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ORIGINAL ARTICLE

ASSESSMENT OF DENTAL PROFESSIONALS' MAINTENANCE OF MANAGEMENT PRACTICES DEVELOPED AND INCORPORATED DURING COVID-19 PANDEMIC – A CROSS-SECTIONAL STUDY

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ABSTRACT

Background. COVID-19 pandemic has been a source of emerging public health problems for the past few years. Due to its contagious nature, health care professionals especially dentists, incorporated various modifications in their practices to prevent themselves and their patients from the risk of getting infected.

Objective. The present study aims to assess whether dental professionals are still continuing with those modifications in practice in current times.

Materials and Methods. The present study was conducted on 415 subjects after getting due approval from concerned authorities and consent from the subjects. Systematic random sampling methodology was employed for selection for study sample. The study employed a self-constructed questionnaire which was divided into 2 parts and information regarding demographic profile, practice modifications and safety protocols was gathered from subjects. Statistical analysis was conducted using Chi-square test and multiple regression analysis.

Results. Only 8.6% of subjects were currently continuing with their all previous practice modifications. A vast majority of subjects (83.8%) were not deferring treatment of patients showing suspicious symptoms. Approximately 89% of subjects were not sanitizing the operating area at the end of the working day. More than two-thirds (76.4%) of the subjects stated that the pandemic was over. Female gender (OR:1.67) and high level of education (OR:2.45) had an important effect on the continuation of practice modifications.

Conclusion. Very few subjects were adhering to all practice modifications previously incorporated. Dental professionals should not let their guard down even if COVID-19 cases have reduced considerably. The information collected will be useful for the dental community and further studies should be carried out.

Key words: *COVID-19, rules of practice, dentistry, protocols, safety, India*

INTRODUCTION

It has been more than three years since the emergence of COVID-19 on our planet, a deadly devastating disease that wreaked havoc worldwide claiming millions of lives [17]. As a result of mass vaccination programs globally and implementation of other public health safety measures, the number of COVID-19 cases have reduced considerably across the world. While the virus continues to evolve, the current circulating variants do not appear to be associated with increased severity. Therefore, the World Health Organization (WHO) has declared that COVID-19 is no longer a public health emergency of international concern (PHEIC) [12].

Health professionals, particularly dentists, perform their duties while in close proximity to the patients which exposes them to aerosols and droplets splashing out of patients' oral cavity as most of the procedures require rotary drills and ultrasonic scalers [6]. Therefore, dental professionals are at high risk of getting infected with COVID-19 and transferring

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the infection to their family members, colleagues and other patients.

A vast negative impact of the COVID-19 pandemic was observed among practicing dental professionals not only in terms of the dental supply chain, cost, and availability of dental equipment, treatment cost, and bill payments but also psychologically [16]. Studies conducted in different countries have found significant impacts of COVID-19 on dental practice with elevated stress levels, concerns, fear, and anxiety reported by dental professionals owing to increased risk of contracting infection [3, 9, 15].

All these circumstances lead to development of fear among dentists while treating their patients and subsequently majority of dental professionals incorporated modifications and followed concerned (Government Health Agencies) protocols after resumption of the practice in-between different outbreaks [1, 2]. The present study was conducted to assess whether dental professionals are still sticking to these practice modifications carried out during the pandemic in present times when the COVID-19 cases have declined significantly across the globe.

MATERIAL AND METHODS

Ethical clearance and informed consent

Ethical clearance for conducting the study was obtained from concerned authorities prior to the start of the study. In addition, the purpose and the methodology of the study were thoroughly explained to each subject, they were assured of data confidentiality/ anonymity. Informed consent was also obtained from those subjects who were willing to participate in the study.

Study population and study sample

The present study was a descriptive cross-sectional study conducted on dental professionals. The study population consisted of those dental professionals who were doing their private practice in the Tricity. List of all private dental practitioners was obtained from the Local Indian Dental Association (IDA) branches. The sample size required for the study was calculated using the following formula for sample size calculation:

$$n = \frac{Z^2_{1-(\alpha/2)} \times S^2}{d^2}$$

where:

Z is the standard normal score with 95% confidence interval (CI) (a=0.05),

S is the standard deviation of the variable,

d is maximum acceptable error (5%).

Considering potential errors and sample loss, which is not uncommon in cross-sectional studies, final sample size was estimated to be 445. In order to pick the study subjects from our sampling frame (list of all practicing dentists), a systematic random sampling methodology was used. However, incomplete questionnaires from some of the subjects were not counted and those subjects were excluded from the study. A sample of 415 subjects constituted the final sample.

Research instrument/questionnaire

The present study utilized a self-constructed questionnaire which was designed specifically for the study. The questionnaire was in English language and content of the questionnaire was verified by a specialist (Public Health and Safety). The questionnaire was pre-tested for validity and reliability. Reliability of the questionnaire was assessed using Test-Retest and the values of measured Kappa (k) were 0.84 and Weighted Kappa (k) was 0.8. The questionnaire was split into two parts. Part I was 'General section' which gathered information on socio-demographic and professional details of the subjects (gender, educational status, type of practice etc.). Part II was again divided into 2 sections: First section comprised of questions on modification of practice pertaining to patients (Section A) and second section (Section B) inquired about change assessment related to equipment, hygiene practices and personal protective measures. The questionnaire was delivered to the study subjects personally or through WhatsApp (Social Media Application). The subjects were given one week time to fill the questionnaire and return it. Responses of the subjects towards the questionnaire were analyzed accordingly.

Statistical Analysis

Calculations were done using descriptive statistical analysis. Number and percentages were used to compute results on categorical measurements. SPSS package version 21.0 (SPSS, Chicago, IL, USA) was used to statistically analyze the results. Chi-square was used to find significance between two groups. Multivariate logistic regression analysis was also performed to assess the effect of various independent variables on continuation with practice modifications. Odds ratios were also generated. The significance level was set at <0.05.

RESULTS

Socio-demographic profile of study population

The study population constituted more number of male subjects (62.6%) as compared to females (37.4%). Majority of the subjects (35.1%) were in the age-group of 36-45 years and 56.3% of the subjects

held a graduation degree in dentistry. More than 40% of the subjects had clinical experience between 5-10 years and 61.2% of the subjects were engaged only in private practice (Table 1).

Table 1. Socio-demographic profile of the study population

Socio-demographic profile		N	(%)
Gender	Male	260	62.6
	Female	155	37.4
Age (in years)	25-35	82	19.7
	36-45	146	35.1
	46-55	102	24.5
	55 & above	85	20.4
Educational status	Graduate (BDS)	234	56.3
	Postgraduate (MDS)	181	44.7
Years of experience	Up to 5	125	30.1
	5-10	176	42.4
	More than 10	114	27.5
Working profile	Private practitioner only	254	61.2
	Academic and private	161	38.8

Response to the questionnaire

Only 8.6% of subjects were currently continuing with their all practice modifications which they did during COVID-19 and 42.4% said that they were only continuing with some of the practice modifications (Figure 1a). Only 19% of subjects out of 209 (excluding those who said 'No') were making their patients sanitize their hands/use soap before entering clinic and only 11.5% were taking COVID-19 history (Table 2). A vast majority of subjects (83.8%) responded in negative when they were asked about deferring treatment of patients showing suspicious symptoms. Approximately 89% of subjects were not sanitizing the operating area at the end of the working day and less than one-third (24%) of the subjects were using only simple mouth mask while working on a patient. Conducting fumigation of the dental operatory on routine basis and autoclaving/heat sterilizing dental hand pieces and other equipment after each use were done by only 17.6% and 9.1% of subjects respectively (Table 2).

Response regarding ending of pandemic

A question was also asked from the subjects on whether the COVID-19 pandemic has ended. More than two-thirds (76.4%) of the subjects gave an affirmative response (Figure 1b). Statistically significant findings were observed when subjects' responses towards continuation of practice modifications was compared with response regarding ending of the pandemic (p=0.042).

Multiple logistic regression analysis

Multiple logistic regression analysis was done regarding impact of socio-demographic variables on continuation of practice modifications. Female gender (OR: 1.67, p=0.016), high level of education (OR: 2.45, p=0.015) and working profile as both academic and private practice (OR: 2.65, p=0.029) were the most significant contributing factors towards continuation of practice modifications in current times (Table 3).

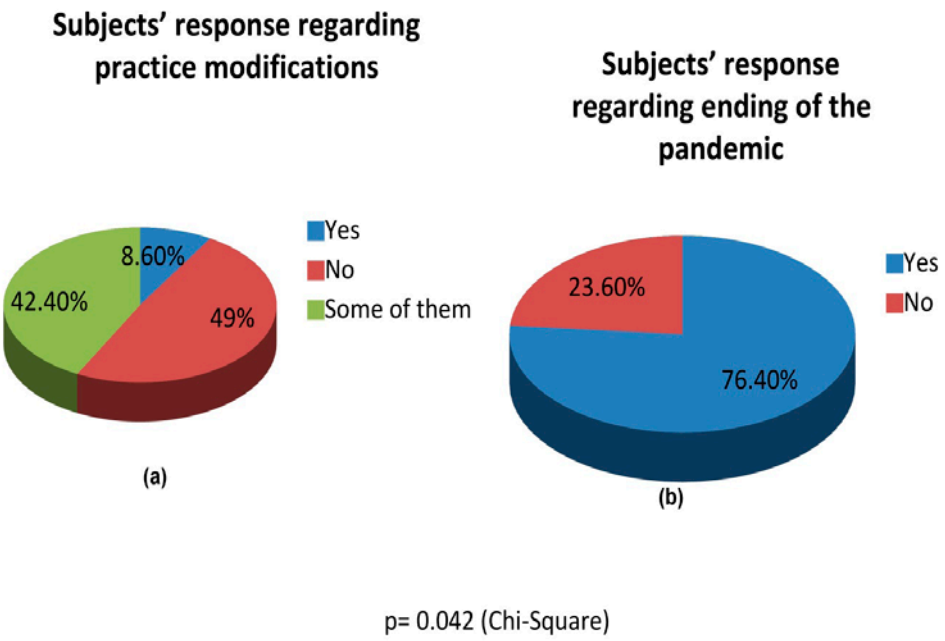

Figure 1 (a) & (b): Subjects' responses regarding continuation of practice modifications amending of the pandemic

Table 2. Responses of the subjects towards the questionnaire

No.	Questionnaire	Response (N=209)*	
Section A		Yes	No
1.	Making patients sanitize hands/use soap before entering clinic	11 (19%)	198 (81%)
2.	Doing thermal screening of all patients before entering the clinic	32 (15.2%)	177 (84.8%)
3.	Taking appropriate COVID-19 history	24 (11.5%)	185 (88.5%)
4.	Encouraging social distancing practice in the waiting area	22 (10.8%)	187 (89.2%)
5.	Making the patients wear mask at all times till the start of the treatment	44 (21%)	165 (79%)
6.	Deferring dental treatment of patients showing suspicious symptoms	34 (16.2%)	175 (83.8%)
7.	Making patient rinse with antibacterial/viral mouthwash before treatment	74 (35.5%)	135 (64.5%)
Section B			
1.	Sanitizing the operating area at the end of the working day	25 (12.2%)	184 (87.8%)
2.	Using N95 mask or a respirator while working on a patient	50 (24%)	159 (76%)
3.	Keeping air purifier in the operating area	17 (8.1%)	192 (91.9%)
4.	Cleaning and disinfecting clinic surfaces daily	132 (63.3%)	77 (36.7%)
5.	Cleaning chair's saliva ejector, water lines and spittoon daily with a disinfectant	31 (15%)	178 (85%)
6.	Conducting fumigation of the dental operatory on routine basis	37 (17.6%)	172 (82.4%)
7.	Disinfecting the lab work before sending it to dental laboratory	27 (12.9%)	182 (87.1%)
8.	Maintain adequate ventilation of the clinic and operating area	117 (56.2%)	92 (43.8%)
9.	Autoclaving/heat sterilizing dental hand pieces and equipment after use	19 (9.1%)	190 (90.9%)

*Those subjects who answered -Yes & some of them, in Figure no. 1a

Table 3. Determinants for continuing with practice modifications based on multiple logistic regression analysis

Variable	Odds Ratio	95% CI	p-value
Gender			
Male	1	Ref	0.016*
Female	1.67	0.52-2.34	
Age			
25-35	1	Ref	0.067
36-45	1.56	0.16-3.54	
46-55	1.78	0.23-2.78	
55 & above	2.67	1.45-3.56	
Educational status			
Graduate (BDS)	1.00	Ref	0.015*
Postgraduate (MDS)	2.45	0.72 - 3.21	
Years of experience			
Up to 5	1.00	Ref	0.063
5-10	2.67	1.49 – 2.89	
More than 10	1.83	0.26 - 3.67	
Working profile			
Private practitioner	1.00	Ref	0.029*
Academic & private practitioners	2.65	2.56 – 4.82	

*p≤0.05, Statistically significant

DISCUSSION

Dental practices remain a difficult environment for controlling the spread of COVID-19 as infections can be transmitted through the coughs and sneezes of infected patients. Demand for dental care is increasing rapidly as the numbers of COVID-19 cases are on decline globally. Various practice modifications (strict infection control protocols) were incorporated by dental professionals in their practices during different waves of the pandemic to prevent risk of getting infected [7]. However, during current times many dental professionals have shifted back to pre-COVID-19 practice regime because of decrease in the severity of circulating variants, relaxation of safety measures and getting vaccination. The present study is first of its kind to focus on continuation of dental practice modifications by dental professionals during current times when we are moving towards post-pandemic era.

Alcohol based hand sanitizers or use of soap with water are highly effective to inactive multiple viruses including COVID-19 [10]. Very few subjects (19%) were making their patients sanitize their hand or wash hands with soap and water before entering the clinic premises during present times in our study. Hand hygiene needs to become an integral part of our daily routine and our lives, as we live through this pandemic, and beyond, to protect us from diseases.

It is vital for dental professionals to obtain detailed medical history of patients routinely before starting with any dental treatment. Many authors suggest that triage examination (in the form of questionnaire) can be done to investigate patient's current health status and presence of risk factors for COVID-19; even though the severity of the disease is diminished in current times [8]. Treatment should be deferred in patients presenting with fever and flu like symptoms and tele-consultation can be provided in these cases [5]. However, only 11.5% of subjects were taking appropriate COVID-19 history in our study and very few subjects (16.2%) were deferring treatment in patients showing suspicious symptoms.

It is essential to sanitize the floors and other surfaces of the operating room at the end of the working day with a disinfectant to prevent cross-infection [4]. Moreover, accurate sanitizing must be carried out on all surfaces of the dental unit, especially in the spittoon area. Saliva ejector including the water lines of the dental unit should be cleaned with 0.5% hypochlorite solution as residual water may be contaminated by viruses (including COVID-19) and bacteria. Astonishingly, less than 15% of subjects were performing these procedures in their practices. Alternative procedures, such as ozone disinfectant technologies, could be considered to improve sanitizing [13].

It has been reported that both high speed and low speed dental hand pieces that are not autoclaved can be a source of cross contamination and can put patients and dentists at risk of getting infected [11]. Therefore, it is imperative to remove them from air and water lines of the dental unit, cleaned and heat-sterilized after every use. This was done by only 9.1% of the subjects in our study and can be considered as an eye-opener finding considering the fact that the pandemic is still not fully over it.

Odds of continuing with practice modifications were 2.45 times higher in postgraduates as compared to graduates in our study stressing the importance of education in Covid preventive behaviour. More than two-thirds of the subjects in our study thought that the COVID-19 pandemic is over. This could be the reason that almost 50% of the subjects in the study were not continuing with the practice modifications which they followed earlier during the course of the pandemic and the findings were statistically significant. Though WHO has declared that COVID-19 is no longer a PHEIC, it does not mean the disease is no longer a global threat [14].

The present study had some limitations also. Firstly, as the study is first of its kind, comparability of the results of the study with similar other studies was bit of a concern. Secondly, as it was a questionnaire based study so there can be possibility of social-desirability bias. Moreover, the study sample comprised of only private dental professionals as it could have taken lot of time to take permission from government health authorities. Therefore the results of the study should be interpreted with caution. Further studies employing a larger sample should be conducted to gather more valuable data for comparison.

CONCLUSION

The results of the present study indicate that almost half of the study subjects were not continuing with any dental practice modifications that they did previously during the course of COVID-19 pandemic. Very few subjects were adhering to some of the infection control and safety protocols that are essential to curtail spread of infection. COVID-19 pandemic has brought many changes in health care delivery system including dentistry and paved way for increase in sanitation and safety protocols. Owing to mass vaccination programs and adoption of safety protocols and guidelines, the number of active cases has declined significantly across the globe, but the disease is still a global threat. For this reason WHO has urged countries against letting down their guards and dismantling the systems they had already built in case the world faces similar disease outbreaks in near future. It is recommended that dentists should continue following at least some of the practice modifications (if not all) and abiding to health and safety guidelines till the pandemic is fully over.

Conflict of interest

The authors declare no conflict of interest.

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