

*Original Research Paper*

# Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak; A Cross-sectional Study among Saudi Arabia-based Dental Professionals

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**Introduction:** A number of dental practices have either modified their services according to the recommended guidelines for emergency treatment only or closed down practices for an uncertain period. **Materials and methods:** This is a cross-sectional study conducted among dental practitioners of Saudi Arabia using an online survey. 493 dental practitioners were used in this study and were contacted using social media. **Results:** 82.6% of dentists were afraid of getting infected with COVID-19 from a patient or co-worker and 60.2% wanted to close their dental practice until the number of COVID-19 cases starts declining. **Conclusion:** The overall anxiety levels of our dental professionals are high, but it does not reflect in their practice as they were keen on continuing their practice.

**Keywords:** COVID-19, Dental professionals, Practice modifications, COVID-19.

## INTRODUCTION

The recent spread of novel coronavirus disease 2019 (COVID-19) has caused a serious impact on the whole international community and triggered worldwide public health concerns. Healthcare professionals, especially dentists are at greater risk of getting infected due to potential close interaction with infected patients. As COVID-19 is transmitted primarily through sneezes, droplets, and aerosols, hence there is a high risk of spread during dental treatment procedures in dental clinics. Since the transmission is of high chance during a dental procedure, there is a vital necessity to increase studies to detect novel coronavirus disease (COVID-19) in oral fluids/saliva that is significant to improve effective strategies for prevention, especially for dental professionals (Dennis, 2020; Ather et al., 2020).

There are several suggestions and recommendations on how dental procedures can be performed with a low risk of COVID-19 transmission. During the dental treatment, all the essential dental instruments should be prepared in advance, to reduce contamination and make the process quicker. Disposable protections should be laid on working surfaces, the

dental chair, and appliances to avoid direct contamination. Dental practitioners should execute only emergency treatments and lessen as much as possible the production of droplets during the procedure. The usage of a rubber dam and surgical aspiration may limit aerosol dispersion. Handpiece use should be restricted, and if feasible, dental procedures should be done with manual instruments (Izzetti et al., 2020; Alharbi, Alharbi & Alqaidi, 2020; Ge et al., 2020).

A study done in Pakistan reported that more than two-thirds of the general dental practitioners (78%) were anxious and scared by the devastating effects of COVID-19. A large number of dentists (90%) were aware of recent changes in the treatment protocols. However, execution of amended treatment protocol was recorded as 61%. Despite having a high standard of knowledge and practice, dental practitioners around the globe are in a state of anxiety and fear while working in their respective fields due to the COVID-19 pandemic impact on humanity. A number of dental practices have either modified their services according to the recommended guidelines for

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emergency treatment only or closed down practices for an uncertain period (Ahmed et al., 2020).

Another investigation done in Iraq revealed that the documented anxiety level was higher amongst younger dentists and females. Awareness and practice levels among these dentists of safety measures and infection-control methods linked with COVID-19 (94%) were found to be high and to be statistically significantly affected by age, qualification, and designation (except GP vs. Specialist). With respect to the economic influence, about 75% of practitioners, irrespective of demographical variables, stated that their income had declined by about 50% (Mehdee et al., 2020).

In the face of the COVID-19 pandemic, new biosafety measures are necessary to reduce contagion. Dentistry is a profession that works directly with the oral cavity and is therefore very exposed to this virus or other infectious agents. Because of this, some measures need to be taken to minimize contagion. In fact, dentists can play an important role in stopping the transmission chain, assuming correct procedures in order to reduce the viral agent diffusion, or in promoting undesirable infectious disease diffusion, if operating in adherence to adequate safety protocols. Dental-care professionals must be fully aware of 2019-nCoV and other viral agent spreading modalities, how to identify patients with active infections and, most importantly, to prioritize self and patient protection (Bizzoca, Campisi & Muzio, 2020).

A Pakistan-based study reported that the dental professionals had adequate knowledge about COVID-19, but a few of them were comfortable treating patients during the pandemic. A minority of dental professionals attended a workshop/seminar on the COVID-19. Continuous education activities should be provided to dental professionals to enhance their role in the prevention of COVID-19 spread and promotion of oral health (Almas et al., 2020).

In order to reduce the risk of transmission, cases that are not urgent nor require emergency care should not be treated in the clinic. Tele dentistry can be a practical approach during the COVID-19 pandemic to reduce the number of patients visiting the dental clinic and thus restricting the visits to emergency and urgent dental care. However, the efficacy of this approach needs to be tested and documented before proper induction (Rao et al., 2020).

## AIMS OF THE STUDY

- To determine the level of fear and effect of practice modifications among dentists.
- To compare the responses on the basis of gender and the working sector.

## MATERIALS AND METHODS

### Study Design

This is a cross-sectional study conducted among the dental practitioners of Saudi Arabia using an online survey.

### Study Sample

493 dental practitioners were used in this study and were contacted using social media.

## Study Instrument

Online questionnaire was constructed consisting of questions related to personal, professional, and demographic data followed by questions related to fear, adjustment to practice modifications, and their impact.

## Instrument Validity and Reliability

A pilot study was conducted by sending the survey to 20 participants and the data will be inserted in SPSS version 22 to determine the reliability by using Chronbach's coefficient alpha (value: 0.783). Validity of the questionnaire was tested by sending it to experienced researchers in REU but no changes were made.

## Statistical Analysis

Collected data was analyzed using SPSS version 22, where descriptive as well as inferential statistics were conducted. Comparisons between groups will be made with the value of significance kept under 0.05 using the Chi-square test.

## RESULTS

A total of 493 dental professionals participated in this study, with 65.5% males and 35.5% females, 62.5% were between 20-30 years and 37.5% from 31+ years, 76.5% were general practitioners and 23.5% specialists, 60.9% worked in hospitals whereas 39.1% in clinics, 68.6% worked in the private sector and 31.4% in government (Table 1). 82.6% of dentists were afraid of getting infected with COVID-19 from a patient or co-worker, 60.2% wanted to close their dental practice until the number of COVID-19 cases starts declining, 88.2% feared that they could carry the infection from their dental practice back to their family, 89.2% were aware of the mode of transmission of COVID-19, 82.4% were deferring dental treatment of patients showing suspicious symptoms and only 44.2% had worn an N-95 mask while treating a patient in their dental practice (Table 2).

Table 3 shows the comparison of survey responses based on gender with their p-values being observed through the Chi-square test. It can be noted that majority of the comparisons were not statistically significant (p-value greater than 0.05). However, significant differences were observed when inquired about being afraid of getting quarantined if you get infected (p-value: 0.018), deferring dental treatment of patients showing suspicious symptoms (p-value: 0.007), and routinely following universal precautions of infection control for every patient (p-value: 0.002).

Table 4 shows the comparison of survey responses based on the working sector with their p-values being observed through the Chi-square test. It can be noted that majority of the comparisons were not statistically significant (p-value greater than 0.05). However, significant differences were observed when inquired about wanting to close their dental practice until the number of COVID-19 cases starts declining (p-value: 0.021), anxious about the cost of treatment if you get infected (p-value: 0.000), deferring dental treatment of patients showing suspicious symptoms (p-value: 0.010) and routinely following universal precautions of infection control for every patient (p-value: 0.016).

**Table 1** Demographics of the study sample

Demographic Variables	Frequencies 'n' (%)
Gender	Males: 318 (64.5%) Females: 175 (35.5%)
Age	20-30 years: 308 (62.5%) 31+ years: 37.5%
Designation	General practitioner: 377 (76.5%) Specialist/Consultant: 116 (23.5%)
Workplace	Hospital: 300 (60.9%) Clinic: 193 (39.1%)
Working sector	Private: 338 (68.6) Government: 155 (31.4%)

**Table 2** Frequencies of responses for the survey questions

Survey Questions	Responses (%)
Are you afraid of getting infected with COVID-19 from a patient and co-worker?	Yes: 82.6% No: 15.8% Not sure: 1.6%
Are you anxious when providing treatment to a patient who is coughing or suspected of being infected with COVID-19?	Yes: 83% No: 15.2% Not sure: 1.8%
Do you want to close your dental practice until the number of COVID-19 cases starts declining?	Yes: 60.2% No: 34.9% Not sure: 4.9%
Do you feel nervous when talking to patients in close vicinity?	Yes: 74.4% No: 24.3% Not sure: 1.2%
Do you have fear that you could carry the infection from your dental practice back to your family?	Yes: 88.2% No: 11.4% Not sure: 0.4%
Are you afraid of getting quarantined if you get infected?	Yes: 75.9% No: 23.3% Not sure: 0.8%
Are you anxious about the cost of treatment if you get infected?	Yes: 37.9% No: 60.9% Not sure: 1.2%
Do you feel afraid when you hear that people are dying because of COVID-19?	Yes: 81.9% No: 15.8% Not sure: 2.2%
Are you aware of the mode of transmission of COVID-19?	Yes: 89.2% No: 9.7% Not sure: 1.1%
Are you updated with the current CDC or WHO guidelines for cross-infection control regarding COVID-19?	Yes: 83.2% No: 15% Not sure: 1.8%
Are you currently asking every patient's travel history before performing dental treatment?	Yes: 79.5% No: 18.3% Not sure: 2.2%
Are you currently taking every patient's body temperature before performing dental treatment?	Yes: 85.6% No: 13.2% Not sure: 1.2%
Are you deferring dental treatment of patients showing suspicious symptoms?	Yes: 82.4% No: 14.6% Not sure: 3%
Do you think surgical mask is sufficient to prevent cross-infection of COVID-19?	Yes: 67.3% No: 28.4% Not sure: 4.3%
Do you think N-95 mask should be routinely worn in dental practice due to the current outbreak?	Yes: 51.7% No: 44.6% Not sure: 3.7%
Have you ever worn an N-95 mask while treating a patient in your dental practice?	Yes: 44.2% No: 52.5% Not sure: 3.2%
Do you routinely follow universal precautions of infection control for every patient?	Yes: 78.5% No: 19.1% Not sure: 2.4%
Do you use rubber dam isolation for every patient?	Yes: 50.9% No: 46.9%

	Not sure: 2.2%
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**Table 3** Cross-tabulation of gender with survey questions with p-values

Survey Questions	Males	Females	p-value
Are you afraid of getting infected with COVID-19 from a patient and co-worker?	No Statistically Significant Association		.559
Are you anxious when providing treatment to a patient who is coughing or suspected of being infected with COVID-19?	No Statistically Significant Association		.329
Do you want to close your dental practice until the number of COVID-19 cases starts declining?	No Statistically Significant Association		.128
Do you feel nervous when talking to patients in close vicinity?	No Statistically Significant Association		.331
Do you have fear that you could carry the infection from your dental practice back to your family?	No Statistically Significant Association		.383
Are you afraid of getting quarantined if you get infected?	Yes: 78% No: 22% Not sure: 0%	Yes: 73% No: 25% Not sure: 2%	.018*
Are you anxious about the cost of treatment if you get infected?	No Statistically Significant Association		.150
Do you feel afraid when you hear that people are dying because of COVID-19?	No Statistically Significant Association		.983
Are you aware of the mode of transmission of COVID-19?	No Statistically Significant Association		.195
Are you updated with the current CDC or WHO guidelines for cross-infection control regarding COVID-19?	No Statistically Significant Association		.896
Are you currently asking every patient's travel history before performing dental treatment?	No Statistically Significant Association		.965
Are you currently taking every patient's body temperature before performing dental treatment?	No Statistically Significant Association		.863
Are you deferring dental treatment of patients showing suspicious symptoms?	Yes: 84% No: 14% Not sure: 1%	Yes: 78% No: 15% Not sure: 6%	.007*
Do you think surgical mask is sufficient to prevent cross-infection of COVID-19?	No Statistically Significant Association		.402
Do you think N-95 mask should be routinely worn in dental practice due to the current outbreak?	No Statistically Significant Association		.690
Have you ever worn an N-95 mask while treating a patient in your dental practice?	No Statistically Significant Association		.422
Do you routinely follow universal precautions of infection control for every patient?	Yes: 74% No: 24% Not sure: 3%	Yes: 87% No: 11% Not sure: 2%	.002
Do you use rubber dam isolation for every patient?	No Statistically Significant Association		.702

**Table 4** Cross-tabulation of working sector with survey questions with p-values

Survey Questions	Private	Government	P-value
Are you afraid of getting infected with COVID-19 from a patient and co-worker?	No Statistically Significant Association		.062
Are you anxious when providing treatment to a patient who is coughing or suspected of being infected with COVID-19?	No Statistically Significant Association		.689
Do you want to close your dental practice until the number of COVID-19 cases starts declining?	Yes: 64% No: 32% Not sure: 4%	Yes: 52% No: 41% Not sure: 7%	.021*
Do you feel nervous when talking to patients in close vicinity?	No Statistically Significant Association		.362
Do you have fear that you could carry the infection from your dental practice back to your family?	No Statistically Significant Association		.773
Are you afraid of getting quarantined if you get infected?	No Statistically Significant Association		.058
Are you anxious about the cost of treatment if you get infected?	Yes: 44% No: 55% Not sure: 1%	Yes: 25% No: 73% Not sure: 2%	.000*
Do you feel afraid when you hear that people are dying because of COVID-19?	No Statistically Significant Association		.145
Are you aware of the mode of transmission of COVID-19?	No Statistically Significant Association		.799
Are you updated with the current CDC or WHO guidelines for cross-infection control regarding COVID-19?	No Statistically Significant Association		.253
Are you currently asking every patient's travel history before performing dental treatment?	No Statistically Significant Association		.061
Are you currently taking every patient's body temperature before performing dental treatment?	No Statistically Significant Association		.757
Are you deferring dental treatment of patients showing suspicious symptoms?	Yes: 83% No: 15% Not sure: 1%	Yes: 81% No: 13% Not sure: 6%	.010*
Do you think surgical mask is sufficient to prevent cross-infection of COVID-19?	No Statistically Significant Association		.514
Do you think N-95 mask should be routinely worn in dental practice due to the current outbreak?	No Statistically Significant Association		.692
Have you ever worn an N-95 mask while treating a patient in your dental practice?	No Statistically Significant Association		.169
Do you routinely follow universal precautions of infection control for every patient?	Yes: 76% No: 22% Not sure: 2%	Yes: 84% No: 12% Not sure: 4%	.016
Do you use rubber dam isolation for every patient?	No Statistically Significant Association		.190

## DISCUSSION

This study aimed to assess the change in practice routines of dental professionals during the pandemic of COVID-19. It can be noted from the findings that a large majority of the dental professionals were afraid of getting infected, or being anxious when providing treatment for a suspected patient, or feeling nervous being around them. However, around 60% of them were in the favour of quitting their practice until the number of cases declined, which shows that their fear is not associated with quitting their practice.

A study conducted in Italy measured the effect of COVID-19 among dentists, and found that 85% reported being worried about contracting the infection during a clinical activity. Around 61% of their participants only opted to treat emergency patients and 70% had the feeling of high concern about people passing away due to this pandemic (Consolo et al., 2020). Comparing these findings with ours, it was noted that 82.6% were afraid of getting infected with COVID-19 from a patient or a co-worker, which is slightly lower than the Italian study. 81.9% reported being concerned when they hear people dying because of this pandemic, which is higher than the Italian study. However, no information regarding treating only

emergency patients was inquired by the study participants in our study.

Another similar study done among Jordanian dentists revealed that the large majority of participants were aware of the mode of transmission, but they used the extra precautionary measures to a limited extent (Khader et al., 2020). As far as our findings were concerned, similar responses were observed as 89% of them were aware of the mode of transmission and only 44.2% had worn N-95 masks for the prevention of COVID-19.

A Turkish study also determined the change in the practice of dental practitioners, which revealed that more than 90% of dentists were concerned about themselves and their families and only 12% of the dentists wore an N95 mask (Duruk, Gumusboga & Colak, 2020). When compared these numbers with our study, 82.6% were concerned about themselves, which is lower than the Turkish study, and 44.2% wore N-95 masks which is considerably higher.

Another similar investigation done in Iraq showed that there was a statistically significant association of gender with the overall anxiety level towards COVID-19 and the working sector (p-values 0.003 and 0.046 respectively) (Mehdee et al., 2020). However, comparing this variable with gender and working sector in our study, no statistically significant association was discovered (p-value: 0.559 and 0.062 respectively).

## CONCLUSIONS

- The overall anxiety levels of our dental professionals are high, but it does not reflect in their practice as they were keen on continuing their practice.
- No significant associations were found when the findings were compared on the basis of gender and the working sector.
- There is a need to educate our dental professionals when it comes to the use of advanced protection such as N-95 masks.

## CONFLICT OF INTEREST

There is no conflict of interest among the authors for this publication.

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