 \times 0.12 \div (0.05)^2 *1.5$

n = 245

The total sample required was 245 to conduct survey but as other students have also received information on COVID-19 prevention, we did not want to be impartial towards them. Hence, we took data from all students of class 8th & 9th standard from schools and madrasas and total sample size came out to be 1495.

The purposive sampling was done with the purpose of taking all students of class 8 and class 9 as from the 6 selected schools and 6 selected madrasas as study participants to assess their knowledge and practice on COVID-19 prevention

Study tool:
Data was collected using a paper-based structured self-administered questionnaire both in English and translated local Bengali version on knowledge and practices of COVID-19 prevention among students of 8th & 9th standard from selected six schools and equivalent grades of 6 madrasas.

Study variables
Dependent variables. Knowledge, Practice of COVID-19 prevention.
Independent variables. Socio-demographic characteristics (age, sex, grade, mother's educational, father's educational status), Knowledge of COVID-19(infectious disease understanding, and understanding of prevention and control measures) and preventative measures (actual practices).

Knowledge: refers to what the student knows about the symptoms, causes, and methods to prevent COVID-19.

Practice: refers to the student's practices for preventing COVID-19infection, including hand washing, physical distance, and facemask use.

Data collection:

Two data field collection coordinators appointed by the BRAC JPGSPH project team visited the school one week before the data collection. They contacted the school and madrasa authority and took informed consent from the teachers/headmasters in hard copy as they were students' immediate guardians. We trained that data collectors in collaboration with the BRAC JPGSPH project about the research. They went to those pre-selected schools and Madrasas with a structured self-administered questionnaire. Then they provided the questionnaire and assent form to the students, where they explained the purpose of the study. The students filled out the form by themselves, and the data collectors collected the forms.

Data management & Analysis plan:

Collected data were entered into SurveyCTO primarily and extracted into STATA v.17 format for data cleaning and analysis. After that, data cleaning, filtering, and cross-checking of both soft and paper-based documents was done to avoid missing variables before the analysis and STATA V.17 was used to perform the analysis. Results are presented in a table with means and standard deviations for continuous variable and counts and percentages for categorical variables. The t-test (numerical data) and chi- square test (categorical variables) are used to compare the difference of different grades of schools and Madrasas. In order to evaluate the many potential sociodemographic variables that may substantially correlate with knowledge and practice, a logistic regression was performed. This analysis plan was used because it is cheaper and consumes less time. Students were deemed to have adequate knowledge when they properly answered 80% or more of the knowledge questions(more than equal to 17), whereas inadequate knowledge was defined as answering less than 80% of the knowledge questions (less than 17) and same with practice answers adequate knowledge when they properly answered 80% or more of the practice questions (more than equal to 3), whereas inadequate practice was defined as

answering less than 80% of the practice questions (more than equal to 3), which is adopted from the study of Tadesse (Tadesse et al., 2019).

Ethical consideration:

Ethical approval for this study was taken from the Ethical Review Committee of BRAC James P Grant School of Public Health, BRAC University. Assent in writing was obtained from the participants. All study participants were informed about their research involvement, objectives, and duration. Participants' anonymity and privacy was protected during data collection and the dissemination of study results. The participation was voluntary and they were able withdraw anytime.

FINDINGS

Sociodemographic and other information of the students:

The characteristics of the study participants are presented in Table 1. A total of 1495 students were included in the final analysis, of which 965 (64.55%) were school students and 530 (35.45%) were from the madrasa. The average age of students was 14.6±.031 (SD) years old (range from 10 to15) The majority of students 71.70% (n=1072) were from Pekua 78.96% schools' students & 58.49% madrasas students. More than half of the students were female 66.89% (n=1000). The students were almost equally distributed amongst the categories of grade, with a proportion of approximately. However, the 8 grade is still high with about 51.64% (n=772) among which school students were most 47.46% (n=458). Most of the students 80.33% (n=1201) have more than 5 family members. Equal or less than 4 family members is 13.58% (n=203). Most of the students 23.55% (n=352) said that their father finished class 5 & 18.53% (277) said that father finished class 10 5. The majority of students 27.56% (n=412), stated that their mother finished class 10 & 22.88% (n=342) finished less than class 5.

Table 1 shows socio-demographics characteristics of students about COVID-19 prevention between Schools & Madrasas

Socio- demographics and others	School		Madrasa		Total	
	n	%	n	%	n	%
	965	(64.55)	530	(35.45)	**1495**	**(100)**
Age {Mean [SD]}	**13.42**	.127	**12.69**	.236	**14.65**	.031
Gender						
Male	360	(37.31)	135	(25.47)	495	(33.11)
Female	605	(62.69)	395	(74.53)	1000	(66.89)
Upazilla						
Cox's Bazar Sadar	203	(21.04)	220	(41.51)	423	(28.30)
Pekua	762	(78.96)	310	(58.49)	1072	(71.70)
Grade						
Class 8 and equivalent	458	(47.46)	314	(59.25)	772	(51.64)
Class 9 and equivalent	501	(51.92)	207	(39.06)	708	(47.36)
Student Didn't respond	06	(0.62)	09	(1.70)	15	(1.00)
Education of father						
never went to school	88	(9.12)	38	(7.17)	126	(8.43)

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Finished class 5	204	(21.14)	148	(27.92)	352	(23.55)
Finished class 10	173	(17.93)	104	(19.62)	277	(18.53)
Studied until college	76	(7.88)	22	(4.15)	98	(6.56)
Studied more than college	107	(11.09)	23	(4.34)	130	(4.55)
Student Didn't respond	45	(4.66)	23	(4.34)	68	(4.55)
Student don't know	272	(28.19)	172	(32.45)	444	(29.70)
Education of Mother						
never went to school	80	(8.29)	30	(5.66)	110	(7.36)
Finished class 5	203	(21.04)	139	(26.23)	342	(22.88)
Finished class 10	275	(28.50)	137	(25.85)	412	(27.56)
Studied until college	75	(7.77)	15	(2.83)	90	(6.02)
Studied more than college	61	(6.32)	13	(2.45)	74	(4.95)
Student Didn't respond	47	(4.87)	44	(8.30)	91	(6.09)
Student don't know	224	(23.21)	152	(28.68)	376	(25.15)
Family members						
<5	136	(14.09)	67	(12.64)	203	(13.58)
5+	766	(79.38)	435	(82.08)	1201	(80.33)
Student didn't respond	63	(6.53)	28	(5.28)	91	(6.09)

Knowledge & Practice score

Fig 1 shows that majority of schools & madrasas students of grade 8 & 9 and equivalent have inadequate knowledge score of COVID-19 prevention i.e 63.32% (n=611) & 64.21% (n=349) whereas only 36.68% & 35.79% have adequate knowledge score whereas Fig 2 shows that majority of schools & madrasas students of grade 8 & 9 and equivalent have adequate practice score of COVID-19 prevention i.e 91.61% (n=884) & 90.57% (n=480) whereas only 8.39% & 9.43% have adequate knowledge score.

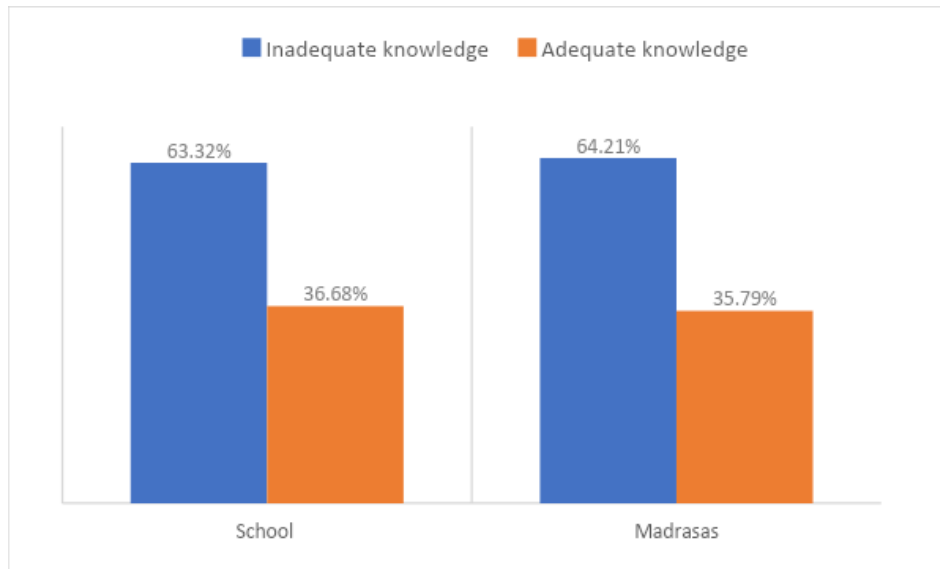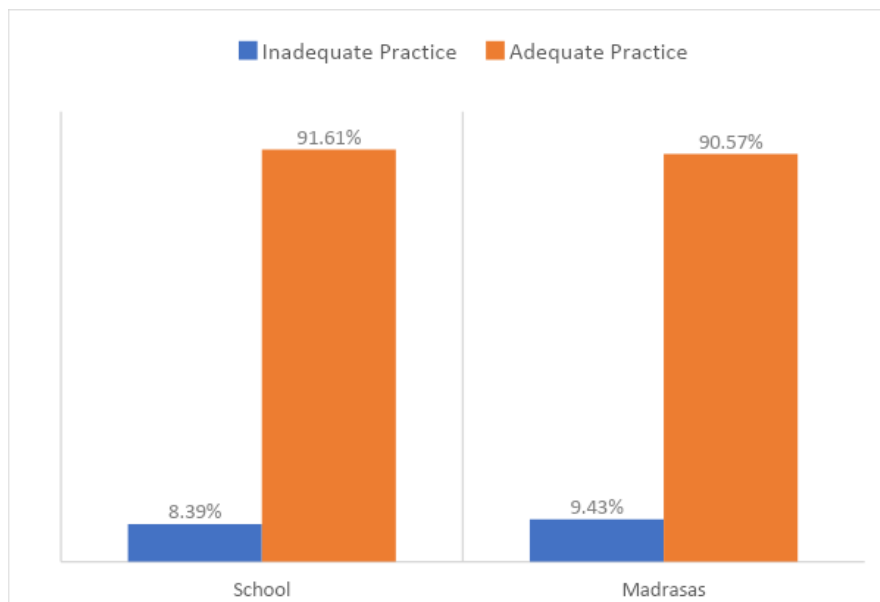**Fig 1 shows percentage of knowledge score about COVID-19 prevention between Schools & Madrasas**

Fig 2 shows percentage of practice score about COVID-19 prevention between Schools & Madrasas

Knowledge of COVID-19 prevention

Knowledge about the COVID-19& its prevention is shown in Table 2. Majority of students 99.73% (n=1491) knew about covid-19. In this study respondent responded that highest modes of transmission of COVID-19was "Touching contaminated surface" 46.50% (n=677), whereas 27.27% (n=397) responded through "Droplets from cough & sneezing" & 16.28% (n=237) responded "Through handling contaminated money". Among total students 29.85% (n=) & 23.81% (n=) responded symptom of COVID-19"Headache" & "Shortness of breath" whereas 20.70% (n=309) responded "vomiting". This study shows knowledge on COVID-19 prevention in which 64.20% (n=954) responded "vaccination", 12.31% (n=183) responded "Isolation" & 9.08% (n=135) responded "Avoid touching face" as prevention from covid-19. Majority of students received information about COVID-19from "Family members" 41.27%(n=617) whereas from Mass media i.e 26.6% (n=398), 20.47% (n=306) students received from "Teacher".

Table 2 shows response on knowledge of COVID-19 prevention with schools & madrasas

	School		Madrasa		Total	
Knowledge about covid-19	**n**	**%**	**n**	**%**	**n**	**%**
Yes	962	(99.69)	529	(99.81)	1491	99.73
Student did not respond	3	(0.31)	1	(0.19)	4	0.27
Modes of transmission of COVID-19						
Come in contact with the breath of an infected person	12	(1.27)	8	(1.56)	20	(1.37)
An infected person talks in front & close to a non-infected person	40	(4.25)	12	(2.33)	52	(3.57)
Droplets from cough & sneezing	257	(27.28)	140	(27.24)	397	(27.27)
Through handling contaminated money	152	(16.14)	85	(16.54)	237	(16.28)
Touching contaminated surface	427	(45.33)	250	(48.64)	677	(46.50)
Student don't know	25	(2.65)	4	(0.78)	29	(1.99)
Student didn't respond	29	(3.08)	15	(2.92)	44	(3.02)

Symptoms of covid-19

Fever or chills	35	(3.64)	10	(0.89)	94	(3.02)
Dry cough	12	(1.25)	5	(0.95)	17	(1.14)
Sore throat	77	(8.00)	49	(9.26)	126	(8.45)
Shortness of breath	248	(25.78)	107	(20.23)	355	(23.81)
Diarrhea	17	(1.77)	4	(0.76)	21	(1.41)
Muscle\ body aches	41	(4.26)	31	(5.86)	72	(4.83)
Headache	255	(26.51)	190	(35.92)	445	(29.85)
Stomach ache	34	(3.53)	33	(6.24)	67	(4.49)
Vomiting	217	(22.56)	92	(17.39)	309	(20.72)
Students don't know	19	(1.98)	6	(1.13)	25	(1.68)
Student didn't respond	7	(0.73)	2	(0.38)	9	(0.60)

Knowledge on COVID-19 prevention

Wearing mask	29	(3.03)	26	(4.92)	55	(3.70)
Handwashing	17	(1.77)	17	(3.22)	34	(2.29)
Social distance	32	(3.34)	36	(6.82)	68	(4.58)
Avoid crowed place	13	(1.36)	13	(2.46)	26	(1.75)
Avoid touching face	72	(7.52)	63	(11.93)	135	(9.08)
Isolation	107	(11.17)	76	(14.39)	183	(12.31)
Vaccination	667	(69.62)	287	(54.36)	954	(64.20)
Student don't know	3	(0.31)	2	(0.38)	5	(0.34)
Student didn't respond	18	(1.88)	8	(1.52)	26	(1.75)

Source about COVID-19 information

Mass media	247	(25.60)	151	(28.49)	398	(26.6)
Info card from community worker	4	(0.41)	10	(1.89)	14	(0.94)
Change agent	21	(2.18)	20	(3.77)	41	(2.74)
Local leader	8	(0.83)	14	(2.46)	22	(1.47)
Session BRAC	20	(2.07)	17	(3.21)	37	(2.47)
Teacher	186	(19.27)	120	(22.64)	306	(20.47)
Family members	447	(45.80)	175	(33.02)	617	(41.27)
Student don't know	19	(1.97)	7	(1.32)	26	(1.74)
Student didn't respond	18	(0.87)	16	(3.02)	34	(2.27)

Washing hand coming from outside

Yes	840	(88.14)	435	(83.98)	1275	(86.68)
No	113	(11.86)	83	(16.02)	196	(13.32)

Time for washing hands

Less than 10 seconds	97	(10.06)	60	(11.32)	157	(10.51)

20 second /more	852	(88.38)	457	(86.23)	1309	(87.62)
Student didn't respond	15	(1.56)	13	(2.45)	28	(1.87)

Practice on COVID-19 prevention

Table 3 show majority of students from schools & madrasa wash their hands after coming from outside 86.68% (n=1275) in which major students are from school students of 8th grade 88.14% (n=840). Whereas study shows students wear mask regularly to prevent COVID-1975.65% (n=1131) and wear mask outside mainly while talking to others which is 38.86% (n=581) & when they feel like 32.24% (n=482).

Table 3 shows response on practice of COVID-19 prevention with schools & madrasas

	School		Madrasas		Total	
Variable	n	%	n	%	n	%
Washing hand coming from outside						
Yes	840	(88.14)	435	(83.98)	1275	(86.68)
No	113	(11.86)	83	(16.02)	196	(13.32)
Wearing mask regularly						
Yes	735	(76.17)	396	(74.72)	1131	(75.65)
No, not at all	16	(1.66)	9	(1.70)	25	(1.67)
No, sometimes	201	(20.83)	113	(21.32)	314	(21.0)
Student didn't respond	13	(1.35)	12	(2.26)	25	(1.67)
Wearing mask outside						
When go outside home	244	(25.28)	133	(25.09)	377	(25.22)
While talking to others	365	(37.89)	216	(40.75)	581	(38.86)
When I feel like it	319	(33.09)	163	(30.75)	482	(32.24)
Didn't respond	34	(3.52)	18	(3.40)	52	(3.48)
Others	3	(0.31)	-	-	3	(0.20)

Factor affecting knowledge on COVID-19 prevention

The table 4 shows unadjusted and adjusted logistic regression which determined whether the independent variables (socio-demographic) had an effect on knowledge about COVID-19 prevention among the students. The logistic regression investigated the association of socio-demographic factors and knowledge of COVID-19 prevention. The analysis illustrated that gender and grade were significant factors associated with inadequate knowledge about COVID-19 prevention of students for both crude and adjusted model.

According to our study madrasas students were .882 times more knowledgeable about COVID-19 prevention than school students [AOR .882, 95%CI: (.691 - 1.126)]. This study identified that female students were .605 times more knowledgeable about COVID-19 prevention than male students [AOR .605,95% CI: (0.484 -0.755)]. However, we also found that students from 9th standard had 1.307 time more knowledgeable about COVID-19 prevention, than 8th standard students [AOR: 1.307; CI: (1.024-1.668)]. In our study we discovered that a student with less than five family members is 1.681 times likely to be knowledgeable about COVID-19 prevention than those with more than 5 family members [AOR 1.681, 95%CI: (0.980 - 2.885)].

Table 4 shows logistic regression of factors socio-demographic associated with knowledge score

Variable		Crude OR (95% CI)	p- value	Adjusted OR (95%CI)	p- value
Schcode	School	1	reference	1	reference
	madrasa	.895(0.716 - 1.117)	0.328	.882(.691 - 1.126)	0.317
Gender	Male	1	reference	1	reference
	Female	.605 (0.484 -0.755)	**0.000**	.576(.457 - 0.727)	**0.000**
Grades	8 & equivalent	1	reference	1	reference

		Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
	9 & equivalent	1.214 (0.9816 - 1.501)	0.074	1.307(1.024 - 1.668)	**0.031**
Family members	<5	1	reference	1	reference
	5+	.906 (.658- 1.247)	0.545	1.598 (.966- 2.643)	0.067

Factors affecting Practice on COVID-19 prevention

The table above is unadjusted and adjusted logistic regression which determined whether the independent variables (socio-demographic) had an effect on practice about COVID-19 prevention among the students. The logistic regression investigated the association of socio-demographic factors and practice of COVID-19 prevention. According to our study madrasas students were performing practice on COVID-19 prevention .794 times more than school students [AOR.794, 95% CI:(0.534 - 1.181)]. The study shows that female student being carrying out practice about COVID-19 prevention are 1.014 times more than male students [AOR 1.014 95% CI: (0.687 - 1.498)]. Whereas we also found in our study, students who are in grade 9 are more likely to practice COVID-19 prevention .933 times more than grade 8 in schools and madrasas [AOR.933, 95% CI:(0.621 - 1.401)]. The study also revealed that a student with less than five family members were 1.790 times more likely to perform COVID-19 prevention practices than those with more than 5 family members [AOR 1.790, 95%CI: (0.937 - 3.419)].

Table 5 shows logistic regression of factors socio-demographic associated with practice score

Variable	characteristics	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Schcode	School	1	ref	1	ref
	madrasa	.879 (0.607 - 1.272)	0.496	.794(0.534 - 1.181)	0.255
Gender	Male	1	ref	1	ref
	Female	1.102 (0.757 - 1.606)	0.610	1.014(0.687 - 1.498)	0.941

Grades	8 & equivalent	1	ref	1	ref
	9 & equivalent	.835 (.581 - 2.572)	0.330	.933(0.621 - 1.401)	0.739
Family	<5	1	ref	1	ref
members	5+	1.600 (.972 – 1.098)	0.131	1.790(0.937 - 3.419)	0.078

DISCUSSION

This study was conducted to assess the level of knowledge, and practice of COVID-19 prevention among students from 8th & 9th grades studying in selected schools & equivalent grades of madrasas at selected sub-districts of Cox Bazar districts.

Knowledge can play a critical role in enhancing the practice of public preventive behavior, as our findings in fig 1 showed that 37% of the students had adequate knowledge whereas about 63% had inadequate knowledge on COVID-19 prevention, however, 64% of students were performing adequate COVID-19 prevention practices. A similar study carried out in Bangladesh also revealed that, when it came to COVID-19 prevention, 48.3% of students had more accurate knowledge, and 51.7% had knowledge that was comparatively inaccurate (Ferdous, M. Z, et.al.2020). Our finding also revealed that students were aware of modes of transmission of virus as 46% students said through touching contaminated surface whereas 30% of students responded that symptoms was headache and shortness of breath. In a study researcher found route of transmission of COVID-19 were reported by the participants: with only a minimal minority (0.2%) participants not being sure or unable of recognizing transmission routes ((Banik, R, et.al, 2021). The source of COVID-19 prevention information was found to be similar between school and madrasa students; students were more likely to obtain information from the family members whereas, other major sources were teachers and mass media. This is also similar to findings in (Farhana, 2020; Hossain et al., 2021) which showed that a vast majority of youth in Bangladesh learned about the COVID-19 preventive measures mostly through social networking sites and family. This may be due to the fact that, during COVID-19 lockdown, closure of schools & madrasas, students spent much time at home and had access to ICT devices and the internet. On the other hand, schools and madrasas also played a huge role after reopening in disseminating

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information about COVID-19 prevention. This shows that the Bangladesh government can use educational institutes and social media to provide concise educational programs for students and family members to disseminate accurate knowledge & practice technique among students for better reach. Only 2% students responded that they received COVID-19 prevention information from BRAC session. This shows that program didn't create much impact on students both from schools & madrasas because they may be have information beforehand from Family members and teachers.

Majority from both school and madrasas students 64% responded that vaccination plays important role in COVID-19 prevention. In our study we observed that school and madrasas student had majority of same response, so, no major difference was observed in both institutes. Whereas this differs from a study done among madrasa students, who had minimal knowledge about their childhood vaccination (Islam, 2016).This is likely because madrasa students at present are more open to information over social media, which may have contributed to their learning. The WHO has proposed effective measures to prevent the spread of COVID-19 infection, including frequent hand washing, wearing a face mask when going out. As 87% students responded that they wash hands coming from outside. A study in Beijing revealed that majority of students washed their hands after coming from outside and before taking meal to prevent COVID-19 (Lee, M., Kang, B. A., & You, M. 2021). Hand washing is one of the most crucial and cost-effective ways to prevent the virus from spreading and the onset of an infection. However, there is still room for improvement in the knowledge of other topics like keeping appropriate social distance, donning a face mask, closely monitoring body temperature, and recognizing high-risk areas.

The logistic regression analysis illustrated that gender and grade were significant factors associated with adequate knowledge about COVID-19 prevention of students for both crude and adjusted model. Even female student being carrying out COVID-19 prevention practice about than those of a male student. A study shows female gender were more likely to have good practices. This goes hand in hand with women generally being more health conscious and practicing preventive behavior (Mannan, D. K. A., & Mannan, K. A. 2020). Additionally, men may exhibit less preventive behavior because of how they perceive their masculinity, which lowers their motivation to engage in preventative health behavior (Handebo, S.,et.al. 2021). The model predicts that a student with less than five family members are more likely to

knowledgeable about COVID-19 prevention than those with more than 5 family members. This shows that living with more family members help in gaining knowledge first. However, student with less than five family members perform COVID-19 prevention practices than those with more than 5 family members. Study conducted in Dessie showed in comparison to households with 5 or fewer members, those with a household size of more than five had a 1.56-times higher chance of adopting a proactive COVID-19 prevention strategy (A. Feleke et al.,2022). At the same time, another study in Bangladesh showed that family size has no significant association with knowledge and practice on COVID-19 prevention (Kamal et al., 2021).

These findings implies that information disseminated through health interventions to prevent and control epidemics must be supported by scientific evidence and presented in an understandable way in order to increase student knowledge and including their family members. The idea that the public can make "informed decisions" about health behaviors by using their knowledge of relevant health issues has been validated in many public health areas, even though it is difficult to say how much knowledge is necessary to achieve desired changes in health outcomes. As a result, targeted education is still needed to improve knowledge of COVID-19.

Limitation:

There are a few restrictions on this study. First, secondary data collectors were sent because the students' location was far from Dhaka. Second, there was a time constraint because many students were unavailable due to approaching vacations. Third, a cross-sectional study design was used in this research. As a result, causal conclusions might not be proven. Fourth, self-reporting has drawbacks, including multiple biases, when compared to in-person interviews. Fifth, to assess the degree of knowledge, attitude, and practice, we used a small number of questions. To ascertain the actual extent of Knowledge and Practice in the general population, additional assessments using all aspects of Knowledge and Practice toward COVID-19would be crucial. Additionally, focus group discussions and in-depth interviews should be used to develop the unreliable and insufficient assessment of knowledge and practices regarding COVID and create multi-dimensional measures.

CONCLUSION

Our findings pointed the need for efficient and specifically designed health education programs meant to increase students' knowledge of the COVID-19and promote the adoption and upkeep of safe practices. The study found that knowledge levels were inadequate in the majority of the students and were directly and significantly related to living place, grades, and female gender. The study also showed adequate practice for COVID-19 prevention which could be due to influence of parents and teachers as students are school & madrasa going students. A better application of preventive practices for COVID-19may result from the improvement of accurate knowledge and beneficial behaviors. However, specific interventions are still required, particularly for male, rural, and 9th grade or comparable grade students of schools and madrasas.

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ANNEX

1. Socio-Demographic Information

Variables	S.No	Question	Response
Student Id	1.	Student ID	…………………
Age	2.	what is your age?	…………………years
Sex	3.	Sex:	€ Male € Female
Institution Id	4.	Institution	€ School € Madrasa
Grade ID	5.	Grade level	€ 8th Grade € 9th Grade
Location	6.	Location of school/ madrasa	€ Sadar € Pekua

2.Knowledge on Covid-19

Variable	S.No	Questions	Response
Knowledge on COVID-19mode of transmission	1.	Do you know how Corona virus can spread? (Multiple answers possible)	1. From Infected Person 2. From infected but no symptom person 3. From Respiratory droplets of infected person 4. Infected dead body 5. Touching of contaminated materials 6. I don't know

Knowledge on COVID-19symptoms	2.	Primary clinical signs of COVID-19. (Multiple answers possible)	1. Fever 2. Cough 3. Headache 4. Vomiting 5. Abdominal Pain 6. Loose Motion 7. Pain in body 8. I don't know
Knowledge on COVID-19transmission prevention	3.	Do you know how can spread of corona virus can be prevented? (Multiple answers possible)	1. Avoiding crowded places 2. Avoiding facial contact 3. Keep infected individual separate 4. Wearing Masks 5. Hand Washing 6. Social Distancing 7. Vaccination 8. I don't know
Source of Information for COVID-19knowledge	4.	How did you learn about information on preventive measures of covid-19? (Multiple answers possible)	1. Family 2. Religious leader 3. Teachers 4. Social media 5. Mass media- radio, 6. Newspaper 7. SBCC sessions of BRAC 8. Sessions from Agents of change at community 9. Other

3. Practice for COVID-19 prevention

Variable	S.No	Questions	Response
Practice of prevention	1.	Do you wear a mask when you go outside of home?	1. Always 2. Mostly 3. Sometimes 4. Never
Practice on Handwashing	2.	Do you wash your hands after coming back to home?	1. Always 2. Mostly 3. Sometimes 4. Never
Duration of Hand washing	3.	Do you know how many seconds you should wash your hands?	1. 10 seconds 2. 20 seconds

			3. 30 seconds 4. I don't know