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Covid-19 Awareness and Prevention among Dentists & Dental Students: A Questionnaire Based Survey

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Abstract:
Background: *In the event of an outbreak, the dentist can be the first person to come in contact with an infected person; they can either become a carrier unknowingly and infect others or by following proper guidelines can prevent the possible spread of the disease and save the entire community from its disastrous consequences. The aim of this study is to assess the awareness of COVID-19 disease and prevention methods among dentists and dental students.*
Materials and methods: *An online questionnaire was distributed among dentists and dental students on COVID-19 awareness and prevention. The questionnaire was divided into 4 sections: the 1st section contained an informed consent form, the 2nd, 3rd, 4th sections had the demographic details (9 questions), COVID 19 awareness (10 questions), Prevention of Covid-19 (4 questions). Data was analysed with frequency distribution and descriptive statistics also Chi square test was performed for all the groups and subgroups.*
Results: *A total of 316 responders completed the questionnaire based survey on COVID-19 awareness and prevention among dentists and dental students.*
Conclusion: *The dentists were found to have good knowledge and practice scores, which is important to combat COVID-19. They are advised to follow the Centers of Disease Control and Prevention (CDC) and World Health Organization (WHO) guidelines in their clinics, and sensitize their staff so that no stone is left unturned in defeating this pandemic.*
Key word: Covid-19, Awareness, Prevention ,Dentists, Dental Students, Survey, Questionnaire based study, Pandemic

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I. Introduction:

The novel coronavirus belongs to a family of single-stranded RNA viruses known as Coronaviridae [1]. This family of viruses are known to be zoonotic or transmitted from animals to humans [2]. As the published genome sequence for this novel coronavirus has a close resemblance with other beta-coronaviruses such as SARS-CoV and MERS-CoV, the Coronavirus Study Group of the International Committee on Taxonomy of Viruses has given it the scientific name SARS-CoV-2, even though it is popularly called the COVID-19 virus[1,2] In December 2019, the 2019 novel coronavirus disease (COVID-19) caused by novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in China, followed by a rapid spread all over the world. On March 11, 2020, the World Health Organization (WHO) raised its pandemic alert. As of March 2021, COVID-19 had caused over 122,992,844 confirmed cases and 2,711,071 deaths in 189 countries and overseas territories or communities [3].A large number of medical staff was reported to have acquired the disease while working with infected individuals. The dental clinic is not an exception for a similar possibility of transmitting and acquiring the infection between staff or individuals; moreover, the dental clinic could be a riskier environment for spreading the virus because of the close contact with patients and the nature of the dental treatment[4].

Aerosols are defined as liquid or solid particles suspended in the air by humans, animals, instruments, or machines. Bio-aerosols are aerosols consisting of particles of any kind of organism [1,2]. Aerosols, which are responsible for the transmission of airborne micro-organisms by air, consist of small particles named droplet nuclei (1–5μm) or droplets (>5μm). Droplet nuclei can stay airborne for hours, transport over long distances and contaminate surfaces by falling down [5]. patients infected with COVID-19, without showing symptoms, are of a great threat to dentists and other members of the dental team. Dentists, thereby, should entertain a high level of awareness and integrity to deal with the disease and be able to control and manage its spread[4]. Patients diagnosed with COVID-19 are not supposed to receive dental treatments, dental emergencies can occur, and close contact would be unavoidable. Furthermore, both the relatively prolonged incubation period of the

disease (the median incubation period was estimated to be 5.1 days, 95% CI 4.5-5.8[6] or up to 14 days for some cases [7,8] before any symptoms could even be detected) and the post infection period make it challenging for medical staff to recognize the existence of COVID-19 infections, which could increase the transmission of the disease during these lay periods. Therefore, patients infected with COVID-19, without showing symptoms, are of a great threat to dentists and other members of the dental team. Dentists, thereby, should entertain a high level of awareness and integrity to deal with the disease and be able to control and manage its spread[4].

There are practical guidelines recommended for dentists and dental staff by the Centres for Disease Control and Prevention (CDC), Dental council of India (DCI), the Indian Dental Association (IDA), and the World Health Organization to control the spread of COVID-19 . Despite the availability of prevention guidelines and recommendations on disease control, many dental practices lack the minimum requirements of infection control, which resulted from the low interest in taking the mandatory precautions. It is important to implement sound prevention measures in dental clinics and to increase the level of awareness among dentists to improve their prevention. Hence, this study aimed to assess the level of awareness and prevention of COVID-19 and infection control among Indian dentists[4].

II. Materials And Methods:

This was a questionnaire-based survey adapted from current interim guidelines and information for dentists provided by the US Centres for Disease Control and Prevention (CDC), WHO, IDA and DCI [9–11]. We performed a cross-sectional survey of a random sample of respondents from dental fraternity. This survey was conducted in APRIL 2020. An online questionnaire using Google Forms was used to collect the data.

However, each participant who was randomly selected was contacted individually to make sure that they were a dentist. The questionnaires were anonymous to maintain the privacy and confidentiality of all information collected in the study. Ethical approval was obtained from the Institutional Review Board at Sathyabama institute of Science and Technology.

The questions on the survey were developed after reviewing pertinent literature and the international guidelines [9–11]. The questionnaire was designed in English and comprised of a series of questions pertaining to socio-demographic characteristics, the knowledge of dentists, and their attitudes and perception toward COVID-19 and infection control in dental clinics. The survey was a structured multiple-choice questionnaire divided into sections: The questionnaire was divided into 4 sections: the 1st one contained an informed consent form, the 2nd, 3rd, 4th sections had the demographic details (9 questions), COVID 19 Awareness (10 questions), Prevention of Covid-19(4 questions).Descriptive statistics was performed for all the groups and subgroups.

Data collection was carried out through simple random sampling method, and the distribution of responses was presented as frequency and percentages. Sub-groups were classified on the basis of gender, age (18-30 years, 31-45 years, and >45 years) and profession (undergraduate, graduate students and faculty from dental colleges and clinical practitioners). Data were tabulated in excel, and statistical analysis was performed using Epi info (version 7.2.2.6, CDC, license: public domain) software.

III. Result:

Demographic details:

This study included a total of 316 dentists and dental students. Their age ranged from 21-60 years with the maximum of 215 (68.3%) dentists in the age group of 21-30 years. The gender distribution was predominantly female 223 (70.8%)

A total of 178 (56.5%) were undergraduate dental students, 69(21.9%) were postgraduate dentists. Years of dental practice ranged from < 1 year - >15years, of which 175 (55.6%) were dental students and dentists with an experience ranging from 5-10 years were 64 (20.3%).

A total of 233(73.9%) dentists were working in educational institutions and 100 (31.7%) were working in dental clinics. Of which majority of the dentists were attached to private sector 290(92.1%).Based on the place of work, 246 (78.1%) were working in urban and 53(16.8 %) were working in semi-urban [Table 1]

Table no 1 : shows demographic details of the participants

Variable	Dentist (n)	%
Primary source of information		
• **newspaper & television**	186	59
• **official websites -WHO, CDC, DCI, IDA, ICMR, Gov. Of India**	194	61.5
• **Internet & social media**	186	59
• **newspaper**	2	0.6
• **television**	2	0.6
• **Internet**	1	0.3
• **Social media**	1	0.3
•		

Defining "close contact"		
• **Being within 10 feet (3 meters) of a patient with COVID-19 for a prolonged time**	34	10.8
• **Being within 6 feet (2meters) of a patient with COVID-19 for a prolonged time**	131	41.5
• **Having direct contact with infectious secretions (sputum, serum, blood) from COVID-19 patient**	270	85.7
When the patient reports with severe symptoms of cough, fever, breathlessness		
• **have been in close contact with a person known to haveCOVID-19**	270	85.7
• **Currently residing in an area with on-going COVID-19**	168	53.3
• **recent travel from an area with on-going spread of COVID-19**	236	74.9
Covid-19 affecting social life		
• **Yes**	231	73.3
• **Maybe**	60	19.0
• **No**	24	7.6
Preferred method of hand hygiene for visibly soiled hands		
• **hand rub with soap and water for at-least 20 seconds**	275	87.3
• **use of alcohol-based hand sanitizer with at-least 60 %alcohol**	211	66.9
• **scrubbing hand** • **s with wet towel**	14	4.4

Awareness about the virus, Signs and symptoms, Mode of transmission:

When asked about the virus causing corona virus disease 162(50.8 %) reported as SARS-CoV2 and 135(42.3%) reported as 2019-nCoV. Most of them correctly reported Wuhan, China 313(99.3%) as the place Covid-19 was first diagnosed. The percentage of dentists who reported the different symptoms of the COVID-19 infection are shown in Table 1. Majority of the dentists reported fever, dry cough 306(97.1%) and 291(92.3%) reported shortness of breath .242(76.8%) reported sore throat as symptoms. Mode of transmission was reported as coughing and sneezing by 295(93.6%) dentists and 270 (85.7%) dentists reported hand shaking or touching surfaces such as doorknobs and tables.

Awareness of Measures for Preventing COVID-19 Transmission in Dental Clinics

The primary source of information was reported to be through official websites-WHO, CDC, IDA, ICMR, Govt. of India by 194 (61.5%) dentists and 186 (59%) of them reported that newspaper, television, internet and social media . A majority of 270 (85.7%) dentists defined "close contact" as having direct contact with infectious secretions (sputum, serum, blood) from COVID-19 patient. When the dentists were asked situations which required medical advice when the patient reports with severe symptoms of cough, fever, breathlessness to the dental clinic, 270(85.7%) dentists have answered that patients who have been in close contact with a person known to have Covid-19 required immediate medical care followed by the ones with recent travel from an area with on-going spread of Covid-19 236(74.9%).

Majority of 231(73.3%) reported that covid-19 is affecting their social life. When asked on preferred hand hygiene measure for visibly soiled hands, 275 (87.3%) dentists reported that hand rub with soap and water for about 20 seconds was sufficient whereas,211(87.3%) reported the use of alcohol based hand sanitizer with at-least 60% alcohol [Table 2].

Table no 2 :showing Awareness of Measures for Preventing COVID-19

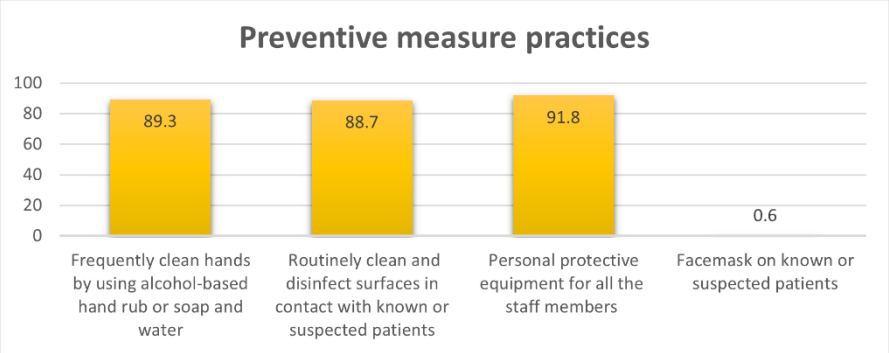
Variable	Dentist (n)	%
Age		
21-30 years	215	68.3
31-40 years	88	27.9
41-50 years	10	3.2
51-60 years	2	0.6
Gender		

Female	223	70.8
Male	92	29.2
Qualification		
Undergraduate dentist	48	15.2
Postgraduate dentist	69	21.9
Undergraduate dental student	178	56.5
Postgraduate dental student	20	6.3
Years of Dental Practice		
< 5 years	1	0.3
> 15 years	12	3.8
1-5 years	46	14.6
11-15 years	17	5.4
5-10 years	64	20.3
student	175	55.6

Awareness of Measures for Preventing COVID-19 Transmission in Dental Clinics:

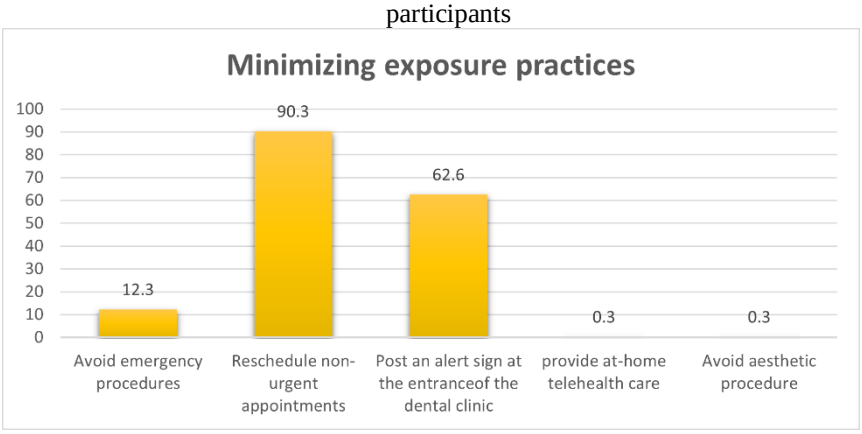
The majority of the 292(91.8%) dentists reported that wearing personal protective equipment for all the staff members is essential, and 284(89.3%) reported that cleaning hands frequently by using alcohol-based hand rub or soap and water, 282 (88.7%) routinely cleaning and disinfecting surfaces in contact with known or suspected patients can help prevent transmission from patients with known or suspected COVID-19 (Fig.1)

Figure 1 shows frequency distribution of preventive measure practices according to study participants



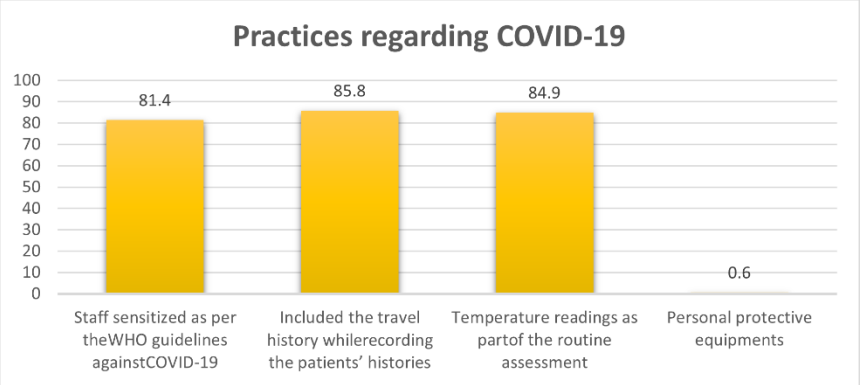
On asking about methods of minimizing exposure practices 287 (90.3%) dentists reported that rescheduling non-urgent appointments and 199 (62.6%) dentists reported that posting an alert sign at the entrance of the dental clinic is essential to minimise exposure (Fig.2).

Figure 2 shows frequency distribution of practices for minimizing exposure to Covid -19 according to study participants



On questioning about practices regarding Covid -19 273(85.8%) stated that travel history must be included while recording patient case history .While,270 (84.9%) dentists reported that temperature readings must be made mandatory in the routine assessment(Fig.3).

Figure 3 shows frequency distribution of practices regarding COVID-19



Finally 271 (86 %) dentists agreed that Dentist s role in Covid-19 awareness is very significant.

IV. Discussion

We present here a study to assess the awareness of COVID-19 disease, prevention methods among dentists and dental students with a comparison of many features among them. It is heartening to note that the knowledge with respect to COVID-19 is relatively high among the respondents. Statistical analysis was done, frequency percentage (%), cross tabulation and chi square test were used to portray the characteristics of the participant.

An online questionnaire was distributed among dentists and dental students on COVID-19 awareness, prevention and infection control among dentists. The questionnaire was divided into 4 sections: the 1st one contained an informed consent form, the 2nd, 3rd, 4th sections had the demographic details (10 questions), COVID 19 Awareness (10 questions), Prevention of Covid-19(5 questions) with a total of 25 questions. Scores were allotted for each question with a total of 35 marks. The respondents were categorised into fair (12-23), good (24-35) and poor (<12) based on the score obtained.

Majority of the respondents scored Fair (32.7%) and good (67.3%). Whereas only a hand full of respondents scored poor. The knowledge scores were correlated against the baseline characteristics of the respondents.

Females had significantly better knowledge statistically than males (P = 0.002) [4,12]. On statistical analysis ,chi square test revealed that out of 315 samples 223 were female and it was also proved that 149(66.8%) scored good and 74 (33.2%) scored fair. Whereas among male samples, 63 (68.5%) scored good and 29 (31.5%) scored fair. Females were predominant in this sample, which was similar to other studies [4,12] which explained that this might be because the number of female dentists in Jordan is higher than the number of male dentists based on the latest Jordan Dental Association statistics [13]. The p-value was calculated as 0.775 which shows that gender role is statistically insignificant.

Based on the occupation, since all the samples were dentists and dental students, cross tabulation was done based on their educational qualification, in which 81.2% postgraduate dentists scored good and 77.1% undergraduate dentist scored good. When asked about the experience, 93.1% dentists with experience of more than 10 years scored good compared to 57.7% dental students who scored good. On comparing the workplace based on clinic, educational institution, and hospital, 57.1% working in educational institutions scored fair. Sufficient knowledge was significantly correlated with dentists attached to the government and private sector. On performing chi square test, p-value was obtained as 0.417 which shows statistical insignificant.

In a changing world, both healthcare professionals and the general public need to have reliable and accurate sources of information. The questions were framed using information from the World Health Organization (WHO), Up To Date, Indian Council of Medical Research (ICMR), Centre for Disease Control (CDC), National Institute of Health (NIH) NIH, and website resources. On questioning about the main source of information for the dentists, a majority of 60.6% claimed that various official websites such as WHO, ICMR, CDC, DCI, IDA, Govt. Of India for reliable information, this is an indicator of their faith in health organizations across the world. At the time that the survey was conducted, online webinars via zoom or other applications were just beginning in India to educate clinicians searching for answers. This is not reflected in our current study due to many of the responses being filled before the same or the respondents not being part of these audiences. Social media at 58.7% is the least source for the respondents. Since social media is prone to fake news, it is heartening that dentists and dental students are not learning much from it. [14]

V. **Conclusion**:

The COVID-19 pandemic has affected the world in various ways. The deficiency of information, the need for accurate information, and the rapidity of its dissemination are important, as this pandemic requires the cooperation of entire populations. The rapid survey that we conducted had a good response and we show that dentists and dental students were quite well informed about the coronavirus. They are aware of the measures needed to be taken to reduce the spread of the disease. The knowledge present allows the authors to speculate that the lockdown in India would be effective. The public receives a large amount of information from official websites like WHO, ICMR, DCI, IDA, and the medical fraternity and government need to develop strategies to ensure that accurate information needs to spread in these forums. The awareness is quite high and it is important that the knowledge of communication channels be known and be kept at the topmost priority throughout the pandemic.

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