

## **“Awareness of clinical protocol for dental setting and the Information sources used among Indian Dental undergraduates amidst COVID-19 pandemic.”**

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### **Abstract**

**Background:** The world was hit by the COVID-19 pandemic in March 2020. In wake of the pandemic, standard guidelines were formulated for dental clinical setting by the World Health Organization and other national health agencies.

**Aim:** To assess the level of Awareness of clinical protocol for dental setting and the Information sources used among Dental students and interns amidst COVID-19 pandemic.

**Methods:** A multi-centric cross sectional survey was conducted in 7 dental colleges of Mumbai and Navi Mumbai. A total of 340 (85% response rate) dental students and interns participated in this study. A self-designed pre-validated English language questionnaire containing 19 items was used, which was distributed electronically using Google Forms. Level of awareness and source of information about Covid-19 were the two domains assessed in our study.

**Results:** Ninety-three percent students were aware of the modes of transmission of COVID-19. Seventy-Eight percent students were aware of the protocol for Personal protective equipment donning and doffing. Fifty-one percent of the participants had social media as their first source of information about COVID-19, 25.6% chose television, 7.1% chose family members, 5.3% chose World Health organization & Indian Dental Association websites, and only 2.1% chose scientific articles and government websites (1.2%) as the first source of information. Only 19.7% participants were sufficiently aware of the clinical protocol in dental settings.

**Conclusion:** Undergraduate students were aware of the general information related to the spread of corona virus. Social media was their primary source of information. A large proportion of students are unaware of standard guidelines related to patient care in dental practice.

**Keywords:** Health knowledge, Pandemics, COVID-19, Dental infection control, Information

## Introduction

The novel coronavirus also known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) causes a severe respiratory illness referred to as coronavirus disease (COVID-19). COVID-19 was first reported by the World Health Organization (WHO) on the 31st December 2019 and was announced as a global pandemic on 11th March 2020. The surge of COVID-19 in Wuhan, China led to the closure of public places, halting of public transportation, isolation and management of infected persons, beat a bid to curb the spread of SARS-CoV-2<sup>[1]</sup>. Globally, as of 9:46am CET, 23 March 2021, there have been 123,216,178 confirmed cases of COVID-19, including 2,714,517 deaths, reported to WHO<sup>[2]</sup>. In India, from 3 January 2020 to 23 March 2021, there have been 11,686,796 confirmed cases of COVID-19 with 160,166 deaths, reported to the WHO<sup>[3]</sup>.

A dental professional team is categorized as a high-risk group as COVID-19 may be transmitted in dental settings. Therefore, it is crucial for dental professional team to be aware and practice preventive measures against SARS-CoV-2 infection. This can be possible by focusing on hand hygiene and personal protective equipment (PPE); ensuring an adequately ventilated space; and exercising caution when performing aerosol-generating procedures<sup>[4]</sup>. Due to lockdown the educational system is facing new challenges every day. In times of this pandemic, it is very essential for undergraduate dental students and interns to keep themselves updated on changing trends in dental practice, on-going researches, myths and facts related to COVID-19. Also the source of this information plays a very crucial role. The proliferation of misinformation on social media platforms is faster than the spread of COVID-19 and it can generate hefty deleterious consequences on health amid a disaster like COVID-19<sup>[5]</sup>. So the present study was conducted to assess the level of awareness of clinical protocol for dental setting and the Information sources used among Dental students and Interns amidst COVID-19 pandemic.

## Methodology

A descriptive cross sectional study was conducted among undergraduate dental students who attended clinical postings (third year and final year students) and interns. It was a multi-centric study conducted in all the dental colleges of Mumbai and Navi Mumbai region (7 dental colleges). Responses were collected from February and March 2021. Ethical approval was obtained from Institutional Ethics Committee of the College prior to the start of study (Protocol no: IEC269022021). A sample size of 400 was calculated assuming the level of knowledge in the population (P) 50 %, type 1 error ( $\alpha$ ) 5% and standard error (d) as 5. Convenience sampling technique was used to obtain the sample. The questionnaire was distributed electronically using Google Forms and sent to participants through WhatsApp groups. Written informed consent was obtained from all participants. A self-designed, structured, pre-validated English language questionnaire was used for the study. Questionnaire had 17 close ended questions and 2 open ended questions. Level of awareness and source of information about Covid-19 were the two domains assessed in our study. Socio-demographic details of participants were recorded. A pilot study was conducted on 10 participants to check the validity of the questionnaire and feasibility of the study. The final questionnaire was checked for face and content validity by 5 subject experts (Content validity ratio: 0.9). Data was analysed using SPSS version 20. Data was presented as descriptive statistics. Chi square tests were used to compare level of knowledge within the study cohort. The level of significance was set at  $p < 0.05$ . Participants were considered to be 'sufficiently aware' if they could correctly answer 75% of the awareness questions.

## Results

The response rate for the survey was 85% (340 responses). 82.4% of females and 17.6% of males participated in this study. Forty-Nine per cent of third year dental students, 20.3% of final year and 30.9% of interns participated in this study.

**Table 1** shows the knowledge awareness of dental students and interns in regards to mode of transmission, incubation period and preventive measures in order to prevent transmission of COVID-19. **Figures 1 and 2** show participants who identified correct sequence of donning and doffing of PPE. Forty-two per cent of the participants knew 0.2% povidone iodine mouth rinse is used for 20 seconds before clinical procedure to reduce salivary load of oral microbes. Figure 3 shows that majority of participants identified social media as their first source of information about COVID-19.

Majority of participants used social media as their current source of information regarding COVID-19 [**Figure 4**]. Forty per cent of participants had not attended any webinars or lectures. Many participants were not aware of short training courses on COVID-19 and only few had completed training courses on COVID-19 [**Table 2**]. Sixty-seven participants (19.7%) were found to be 'sufficiently aware' about the information on coronavirus. The level of knowledge was significantly higher among interns and the participants who had used appropriate information sources. [**Table 3**]

When participants were asked to name the training courses they have attended, many of them wrote 'NONE'. A few of them named courses like 'WHO-hand hygiene and infection prevention and control', 'Diksha App courses', 'COVID-19 management', 'Use of mouthwashes against COVID-19', 'Donning and Doffing of PPE' and 'WHO course on COVID-19: Operational Planning Guidelines and COVID-19 Partners Platform to support country preparedness and response'. Among them courses like 'Basics of COVID-19', 'Psychological Care of patient with COVID-19', 'Decontamination and sterilization of medical devices – WHO', 'Introduction to emerging respiratory viruses including novel coronavirus', 'COVID-19 transmission during Endodontic procedure' and 'Coronavirus Disease 2019 Module, by American Association for Clinical Chemistry and NEJM Knowledge' were also mentioned.

When dental students and Interns were asked whether they are keeping themselves updated about current researches, changing trends in dental practice, myths, facts related to Covid-19, 87.4% answered 'YES' and 12.6% answered 'NO'. However, when participants were asked to mention the last attended training program/ course/ webinar attended on Covid-19, many of them answered NONE. Few named the courses like 'Donning and Doffing of PPE', 'Is chlorhexidine mouth wash effective against covid-19?', 'Mouth rinses with substantivity can prevent covid-19 spread and protect health care workers', 'WHO courses', 'Cynodent webinars', 'IDA covid-19 management', 'DCI webinars', 'John Hopkins University's course on Covid-19' and 'Dentoscope Academy Course on Should we get poked???Let's Talk. A Look at the Covid vaccine buffet'.

## Discussion

Due to its high infectivity, SARS-CoV-2 and the associated debilitating COVID-19 have been emerging topics since last year that have received great attention and have undergone intense investigation<sup>[6]</sup>. This survey assessed the degree of awareness of dental students and interns, as they are typically in close contact with patients when delivering oral healthcare services and it also assessed the information sources used by them regarding COVID-19.

Common modes of transmission of COVID-19 are through droplets and fomites. Transmission can occur through interpersonal contact and while sneezing, dry coughing, or even talking. Eye exposure has also been reported as a mode of transmission, with infectivity even higher than that of SARS<sup>[7]</sup>. In our study maximum students knew the modes of transmission of the virus. Similar findings were reported by Shahin et al.<sup>[4]</sup>. Umeizudike et al conducted a study in Nigerian undergraduate dental students on knowledge, perception, and attitude to COVID-19 and infection control practices. In this study majority of the participants identified respiratory droplets from coughing, sneezing, talking, touching contaminated surfaces, handshaking, saliva as modes of transmission for COVID-19<sup>[8]</sup>.

COVID-19 transmission routes are through direct contact and airborne droplets, including aerosol delivery as reported by Sezgin GP et al<sup>[9]</sup>. Most of the treatments in dentistry produce droplets and/or aerosols that can cause infection. Students, especially those with limited clinical experience, should be well aware about infectious diseases in order to protect themselves, their patients and the dental auxiliary staff<sup>[10]</sup>. The World Health Organization and Dental Council of India have issued guidelines for protection of dental personnel to prevent cross-infection. Standard measures such as disposable surgical cap, disposable surgical mask, white coat, safety glasses or face protection, use of disposable latex or nitrile gloves should be undertaken<sup>[11]</sup>. In the treatment procedures, the use of 1% hydrogen peroxide or 0.2% povidone iodine mouthwash and use of “rubber-dam” is advised. It is recommended to use hand instruments in order to prevent aerosol generation in conditions where it is not possible to use a rubber-dam<sup>[12]</sup>. The use of rubber dam results in a significant reduction in the microbial content of air turbine aerosols produced during operative procedures, thereby reducing the risk of cross-infection in the dental practice<sup>[13]</sup>. In a cross-sectional survey conducted among dentists, dental auxiliaries and students, 61.2% of participants believed that rubber dam isolation was an important measure of SARS-CoV-2 prevention<sup>[4]</sup>. It is also recommended to avoid splashing for aerosols procedures using extra traction measures such as the use of a high-traction saliva absorber or the use of an airtor with an anti-retraction valve. Strict disinfection protocol should be followed in clinics. The clinical environment should be ventilated after treatment and the areas of contact (like dental unit, reflector and light) should be disinfected<sup>[14]</sup>.

In the present study dental students and interns were cognizant of the incubation period and criteria for initial screening. They were also aware of preventive measures in dental clinic to avoid transmission of COVID-19 like PPE, N95 mask, pre-procedural mouth rinse, use of extra-oral radiographs when possible, disinfection and fumigation. Most of the participants knew

importance of rubber dam, high volume saliva ejector and 0.2% povidone iodine mouth rinse. Some participants (78.2%) were aware and a few (21.8%) were unaware of the protocol and sequence for PPE donning and doffing. These results indicate that there is a need for creating awareness in about 40% of dental students and interns. They ought to be well versed about all the precautionary measures in handling patients in order to protect themselves, their patients and therefore the environment. Kanaparthi et al conducted a survey among dental practitioners of Telangana state, India which showed that 51.2% of the participants were conscious of the protocol for PPE donning and doffing<sup>[15]</sup>.

In our study majority of the participants had used social media as their first and current source of data about COVID-19. This shows that the main source of data was social media. During a study conducted in North-Central Nigeria majority (55.7%) of participants had also used social media as the primary source of data<sup>[1]</sup>. Social media platforms provide direct access to an unprecedented amount of content, and may have questionable information. The COVID-19 pandemic has resulted in an avalanche of data, much of it is false or misleading<sup>[16]</sup>. Social media posts with misleading or dangerous opinions and analyses are often amplified by celebrities and social media influencers. Misinformation associated with COVID-19 have created ample of confusion amongst the overall public, which affected their day-to-day routines<sup>[17]</sup>. Medical and dental professionals were no exception to this. The rapid flow and changes in information substantial amount of confusion amongst them too. Healthcare providers in fear of infection with this virus had stopped providing dental services. Even people were afraid to exit their homes even when affected by very serious health issues. Social Media Platforms like WhatsApp, Twitter, YouTube, Facebook, Instagram, etc. were seen spreading fake news associated with coronavirus intentionally or unintentionally. In such situations even the mass media did not surprise us by being a hub of spreading infodemics associated with COVID-19 as reported by Sharma P et al<sup>[18]</sup>. Hence, during this situation, the government should take

an initiative in clarifying people's confusion. And there should be one platform where both the healthcare providers and therefore the general public could gain knowledge associated with COVID-19, thus limiting confusion amongst them.

Also the dental students and interns should refrain from referring to social media platforms for updating themselves. They must refer scientific articles, WHO/ Indian Dental Association (IDA) websites, Government websites for information regarding COVID-19. During the pandemic dental students are losing touch with their professors and counting on only social media platforms. Professors should be encouraged to take self-initiative and conduct online lectures, seminars, webinars on COVID-19 prevention and educate their students with relevant information. Kashid et al conducted a questionnaire based cross-sectional study on awareness of COVID-19 amongst undergraduate dental students in India which showed that 70.5% of participants were conscious of short training courses on COVID-19 and 44.5% had completed training courses on COVID-19 <sup>[19]</sup>. Dental students and interns should upgrade themselves with new information regarding COVID-19 by attending webinars, lectures, seminars and short training courses. This will not only help in upgrading themselves with new information but will also help to prevent spread of false/fake information in the society.

Technology can largely be used to our aid in pandemic times. Tele-dentistry can be used in identifying dental problems and catering to patients when appointments cannot be postponed. Tele-dentistry can be used to monitor actual oral hygiene behaviours, creating effective feedback systems to support oral health. Moreover, learning from authentic content available on internet like WHO infection control protocol for dental personnel, Dental Council of India (DCI) advisories and lecture series is the way ahead. The roadmap for dental clinical protocol crafted by centralised dental council needs to be adhered to while treating patients. <sup>[20]</sup>.

The study helped us to understand whether the dental students are up to date with the recent and authentic information of protocols for clinical procedures in dental settings. Dental students should be well updated with the trends in clinical practice with reliable information sources. This will help in curbing the transmission of the virus among auxiliary staff and patients, thus breaking the Covid 19 chain.

## Conclusion

Dental undergraduate students were aware of the general information about the spread of COVID-19. However, students were unaware of the clinical protocol and precautionary measures to prevent transmission while delivering dental services to patients effectively. This can be made possible by conducting lectures, seminars, webinars by their respective colleges on COVID-19 and ensuring active participation of the dental students and interns.

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## Conflicts of Interest

There are no conflicts of interest.

## Geolocation information

Navi Mumbai, Maharashtra, India

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Table 1: Responses of participants regarding Information of the novel Corona virus

	Questions	Aware (Correct Response)	Unaware (Incorrect Response)
1	Modes of transmission of COVID-19	93.2%	6.8%
2	The incubation period for COVID-19	93.5%	6.5%
3	Which of the following is NOT a preventive step in transmission of COVID-19?	14.4%	85.6%
4	Initial screening of patient should include?	96.2%	3.8%
5	What preventive measures should be taken to avoid transmission?	97.1 %	2.9%
6	Are rubber dam and high volume saliva ejectors helpful in minimizing aerosol?	52.4%	47.6%
7	Ideal concentration of alcohol based hand rub/sanitizer for hand hygiene in dental setting is:	52.6%	47.4%
8	Are you aware of the protocol for PPE donning and doffing?	78.2%	21.8%

Table 2: Response of participants regarding Awareness of Information Sources

		Positive Response s (Yes)	Negative Responses (No)
1.	Are you aware of short training courses on Covid-19?	47.9%	52.1%
2.	Have you completed any such training courses on Covid-19?	17.9%	82.1%
3.	Are you keeping yourself updated about current researches, changing trends in dental practice, myths, facts related to Covid-19?	87.4%	12.6%

Table 3: Difference in the level of knowledge about novel Coronavirus among study participants depending on gender, year in college and information sources

Characteristics	% Inadequate Level of Knowledge 80.3% N=273	% adequate Level of Knowledge (Sufficiently aware) 19.7% N=67	Total % (N)	Pearson Chi square value (X <sup>2</sup> )	Significance P-value
Gender - Male - Female	13.3 (46) 67.0 (224)	3.9 (13) 15.8 (52)	17.2 (59) 82.8 (276)	0.317	0.573
Studying as: -Undergraduate students (third & final year) - Interns	59.1 (201) 21.2 (72)	9.7 (33) 10.0 (34)	68.8 (234) 31.2 (106)	14.894	0.000*
Information Sources: -Inappropriate sources <sup>#</sup> -Appropriate Sources <sup>##</sup>	60.3 (205) 20.0 (68)	8.8 (30) 10.9 (37)	69.1 (235) 30.9 (105)	23.163	0.000*
Total	100 (340)				

Test applied: Chi square test

# Television, Newspapers, Social media, friends & family were considered inappropriate information sources

## Government websites, college professors, Scientific articles were considered appropriate information sources

\*statistically significant results

Figure 1: Responses (%) for correct sequence of donning PPE (out of 340)





Figure 2: Responses (%) for correct sequence of doffing PPE (out of 340)

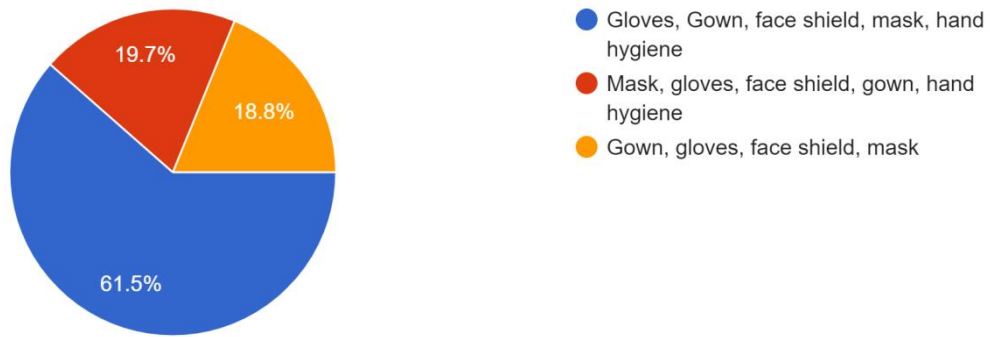


Figure 3: Responses (%) for First sources of information about Covid-19 (out of 340)

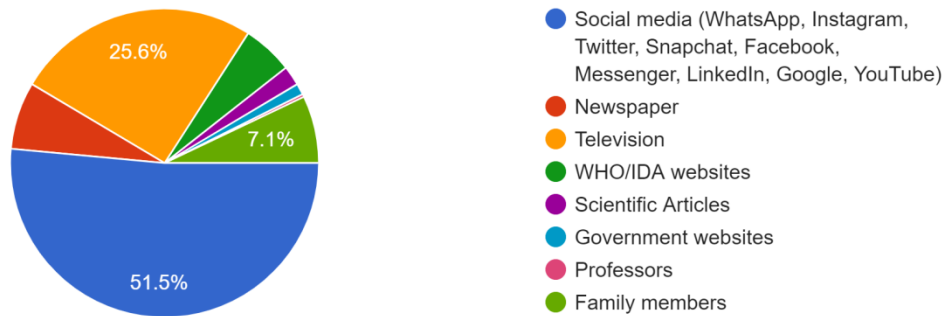


Figure 4: Responses (%) for Current source of information about Covid-19 (out of 340)

