

Awareness and Attitude of Dental Practitioners Towards the Covid-19 Disease

Dana Alraeesi¹, Sireen Alraeesi¹, Aziza Eldarrat^{2*}

1. Dental Department, Emirates Health Services Establishment, Dubai, UAE.

2. Aziza Eldarrat, PhD, Professor and Consultant of Restorative Dentistry-Endodontics, College of Dentistry, University of Science and Technology of Fujairah, Fujairah, UAE.

Abstract

The COVID-19 pandemic has had a significant impact on dental practices across the globe, and despite the worldwide recognition of the dangers of COVID-19, dental practitioners' awareness and attitudes toward the heightened risk for the disease in dental settings has not been fully addressed.

To assess the awareness of dental practitioners regarding the disease symptoms, transmission and incubation, and their attitude towards preventive measure use and patient treatment during the pandemic.

267 online self-administered questionnaires were sent to dental practitioners. Only completed questionnaires were used in the data analysis.

The participants were 38.0% males and 62.0% females, and most of the participants were ≥ 30 years old (88.0%). In terms of dental practice experience, 20.7% of participants had between 5-10 years and 77.2% had >10 years. A majority of the participants reported fever as a common symptom (98.9%) and respiratory droplets as the transmission mode of COVID-19 (98.9%). Infection incubation period of 1-14 days was reported by only 52.2% of participants. Female participants used surgical gowns more than male participants ($p < 0.05$). Participants working in private sectors treated elective cases more than governmental workers ($p < 0.01$)

Dental participants were found to have inadequate awareness regarding COVID-19, more knowledge and awareness needs to be spread to ensure good preparations for any future global pandemics.

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Introduction

The new coronavirus 2 (SARS-CoV-2) disease or COVID-19, as termed by the World Health Organization, spreads mainly by the direct contact with an infected person or with the contaminated droplets from the oral cavity during talking, sneezing or coughing. The research studies have confirmed the presence of COVID-19 in the infected patients' oral cavity and saliva^{1,2}. Therefore, the COVID-19 disease can be transmitted in the dental clinics through the infected patient's droplets and the aerosols of dental procedures which are contaminated with the COVID-19 contributing to nosocomial spread

³. The first dentist to test positive with COVID-19 was reported to the Wuhan University Dental Hospital's Department of Preventive Dentistry in 2020. After that, several dental professionals were found to be infected⁴. The clinical signs of COVID-19 disease often include fever and cough, while some also exhibit shortness of breath. In addition, less noticeable symptoms like, headaches, sore throat, muscle ache, disorientation, chest pain, running nose, reduced sense of smell and taste, diarrhea and nausea, have also been reported^{5,6}. Most patients who underwent chest computed tomography (CT) displayed bilateral pneumonia⁵. According to the published reports, eighty percent of these individuals only exhibit moderate symptoms that match those of the influenza and seasonal allergies, which could result in a rise in the number of misdiagnosed cases⁷. The disease takes three to seven days to incubate, however, there is evidence that the incubation period could take up to fourteen days⁸⁻¹¹. The overall

*Corresponding author:

Prof. Eldarrat A., BDS, MSc, PhD, Professor and Consultant
College of Dentistry, University of Science and Technology of
Fujairah (USTF) Fujairah, United Arab Emirates.
E-mail: aeldarat@ustf.ac.ae azizaeldarrat@yahoo.com

mortality rate in COVID-19 cases is 3.4%¹².

The diagnosis of COVID-19 can be made using a combination of epidemiologic data, such as a history of travel to or residence in an affected region fourteen days prior to symptom onset, clinical symptoms, CT imaging findings, and laboratory tests such as Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) tests on respiratory tract specimens^{11,13}. Currently insufficient data from randomized controlled studies to suggest any anti-COVID-19 medications, therefore, the treatment of COVID-19 infection based mainly on supportive care¹¹. The treatment strategy for COVID-19 infection is to limit the infection source, utilize infection prevention and control methods to reduce the risk of transmission⁹, isolation, supportive care for infected patients¹¹ and the use of the newly developed vaccines¹⁴. Dentists are most at risk of getting infections, furthermore, dental settings present a major source of cross-infection between patients and dental health care workers¹⁵. The COVID-19 outbreak has highlighted the need for research studies to assess the awareness and attitude of dental practitioners in the governmental and private sectors for the necessary implantation of extra precautions to reduce the risk of COVID-19 infection transmission. The COVID-19 pandemic has had a significant impact on dental practices across the globe, and despite the worldwide recognition of the dangers of COVID-19 infection, dental practitioners' awareness of and attitudes toward the heightened risk for diseases transmission in dental settings has not been fully addressed. Therefore, the aims of this study were to assess the awareness of dental practitioners for the risk of COVID-19 infection transmission in dental clinics, measures for preventing the infection transmission and their attitude towards treating positive patients during the COVID-19 pandemic.

Materials and methods

An online self-administered questionnaire was used in the current study to assess the main purposes of this research, after obtaining the ethical approval from the Ministry of Health and Prevention in Dubai, UAE (MOHAP/DXB-REC/SSS/No.128 /2020). Questionnaire questions were carefully selected from relevant published reports in international journals. The questionnaire questions were related to

participants' gender, age, years of practice, health care sector, awareness about the incubation period, symptoms, and mode of transmission of the COVID-19 infection. In addition to questions related to participants' awareness of measures for preventing COVID-19 transmission in dental clinics and their attitude toward treating COVID-19 positive patients. The questionnaire consisted of multiple choice questions, with some questions allowing for more than one answer. An email explaining the study purposes with the questionnaire link was sent through the Emirates Medical Association in Dubai to the association's dental members working in the governmental or private sectors. Participation in the study was entirely voluntary. A pilot study was carried out on some volunteers to assess the response of participants to the questionnaire questions before conducting the study.

Two hundred and sixty-seven questionnaires and consent forms were sent to the dental practitioners. Data were collected over a period of twelve weeks. Questionnaires with uncompleted answers were excluded and a total of ninety-three completed questionnaires were entered on an Excel spreadsheet and imported into Statistical Package for Social Sciences (SPSS) version 20 (SPSS Inc., Chicago, IL, USA) for data statistical analysis.

The data statistical analysis carried out by an expert statistician. Statistical analysis was performed by SPSS in general, while Microsoft Office Excel was used for data handling and graphical presentation. Qualitative categorical variables are described by frequencies and percentages, and the figures are presented in the Pareto format sorted from largest to smallest item to facilitate description and interpretation. Hypothesis testing for comparing independent proportions of two groups is carried out using z test. The significance level is considered at ($p < 0.05$) and highly significant at ($p < 0.01$). Two Tailed tests are assumed throughout the analysis for all statistical tests.

Results

Demographics

In the current study the participants were 35 (38.0%) male, 57 (62.0%) female, 10 (10.9%) were aged < 30 years old, and 81 (88.0%) were \geq 30 years old. The participants' practice

experience varied, with 19 (20.7%) having between 5 to 10 years and 71 (77.2%) had more than 10 years' experience. 41 (44.6%) of the participants worked in the governmental healthcare sector, an equal number of participants worked in the private healthcare sector (41, 44.6%) and 9 (9.8%) worked in teaching institutes.

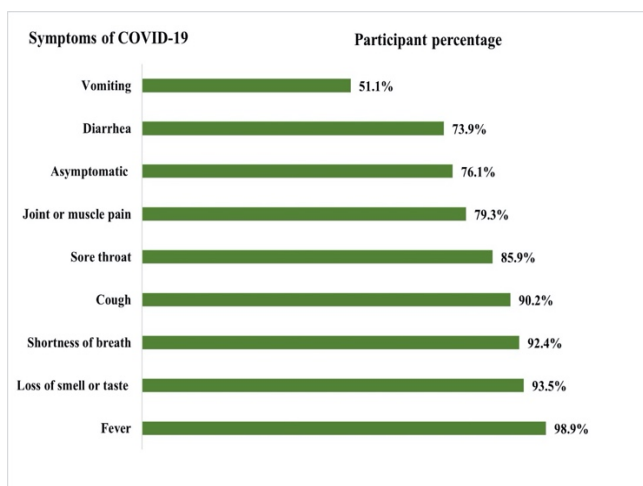


Figure 1. Participants' knowledge of COVID 19 symptoms.

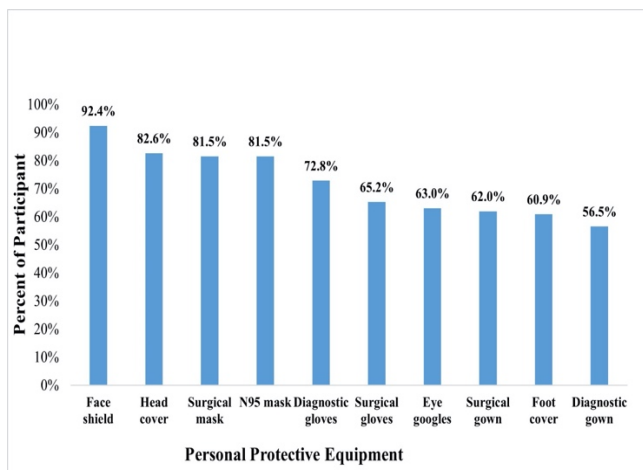


Figure 2. Participants' usage of personal protective equipment items.

Participant Knowledge

The participants' knowledge of the incubation period and the mode of transmission of COVID-19 infection is represented in Table 1. Regarding participants' knowledge about the mode of transmission of COVID-19 virus (shown in Table 1), 91 (98.9%) participants believed that the transmission occurred via respiratory droplets, 77 (83.7%) by direct contact with the infected person and 83 (90.2%) by aerosol transmission

during dental treatments. Fewer participants (21, 22.8%) chose vertical transmission (from mother to newborn). The participants' knowledge of the symptoms of COVID-19 infection is shown in Figure 1.

Incubation period (days)	Participants		Modes Transmission	Participants	
	Frequency (n)	Percentage (%)		Frequency (n)	Percentage (%)
1 to 14	48	52.2	Respiratory droplets	91	98.9
2 to 7	26	28.3	Direct contact	77	83.7
7 to 14	14	15.2	Aerosol	83	90.2
7 to 21	3	3.3	Vertical transmission (mother to newborn)	21	22.8

Table 1. Participants' knowledge of incubation period and mode of transmission of COVID 19 infection.

Attitude towards treating cases in general	Frequency (n)	Percent (%)
Elective	50	54.4
Urgency	68	73.9
Emergency	80	87.0
Attitude towards treating COVID-19 positive patients		
No treatment-refer to hospital	35	38.0
No treatment-no refer to hospital	17	18.5
Elective treatment	15	16.3
Emergency treatment only	64	69.6

Table 2. Participants' attitudes towards generally treating cases and treating COVID-19 positive patients during the pandemic.

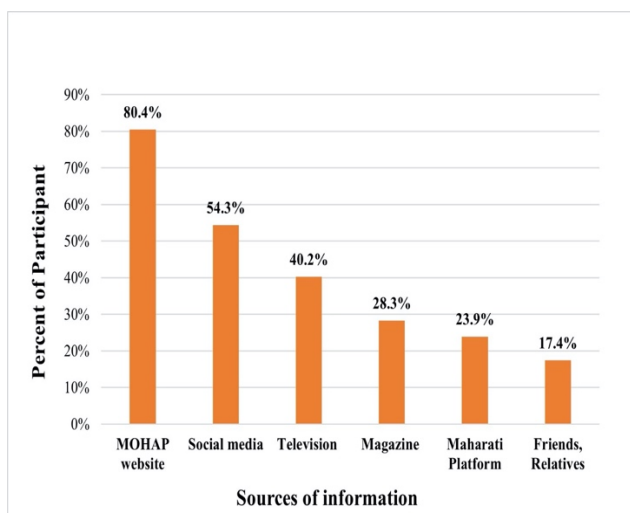


Figure 3. Participants' sources of information for COVID 19.

Participant Attitudes

Table 2 reflects the attitudes of participants toward treating patients during the pandemic. When asked about treating patients in general, participants mostly opted to treat emergent (80, 87.0%) and urgent (68, 73.9%) cases. Fifty participants (54.4%) would treat elective cases.

The participants' attitude toward treating COVID-19 infected patients during the pandemic is shown in Table 2. Most of participants (64, 69.6%) would provide emergency treatment only, 35 (38.0%) would refer to hospital without treatment while 17 (18.5%) would not treat and would not refer to a hospital. Unexpectedly, 15 (16.3%) participants reported they would provide elective treatment for COVID-19 positive patients. The participants' use of personal protective equipment as a measure of infection control in the dental setting during the COVID-19 pandemic is illustrated in Figure 2.

PPE	Gender					Years of practice				
	Male (n=35)		Female (n=57)		P value	5 to 10 years (n= 17)		>10 years (n= 73)		P value
	N*	%	N	%		N	%	N	%	
Diagnostic gloves	27	77.1%	40	70.2%	0.47	11	64.7%	55	75.3%	0.37
Surgical gloves	19	54.3%	41	71.9%	0.09	15	88.2%	43	58.9%	0.02
Surgical mask	30	85.7%	45	79.0%	0.41	15	88.2%	57	78.1%	0.34
N95 mask	25	71.4%	50	87.7%	0.05	13	76.5%	60	82.2%	0.59
Diagnostic gown	23	65.7%	29	50.9%	0.16	9	52.9%	43	58.9%	0.65
Surgical gown	17	48.6%	40	70.2%	0.03	14	82.4%	41	56.2%	0.046
Head cover	28	80.0%	48	84.2%	0.60	14	82.4%	60	82.2%	0.99
Foot cover	21	60.0%	35	61.4%	0.89	10	58.8%	44	60.3%	0.91
Eye googles	24	68.6%	34	59.7%	0.39	10	58.8%	46	63.0%	0.75
Face shield	33	94.3%	55	96.5%	0.61	17	100%	66	90.4%	0.18

Table 3[a]. Use of personal protective equipment (PPE) among male and female participants and among participants with 5 to 10 years or more (>10 years) of dental practice experience (*N: Frequency).

Type of cases treated	Years of practice				P value	Healthcare sector				
	5 to 10 years (n= 17)		>10 years (n= 73)			Government (n=41)		Private (n=41)		P value
	*N	%	N	%		N	%	N	%	
Elective	9	52.9%	40	54.8%	0.89	16	39.0%	29	70.7%	0.003
Urgency	15	88.2%	52	71.2%	0.15	31	75.6%	33	80.5%	0.59
Emergency	17	100%	61	83.6%	0.07	35	85.4%	37	90.2%	0.49

Table 3[b]. Relationship between years of practice and between healthcare sector and cases treated during the pandemic (*N: Frequency).

The participants' sources of information are shown in the Figure 3. A large proportion of the participants, 74 (80.4%), obtained their

information from the Ministry of Health and Prevention (MOHAP) website, while almost half of the participants, 50 (54.3%), gained information from social media. Participants also resorted to other sources of information: 37 (40.2%) television programs, 26 (28.3%) magazines, 22 (23.9%) Maharati platform (Maharati platform is an online platform for e-learning created by the Ministry of Health, for use by healthcare workers in the UAE) and 16 (17.4%) friends/relatives.

Statistical Relationships

The difference between male and female participants in using personal protective equipment in dental settings is shown in Table 3[a]. As seen in the table, the use of surgical gloves and N95 mask was higher among female participants than male participants. Furthermore, female participants significantly used surgical gowns more than than male participants ($p < 0.05$).

Table 3[a] also shows the relation between the number of years of dental practice experience with using personal protective equipment. Participants with 5-10 years of practice tended to use surgical gloves and surgical gowns significantly more than participants with >10 years of practice ($p < 0.05$). The relationship between years of practice and the type of cases treated during COVID-19 pandemic is shown in Table 3[b]. The proportion of participants with less years of practice (5 to 10 years) were significantly more inclined to treat emergency cases in comparison to participants with >10 years of practice ($p < 0.05$). Furthermore, Table 3[b] also illustrates the relationship between the participants' healthcare sector and the type of cases treated during the pandemic. The proportion of participants in the private sector group treating elective cases was significantly higher than the participants working government sector ($p < 0.01$).

Discussion

The COVID-19 pandemic has had a significant impact on dental practices across the globe. As a result of the new coronavirus disease, dental clinics were obligated to significantly reduce their dental treatment services and comply with government regulations to protect the health and wellbeing of patients and staff. Dental practices are a significant source of

infection transmission since most dental procedures result in aerosol and droplet production that may be infected with microorganisms¹⁵. Besides, the COVID-19 virus may remain alive and contagious in aerosols for hours and on surfaces for up to days, according to research, making the possibility of virus transmission by aerosol transmission possible¹⁶. Therefore, care must be taken to minimize the risk of infection transmission between dental professionals and patients. To be able to accomplish this, dental practitioners must be aware of how the COVID-19 virus is transmitted. This study assessed the level of awareness of the participants for COVID-19 infection incubation period, mode of transmission and symptoms. As demonstrated in Table 1 of this study, almost all participants (98.9%) believed that the transmission occurred via respiratory droplets of infected patients. In the same table, most of the participants (48, 52.2%) reported the period to be 1-14 days as the incubation period of COVID-19 infection, 26 (28.3%) participants reported 2-7 days, 14 (15.2%) reported 7-14 days and few (3, 3.3%) answered 7-21 days. The participants' knowledge of the symptoms of the COVID-19 infection is demonstrated in Figure 1. Most of the participants reported fever (91, 98.9%), loss of smell or taste (86, 93.5%), shortness of breath (85, 92.4%), and cough (83, 90.2%) as common symptoms of COVID-19 infection. Less participants selected being asymptomatic, diarrhea and vomiting as symptoms.

With the rise of the pandemic, patients seeking dental care were advised to take several specific precautions, such as initial screening to identify those with COVID-19 infection, frequent handwashing, and disinfection, wearing of medical mask, social distancing and measuring patient's temperature. Practitioners had to make inquiries concerning the patient's health status, exposure to someone with known or suspected COVID-19 symptoms, recent travel to a region with a high incidence of COVID-19, and the presence of any febrile respiratory illness symptoms like fever or cough¹⁷. If the patient's answer to any of these questions, then elective dental delay for at least 14 days is advised. Self-quarantining and referral to a primary care provider for treatment should be recommended to the patient.

Dental procedures can be carried out

when there are no contacts and/or symptoms, and as long as the preventative measures have been taken. The postponing of elective treatments, surgeries, and non-urgent visits and prioritizing emergency visits were recommended during the pandemic¹⁸. These recommendations were adopted worldwide, the majority of the participants of this study reported that they opted to treat emergent (80, 87.0%) and urgent (68, 73.9%) cases during the COVID-19 pandemic. 50 (54.4%) participants would treat elective cases (shown in Table 2).

Additionally, most participants (64, 69.6%) would provide emergency treatment only in the situation of a COVID-19 infected patient requiring dental attention, 35 (38.0%) participants would refer to hospital without treatment (Table 2). Dental practitioners were recommended to perform only emergency treatments and to reduce as much as possible the production of aerosol/droplets during the dental procedure¹⁹. In dental settings, the most critical measure for reducing the risk of cross-infection and transmitting of microorganisms is the use of personal protective equipment²⁰. This includes the use of face shields, masks, gloves, gowns, and eye goggles to protect skin and mucosa from infected blood or saliva. As respiratory droplets are the main route of COVID-19 transmission, particulate respirators (e.g., N-95 masks) are favorable for routine dental practice²¹. A recent study highlighted the risk of infection transmission related to the performance of dental procedures when handpieces and ultrasonic devices were used²². Therefore, it is advisable to minimize the operations involving the generation of aerosols and droplets in addition to use of personal protective equipment.

In this current study, Figure 2 describes the participants' use of personal protective equipment as a measure of infection control in the dental setting during the COVID-19 pandemic. As displayed in the figure, the mostly used piece of equipment was the face shield, while the least used item was the diagnostic gown. 85 (92.4%) of the participants wore face shield, 76 (82.6%) wore head covers, an equal number of participants (75, 81.5%) wore a surgical mask and N95 mask, 67 (72.8%) wore diagnostic gloves and 60 (65.2%) wore surgical gloves. Participants' use of eye goggles, surgical gown, foot cover and diagnostic gown were 58 (63.0%), 57 (62.0%), 57 (60.9%) and 52 (56.5%),

respectively.

Interestingly, in the current study, the statistical analysis showed a statistically significant difference between male and female participants in the use of surgical gown ($P < 0.05$) as shown in Table (3a). Furthermore, participants with 5-10 years of practice tended to use surgical gloves and surgical gowns significantly more than participants with >10 years of practice ($p < 0.05$) as can be seen in Table (3a). Table (3b) shows the relationship of years of practice and the type of cases treated during COVID-19 pandemic. The proportion of participants with less years of practice (5 to 10 years) were significantly more inclined to treat emergency cases in comparison to participants with >10 years of practice ($p < 0.05$). Table (3b) demonstrates the relationship between the participants' healthcare sector and the type of cases treated during the pandemic. The proportion of participants in the private sector group treating elective cases was significantly higher than the participants working in governmental sector ($p < 0.01$).

Conclusions

Dental healthcare professionals must employ strict standards for infection control in order to safeguard the general public's health. It is discovered that dental participants know little about the COVID-19 illness. Dental professionals need to be aware of any potential of illness that might intervene with their dental practice to be ready to know how best to approach it.

Declaration of Interest

The authors declare no conflict of interest.

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