Research Article

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Coronavirus Disease 2019 Awareness among Dental Undergraduate Students in a Teaching Hospital of Eastern Nepal

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ABSTRACT

Introduction: World Health Organisation declared coronavirus disease 2019 (COVID-19) outbreak a global pandemic on 2020 March 11. Awareness of COVID-19 helps in mitigating the spread of the disease.

Objective: To assess the awareness of COVID-19 disease and its related infection control practices among dental undergraduate students in Nobel Medical College and Teaching Hospital, Biratnagar.

Materials and Method: A descriptive cross-sectional study was conducted among 190 Bachelor of Dental Surgery (BDS) undergraduate students from 2021 September 2 to 2021 October 29 using convenience sampling technique. Ethical clearance was obtained from Institutional Review Committee of Nobel Medical College and Teaching Hospital, Biratnagar, Morang, Nepal. A written informed consent was obtained from all the participants. Fifteen itemed self-administered questionnaire was used for collection of data. Data were entered in Microsoft Excel 2007 and analysis was done using the SPSS v.20. Frequencies and percentages are presented for descriptive statistics.

Result: The mean age of the participants was 22.07±1.98 years ranging from 18 to 27 years. Majority (143, 75.30%) of them were female. All of the participants knew the causative virus of COVID-19 as well as they knew the place of first case reported. Only seven (23%) of the students were aware about transmission of virus while none of the intern doctors and dental surgeons gave the correct mode of transmission. Regarding close contact approximately 144 (75.80%) gave correct answer.

Conclusion: The study showed good knowledge regarding modes of transmission and preventive measures however, only 29 (15%) of the respondents knew about route of transmission.

Keywords: Awareness; corona virus disease 2019; dental undergraduates; Nepal.

INTRODUCTION

Coronaviruses belong to the Coronaviridae family,[1] named SARS-CoV-2. The disease was named as coronavirus disease 2019 (COVID-19).[2,3] World Health Organisation (WHO) declared COVID-19 as global pandemic on 2020 March 11.[4] The symptoms include fever, dry coughing, fatigue, difficulty in breathing, talking, and moving, and chest pain.[5,6] It can spread through contact with contaminated objects.[6] Droplets typically cannot transverse more than six feet[7] but remains intact and contagious in air about three hours.[7,8] The

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awareness level of the students helps in prevention of disease and dissemination of pandemic-related knowledge supporting the prevention and control of the pandemic.[9] This study was conducted to assess the awareness of COVID-19 among dental undergraduates in a sample of Nepali health care scenario.

MATERIALS AND METHOD

A descriptive, cross-sectional study was conducted among all the undergraduate students from first year to final year Bachelor of Dental Surgery (BDS), dental interns, and dental surgeons of Nobel Medical College and Teaching Hospital, Biratnagar, Morang. Ethical clearance was obtained from Institutional Review Committee of Nobel Medical College and Teaching Hospital, Biratnagar (Ref. 417/2021) before conducting the study. A written informed consent was taken from all the participants. Data collection was done from 2021 September 2 to 2021 October 29 using convenience sampling technique. The sample size was calculated by using the formula: $n = Z^2 \times p \times q / e2 = (1.96)^2 \times 0.598 \times (1-0.598) / (0.07)^2 = 188.47 \approx 189$; where, n = required sample size; Z = 1.96 taken at 95% Confidence Interval (CI); P = 0.598 (prevalence taken as 59.8% as the correct response for cause of COVID-19 Virus called SARS-COV-2 is 59.8%);[10] q = 1-p; e (margin of error) = 0.07 (7%).

Total sample size was 189. As total students in first year 29, each year from second year to interns is 30, and 11 dental surgeons. So, sample size of 190 was taken. All the students from first year to final year, dental interns, and dental surgeon of Nobel Medical College willing to participate in the study were included. A 15-itemed questionnaire was used for collection of data. The questionnaire was adapted from current interim guidelines and information for health care personnel provided by the US Centres for Disease Control and Prevention (CDC) and WHO.[4] The questionnaire was prepared in English language. Section one consists of the participants' socio-demographic characteristics and section two consisted of participants' awareness of COVID-19. Self-administered questionnaires were distributed to all the participants and they submitted the questionnaire after filling to the principal investigator. The investigator checked for the completeness of the filled questionnaire. Only completed filled questionnaires were used for data entry and analysis. Data were entered in Microsoft Excel 2007 and analysis was done using the IBM SPSS Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics was used for categorical variables that were expressed as frequencies and percentages. Questionnaires asked were given as:

1. The virus causing COVID-19 infection is called
   a. SARS
   b. SARS-COV-2
   c. 2019-nCOV
   d. Both A&B
2. First report of cases was from Wuhan city in Hubei province of China
   a. Yes b. No
3. The main transmission of virus from person to person is via
   a. Respiratory droplets
   b. Spread from contact with contaminated surfaces and objects
   c. Air borne
   d. Water borne
4. Which of the following is considered as "Close contact"
   a. Being within approx. 10 feet (3 meter) of a patient with COVID-19 for a prolonged period of time
   b. Being within approx. 6 feet (2 meter) of a patient with COVID-19 for a prolonged period of time
   c. Having direct contact with infectious secretions(sputum, serum, blood)
   d. Both B&C
5. Reported illness have ranged from mild to severe symptoms of cough, fever, breathlessness which can appear 2-14 days after exposure. For which of the following situations is medical advice indicated?
   a. Have been in close contact with a person known to have COVID-19
   b. Currently residing in an area with ongoing

COVID-19 infection
c. Recent travel from an area with ongoing spread of COVID-19
d. All of the above

6. Did you receive formal training in hand hygiene in the last three years

a. Yes b. No

7. Which of the following hand hygiene action prevents transmission of virus to the health care workers?

a. After touching a patient
b. Immediately after exposure to body fluids
c. After exposure to immediate surroundings of the patients
d. All of the above

8. Preferred methods of hand hygiene for visibly soiled hands is

a. Hand rub with soap and water for at least 10 sec.
b. Hand rub with soap and water for at least 20 sec.
c. Use of alcohol-based sanitizer with at least 60% alcohol
d. Use of alcohol-based sanitizer with at least 50% alcohol

9. Use of facemask is not essential in which of the following groups?

a. People who are well to protect themselves from COVID-19 infection
b. Being in close contact of a person suspected of or known to have COVID-19 infection
c. Health care professionals
d. Children and old aged people

10. Which of the following is most effective method for prevention of COVID-19 infection in health care setting

a. Avoid exposure
b. Vaccination

11. What PPE should be worn by individuals transporting patients who are confirmed with or under investigation for COVID-19 within a health care facility

a. Gloves b. gown c. eye protection d. mask – N95 e. all

12. What PPE should be worn by HCP providing care to asymptomatic patients with a history of exposure to COVID-19 who are being evaluated for non-infectious complaints (eg. HTN, DM)

a. Gloves b. gown c. eye protection d. mask – N95 e. all

13. Which of the following is recommended for isolation of a patient with confirmed COVID-19 and those under investigation for COVID-19

a. Airborne infection isolation room(AIIR) with exhaust
b. Airborne infection isolation room(AIIR) without exhaust

14. Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications. No specific treatment for COVID-19 is currently available

a. True b. False

15. A recommended infection prevention and control measures is to perform aerosol generating procedure, including collection of diagnostic respiratory specimens, in an AIIR (Air borne infection isolation room)

a. True b. False

RESULT

A total of 190 dental undergraduates completed the study (Table 1). The mean age of the participants was 22.07± 1.98 years ranging from 18 to 27 years. Majority 143 (75.30%) of them were female.

All of the participants knew the causative virus of COVID-19 as well as they knew the place of first case reported. Only 23 (12%) of the students were aware about transmission of virus while none of the intern doctors and dental surgeon gave the correct mode of transmission. Regarding close contact approximately 144 (75.80%) gave correct answer and correct answer increase with increase in year of study except fourth year who gave less correct answer than third year students. All of the participants were aware about the symptoms of disease while 160 (84.20%) of them were trained in

Table 1: Participants in every year (N = 190).

Year	n (%)
First	29 (15.30)
Second	30 (15.80)
Third	30 (15.80)
Fourth	30 (15.80)
Fifth	30 (15.80)
Intern	30 (15.80)
Dental Surgeon	11 (5.70)
Total	190 (100)

hand hygiene. All the participants except first year had taken training in hand hygiene during last three years. Only 44 (23.20%) of participants knew about types of hand hygiene action required for health worker whereas approximately 134 (70.50%) knew about preferred method of hand hygiene for visibly soiled hands. All subjects knew the situation where face mask is not essential for them. Among participants, 133 (70%) were educated about prevention of infection in health worker. All the participants knew about the personal protective equipment (PPE) worn by health care professionals transporting symptomatic and asymptomatic patients. Among them approximately 139 (73.20%) had knowledge about isolation of patient with COVID-19 and those under investigation. Around 169 (89%) of subjects accepted that there was no specific treatment protocol for COVID-19, the management includes symptomatic treatment and complication management. About 175 (93%) of participants correctly answered the recommended infection control and prevention measures (Table 2).

Table 2: Responses to questions on the awareness of coronavirus disease 2019 (N = 190).

SN	Questionnaire	Correct answers							
		First year (n=29) n (%)	Second year (n=30) n (%)	Third year (n=30) n (%)	Fourth year (n=30) n (%)	Final year (n=30) n (%)	Intern (n=30) n (%)	Dental surgeon (n=11) n (%)	Overall (n= 190) n (%)
1	The virus causing COVID-19 infection is called Answer-D	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)
2	First report of cases was from Wuhan city in Hubei province of China Answer- True	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)
3	The main transmission of virus from person to person is via Answer-A	2 (6.90)	4 (13.30)	7 (23.3)	8 (26.70)	2 (6.70)	-	-	23 (12.10)
4	Which of the following is considered as “Close contact” Answer-D	11 (37.90)	19 (63.30)	27 (90)	17 (56.70)	30 (100)	29 (96.70)	11 (100)	144 (75.80)
5	Reported illness have ranged from mild to severe symptoms of cough, fever, breathlessness which can appear 2-14 days after exposure. For which of the following situations is medical advice indicated? Answer-D	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)

6	Did you receive formal training in hand hygiene in the last three years Answer- Yes	0	29 (96.70)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	160 (84.20)
7	Which of the following hand hygiene action prevents transmission of virus to the health care workers? Answer-E	8 (27.60)	12 (40)	9 (30)	6 (20)	6 (20)	3 (10)	0	44 (23.20)
8	Preferred methods of hand hygiene for visibly soiled hands is Answer-B	20 (69)	19 (63.30)	20 (66.70)	21 (70)	24 (80)	19 (63.30)	11 (100)	134 (70.50)
9	Use of facemask is not essential in which of the following groups? Answer-A	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)
10	Which of the following is most effective method for prevention of COVID-19 infection in health care setting Answer-A	18 (62.10)	21 (70)	17 (56.70)	24 (80)	24 (80)	20 (66.70)	9 (81.80)	133 (70)
11	What PPE should be worn by individuals transporting patients who are confirmed with or under investigation for COVID-19 within a health care facility Answer-E	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)
12	What PPE should be worn by Health Care Provider (HCP)providing care to asymptomatic patients with a history of exposure to COVID-19 who are being evaluated for a non-infectious complaints (eg. HTN, DM) Answer-E	29 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	190 (100)
13	Which of the following is recommended for isolation of a patient with confirmed COVID-19 and those under investigation for COVID-19 Answer-B	13 (44.80)	17 (56.70)	12 (40)	30 (100)	27 (90)	29 (96.70)	11 (100)	139 (73.20)
14	Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications. No specific treatment for COVID-19 is currently available Answer-A	19 (65.50)	24 (80)	25 (83.30)	30 (100)	30 (100)	30 (100)	11 (100)	169 (88.90)
15	A recommended infection prevention and control measures is to perform aerosol generating procedure, including collection of diagnostic respiratory specimens, in an AIIR (Air borne infection isolation room) Answer-D	17 (58.60)	28 (93.30)	30 (100)	30 (100)	30 (100)	30 (100)	11 (100)	175 (92.60)

DISCUSSION

All participants knew about causative agent, place of origin and symptoms of disease similar to study done by Asraf et al. in undergraduate medical students of Birgunj, Nepal.[11] The high level of knowledge about these can be explained by the explosive flow of information in all media, especially after the confirmation of the first case in Nepal.[11] On the contrary, in a study by Umeizudike et al. only half of the Nigerian students were knowledgeable regarding these queries.[10] Majority of the dental students knew the early and common features of the infection; this finding is vital and very important as students should be able to easily identify a suspected case and take the necessary immediate action and respond appropriately. This was also the case among Nigerian dental students and Jordanian studies among dentists.[10,12] The respondents in the present study indicated good knowledge of the preventive strategies for COVID-19, it worth noting that the vast majority of participants know the correct preventive measures of the disease (clean surface, use mask, and gloves, advise patients to use masks, hand washing) if this knowledge has been transferred to practice it would make a significant difference in the control of the disease similar to study done by Mahmoud et al. in Sudanese dental students.[13]

The identification and isolation of a suspected case is the most important step in curbing the spread of COVID-19 . However, in present study, 144 (75.80%) of the responders were aware of defining a "close contact". According to the US CDC a "close contact" is defined as: “being within approximately six feet (two metres) of a COVID-19 case for a prolonged period of time or having direct contact with infectious secretions of a COVID-19 case. Similarly, various other key definitions have been provided in Interim U.S. Guidance for Risk Assessment and Public Health Management of Health care Personnel with Potential Exposure in a Health care Setting to patients with COVID-19 published by the CDC.[14] This is in contrary to study by Modi et al.[4] in Indian health professionals where less than half population were unaware about close contact. Correct hand hygiene practices play a crucial role in preventing the spread of infection. The WHO “Five Moments of hand hygiene” defines key moments when health care providers must carry out hand hygiene. Two basic methods to clean hands are hand washing and hand rubbing. The CDC recommends alcohol-based hand rub (ABHR) in most situations.[15] However, the question in our survey was focussed on the recommended hand hygiene technique for visibly soiled hands which is handwashing with soap and water for at least 20 seconds with the whole process lasting for up to 40-60 seconds.[15] Awareness of the use of personal protective equipment (PPE) for suspected/ confirmed COVID-19 cases was high among all groups. The CDC has provided interim infection prevention and control recommendations for patients with suspected or confirmed COVID-19 in Health care Settings for PPE.[16] A Facemask/N95 respirator should be used when entering into the patient room. The N95 respirator is preferred over face mask when performing or presents for aerosol-generating procedures. Proper disposal of the used masks and hand hygiene should be performed.[17] A clean gown with goggles or disposable face shield and clean non- sterile gloves are recommended upon entry to the patient room area. In case of shortage, gowns should be prioritized for aerosol-generating procedures.[4] Besides being aware of the required PPE, it is also important to know the correct sequence of “donning and doffing” of PPE. The CDC sequence of donning a face mask is as follows: securing ties or elastic bands at the middle of head and neck, fitting the flexible band to the nose bridge, fit snug to face and below the chin, fit-check respirator.[18] All respondents were of the opinion that the use of a facemask/respirator is not essential or recommended for people who are well and not in contact with a suspected or infected COVID-19 patient. The general recommendation from all major global health organisations is that those in health care settings or those who are symptomatic should use a mask.[18] Even though discrepancies have been observed for use in the community setting, the widespread use of masks should be discouraged to preserve limited supplies for health care in contrary to Indian health professionals[4] where only 75% were aware about it. Patient isolation and aerosol performing procedures should be carried out in the Airborne Infection Isolation Room (AIIR). These

are rooms kept under negative pressure. Suspected or confirmed patients should not be placed in a room that has an exhaust that recirculates air within the hospital building. Air from these rooms should be filtered through a high-efficiency particulate air (HEPA) filter directly before recirculation. Approximately 175 (93%) of respondents were aware of this concept similar to Sudanese dental students.[14]

To the best of authors' knowledge, this is the first study that evaluates the awareness of COVID-19 among dental students and professionals in Nepal. This move could help plug the spread of infection among dentists. Dentists and dental students are at more risk of pathogens spreading through blood or other body fluids. A study by Singh and Purohit[16] reveals that infection control measures are intended to reduce and prevent contamination from various microorganisms including COVID-19. Thus, the knowledge and attitude toward infection control measures by students who have started clinical training are very important. Less experienced students are likely to be more susceptible to infectious diseases as discussed in a study by AlMaweri et al. [12] Environmental factors in each year may have influenced the responses recorded as each year student has its own peculiarities and also level of knowledge increases with each year of seniority. There may be possibility of using internet, consultation with seniors or other persons of related field by respondents for giving correct answers as participants were allowed to fill the questionnaire on their own. Notwithstanding, this study has provided a good perspective on the knowledge and attitudes/perceptions of undergraduate dental students towards the COVID-19 pandemic and infection control practices in eastern Nepal.

CONCLUSION

The study group showed knowledge generally regarding modes of transmission and preventive measures; however, less respondents knew about route of transmission. This study shows that there is a strong need to implement periodic educational interventions and training programs on infection control practices for COVID-19 across all dental practitioners including students. Conducting periodic webinars for educational intervention for all health care students and professionals including non-clinical and administrative staff, paramedical and nursing sub-groups could be a useful and safe tool to create more awareness.

Conflict of interest: None.

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