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Exploring the knowledge, awareness and practices of COVID-19 among dentists in Bangladesh: A Cross-sectional Investigation

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Abstract

Aim: This study aims to assess the knowledge, awareness, and practices of registered dentists regarding COVID-19 epidemiology and transmission during the rapid outbreak of this highly contagious virus in Bangladesh.

Subjects and Methods: A cross-sectional web-based survey was conducted among the dentists who were enrolled with their valid unique Bangladesh Medical and Dental Council (BMDC) registration number. A validated questionnaire was developed and distributed among the dentists by using different social media platforms. A total of 184 dentists participated in the survey between March and April 2020. Both descriptive analysis logistic regression analysis was performed.

Results: The mean age of the dentists is 31.75 years, with a standard deviation of 6.5 years. About 29.3% of dentists completed their postgraduate qualification, and 76% of them are engaged in private practice. The dentists who completed postgraduate education are three times more likely to know (OR=3.1, 95%CI 1.2-7.9) about COVID-19 compared to the dentists who completed an undergraduate degree. It is also observed that the dentists who are employed in private and independent settings are four times (OR=4, 95%CI 0.7-24) more likely to follow safe practice compared to the dentists who are engaged in the government hospitals or clinics.

Conclusion: The dentists from Bangladesh have shown good knowledge, awareness, and practice regarding COVID-19. We recommend that the healthcare authorities, professional organizations, and hospitals coordinate, and conduct mandatory advanced infectious disease training for all the practicing dentists in the country.

Introduction

In December 2019, the world observed an outbreak of a rapidly spreading and contagious virus in Wuhan, China. Subsequently, it quickly spread out not only throughout China but also all over the world, prompting the World Health Organization (WHO) to officially declare this new type of coronavirus disease as pandemic on March 13, 2020 (Pillai et al. 2020). The pandemic has spread overwhelmingly, affecting every corners of the globe, directly or indirectly (Jalabneh et al. 2020).

COVID-19 is an enveloped RNA virus (Chen et al. 2020), which is more contagious than SARS-CoV and MERS- CoV, creating more concern among experts (Meng et al. 2020; Li et al. 2020; Van Doremalen et al. 2020; De Wit et al. 2020). Its common clinical symptoms include fever, dry cough, fatigue, myalgia, headache, haemoptysis and sometimes diarrhoea, loss of taste and smell sensation (Chen N et al. 2020; Chan et al. 2020), which typically last from 4 to 14 days (Backer et al. 2020). Though the accepted incubation period range of this virus is two weeks in some cases, it may extend even up to 24 days make this virus unpredictable (Backer et al. 2020). In severe cases, COVID-19 may progress to acute respiratory distress syndrome and bleeding and coagulation dysfunction, which usually affect older people and people with co-morbidities (Chen N et al. 2020; Gambhir et al. 2020). This virus mostly transmitted from

humans to humans through airborne droplets or by contacting the infected person and contaminated surface (Gambhir et al. 2020).

In Bangladesh, the first case of COVID-19 was detected on March 7, 2020, since then country observed a steep rise of cases (Anwar et al. 2020). To date, over a quarter-million confirmed COVID-19 cases were reported in Bangladesh by COVID-19 (World Health Organization 2020), where the capital region, Dhaka has been mostly affected (Anwar et al. 2020). Health care workers are at higher risk of getting infected as they come in proximal contact with both symptomatic and asymptomatic COVID-19 patients (Meng et al. 2020). According to the WHO, in Bangladesh by May 1, 2020, the health care workers, including medical doctors, dentists, nurses & associated healthcare professionals, comprised 11% of the total COVID-19 cases (Yasmin et al. 2020). Till date, at least 82 doctors died due to this viral infection in Bangladesh; also 11 doctors, including a dentist, died with COVID-19- like symptoms (Editor in Chief 2020a, b). The COVID-19 is also affecting the psychological wellbeing of the healthcare professionals (Hossain et al. 2020).

Among the health care workers, the risk of cross-infection is high among dentists because they must work with patients with close contact. Furthermore, dental operatory itself poses a riskier environment because of producing aerosol and droplets out of the patient's oral cavity (Meng et al. 2020; Ather et al. 2020; Isha et al. 2020). Recent study data suggested that SARS-CoV-2 virus might remain viable and infectious in aerosols and droplets for hours, which poses more significant threats for dentists to be infected and subsequently spread to their colleagues, families and other patients (Van Doremalen et al. 2020; Ahmed et al. 2020). Dentists may also get infected from unrecognized and under surveillance COVID-19 individuals; thus, contamination may occur before the symptoms appear (Ataş and Yildirim 2020) and indirect contact with contaminated surfaces and instruments (Fallahi et al. 2020).

For this reason, the Centers for Disease Control and Prevention (CDC) and the WHO recommend various precautionary guidelines to prevent COVID-19 cross-infection in the dental setting (Khader et al. 2020). A multi- country study finding revealed that dentists around the world are in a state of anxiety and fear due to the COVID- 19 pandemic (Ahmed et al. 2020). Despite the rapid spread of COVID-19 in Bangladesh, countrywide lockdown, and social distancing measures to slow down the disease spreading have made it difficult for implementing extensive official professional education or training material to prevent cross-infection in dental settings. However, different professional organizations have been using online and social media platforms to spread the scientifically validated protocols, emergency dental treatment outlines to prevent the disease spread through dental practice. The importance is paramount for dental health care workers of Bangladesh to be equipped with up-to- date knowledge and practices toward COVID-19. Therefore, the current study aimed to assess the knowledge, attitude, and practices of registered dentists regarding COVID-19 epidemiology and transmission during the rapid outbreak of this highly contagious virus in Bangladesh.

Methods

Study Design and participants

A cross-sectional web-based survey was conducted among the dentists who enrolled with their unique Bangladesh Medical and Dental Council (BMDC) registration number between May and June, 2020. The dentists were approached by social media platforms and a link to the web-based survey was shared, where participation in the survey was voluntary. The following inclusion criteria used- (i) Registered with Bangladesh Medical and Dental Council, and (ii) Currently in practice in Bangladesh. A total of 184 dentists filled out the survey questionnaire.

Data Collection and Ethical approval

Ethical approval for this research was taken from the Research Ethics Committee of Sapporo Dental College & Hospital, Dhaka, in Bangladesh (Ref. No. SDC/C-7/2020/745). The research team developed the survey questionnaire by reviewing relevant literature and was compiled according to international guidelines (Ahmed et al. 2020; Ataş and Yildirim 2020; Khader et al. 2020). Initially, the preliminary questionnaire was pretested for face and content validity. Content validity was evaluated by four experts who have a clear idea about COVID-19 guidelines. Then following minor corrections were made according to their suggestions. After that, the revised questionnaire was administered among 30 dentists of Sapporo Dental College and Hospital, Dhaka, through an interview to evaluate face validity. The respondents were asked about the difficulty of understanding and ambiguous nature of the questions, if any. All the participants commented that they had understood every question of the questionnaire appropriately. Following some grammatical correction, the final questionnaire was then sent to all the registered dentists online.

The survey questionnaire was divided into four parts. The first part covered the background information about the dentists, the second part included knowledge related questions, third part referred to the awareness and attitude towards COVID-19, and the fourth and final part contained questions on attitude and practice related. Google docs were used to develop the questionnaire and the link of the questionnaire was distributed among the dentists through social media platforms such as Facebook Inc, Viber, and WhatsApp Messenger.

Data analysis and variables

Both descriptive and inferential statistics were performed using IBM SPSS version 26 (SPSS Inc., Chicago, IL USA). Descriptive statistics were performed variables such as gender (male and female), age group (21-25 years, 26-30, 31-35 years and >35 years), educational status such as undergraduate and postgraduate, monthly income was categorized into below Bangladeshi taka (BDT) 20000, BDT 20000-50000, BDT 50000-100000, BDT 100000-150000 and more than BDT 150000, place or work was categorized into government, private, and independent and years of working experience was categorized

to less than 5 years and above 5 years. For inferential statistics, three dependent variables were formulated.

The dependent variables of this study were knowledge, awareness, and practices of COVID-19 among dental professionals in Bangladesh. We measured knowledge using 24 questions on COVID-19 epidemiology and transmission. To measure awareness, we used 11 questions on COVID-19 awareness, while we measured practices of the dental professionals to prevent the spread of the infection using 13 questions. All questions were dichotomous. We gave one point for each correct response, good awareness and good practice, while incorrect response, poor awareness and poor practice received a score of zero. We computed sub-scale (knowledge, attitude and practice) totally by computing all scores of that subscale. Finally, we transformed the subscale total on a scale of 0 to 100. Then, we categorized knowledge, awareness and practice as good, moderate and poor. On a 0 to 100 scale, a score of 80 or greater was categorized as good; 50 - <80 was categorized as moderate, and <50 was categorized as poor. These categorizations are arbitrary but a common practice in measuring KAP (Ritchie et al. 2020).

Explanatory variables included in this study were - (i) gender- male and female, (ii) age group was categorized to – 21 to 25 years, 26 to 30 years, 31 to 35 years and 35 years and above, (iii) educational background are - undergraduate and postgraduate, (iv) years of working experience had two categories- less than 5 years of working experience and more than 5 years of working experience, (v) place of work – government setting, private clinic and independent practice and (vi) average monthly income categories are- below BDT 20000, BDT 20000-50000, BDT 50000-100000, BDT 100000-150000 and more than BDT 150000.

Results

The background characteristics of the respondents are displayed in Table 1. About 46.7% of female dentists and 53.3% dentists participated in this research and most of them (44%) are in the age category of 26 to 30 years. The mean age of the dentists is 31 years, with a standard deviation of 6.50. Only 10.3% of respondents are in the age category of 21 to 25 years. Approximately 40.7% dentists completed an undergraduate degree and 29.3% completed postgraduate degrees. About 51.6% dentists are working less than 5 years and 48.4% dentists are working for more than 5 years. Most of the dentists who participated in this survey are involved in private practice (76.1%), only 18.5% dentists are serving the government hospitals and 5.4% dentists are doing independent practice during the time of the survey. Most of the dentists (34.8%) are earning between BDT 20000-50000, approximately 22.3% dentists are making below BDT 20000, and only 6.5% dentists are earning is over BDT 150000.

The descriptive analysis of knowledge, awareness and practice related questions are shown in Table 2, 3 and 4 respectively. About 92% respondents provided appropriate reply related to the main clinical symptoms of COVID-19. Approximately 98.3% dentists know that there is no effective cure for COVID-19. About 58.3% respondents shared that eating or contacting wild animals would not result in the infection by the COVID-19 virus. Almost 59.4% dentists know that they can wear the conventional surgical masks

to prevent the infection. About 95.4% considered people come from virus infected area are not capable of spreading the virus as false. Approximately 88% respondents shared that using all personal protection equipment are not essential for clinical practice as a false response. A vast majority of the respondents 93.1% know the incubation period of COVID-19 is 14 days.

Regarding awareness on COVID-19 virus, about 92% dentists reported that all kind of dental treatment should not continue during the pandemic. 97.1% dentists are aware that their professional income will be affected during the pandemic and similar number of dentists agreed that the patients might hide their medical history due to social stigma. About 92% dentists revealed that number of patients seeking dental treatment is going to reduced due to the outbreak. Approximately 97.7% respondents shared that patients can be contaminated by another patient in dental clinic. Majority of the dentists (93.1%) are feeling anxious to provide dental treatment to patients due to the pandemic.

In relation to the practice regarding COVID-19 related issues, only 14.9% dentists did not close down their practice during the outbreak and 96% dentists already reduced the scheduled of patients appointment. Approximately 57.1% dentists shared that they do not use separate gown/apron or OT dress for individual patients. Only 3.4% dentists reported that they don't work a mask when leaving home.

Regression analysis findings between background characteristics and knowledge, awareness and practice during COVID-19 among the Bangladeshi dentists are shown in Table 5. The dentists who completed postgraduate education are three times more likely to know (OR=3.1, 95%CI 1.2-7.9) about COVID-19 compared to the dentists who completed an undergraduate degree. The dentists who are earning monthly between BDT 20000-50000, BDT 50000-100000 and BDT 100000-150000 are two times more likely to know about COVID-19 related information relative to the dentists who are earning below BDT 20000. The dentists aged between 31-35 years are five times more likely to be aware of COVID-19 associated issues compared to the dentists aged between 21 to 25 years old. Similarly, dentists who are earning between 50000-100000 are five times more (OR=5.9, 95%CI 1.0-33.3) likely to be aware of COVID-19 situation with the dentists who are earning below BDT 20000.

Regarding practice and awareness on COVID-19 matters, dentists with postgraduate degrees are five times (OR=5.3, 95%CI 1.2-23.3) more likely to follow proper precautions compared to the dentists who completed undergraduate dental degree. Dentists who are working in the dental clinics for less than 5 years are ten times more likely to practice in the safest possible way during COVID-19 compared to the dentists who are working for more than 5 years. It is also observed that the dentists who are employed in private and independent settings are four times (OR=4, 95%CI 0.7-24) more likely to follow safe practice compared to the dentists who are employed in the government hospitals or clinics.

Discussion

The COVID-19 pandemic put the whole world almost into a state of emergency because of its deadliest nature of contagion and mortality. Although COVID-19 was prevalent in the developed countries (Pillai et al. 2020), now the epicenter of the pandemic is gradually shifting in the South Asian region with its

destructive nature (Pulla 2020). Bangladesh is one of the countries in this region where an increase of COVID-19 cases, which is increasing since the virus outbreak in March, 2020 (Anwar et al. 2020). However, mortality owing to this virus is still relatively low here in comparison, the reported case elsewhere in the world (Ahmed and Rahman 2020).

Nevertheless, mortality among the health professionals in Bangladesh who were affected by COVID-19 is quite high in Bangladesh (Yasmin et al. 2020; Editor in Chief 2020a, b). Dentists, who are an essential part of the health professional group, are front liners in this pandemic. Moreover, areas of professional expertise of dentist are oral cavity and teeth put them in the most vulnerable position for being infected by COVID-19 (Ahmed et al. 2020; Ataş and Yildirim 2020; Fallahi et al. 2020; Khader et al. 2020). Therefore, a dentist should have proper knowledge and practice according to standard guidelines to prevent the infection. For the first time in Bangladesh, we have conducted this study among registered dentists to explore knowledge, awareness and practice regarding COVID-19.

Total 184 registered dentists responded the questionnaire among them majority were male and between 26-30 years old. Most of the dentists responded are in private practice and earn between BDT 20000-50000 while only 6.5% of respondents earn more than BDT 150000. The response rate was quite low, perhaps because dentists might feel reluctant to fill up the questionnaire because of COVID related stress or unwillingness to take part in research initiatives. The study findings revealed that the majority of the dentists who took part in this study, completed an undergraduate degree and only 29.3% dentists completed the postgraduate education, this is lower than reported in a multi-country study where only 35% dental practitioners and in Jordan only 30.4% completed their postgraduate education (Khader et al. 2020; Kamate et al. 2020).

This study finds that most dentists have a better knowledge score, which is like the findings among the Indian, Jordanian and Saudi dentists (Gambhir et al. 2020; Kamate et al. 2020; Quadri et al. 2020). Although knowledge about symptoms is high among Bangladeshi dentists, most of them gave fewer right answers regarding the chance of getting infected from animals, types of COVID-19 virus, and airborne nature of novel coronavirus. However, dentists who have postgraduate degrees are three times more likely knowledgeable than the dentists who have only an undergraduate degree. This finding is also consistent with the results in other countries (Gambhir et al. 2020; Quadri et al. 2020), which ultimately emphasizes the impact of education and training over knowledge score. Furthermore, dentists who earn more than BDT 20000 have better knowledge than those who earn a lower amount.

Most dentists have a more positive awareness regarding the battle against COVID-19 and they firmly believe that they can contribute effectively to the health system in this COVID-19 situation. Besides, most dentists think that health education, quarantine and social distancing could be an effective way to prevent COVID-19, which is like the opinion of the Jordanian dentists (Khader et al. 2020). On the other hand, similar to the dentists from the other part of the world, most Bangladeshi dentists are afraid of being infected as patients may hide COVID-19 history due to social stigma, income reduction, patient reduction and ultimately negatively impact on the health system (Ahmed et al. 2020). Consequently, most

of the dentists in this study reported that they had reduced their patient schedule, and most of them closed their practice.

The odds ratio analysis revealed that the dentists aged between 31 to 35 years of age are showing a more positive awareness and this is a contrast to a multi-country findings where it was found that there is no association between positive awareness and age of the dentists (Sarfaraz et al. 2020). This research exhibited that years of clinical experience are associated with a positive awareness related to COVID-19. Still, no significant relationship was observed between years of clinical practice concerning continuing dental practice among dental professionals in Poland (Tysiąc-Miśta and Dziedzic 2020).

Regarding safe and hygienic practice, the study found that female dentists are more likely to follow safe practice procedures compared to their male counterparts. This is different from the Polish research, where the male dentists wanted to continue their work (Tysiąc-Miśta and Dziedzic 2020). The Bangladeshi dentists who are less experienced are more likely to maintain safety and hygiene in the dental settings due to COVID-19. In contrast, Sarfaraz and colleagues could not find any link between years of experience and maintaining safe practice (Sarfaraz et al. 2020).

This study had several limitations. The response rate of the survey is relatively low, and it resulted in a smaller sample size. Thus, the findings may not wholly represent the accurate picture of all the dentists in Bangladesh. The survey has only captured the responses from younger and middle age group dentists. Since they are active in social media, they have exhibited good knowledge, awareness and practice on COVID-19; however, this study has failed to capture the views and opinions, senior dentists. This prevents the ability to generalize the findings of this study. The study also presents some strengths, and this is the first study among the dentists in Bangladesh on COVID-19, so the outcomes are relatively novel. Dentists are considered as vulnerable health care professionals in Bangladesh. This COVID-19 pandemic not only placing the dentists are at higher risk of getting infected So many dental practices in the country are currently closed since the lockdown started, and patients are not accessing the dental settings due to fear and anxiety. The dentists in the country are going through financial hardship, and no government initiative is in place to help the dentists who are struggling to meet their daily needs. It has also been reported that psychological distress increased among the dentists as the level of knowledge of COVID -19 infection increased (Duruk et al. 2020).

Conclusion

The COVID-19 pandemic has brought multiple challenges in the health sector in a densely populated country like Bangladesh, mostly due to its unpredictable trajectory and delay in integrating public health activities within the health delivery system. Although the dentists from Bangladesh have shown good knowledge, awareness, and practice regarding COVID-19, we recommend healthcare authorities, administration, professional organizations, and hospitals coordinate and organize mandatory advanced infectious disease training for all the practicing dentists. Easily accessible, scientifically verified that online education materials can guide dentists to get more updated infection status and therapeutics.

Different international healthcare and professional authorities' official websites, such as the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), and American Dental Association (ADA), have free access online courses and webinars which can be excellent self- learning platform for the dentists in Bangladesh. There is an urgent need to assess the psychological, financial, occupational health and safety challenges faced by the dentists in Bangladesh, and proper intervention should be introduced to overcome these unpredicted difficulties.

Declarations

FUNDING

There was no research funding received for this study.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

I (Mohammad Tawfique Hossain Chowdhury) am hereby declaring that We took consent from all the participants took part in the study.

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Tables

Table 1. Distribution of dentists by their background characteristics

Background Characteristics	Frequency	Percentage
Gender		
Male	98	53.3
Female	86	46.7
Age Group		
21-25	19	10.3
26-30	81	44
31-35	42	22.8
36+	42	22.8
Mean±SD	31.75±6.50	
Educational Background		
Undergraduate	130	40.7
Postgraduate	54	29.3
Years of working experience		
Less than 5 years	95	51.6
More than 5 years	89	48.4
Place of work		
Government	34	18.5
Independent	10	5.4
Private	140	76.1
Average Monthly Income		
Below BDT 20000	41	22.3
BDT 20000-50000	64	34.8
BDT 50000-100000	41	22.3
BDT 100000-150000	26	14.1
More than BDT 150000	12	6.5

*BDT=Bangladeshi Taka (1 BDT = 0.11 US Dollar; OANDA Currency converter, 8 August 2020)

Table 2. Descriptive analysis of knowledge related questions

Knowledge related questions	False	True
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough and myalgia	14(8%)	161(92%)
Unlike the common cold, stuffy nose, runny nose and sneezing are less common in persons infected with the COVID-19 virus	62(35.4%)	113(64.6%)
There currently is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection	3(1.7%)	172(98.3%)
Not all the persons with COVID-19 will develop to severe cases. Only those who are elderly, have chronic illness and are obese are more likely to be severe cases	16(9.1%)	159(90.9%)
Eating or contacting wild animals would result in the infection by the COVID-19 virus.	102(58.3%)	73(41.7%)
Persons with COVID-2019 cannot infect the virus to others when a fever is not present.	158(90.3%)	17(9.7%)
The COVID-19 virus spreads via respiratory droplets of infected individuals	6(3.4%)	169(96.6%)
Community people can wear general medical masks to prevent the infection by the COVID-19 virus.	48(27.4%)	127(72.6%)
Dentists can wear the conventional surgical masks to prevent the infection by the COVID-19 virus.	104(59.4%)	71(40.6%)
It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	165(94.3%)	10(5.7%)
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations.	2(1.1%)	173(98.9%)
People come from virus infected area are not capable of spreading COVID-19 infection	163(93.1%)	12(6.9%)
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	2(1.1%)	173(98.9%)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	1(0.6%)	174(99.4%)
Quarantine or Isolation is not essential for the people who had contact with COVID-19 infected person	167(95.4%)	8(4.6%)
At least 70% alcohol-based hand rub and sanitizer can reduce the chance of COVID-19 infection	7(4%)	168(96%)
Washing hands with soap and water at least 20 seconds to reduce the chance of COVID-19 infection	1(0.6%)	174(99.4%)
Nobel Corona virus in an air born virus	87(49.7%)	88(50.3%)
COVID-19 is not a contagious disease	159(90.9%)	16(9.1%)
COVID-19 is caused by SARS COV-1 Virus	97(55.4%)	78(44.6%)
Use of All Personal Protection Equipment (PPE) such as Gloves, Musk, Face shield or goggles, Apron or Gown are not essentials for Clinical Dentists to prevent the contamination of COVID-19 disease	154(88%)	21(12%)
Avoid touching nose, mouth and eyes with unwashed hand can reduce the chance of COVID-19 transmission	14(8%)	161(92%)
Optimize the ventilation in the dental clinic is not essential to minimize the exposure	148(84.6%)	27(15.4%)
Corona virus can live/survive on surfaces for more than 24 hours	47(26.9%)	128(73.1%)
There is already effective vaccine available for COVID-19	160(91.4%)	15(8.6%)
The incubation period of COVID-19 is 14 days	12(6.9%)	163(93.1%)

Table 3. Descriptive analysis of awareness related questions

Awareness related questions	No	Yes
Do you have confidence that Bangladesh can win the battle against the COVID-19 virus?	37(21.1%)	138(78.9%)
Do you think Dentists can contribute effectively in the battle against COVID-19	57(32.6%)	118(67.4%)
Do you think that the Health education for community will be effective for COVID-19 prevention?	16(9.1%)	159(90.9%)
Do you feel anxious during giving treatment to the patients after the pandemic outbreak of COVID-19?	12(6.9%)	163(93.1%)
Do you think that you can be contaminated by the virus from your patients during dental treatment?	35(20%)	140(80%)
Do you think that one of your patients can be contaminated by another patient from your dental office?	4(2.3%)	171(97.7%)
Do you think that the number of patients, seeking dental treatment is reduced after the COVID-19 outbreak in your Hospital or Private Chamber?	14(8%)	161(92%)
Do you think that your professional/occupational income will be reduced due to COvid-19 outbreak?	5(2.9%)	170(97.1%)
Do you think that the patients might hide their proper medical history due to social stigma?	5(2.9%)	170(97.1%)
Do you think that the COVID-19 outbreak will create negative impact on the health sector of Bangladesh?	17(9.7%)	158(90.3%)
Do you think that Quarantine of Suspected person for 14 days will help to control COVID-19 outbreak of Bangladesh?	7(4%)	168(96%)
Do you think that the maintenance of Social Distance among healthy population will help to control COVID-19 outbreak of Bangladesh?	4(2.3%)	171(97.7%)
Do you think all kind of dental treatment should continue during the COVID-19 Pandemic	161(92%)	14(8%)

Table 4. Descriptive analysis of practice and behaviour related questions

Practice related questions	No	Yes
In recent days, have you gone to any crowded place?	153(87.4%)	22(12.6%)
In recent days, have you worn a mask when leaving home?	6(3.4%)	169(96.6%)
Do you use surgical face mask during treatment of all patients?	5(2.9%)	170(97.1%)
Do you use Hand Gloves during treatment of all patients?	4(2.3%)	171(97.7%)
Do you use Eye Shield during treatment of all patients?	55(31.4%)	120(68.6%)
Do you use Head Cap during treatment of all patients?	56(32%)	119(68%)
Do you use separate Gown/Apron/OT Dress for individual patients?	100(57.1%)	75(42.9%)
Do you give treatment to the patients having Fever, Sneezing, Dry cough and Fatigue after COVID-19 outbreak situation?	152(86.9%)	23(13.1%)
Do you take the recent travel history (outside the country) of all patients before consultation & treatment?	28(16%)	147(86%)
Do you ask all patients about their chance of exposure to any person traveling abroad recently?	17(9.7%)	158(90.3%)
Have you already reduced the schedule of Patient’s appointment?	7(4%)	168(96%)
Have you closed down your practice during outbreak of COVID-19	26(14.9%)	149(85.1%)

Table 5. Multilevel Logistic Regression analysis between background characteristics with knowledge, awareness and practice during COVID-19

Background Characteristics	Knowledge			Awareness			Practice		
Gender	**OR**	**95% CI**	**p-value**	**OR**	**95%CI**	**p-value**	**OR**	**95%CI**	**p-value**
Male	1			1			1		
Female	.7	.4-1.4	.361	1.2	.5-2.9	.689	1.7	.5-5.4	.362
Age Group									
21-25	1			1			1		
26-30	1.2	.4-3.5	.707	2.7	.7-9.7	.130	.1	.01-.5	.006
31-35	1.9	.5-7.6	.389	5.2	.8-32.7	.082	.9	.1-7.9	.961
36+	1.5	.3-7.3	.601	.46	.6-36.1	.151	1.9	.2-20.7	.608
Educational Background									
Undergraduate	1			1			1		
Postgraduate	3.1	1.2-7.9	.020	.5	.1-1.5	.214	5.3	1.2-23.3	.028
Years of working experience									
Less than 5 years	1.8	.7-4.8	.234	1.7	.5-5.6	.396	10.3	1.6-68.9	.016
More than 5 years	1			1			1		
Place of work									
Government	1			1			1		
Private/Independent	1.1	.5-2.7	.801	1.1	.4-3.1	.908	4	.7-24	.127
Average Monthly Income									
Below BDT 20000	**1**			**1**			**1**		
BDT 20000-50000	2.2	.9-5.3	.069	1.2	.4-3.3	.793	.2	.0-1.3	.093
BDT 50000-100000	2.3	.8-6.5	.121	5.9	1.0-33.3	.044	.4	.1-2.2	.308
BDT 100000-150000	2.2	.6-8.1	.218	1.8	.4-9.5	4.66	.5	.1-3.7	.469
More than BDT 150000	1	.2-4.9	.994	1.9	.3-13.6	.545	.4	.0-4.1	.444