



DENTISTS PERCEPTION ON CLINICAL PRACTICE AND OBSERVANCE OF STANDARD OPERATING PROTOCOLS AFTER COVID 19 PANDEMIC

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ABSTRACT The Covid-19 pandemic has posed significant challenges for dentists worldwide. Treatment provision in dental clinics was suspended due to their potential as sites of cross contamination for patients. Furthermore, dentists, as members of the medical community, had to restructure their clinical practice and adhere to new guidelines and recommendations to mitigate the spread of diseases. Councils and regulatory agencies have suggested different procedures for the treatment and management of patients during the COVID-19 pandemic. It is essential for dentists to comprehend, execute, and adhere to stringent operational guidelines in order to prevent the transmission of infection within healthcare facilities. Despite the introduction of vaccinations and effective infection control measures, do dentists still adhere to standard operating standards in their practice?. Thus the objective of the survey was to evaluate dentists' view and adherence to standard standards in clinical practice following the Covid-19 epidemic.

KEYWORDS :

INTRODUCTION

The spread of Covid 19 has affected every aspect of lives (1). SARS-CoV2, also known as Covid 19, belongs to the coronavirus taxonomic group of single-stranded RNA viruses. This taxonomy of viruses includes the Severe acute respiratory syndrome - coronavirus (SARS-CoV) and Middle Eastern respiratory syndrome - coronavirus (MERS-CoV), which appear to have a similar genome sequence to SARS-CoV2, establishing them as cross-species viral-mediated diseases(2). Although the symptoms of Covid 19 are analogous with those of MERS-CoV and SARS-CoV, it appears that Covid 19 is more contagious than the others(3). The World Health Organization (WHO) has issued a public health emergency declaration for the disease and has suggested a number of preventative and management strategies(4). However, the disease's quick transmission and the type of response it elicits had created a significant problem for health care workers worldwide. Given the widespread transmission of the virus among health care providers, Dentists are more vulnerable to acquire covid 19 disease and can emerge as possible carriers. Reasons include prolonged proximity to the patient and exposure to aerosols produced during oral care procedures. Furthermore, owing to the nature of the dental setting, it is difficult to rule out an increased risk of nosocomial or cross-infection(5).

Direct transmission from the droplets of an infected person, direct transmission through the mucous membranes of the eye, mouth and nose, and indirect transmission through contaminated surfaces are the major modes of virus transmission in a dental setting(6). As mentioned previously, the transmission of airborne pathogens following aerosol-generating procedures cannot be ruled out(7). Fever, cough, sore throat, dyspnea, myalgia, and fatigue are the most prevalent symptoms of the infection(8). Other less common symptoms include a diminished sense of smell and taste, nausea, and diarrhoea. The severe form of the infection exhibits pneumonia or acute respiratory distress syndrome-like symptoms(9,10). In addition, mild flu-like symptoms or seasonal allergy-like symptoms may be present. Apart from this, the infection's asymptomatic nature can also result in undiagnosed cases(11).

To prevent the spread of infection, successful testing, effective contact tracing, treatments, and vaccination programmes have been implemented. However, given the nature of the profession, the fear of contracting the infection and transmitting it to others in a dental setting is still a significant concern. Thus, the focus of this survey was to evaluate dental professionals' knowledge and perceptions of standard

operating protocols of clinical practise following the pandemic.

MATERIALS AND METHODS

The questionnaire was distributed to dentists in southern Indian states via email and social media, and the number of respondents from the four southern Indian states was 200. The questionnaire comprised a total of 12 closed-ended questions, which were organised into three sections. The first section gathered general information, the second section focused on the dentist's knowledge and perception of covid 19 disease, and the third section highlighted the dentist's current protocols and recommendations. The questions were formulated and shared to the experts for review and approval. Based on the validation, an inter-class correlation was calculated using Cronbach's alpha.

Data analysis was carried out with SPSS version 12. Calculated descriptive statistics include frequency and percentage. Dentists' titles, ages, practise settings, and years of experience were displayed using graphs like pie charts and bar charts.

Data Processing and Data Analysis

Data analysis was carried out using SPSS version 28. For categorical data, descriptive statistics were computed, including frequency and percentage. The statistical methods employed were Chi-square test and Fisher exact test to determine the association between demographic attributes and perceptions of risk regarding SARS-CoV-2. and disinfection protocol for the dental operatory after each appointment following the Covid-19 outbreak. Both simple and multiple logistic regression techniques were implemented in order to determine the association between demographic characteristics along with implementation for workplace controls in clinical practice during Covid-19 outbreak to reduce the aerosol inside the operatory. Odds ratio and its 95% confidence interval were calculated. Level of significance was set at 0.05.

RESULTS

A total of 200 participants answered our survey. Table 1 outlines the demographic attributes of the participants. 28.1% of our participants were general practitioners while 27.6% were specialists, and 33.7% were academicians and practitioners. [Table 1]

Among the participants, 49.2% considered themselves as very high risk for having SARS-CoV-2 while 35.7 considered as high risk and 15.1% considered as moderate risk. 46.5% of the participants used Grade II PPE for non-aerosol-generating clinical procedures while

24.2% used Grade III. 81.7% of the respondents implemented workplace controls in clinical practice during Covid-19 outbreak to reduce the aerosol inside the operatory, and 96.4% of them performed disinfection protocol for the dental operatory after each appointment following the Covid-19 outbreak. [Table 2]

Table 3 shows age, years of experience, area of practice, designation were not significantly associated with risk perception of SARS-CoV-2. Moreover, there were no significant association between age, years of experience, area of practice, designation and performing disinfection protocol for the dental operatory after each appointment following the Covid-19 outbreak. [Table 3, Table 4]

In simple logistic regression, years of experience and designation were significantly associated with implementation of workplace controls in clinical practice during Covid-19 outbreak to reduce the aerosol inside the operatory. The participants who had 6-10 years of experience were more likely to implement workplace controls in clinical practice during outbreak than those who had less than 5 years (OR=4.02; 95% CI 1.21 to 13.34; P=0.023). Furthermore, academician & postgraduate students were more likely to implement workplace controls than general practitioners (OR=3.28; 95% CI 1.27 to 8.48; P=0.014). However, multiple logistic regression analysis shows these variables were not significant after adjusting other covariates in the model. [Table 5]

Table 1: Demographic Attributes Of The Respondents (n = 200)

Variable	N (%)
Age (years)	
21 – 30	52 (26.4)
31 – 40	101 (51.3)
41 – 50	39 (19.8)
51 – 60	3 (1.5)
61 – 70	2 (1.0)
Years of experience	
≤ 5	54 (27.4)
6 – 10	56 (28.4)
11 – 15	38 (19.3)
16 – 20	33 (16.8)
> 20	16 (8.1)
Where is your practice based?	
Urban	140 (71.4)
Semi-urban	49 (25.0)
Rural	7 (3.6)
Designation	
General practitioner	56 (28.1)
Specialist	55 (27.6)
Academician & practitioner	67 (33.7)
Academician & researcher	17 (8.5)
Postgraduate student	4 (2.0)

Table 2: Factors Influencing Dentists' Decisions And Professional Attitudes Among Dentist

Variable	N (%)
As dental professionals, do you continue to consider yourself at risk for developing SARS-CoV-2?	
Low risk	0 (0.0)
Moderate risk	30 (15.1)
High risk	71 (35.7)
Very high risk	98 (49.2)
What Pre-Procedural mouth rinse do you use in your clinical practice?	
0.12% Chlorhexidine	53 (26.8)
0.2% Povidone iodine	125 (63.1)
0.5% - 1% Hydrogen peroxide	11 (5.6)
Chlorine dioxide	2 (1.0)
None	7 (3.5)
What are the personal protective equipment protocols undertaken for non-aerosol-generating clinical procedures following the outbreak?	
Face shield/ Eye shields & FFP3/ N99 respirators, Surgical latex gloves	20 (10.1)
Grade I	38 (19.2)

Grade II	92 (46.5)
Grade III	48 (24.2)
Implementation of workplace controls in clinical practice during Covid-19 outbreak to reduce the aerosol inside the operatory (n = 191)	
Yes	156 (81.7)
None	35 (18.3)
What type of workplace controls did you implement in your clinical practice during the Covid-19 outbreak to reduce the aerosol inside the operatory?a (n = 191)	
Exhaust fans	93 (48.7)
Hepa filter / Air purifiers	74 (38.7)
Negative pressure operatory rooms	16 (8.4)
Ultraviolet irradiation	75 (39.3)
None	35 (18.3)
Disinfection protocol for the dental operatory after each appointment following the Covid-19 outbreak (n=195)	
Yes	188 (96.4)
None	7 (3.6)
How has the disinfection protocol for the dental operatory changed after each appointment following the Covid-19 outbreak?a (n=195)	
I perform chlorine dioxide fumigation	4
I use Chlorine dioxide tablet (Chloritab)	1
I perform formaldehyde fumigation	38
I perform hydrogen peroxide fumigation	27
I use ozone devices	2
I use ultraviolet devices	53
I perform surface disinfection using 0.1% sodium hypochlorite	128
I use disinfectant solutions like Lysol	1
I use surfacecept surface disinfectants quaternary ammonium compound	1
I perform surface disinfection using 2% glutaraldehyde	1
None	7
In the current situation, how do you plan dental treatment for a patient who has recovered from Covid 19? (n=198)	
Reschedule/delay the treatment by providing medications	32 (16.2)
Follow standard protocols and treat the patient	98 (49.5)
Plan the treatment based on the dental emergency	59 (29.8)
After 28 days of recovery start treating	1 (0.5)
Treatment based on antibodies testing	1 (0.5)
Will treat after 6 weeks of covid recovery	1 (0.5)
Don't treat the patient	3 (1.5)
I don't know	3 (1.5)

*Multiple answer

Table 3: Perception Of Risk In Relation To Demographic Characteristics Of SARS-CoV-2

Variable	Perception of risk SARS-CoV-2				X2	P
	N (%)					
	Low	Moderate	High	Very high		
Age (years)						
21 – 30	0 (0)	7 (13.5)	20 (38.5)	25 (48.1)	0.922	0.925a
31 – 40	0 (0)	17 (16.8)	35 (34.7)	49 (48.5)		
>40	0 (0)	6 (13.6)	14 (31.8)	24 (54.5)		
Years of experience						
≤ 5	0 (0)	5 (9.4)	20 (37.7)	28 (52.8)	3.210	0.788a
6 – 10	0 (0)	10 (17.9)	19 (33.9)	27 (48.2)		
11 – 15	0 (0)	8 (21.1)	14 (36.8)	16 (42.1)		
>15	0 (0)	7 (14.3)	16 (32.7)	26 (53.1)		
Where is your practice based?						
Urban	0 (0)	23 (16.4)	49 (35.0)	68 (48.6)	0.491	0.805a

Semi-urban & Rural	0 (0)	7 (12.7)	19 (34.5)	29 (52.7)		
Designation						
General practitioner	0 (0)	7 (12.5)	23 (41.1)	26 (46.4)	7.418	0.116a
Specialist	0 (0)	4 (7.30)	23 (41.8)	28 (50.9)		
Academician & Postgraduate student	0 (0)	19 (21.6)	25 (28.4)	44 (50.0)		

^aChi-square test

Table 4: Association Between Demographic Characteristics And Disinfection Protocol For The Dental Operatory After Each Appointment Following The Covid-19 Outbreak

Variable	Disinfection after each appointment N (%)		X2	P
	Yes	No		
Age (years)				
21 – 30	48 (96.0)	2 (4.0)	-	0.788b
31 – 40	92 (95.8)	4 (4.2)		
>40	43 (97.7)	1 (2.3)		
Years of experience				
≤ 5	49 (96.1)	2 (3.9)	-	0.999b
6 – 10	51 (96.2)	2 (3.8)		
11 – 15	36 (97.3)	1 (2.7)		
>15	47 (95.9)	2 (4.1)		
Where is your practice based?				
Urban	135 (97.8)	3 (2.2)	-	0.090b
Semi-urban & Rural	48 (92.3)	4 (7.7)		
Designation				
General practitioner	51 (94.4)	3 (5.6)	-	0.264b
Specialist	54 (100)	0 (0)		
Academician & Postgraduate student	80 (95.2)	4 (4.8)		

^bFisher's Exact test

Table 5: Simple And Multiple Logistic Regression Analysis Of Association Between Demographic Characteristics And Implementation Of Workplace Controls In Clinical Practice During Covid-19 Outbreak To Reduce The Aerosol Inside The Operatory

Variable	Implementation N (%)		Simple logistic regression		Multiple logistic regression	
	Yes	No	Un-adjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Age (years)						
21 – 30	37 (75.5)	12 (24.5)	Ref		Ref	
31 – 40	83 (87.4)	12 (12.6)	2.24 (0.92 – 5.46)	0.075	0.97 (0.15 – 6.18)	0.974
>40	34 (77.3)	10 (22.7)	1.10 (0.42 – 2.88)	0.842	0.69 (0.07 – 7.30)	0.760
Years of experience						
≤ 5	38 (74.5)	13 (25.5)	Ref		Ref	
6 – 10	47 (92.2)	4 (7.8)	4.02 (1.21 – 13.34)	0.023	4.13 (0.58 – 29.29)	0.155
11 – 15	32 (84.2)	6 (15.8)	1.83 (0.62 – 5.35)	0.273	2.17 (0.28 – 16.64)	0.456
>15	38 (79.2)	10 (20.8)	1.30 (0.51 – 3.33)	0.584	1.93 (0.19 – 17.35)	0.598
Where is your practice based?						
Urban	110 (81.5)	25 (18.5)	Ref		Ref	

Semi-urban & Rural	43 (81.1)	10 (18.9)	0.98 (0.43 – 2.21)	0.956	1.07 (0.44 – 2.61)	0.887
Designation						
General practitioner	40 (74.1)	14 (25.9)	Ref		Ref	
Specialist	40 (75.5)	13 (24.5)	1.08 (0.45 – 2.58)	0.868	0.87 (0.34 – 2.26)	0.776
Academician & Postgraduate student	75 (90.4)	8 (9.6)	3.28 (1.27 – 8.48)	0.014	2.59 (0.96 – 6.98)	0.060

Multiple logistic regression

Nagelkerke R2 = 11.0%

Enter method was applied.

No multicollinearity.

Hosmer Lemeshow test, P=0.303

OR=Odds ratio; 95% CI=95% confidence interval

DISCUSSION

This research assessed dentists' comprehension and attitudes about COVID 19 guidelines and Codes of practices after the pandemic. A closed-ended questionnaire was distributed to dentists in southern part of India to gather data on disease awareness and standard operating methods.

According to Singh et al's assessment of Indian dentists, knowledge and practises among dentists were 6 and 18, respectively, implying that awareness and implementation of universal precautions among Indian dentists after the Covid 19 outbreak remained inadequate[11].

The primary motivation for the dentists who continued their clinical practise throughout the epidemic was the philanthropic desire to give urgent and emergency dental care. On the contrary, concern for one's own well-being as well as those of one's immediate family members or close friends was the primary driver for dentists to stop practising medicine during the COVID-19 pandemic (12). The second reason for dentists' decisions to halt clinical practise was the belief among many respondents that dental offices lacked necessary equipment and that the PMH ought to designate specific emergency dental clinics in the event of a pandemic(13). These above reasons led to the Dentists procuring the equipments like hepa filters, negative pressure operatory, UV light etc. during Covid 19 period. However, these equipments are not of any great in the current situation.

Accordingly in our study, only 15.1% of dentist considered themselves at moderate risk for COVID 19 whereas the remaining 84.9% of participants found themselves at high to very high risk for having SARS-COV-2. This also explains why 97% of the respondents advocated some form of pre-procedural mouth rinse and 81.7% employed work place controls to reduce aerosols, in their clinical practice. Almost all respondent (96.4%) reported to follow dental operatory disinfection protocol after each patient during COVID 19 outbreak.

During an active outbreak, about 92% of practitioners preferred wearing grade-II personal protective equipments. Irrespective of the region of practice, both urban and rural practioners followed standard operatory protocol after each patient. However, compared to general practioners, academicians and post graduate doctors had better knowledge regarding personal protection and operatory disinfection regimen.

Dental Council of India (DCI) oversees and controls dental practice in India had proposed COVID-19 guidelines for academic institutions and dental clinics (14). Accordingly, There are two types of dental treatment procedures: non-Aerosol-Generating Procedures (non-AGP) and Aerosol-Generating Procedures (AGP) (15). For both the procedures, it is recommended to employ a pre-procedural mouth rinse with 0.2% povidone iodine or 1% hydrogen peroxide for one minute. DCI also recommends use UV sterilisation for at least 10 minutes in between treatments as well as overnight fumigation under UV light for the dental operatory (16). The personal protective equipment protocol suggested by DCI includes donning and doffing rooms for PPE, face shield or goggles, a triple-layer face mask over N95 respirator, FFP3 masks when treating SARS-COV positive patients, gloves (surgical), gowns (disposable) with hood and mandatory shoe covers (16).

However, there are disagreements over whether COVID-19 may spread via aerosols. Droplets from the nose and contact with another person are hypothesised to be the primary modes of interpersonal transmission for this virus. During dental procedures, a substantial amount of droplets, spatter, and particulates could be produced. The standard treatment protocol and established preventive measures are insufficient in limiting the transmission of Covid-19, especially when COVID-19 subjects are asymptomatic, in the period of incubation, or intentionally concealing their infection. (17,18).

A survey by Parvin Parvaie et al., reported that the level of satisfaction among dental patients following a dental treatment was found to be medium and that strict adherence to social distancing norms and availability of hand sanitizers at the entryway played a crucial role in influencing patient happiness during COVID-19 pandemic. To ensure that no dental emergency goes untreated during a pandemic, it is important to raise awareness on potential for infection spread during dental procedures as well as to encourage patients to use virtual resources like teledentistry for both emergency as well routine consultations during a pandemic (19). Tele-dentistry has not been widely accepted by the dental profession in the past due to limitations on reimbursement, state laws, and the belief that dental care requires in-person appointments. (20).

Even though it isn't specifically stated in the current recommendations, In order to provide dental care safely in the years following the outbreak of the COVID-19 epidemic, dentists may need to make changes to their work processes or the physical layout of their clinics, while also guaranteeing the proper utilization of personal safety equipments. (PPE) (20).

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