

# Current Knowledge of Coronavirus disease-19 among Students Pursuing Dentistry

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## ABSTRACT

**Context:** Coronavirus disease (COVID-19) pandemic has greatly altered people's daily lives, and it continues spreading as a crucial concern globally. The risk of acquiring COVID-19 among dentists is high because they are exposed to aerosol production and body fluids during dental procedures. As the understanding of this novel disease is evolving, dental students should have an in-depth knowledge and understanding and should be updated with the practices that have to be adapted to identify a possible COVID-19 infection and treat them. **Aims and Objectives:** The present study was aimed to assess the knowledge of COVID-19 among students pursuing dentistry. **Materials and Methods:** An online questionnaire consisting of 25 questions was prepared using Google Forms and circulated to undergraduate dental students through e-mail. The data were tabulated and subjected to statistical analysis. **Results:** Among all responses, the maximum number of participants have a good knowledge regarding modes of transmission (94.9%) followed by diagnosis (80%). The results showed that overall mean knowledge score was 61.8% while practice domain was 63.6%. **Conclusion:** The findings in the present study suggest that dental schools should provide appropriate measures for the prevention of diseases, imparting proper training of dental students to protect patients, and ensuring healthier working conditions.

**Key words:** Aerosol, body fluids, Coronavirus disease-19, dentists, knowledge, questionnaire


## INTRODUCTION

People are facing many fatal consequences because of the eruption of coronavirus disease (COVID).<sup>[1]</sup> The first case of COVID-19 was reported in December 2019 amid patients with viral pneumonia symptoms in Wuhan, China.<sup>[2]</sup> The novel coronavirus was initially named 2019-nCoV and officially as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (World Health Organization [WHO], 2020). The WHO affirmed COVID-19 outbreak a "pandemic" on March 11, 2020.<sup>[3]</sup>

The causative organism responsible for this outbreak belongs to the family *Coronaviridae* of the

order *Nidovirales*. Coronaviruses are enveloped RNA viruses, and two strains of them – SARS-CoV and Middle East respiratory syndrome coronavirus are zoonotic in origin. However, individual-to-individual mode of transmission that occurs through airborne droplets, contact or touch an infected individual, or a contaminated surface is causing the disease to spread rapidly across different continents.<sup>[4]</sup> There is an increased risk of developing complications among elderly individuals and those with pre-existing illness such as hypertension, cardiac disease, lung disease, cancer, or diabetes.<sup>[5]</sup>

Thinking about the general recurrence of the worldwide transmission of the illness, dental experts are at the most serious danger of getting exposed in light of the fact that they are close to body liquids such as blood, saliva, and diverse airborne drops during dental procedures.<sup>[6]</sup> With the developing information on this novel illness, dental specialists should be better prepared to perceive an imaginable disease of COVID-19 and ought to likewise have the option to allude patients having doubtful, established, or a past contamination of COVID-19

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to legitimate treatment centers. Consequently, the current examination was attempted with the plan to survey the information in regards to COVID-19 among students pursuing dentistry.

## MATERIALS AND METHODS

### Research Design

The study was conducted in October 2020 at Kamineni Institute of Dental Sciences, Narketpally, Nalgonda. Due to the country's lockdown at the time of data collection, an online questionnaire was developed in Google Forms containing 25 questions.

### Research Setting

The structured multiple-choice questionnaire was designed in English and comprised a series of questions pertaining to knowledge of undergraduate students regarding COVID-19 (<https://forms.gle/whYHZZabaCn86sCWA>).

After reviewing literature and WHO guidelines, questions of the survey were divided into VI sections: Etiology, mode of transmission, diagnosis, clinical features, prevention, and treatment. Number of questions addressing each section is formulated in Table 1.

### Participants

Participants included were 3<sup>rd</sup> and 4<sup>th</sup> year undergraduate dental students. All participants voluntarily participated in the study and were explained at the inception of study as data collection was for scientific research.

### Data Collection

Prepared e-survey forms were sent to the students through email. Principal investigator had access to the study data and the responses which were submitted in stipulated time were included in the study. Out of the total number of 193 students (3<sup>rd</sup> and 4<sup>th</sup> year undergraduate dental students), 158 completed the

whole questionnaire (response rate 81.8%). Subjects were given 1 week time to fill the questionnaire. A reminder mail was sent to the non-respondents after 3 days. A scoring system was applied to assess the level of knowledge of each subject, by giving a score of 4 for each positive response.

### Statistical Analysis

Descriptive statistics were applied to calculate proportions and frequencies. The Chi-square test was used to investigate the level of association among study variables. Statistical analysis was performed using Statistical Package for the Social Sciences SPSS software (v.21).

### Ethical Considerations

The Institutional Ethical Committee (IEC) has approved for conducting the study (IEC No: KIDS/IEC/PER/2020/08).

## RESULTS

A total of 158 undergraduate dental students who were appearing clinical participated in the study; among which there were 77 (81%) 3<sup>rd</sup> years and 81 (82.6%) 4<sup>th</sup> years.

### Knowledge Domain

From the different components assessed in the knowledge domain, correct responses were lowest for clinical features (34.1%) and measures taken to prevent COVID-19 (44%). The remaining components showed more than 50% correct responses of the students; with the highest correct responses of modes of transmission of COVID-19 (94.9%). Percentage of correct and incorrect responses of knowledge domain is shown in Table 2.

For the various routes by which coronavirus spreads, 94.9% knew that the disease could be transmitted by droplets when an infected person

**Table 1:** Number of questions addressing each section

Category	No. of questions
Etiology	5
Modes of transmission	1
Diagnosis	2
Clinical features	1
Prevention	10
Treatment	6
Total	25

**Table 2:** COVID-19 knowledge among undergraduate students

Sections	Number of questions	Correct responses (%)	Incorrect responses (%)
Etiology	5	575 (72.78)	215 (27.21)
Transmission	1	150 (94.9)	8 (5.1)
Diagnosis	2	253 (80.05)	63 (19.95)
Clinical features	1	54 (34.2)	104 (65.8)
Prevention	10	851 (53.8)	729 (46.1)
Treatment	6	561 (59.1)	387 (40.8)
Total	25	61.8%	38.12%

coughs, sneezes, speaks, or by treating COVID-19-positive patients without any precautions.

Percentage of subjects who answered correctly regarding primary symptom of COVID-19 as shortness of breath is 34.2% while majority of the students about 58.2% had responded sore throat as primary symptom. About 80% of the students were aware regarding the presence of virus particles in patients diagnosed with COVID-19 [Graph 1].

Approximately 40% of subjects had adequate knowledge regarding vaccine trials to prevent COVID-19. Incorrect responses under knowledge domain are indicated in Graph 2.

In the section regarding the treatment modalities, 53.8% have an update on various treatment options that were used to treat the patients diagnosed with COVID-19. About 72.7% of the students responded correctly regarding etiology.

In the questions related to the preventive measures while treating COVID-19 patients about half of the students, that is, 52% had responded incorrectly while only 16% of the respondents have the knowledge regarding correct method to wear personal protective equipment (PPE). For the questions that are meant for assessing their views on routinely wearing N95 mask and face shield due to the present pandemic in dental practice and decontaminating the contaminated surfaces between the consecutive surgeries, 53.8% of the students had responded correctly.

**Practice Domain**

The 5 items of the questionnaire were based on the current practices during the COVID-19 disease followed by undergraduate students. Responses are shown in Table 3.

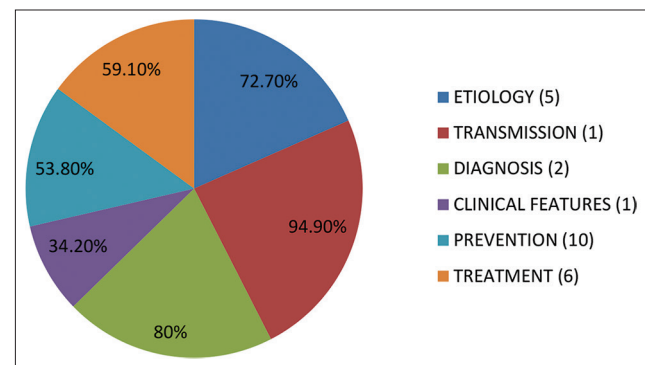
In questions related to practice measures such as how frequently the respondents follow universal precautions of infection control on patients, use of high-volume suction in practice, and decontaminating surfaces, only 63.8% were taking precautions in their professional life such as wearing N95 mask, washing hands, and using sanitizers [Graph 3].

**Table 3: Practices related to COVID-19 among undergraduates**

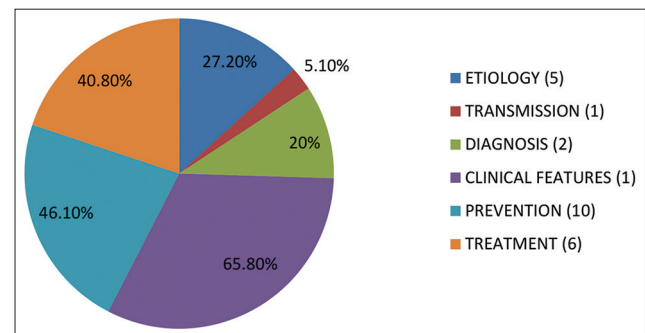
Sections	Number of questions	Correct responses (%)	Incorrect responses (%)
Practice domain	5	503 (63.6)	287 (36.3)

**DISCUSSION**

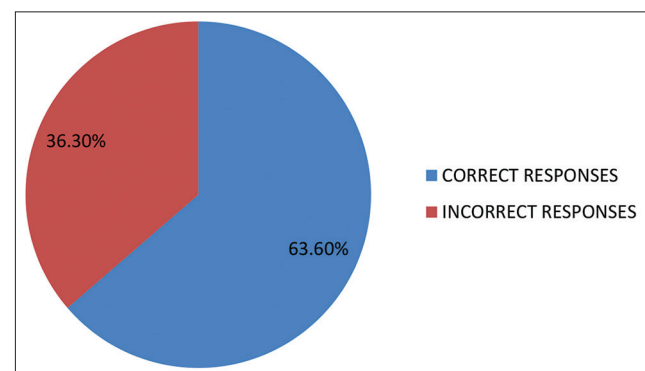
COVID-19 has emerged as a major health-care concern around the world. At present, COVID-19 is a daily discussion topic among everyone especially among health care workers and patients. Due to the unavailability of standard protocols, dental care has entirely stopped or drastically decreased in numerous affected countries. There is uncertainty when the situation will be back to normal. The current study highlights the need of spreading



**Graph 1:** Distribution of level of knowledge among respondents participated.



**Graph 2:** Knowledge domain: Section wise incorrect responses.



**Graph 3:** Practice domain: Distribution of correct and incorrect responses among respondents.

awareness and updating the relevant and appropriate knowledge of COVID-19 disease among the undergraduate dental students.

Since the present study was conducted during the country's lockdown, the primary source of information for most of the students regarding the disease and its transmission was through television, news, and media platform and the level of knowledge varied depending on the type of question. A mean knowledge of 61.8% was obtained on questions about knowledge indicating a fair knowledge among undergraduate students appearing clinical at teaching hospitals. However, this score is much lower than that reported in Chinese general population (90%) and knowledge, attitude, and practices toward COVID-19 among the US residents (80%).<sup>[7,8]</sup> This might be possible because the US studies assessed COVID-19 symptoms using one direct question rather than asking the participants to choose from multiple options.

About 72.7% of the students responded correctly regarding the etiology. Regarding the modes of transmission, nearly all respondents had a good level (94.9%) of knowledge which means the dentist knows how to prevent the community spread of the current pandemic. The possible transmission routes in the dental clinic include direct contact by face-to-face communication, exposure to saliva, blood, and other body fluids. Indirect contact can be due to contaminated instruments and the clinic environment [Figure 1].<sup>[4]</sup>

Considering the highly infectious nature of COVID-19, adequate training is required to carry out safe practice to prevent the spread to the working staff. These measures include wearing PPE, sterilized gloves, and respirators.<sup>[9]</sup>

In a study by Cagetti *et al.*, majority (68.5%) of respondents believe that the risk of infection

transmission is high in the dental practice.<sup>[1]</sup> Treating such patients can act like starting a chain-reaction of spreading the infection to subsequent patients as the containment of the virus has not yet been fully understood.<sup>[10]</sup>

Most of the respondents (80%) were familiar with the wide variety of the symptoms that the patient can present at the clinic which is of utmost importance for the early diagnosis of the suspected positive patients. On the other hand, the asymptomatic carriers can pose the real problem as they have no or very mild symptoms which can be overlapping with other viral infections such as common cold and flu. This requires that the dentists should consider each patient in the clinic to be a COVID-19 positive and take all the necessary precautions as such patients could sometimes be misjudged as normal patients (without COVID-19).

About 34.2% considered shortness of breath as a primary symptom of COVID-19. Even though majority of the students have a good knowledge on routes of transmission, only few (53.8%) followed the precautions to prevent its transmission. In a study by Arora *et al.*, most (78.6%) of the dentists agreed that wearing PPE such as gloves, mask, and goggles can be effective in preventing transmission of COVID-19.<sup>[11]</sup> Besides being aware of the required PPE, it is also important to know the correct sequence of "donning and doffing" of PPE. Only 16.5% of the students knew the correct sequence of donning PPE.

Treating COVID-19 patients require the dentist to follow and keep updated with the recent guidelines mentioned by the Centers for Disease Control and Prevention and WHO. More than half of the students (59.1%) were aware about the various treatment modalities to treat this pandemic. The pre-procedural rinsing should be done with povidone-iodine which is most effective in reducing the load of virus in the oral cavity.<sup>[12]</sup>

It was observed that students were aware of COVID-19 etiology, modes of transmission, diagnosis, treatment, and infection control measures. However, they had limited (63.6%) comprehension of the extra precautionary measures that protect the students and other patients from COVID-19. These figures further highlight the need for addition of updated infection control protocols with respect to the current pandemic in the existing curriculum. Therefore, the current

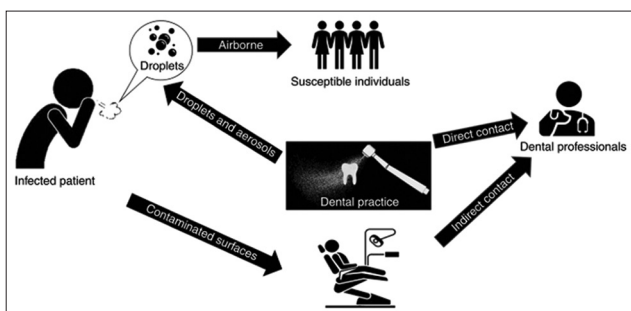


Figure 1: Modes of transmission



situation requires spreading the knowledge of the infection control practices in the hospital and its implementation at an individual level.

## CONCLUSION

Occupational health and safety are of paramount importance to minimize the risk of transmission to health-care students and professionals and provide optimal care for patients. Majority of the participants were unaware of clinical features of COVID-19 and precautionary measures to be taken.

Dental schools should provide appropriate measures for the prevention of diseases, imparting proper training of dental students to protect patients, and ensuring healthier working conditions. There is a need for regular educational interventions and training programs on infection control practices for COVID-19 across all health-care professions since they are the frontline workers.

## REFERENCES

1. Cagetti MG, Cairoli JL, Senna A, Campus G. COVID-19 outbreak in North Italy: An overview on dentistry. A questionnaire survey. *Int J Environ Res Public Health* 2020;17:3835.
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, *et al.* Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med* 2020;382:1199-207.
3. Alharbi A, Alharbi S, Alqaidi S. Guidelines for dental care provision during the COVID-19 pandemic. *Saudi Dent J* 2020;32:181-6.
4. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci* 2020;12:9.
5. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan China: the mystery and the miracle. *J Med Virol* 2020;92:401-2.
6. Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 Outbreak: An overview on dentistry. *Int J Environ Res Public Health* 2020;17:2094.
7. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, *et al.* Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *Int J Biol Sci* 2020;16:1745-52.
8. Clements JM. Knowledge and behaviors toward Covid-19 among us residents during the early days of the pandemic: Cross-sectional online questionnaire. *JMIR Public Health Surveill* 2020;6:19161.
9. Meng L, Hua F, Bia Z. Coronavirus disease 2019. COVID-19 Emerging future challenges for dental and oral medicine. *J Dent Res* 2020;99:481-7.
10. Occupational Safety and Health Administration's Guidance on Preparing Workplaces for COVID-19. Available from: <http://www.osha3990-032020>. [Last accessed on 2020 Jun 01].
11. Arora S, Abullais Saquib S, Attar N, Pimpale S, Saifullah Zafar K, Saluja P, *et al.* Evaluation of knowledge and preparedness among indian dentists during the current covid-19 pandemic: A cross-sectional study. *J Multidiscip Healthc* 2020;13:841-54.
12. Eggers M, Koburger-Janssen T, Eickmann M, Zorn J. *In vitro* bactericidal and virucidal efficacy of povidone-iodine gargle/mouthwash against respiratory and oral tract pathogens. *Infect Dis Ther* 2018;7:249-59.