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Original research

Evaluation of Knowledge and Awareness among dental students about emerging outbreak of COVID-19: A Cross-Sectional study

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Abstract

Background: The ongoing outbreak of coronavirus disease 2019 (COVID 19), emerged in Wuhan, China and caused disruption among the health care populace and the rest of the world. As COVID 19 is highly contagious, the front-line health care workers are at a higher risk and dental health care workers are of no exception to this. They are also at a high risk than other health care professionals as they spend a lot of time close to the patient's oral cavity. They are exposed to the aerosols generated during dental treatments and the fluids like saliva, blood, etc., increases the risk multifold. Hence our aim was to assess the knowledge and awareness of dental students towards COVID 19.

Materials and methods: A total of 350 dental students participated in the study. A structured custom-made questionnaire composed of 16 questions was designed to assess the students level of knowledge and awareness towards COVID 19. The questionnaire was distributed among 3rd and 4th year undergraduate students, interns and postgraduate students. Informed consent was obtained before commencing the questionnaire.

Results: A total of 350 students participated in the study. The majority of the participants were females (74%) and majority of the students were aware of COVID 19 (99%) and only 1% were unaware. 79% of students were aware that COVID 19 is highly transmissible and 76% has knowledge about the incubation period of COVID 19 which is usually between 1-14 days. Inadequate knowledge and awareness make students vulnerable to infections. Adequate training is required to protect the students and their patients.

Conclusion: Majority of the dental students had knowledge, awareness and the detrimental effects of COVID 19. Few students had a lack of awareness and inadequate knowledge about the mode of transmission, cross-contamination with dental instruments, incubation period and laboratory investigations.

Keywords: COVID-19, coronavirus, dental students

Introduction

Corona virus was first identified in the 1960s and in December 2019, a pneumonia outbreak originated in Wuhan city, China, and the outbreak was traced to a novel strain of coronavirus.[1,2] The World Health Organization (WHO) named the novel viral pneumonia as 'Coronavirus disease' (COVID 19) while the International Committee on Taxonomy of Viruses (ICTV) suggested this coronavirus name as 'SARS-CoV-2'.[3] The Wuhan strain has been recognized as a new strain of Beta coronavirus with approximately 70% genetic similarity to the SARS-CoV.[4] On 11th March 2020 WHO declared COVID 19 as pandemic disease.[2] Oral health care associated infections are one of the most important community health problems in many countries, resulting in an increase in the morbidity, mortality, and additional costs in health care setup.[5] Hand hygiene is one of the essential means to prevent the spread of such infections. Currently Centre for Disease Control And Prevention (CDC) recommended interim guidelines for the prevention of spread of COVID 19 among health care professionals as well as household members, more emphasis should be placed in understanding the nature of transmission of disease and its implications.[2] The front-line health care workers is at greater risk and dental health care workers are of no exception to this, and they are also at high risk than other health care professionals as we expend a lot of time close to the patients oral cavity and the aerosols gen-

Rated from dental aerators and ultrasonic scalers, and the fluids that we came into contact such as saliva, blood etc., increases the multifold risk through cross contamination., as COVID 19 can survive on contaminated non-living surface for few hours to several days depending on humidity and temperature.[5] As a preventive measure which includes protective eyewear, masks, gloves, caps, face shields, and protective outwear, is strongly recommended for all healthcare givers in the clinic/hospital settings during the pandemic period of COVID 19.[5,6] Apart from the protective barriers one should have sound knowledge and awareness of the nature of disease and type of infection in multi-dimensional way. Hence this study was undertaken to assess the level of knowledge, awareness, among undergraduate and postgraduate dental students towards COVID 19.

Materials and methods

A cross-sectional study was conducted during the academic year in March 2020 among the undergraduate and postgraduate dental students. A total of 350 students (259 females and 91 males) participated in the study including third year (78), final year (82), intern (88) and postgraduate students (102). All students in the study voluntarily completed the questionnaire consisting of 16 questions designed to assess the students level of knowledge, awareness towards COVID 19. Test-Retest reliability was conducted and the Cronbachs alpha (α) value was found to be 0.8.

For every correct answer a score of 1 was assigned and a score of 0 for every incorrect answer. Data collected, statistical analyses for knowledge, and awareness were computed and results obtained. Data management and statistical analysis were performed using a simple bar charts with percentage (%).

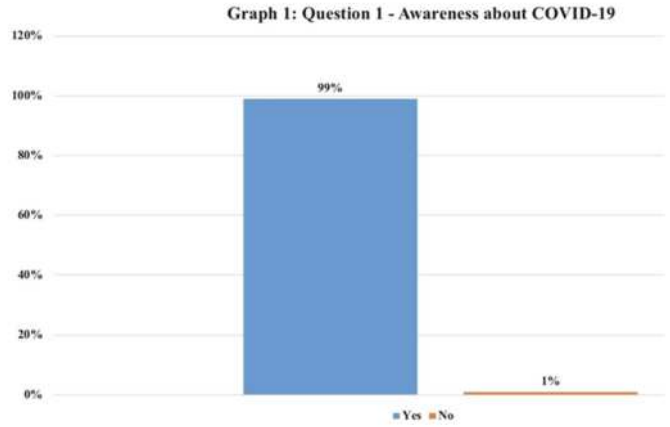
Results

Fig. 1: Shows socio-demographic characters of study population. A total of 350 students participated in the study. Majority of the study participants were females (74%).

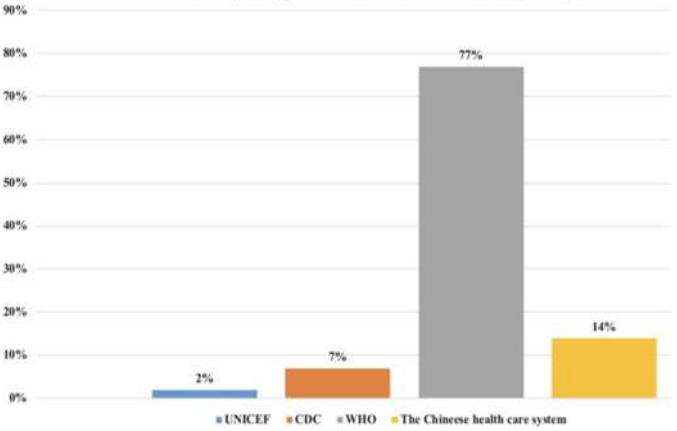
Graph 1: Shows awareness regarding COVID 19 among dental students. Results have shown that the majority of the students were aware of COVID 19 (99%) and only 1% were unaware of this new virus.

Graph 2: Most of the students (77%) were aware that the term COVID 19 was given by WHO.

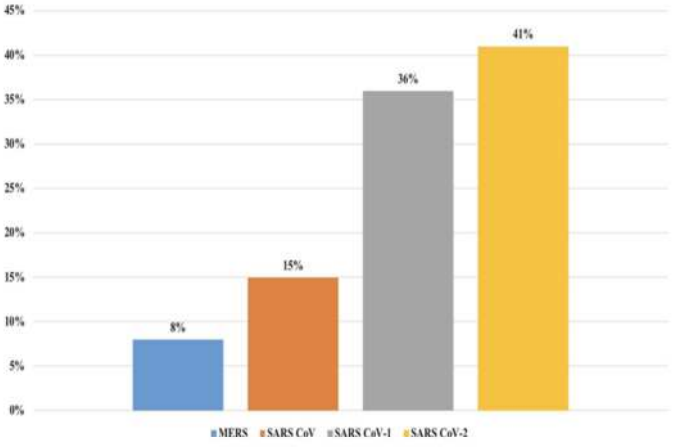
Graph 3: Represents 41% of students were aware of the term SARS CoV-2 given by the International committee on taxonomy of viruses.



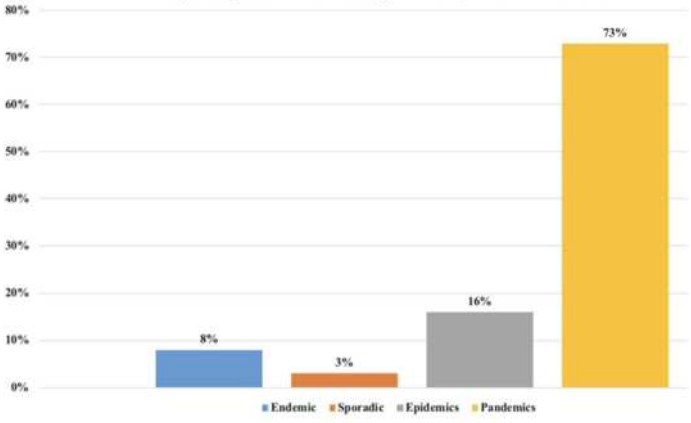
Graph 1: Question 1 - Awareness about COVID-19



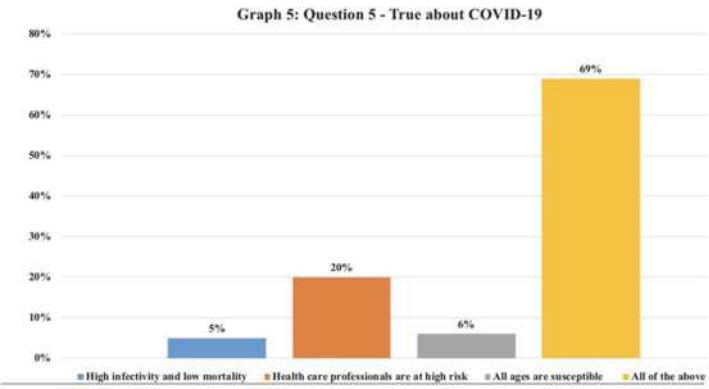
Graph 2: Question 2 - Term "COVID-19" given by

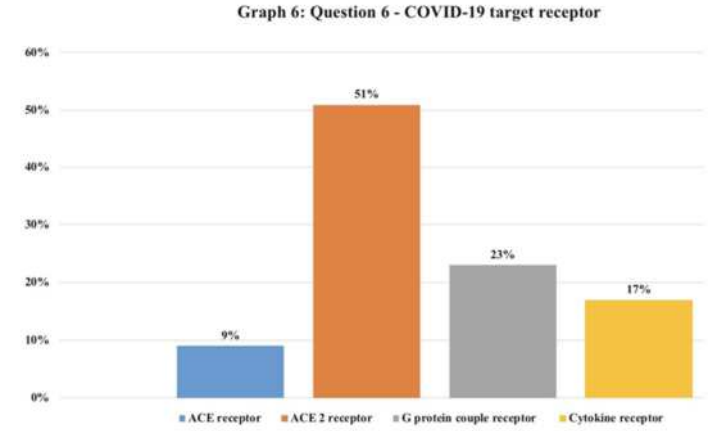


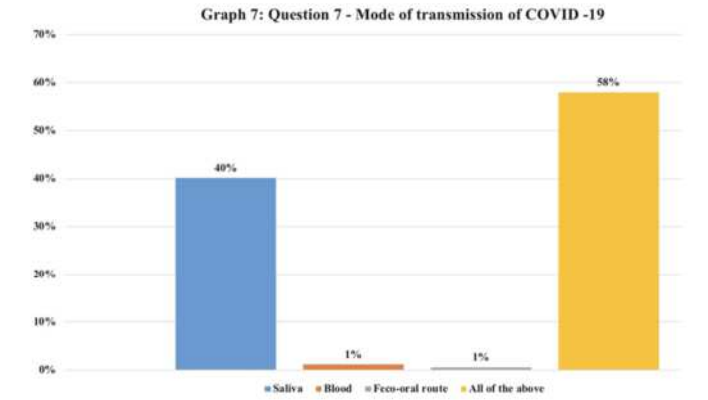
Graph 3: Question 3 - International committee on taxonomy of viruses suggested the Novel Corona-2019 virus name as

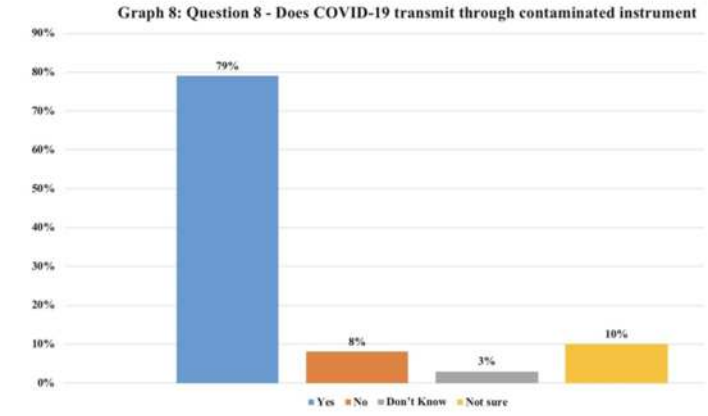


Graph 4: Question 4 - According to WHO, CoVID-19 is declared as









Graph 4: Shown that 73% of the students knew that the new virus was declared as a pandemic according to WHO, 16% thought it was an epidemic.

Graph 5: When asked about the certainty on CoVID 19, 20% of the respondents felt that health care professionals were at risk among the options provided, 6% felt that all age groups are susceptible to COVID 19 whereas 69% of the participants perceive all the options provided were true along with high infectivity and low mortality option.

Graph 6: Question based on target receptor for COVID 19 showed that only 51% of the respondents were aware that ACE-2 receptor was the target receptor, 23% response was given to G protein coupled receptor.

Graph 7: Shows that 58% of respondents were aware about the Corona virus transmission which is through saliva, blood, and feco-oral route. But 40% responded to saliva as the sole mode of transmission.

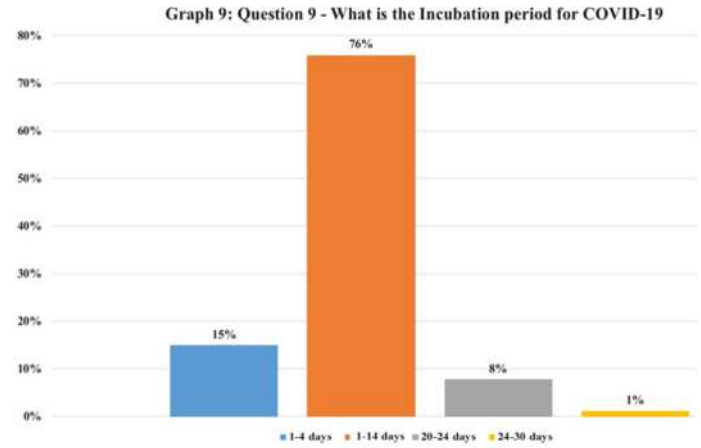
Graph 8: Shows that % of the respondents said yes that transmission can happen, 10% were not sure.

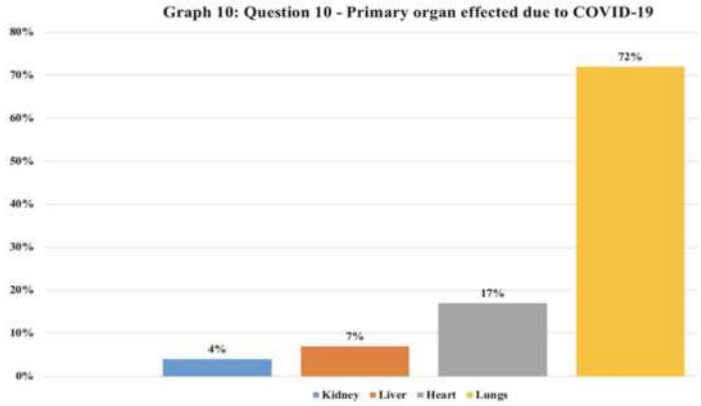
Graph 9: Revealed the actual incubation period for COVID 19 is 1-14 days and 76% responded the same, very few i.e 15% were unaware and responded as 1-4 days, 8% as 20-24 days and 1% as 24-30 days.

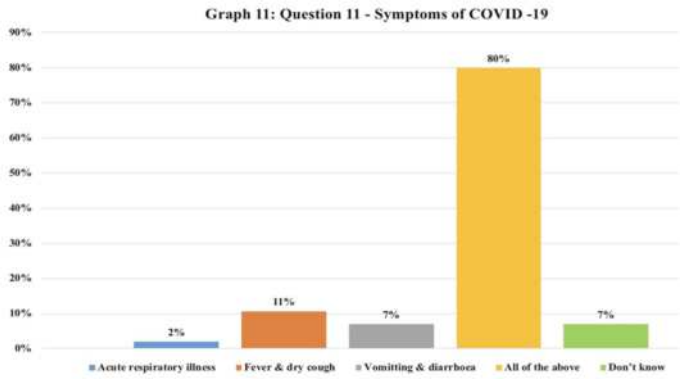
Graph 10: Shows primary organ affected by coronavirus is lungs and 72% respondents were aware.

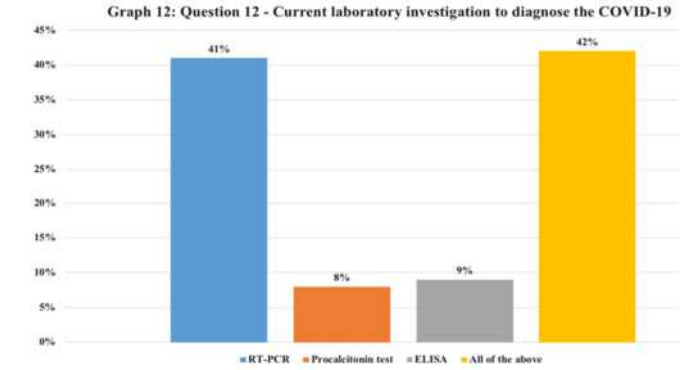
Graph 11: 80% of the respondents were aware of COVID 19 symptoms as acute respiratory illness, fever and dry cough, and vomiting and diarrhoea.

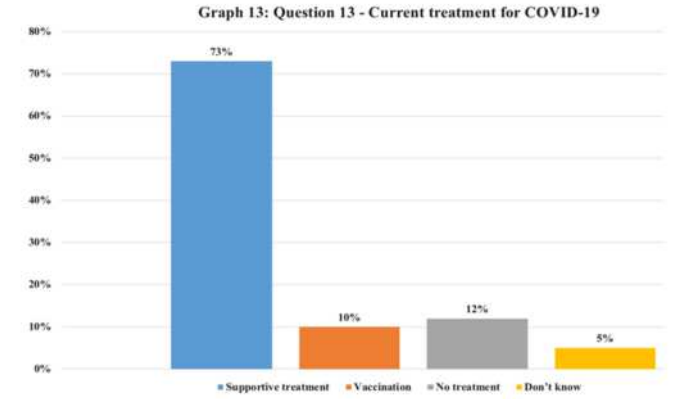
Graph 12: When asked about the laboratory investigations done for COVID 19 only 41% responded that real-time

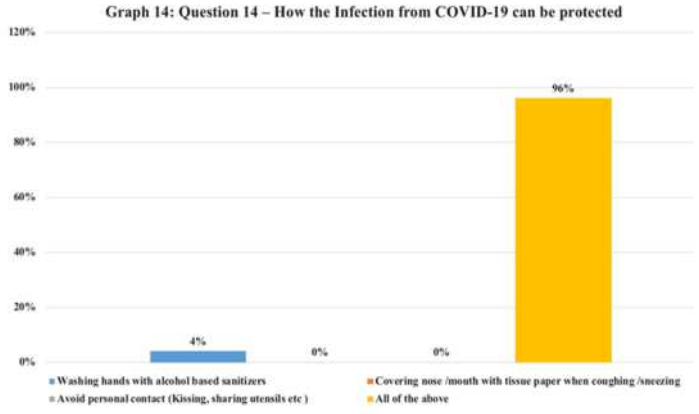


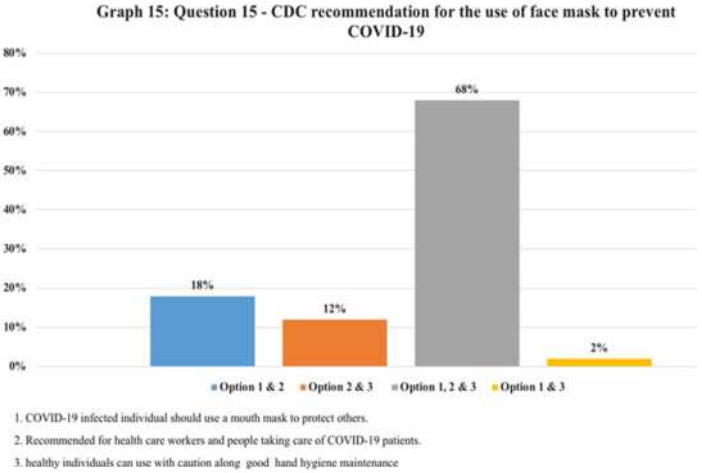


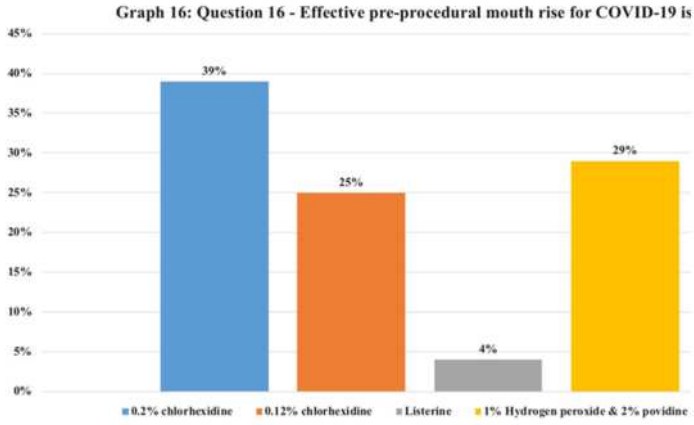












reverse transcription polymerase chain reaction (rRT-PCR). can be used to diagnose coronavirus.

Graph 13: As such there is no specific treatment or vaccination for this virus, only supportive care can be taken for patients affected by this virus 73% of the participants were aware of this fact.

Graph 14: 96% of the total respondents were aware that infection from COVID 19 can be protected by taking precautions such as washing hands with alcohol based sanitizers, covering nose/mouth with tissue paper while coughing/sneezing and avoiding personal contact.

Graph 15: shows that 68 % of students were aware of CDC recommendations for using the face mask in the prevention of COVID 19. Graph 16: Shown that only 29% students opted for 1% hydrogen peroxide and 2% povidine as an effective per-procedural mouth rinse.

Discussion

The epidemic of COVID 19 emerged in Wuhan, The epidemic of coronavirus disease 2019 (COVID 19) emerged in Wuhan, China, December 2019 and has become a major challenging public health issue for not only China but also around the globe.[2] On January 8, 2020, a novel coronavirus was officially announced as the causative pathogen of COVID 19 by the Chinese Center for Disease Control and Prevention.[5] On January 30, 2020, this outbreak was announced as a public health emergency of international concern by the World Health Organization (WHO). The novel coronavirus initially was named as 2019-nCoV and now officially as severe acute respiratory

syndrome coronavirus 2 (SARS- CoV-2). As of March 23, COVID 19 has been recognized in 110 countries, with a total of 5 lakh laboratory-confirmed cases and 25,000 deaths (WHO 2020b).[6] According to research, similar to SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV), SARS-CoV- 2 is zoonotic, with Chinese horseshoe bats (Rhinolophussinicus) being the most probable origin.[7] and most likely pangolins as the intermediate host (The Chinese Preventive Medicine Association 2020).[8]

Coronaviruses are named for the spikes that pro - trude from their membranes, like the sun's corona. Chinese health authorities have reported that patients who are infected with this virus have experienced fever, cough, difficulty breathing, and pneumonia. According to the World Health Organization, Corona virus can cause several illnesses of the respiratory tract, ranging from the common cold, cough, and respiratory difficulties like shortness of breath and severe diseases like SARS. Serious cases can lead to pneumonia, kidney failure, and even death. [7,8,9]

Due to the characteristics of dental settings, the risk of cross-infection may be high between dental practitioners and patients. For dental practices and hospitals in countries/regions that are (potentially) affected with COVID 19, strict, and effective infection control protocols are urgently needed. There is an absolute scarcity of literature exploring knowledge and attitude and awareness on COVID 19 among dental graduates in the Indian context. Hence, the present study was conducted to explore knowledge, and awareness on COVID 19 among dental graduates. The results of the present investigation reveal knowledge, and awareness about COVID 19 in dental college set up among the dental students. This is a survey with internal validity, which means these data cannot be applied to the entire country or other countries, and it also assessed student's implementation of infection control practices against COVID 19. A similar study was conducted previously in Hong Kong to evaluate the knowledge and attitude of dental patients towards SARS during the SARS outbreak[9] Kharma et al.[10] carried out a study, where they tried to assess the knowledge of dental students towards MERS. To the best of our knowledge, this is the first time a survey has been conducted to determine the awareness and apprehension of dental students towards COVID -19. A total of 350 students participated in the study. It is highly encouraging that the majority of the subjects (99%) who participated in this survey had heard about COVID 19. Awareness about COVID 19 was more among females compared to males. This awareness among females was also reported by Nipun Ashok et al., questionnaire study about knowledge of MERS.[11] It is highly appreciable that more than half of the dental students (77%) were aware that the term COVID 19 was given by WHO. A similar proportion of respondents (41%) reported that the COVID -19 is named as SARS -Cov-2 provided by the International Committee on Taxonomy of Virus (ICTV).[12] Although research is being carried out to confirm the transmission pattern of COVID 19 most of the cases are likely to be acquired from another infected person, recent observations suggest that asymptomatic patients and patients in their incubation period are also carriers of SARS- CoV-2.[13] This epidemiologic feature of COVID 19 has made its control extremely challenging, especially in the health care practice.

The most probable route of transmission for acute viral respiratory tract infection like COVID 19 is large respiratory droplets spread during coughing and sneezing or hand contamination or contact with infected persons, 58% of the respondents were aware of the Coronavirus transmission which is through saliva, blood &feco-oral route.[11] But 40% responded to saliva as the sole mode of transmission. It has been advised by WHO that one should follow hygiene measures like regular hand washing and avoiding touching mouth, nose, or eyes with hands. There is a potential risk for transmission in the dental office firstly because of aerosol production during specific dental procedures and instruments which are contaminated.[14]

In our present study, 79% of respondents agreed that transmission could happen, At present, there have been no guidelines for the protection of dental professionals from 2019-nCoV infection in dental clinic practice. Although no dental professional has been reported to acquire the 2019-nCoV infection till date, the last experience with the SARS coronavirus has shown vast numbers of acquired infections of medical professionals in hospital care.

To prevent transmission of respiratory infections like COVID- 19 in hospital / dental clinics, Centre for Disease Control and Prevention has recommended specific precautionary measures such as, visual alerts to be provided in appropriate language at the entrance of clinics and waiting area of hospitals that instructs patient to inform of any respiratory illness when they register for care for the first time.[5] Patients should be instructed to cover their mouth with a tissue when coughing or sneezing, perform hand hygiene after contacting contaminated material

or respiratory secretions, and dispose of the used tissue in the waste repository. Masks should be offered to patients who are coughing, and they should be encouraged to maintain a social distancing of at least 1meter in the waiting room.[5,13,15]

Overcrowding should be avoided as far as possible in clinical areas to prevent cross-infection. Standard procedures should be followed in the waste disposal and cleaning, and disinfection of environmental surface and patient-care equipment. For probable or confirmed cases of COVID- 19, infection prevention and control measures include wearing an N95 mask within 1m diameter of a patient and dressing gown, gloves, and eye protection. Apart from these, airborne precaution should be applied when performing aerosol-generating procedures. In a survey conducted in a dental college, it was found that most of the students used gloves and masks always, but the students who used protective eyewear and gowns regularly were less.[5]

In case of dental emergencies that can exaggerate in a short period and require emergency treatment, certain precautionary measures such as pre-procedural mouth rinses can be advised to the patient before undergoing treatment as it will reduce the number of oral microbes.[16] However, as instructed by the Guideline for the Diagnosis and Treatment of Novel Coronavirus Pneumonia (the 5th edition) stated that chlorhexidine, which is commonly used in dental practice, might not be effective to kill COVID 19. Since COVID 19 is vulnerable to oxidation mouth rinse containing 1% hydrogen peroxide and 0.2%, Povidine can be used as the best mouth rinse,[5] only 29% of students were aware of this combination to be used. 39% felt 0.2% chlorhexidine can be used, 25% responded to 0.12% chlorhexidine and 4% to Listerine.

The diagnosis of COVID 19 can be made on a combination of various factors which includes, history of travel to affected region 14 days before onset of symptoms, clinical symptoms, CT imaging findings, and laboratory tests such as real-time reverse transcription polymerase chain reaction [RT-PCR] test.[2] . When asked regarding the laboratory test for COVID19, 41% responded that real-time reverse transcription polymerase chain reaction ELISA all three were used for diagnosing the infection and remaining chose ELISA and Procalcitonin as individual options. To date, there has been no evidence from randomized control trials to recommend any specific treatment for COVID 19, so the management of COVID 19 has mainly been supportive (WHO 2020a).[2] 73% of the participants were aware of this fact, 12% felt there is no treatment, and 5% didn't know about the treatment protocol. Currently, the protocol which is being followed is to control the source of infection, use of certain preventive measures to lower the risk of transmission, and provide early diagnosis, isolation, and supportive care for affected patients.[2]

Conclusion

The present study highlights the need to create wide-spread awareness about COVID 19 infection, its mode of transmission and identification of diseased individuals, especially elderly individuals with comorbidities, and preventive measures, such as hand washing, the use of personal protective equipment, and social distancing of 6 feet. Keeping in mind detrimental effects of COVID 19, a wide emphasis should be placed on educating health care professionals, patients and their family members through audio-visual aids to reach a maximum number of individuals. Our study concluded that the majority of dental students had the knowledge and awareness and its detrimental effects towards COVID 19. Few students had lack of awareness and inadequate knowledge about the mode of transmission, cross contamination with dental instruments, incubation period and laboratory investigations. Currently there are no specific vaccines or treatments for COVID 19. Therefore, continuous training and contingency measures are needed in all hospital settings to prevent further outbreaks of COVID 19.

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