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Lessons Learned from Coronavirus Disease 2019 by Tunisian Dentists

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Abstract

Objective: This survey aimed to highlight the epidemiological and psychological consequences of coronavirus disease 2019 (COVID-19) on Tunisian dentists.

Methods: This cross-sectional study was conducted in 2020 among Tunisian dentists. The epidemiological impact concerned the frequency of patients' reception before and after the pandemic and measures taken to prevent infection transmission. The psychological impact was assessed using the Generalized Anxiety Disorder (GAD) 7 test.

Results: Totally, 206 dentists participated to the survey. This study showed that 80.6% of the respondents had suspended or limited their practice to emergencies only during the lockdown of March 22, 2020. After the lockdown, the number of patients consulting each day considerably decreased. The personal protective equipment was reinforced by 93.2% of the dentists in spite of difficulties in providing them. The most felt emotions were concern (60.2%) and anxiety (50.5%). The mean GAD score was 6.86 ± 4.95. Dentists were anxious about the infection risk, their patients' economic level, and their professional future.

Conclusion: Coronavirus disease 2019 emergency has negatively impacted the Tunisian dentists.

Keywords: COVID-19, dentists, epidemiology, psychology

Introduction

At the end of 2019, a new coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was responsible for an acute respiratory syndrome named coronavirus disease 19 (COVID-19), appeared in Wuhan, China; and invaded the world in a few weeks.[1] In March 2020, the World Health Organization declared it a "public health emergency of international concern,"[2] On March 2, 2020, Tunisia declared to have recorded the first case infected with COVID-19 in a passenger returning from Italy. As of May 2021, the country has recorded 311 743 cases and 10 868 deaths.[3]

The possible transmission routes of 2019-novel coronavirus (NCOV) (SARS-CoV-2) are direct transmission by cough, sneeze, and droplet inhalation transmission and contact transmissions like contact with contaminated surfaces and oral, nasal, and eye mucous membranes. It can be transmitted directly or indirectly by saliva.[4]

Dentists have been considered among the most exposed workers to COVID-19.[5]

There are various sources of contamination in the dental setting: instrumentation, saliva and blood, respiratory secretions, and the dental operative site.[6]

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A study conducted in Switzerland and Liechtenstein confirmed that the lockdown of the countries and the preventive measures taken by governments had a negative economic effect and a significant decrease in dentists' income.[7]

Several studies showed that dental practice was negatively impacted by COVID-19 and the lockdown established all over the world. In fact, they were forced to suppress their dental care or to limit it to the emergencies.[6,9,12-14]

As for all health professionals, Tunisian dentists were aware of transmission risks and took strict precautions to maintain their activity, such as screening questionnaires, temperature measuring for each patient, regular testing of dental team members, planning daily work schedules to minimize crowding in dental offices, and using strict preventive measures to reduce the spread of aerosols. The aim of these measures was to minimize the risk of transmission from patient to staff, from staff to patient, and from patient to patient.

A national general lockdown and closure of frontiers was announced in Tunisia on March 22, 2020 and extended for several weeks. The lockdown has plunged the country into misery and precariousness while dozens of patients died from the infection. Dentists were faced with 2 major concerns during this period: the fear of infection and the fear of an uncertain and unpredictable future. Therefore, their mental health and socioeconomic position may be affected to varying degrees. Furthermore, the availability of personal protective equipment (PPE) was not always assured for all dentists, given the problems of international transport at this critical time. However, the National Council of Tunisian Dentists,

in collaboration with the Ministry of Health and several scientific associations, tried to provide this equipment to the hospitals and dentists who maintained an emergency care activity in their private dental offices.

This study aimed to describe the epidemiologic and psychological impacts of the pandemic on dentists in Tunisia.

Methods

This cross-sectional study was conducted in 2020 on Tunisian dentists using a validated questionnaire from the relevant literature.[8] The survey was sent to the dentists by personal mail and social media. A response rate equal to or higher than 90% from all the questions was accepted.

The questionnaire included epidemiological aspects of the pandemic and psychological impact.[8] The epidemiological impact included questions about the frequency of patients' reception before and after the pandemic, whether the dental practice was suspended or limited to emergencies only, and the preventive measures. The psychological impact investigated anxiety about: the risk of infection, the individual professional future, and the common economic level. Anxiety was investigated using the Generalized Anxiety Disorder 7-Item Scale.[9]

For the questions "How worried are you about contracting COVID-19 during your dental practice," "How likely is it that a patient can contract COVID-19 during a dental service," and "How worried are you for your professional future" a score between 0 and 4 was established for each response category (0 = "Not at all"; 1 = "Little"; 2 = "Quite"; 3 = "A lot"; 4 = "Extremely"). The Generalized Anxiety Disorder (GAD)-7 score[10] was calculated by assigning scores of 0, 1, 2, and 3 to the response categories of "not at all, 'several days,' 'more than half of the days', and 'nearly every day'," respectively, and adding together the scores for the 7 questions. The total score ranged from 0 to 21 with 4 classes: minimal (0 to 4 points), mild (5 to 9), moderate (10 to 14), and severe (15 to 21).

Statistical data were collected and analyzed using the Statistical Package for Social Sciences version 23.0 software (IBM Corp.; Armonk, NY, USA). Chi-square and analysis of variance tests were used. Statistical significance was set at $P < .05$.

Response to the online survey was considered as informed consent. Approval from the Ethics Committee of the University of Monastir, Faculty of Dental Medicine was obtained before the study (Approval No: 25032020, Date: March 25, 2020).

Results

Totally, 206 dentists participated. The majority of them were under 35 years old (55.3%); 40.8% were between 35 and 55. Sixty percent of them were female. This study showed that 82.5% of the dentists were practicing in a private setting, 12.6% in public hospitals, and 4.9% in university hospitals. The majority of respondents (41.3%) worked between 30 and 40 hours per week, 31.6% between 20 and 30 hours, and 14.6% worked less than 20 hours before the pandemic. The majority of dentists had treated between 6 and 15 patients before the pandemic; they treated only between 0 and 5 patients after the pandemic (Figure 1). About 80.6% of the respondents reported that they had only suspended or limited their practice to emergencies. Telephone availability was guaranteed for dental emergencies by 73.3%. Patients were informed about the reduction or suspension of dental care: in 42.2% of cases by phone, 26.2% by social networks or media, and 30.1% by both. Most of them understood why the dental practice was reduced (93.2%), and 73.3% of them concealed their previously taken appointments after the lockdown of March 22, 2020.

Most respondents (93.2%) have modified their PPE. Since the beginning of the COVID-19 pandemic, 86.9% of dentists reported difficulties finding PPE, and 69.4% reported problems in the delivery of dental materials. Most of them (63.3%) reported that they had not held training sessions on the correct use of PPE. More than half of the participants used only gloves and masks before the pandemic, 33% used gloves, masks, and protective glasses or face shields (Table 1).

Regarding the preventive measures, the highest frequency of answers concerned cleaning/disinfection," "Environment aeration," and "use of PPE" (Table 1).

The study showed that 73.3% either contracted the virus themselves or knew at least 1 person who had contracted it in their environment. Dentists were concerned about contracting COVID-19 themselves as well as their patients. About 36 % were quite concerned for themselves, while 31.1% were "quite" concerned for their patients. Almost 24% of them were concerned "a lot" for themselves and their patients (Figure 2).

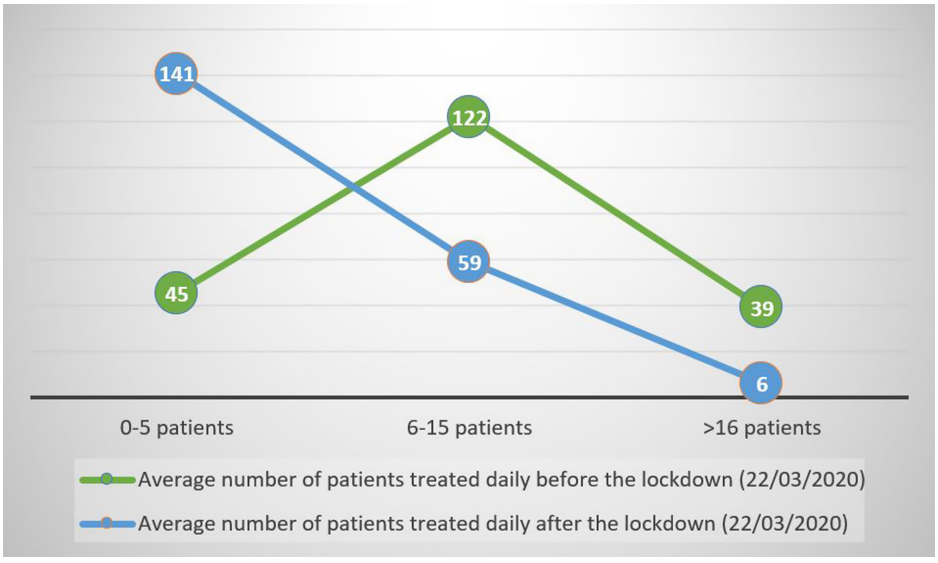

Figure 1. Comparison between the number of patients consulting each day before the pandemic and after the pandemic.

Table 1. Participants Answers About Epidemiological and Socioeconomic Impacts

Participants' Answers	%
Personal protective equipment used	
Only gloves and masks	54
Gloves, masks, and protective glasses/face shields	33
Gloves, masks, protective glasses/face shields, and disposable gowns	11
Other	
Preventive measures during the pandemic	2
Cleaning/disinfection	99
Environment aeration	94.2
Use of PPE	92.7
Disinfectant agents and surgical mask supply to all patients waiting in the waiting room	81.6
Reduction in the patients' number in the waiting room	73.3
Telephone anamnesis to identify emergencies	54.4
Suppression of the waiting room	40.3
Body temperature measurement	31.6
Reasons of concern	
Ignorance about the end of the pandemic	76.2
Impoverishment of patients	54.4
Negative evolution of the dental crisis	46.1
Aids that can help dental professionals during the COVID-19 pandemic	
Economic reliefs from the Tunisian government	66.5
Social security institutions support and subsidy	52.5
Bank account support	30.6
Economic reliefs from dental associations	27.2
Improvements resulting from the pandemic	
"No improvements"	61.7
"Slowing down of the professional rhythm is an advantage"	22.3
"Improvement in the communication with patients"	24.3
"Stabilization of the relationship with dental associations"	8.7
"Reduction of dental practices competitions"	5.3

COVID-19, coronavirus disease 2019; PPE, personal protective equipment.

When thinking about COVID-19, the most felt emotions were concern (60.2%), anxiety (50.5%), fear (16%), sadness (14.6%), and anger. The mean GAD score was 6.86 ± 4.948 out of 21, which indicated an overall mild level of general anxiety. Less than 40% (38.8%) of the respondents showed minimal anxiety, 35.9% of them showed mild anxiety, 17.5% showed moderate anxiety, and 7.8% had severe anxiety.

For 92.2% of the respondents, COVID-19 had a highly negative impact on their professional activity. It was found that 34% were quite concerned, 30.6% were a little concerned, 12.6% were concerned a lot, and 10.7% were extremely concerned about their professional future.

Varied answers were obtained from the dentists regarding their perception of the socio-economic impacts (Table 1).

In the current study, women had the higher levels of anxiety: 10% of women had severe anxiety, 23% of them had moderate anxiety, and 40% had mild anxiety, against 5%, 9%, and 30% of the men respectively with a significant statistical association ($P < .0001$).

Discussion

The present survey has shown that the pandemic has negatively impacted dental practice. Most of the participants reported that they have been forced to limit or suspend dental activity. This has also has been reported by several studies where dentists closed their dental offices,[8] or limited their practices only to emergencies.[9-11]

The dentists have a major risk of being contaminated and spreading the disease during dental procedures[12] through dental instrumentation, saliva, respiratory sources, and the operative site.[4,13,14]

During the pandemic, they tried to find different ways to contact patients. A telephone availability has been provided in 73.3% of cases in the present study and 96.6% of cases in Italy,[15] trying to defer all unnecessary treatment and to treat only emergencies until the health situation becomes under control.[16]

This study showed that the population was worried about the health conditions related to the pandemic. Not only were dentists were afraid of the situation but also patients. The majority of the participants (93.2%) reported that most of their patients understood the reason for the reduced dental activity, and 73.3% had canceled their appointments.

The participants gave great importance to the disinfection and the aeration of the environment, the reduction of patients in the waiting room, and modification of PPE use (before the pandemic, more than half of the dentists used only masks and gloves). Less importance was given to telephone anamnesis. Regarding the reduction of patients in the waiting room and the body temperature measurement, the results obtained were very similar to those obtained by the Italian study.[8]

Tunisian dentists have experienced a very hard period due to the difficulties in providing PPE and problems in the delivery of dental materials, which prevented them from applying the preventive measures properly and forced them to stop practicing for a long period of time, especially during the first months of the outbreak.[8]

The most identified emotions were concern and anxiety. The overall general anxiety level was considered mild with a mean GAD-7 score equal to 6.86. These results were consistent with those reported by the Italian survey, with a score equal to 6.56.[8] Similarly, severe anxiety was shown by 7.8% of Tunisian dentists and 8.7% of the Italian dentists.[8]

A study conducted in Germany during the COVID-19 crisis identified various psychological and mental health issues associated with the pandemic, such as generalized anxiety disorder (GAD), fear, depressive symptoms, sleep disturbances, and psychological discomfort. The research highlighted the prevalence of these issues during April, May, and early June 2020, shedding light on the challenges faced by individuals during this period.[17]

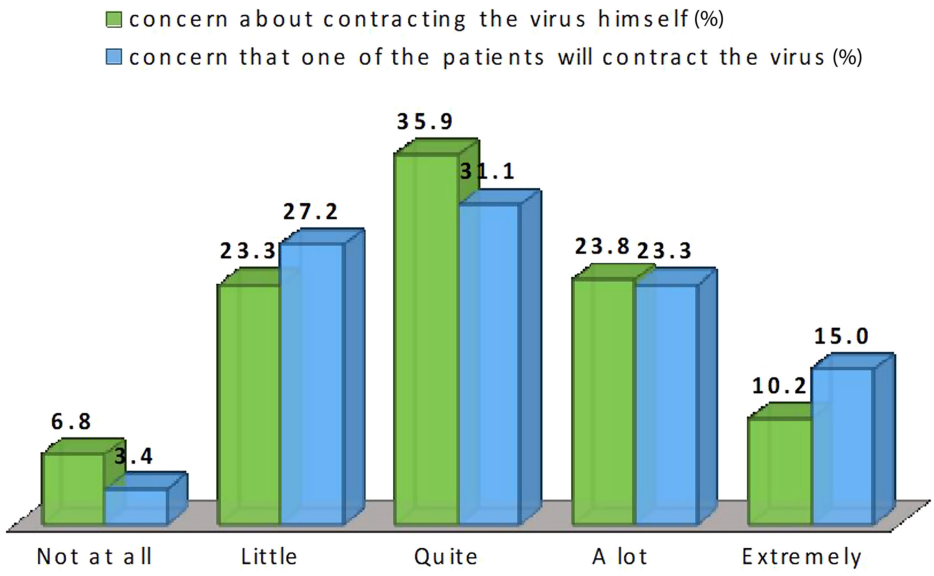

Figure 2. Dentists' concern about contracting COVID-19 and perception of the infection likelihood for patients.

Furthermore, a Chinese study examined the mental health consequences faced by Chinese dental professionals during the early stages of the pandemic. The research highlighted the significant psychological impact of COVID-19 on emergency dental care providers, emphasizing issues such as stress, anxiety, depression, and post-traumatic stress disorder (PTSD) experienced by these front-line healthcare workers.[18]

In our study, there was an association between the level of anxiety and gender. In fact, women had the highest level of anxiety. This finding is also in accordance with the literature.[22,23]

Another study conducted in Tunisia on the psychological impact on health-care professionals detected different symptoms of psychological distress in the studied population (anxiety, depression, insomnia). This anxiety has been linked to the fear of infection, the individual professional future, and the common economic level.[19]

The thought that the dentist is very vulnerable to coronavirus infection causes great stress.[20] This anxiety is increased because the dentist has an ethical and legal obligation to limit the spread of the disease, protecting himself, his family, his staff, and patients.

The COVID-19 virus has spread rapidly throughout the world with varying symptoms and mutations. Moreover, during this period (2020), there was no vaccine or approved treatment, which further increased the anxiety.[21]

A study conducted in Iran found that the availability of PPE significantly reduces stress and improves physical health and job satisfaction.[22]

Most of the participants were concerned about their professional futures. In fact, they did not know the end of the pandemic, and some of them thought that patients would have less money to spend and that the dental crisis would be worse.

The fear of being infected or being responsible for the virus emergence, the insufficient training in the use of PPE, the difficulties in providing the necessary dental equipment, and the unclear evolution of the virus; all make the dentist worried about his professional future.[23] Here we should highlight the limited Tunisian experience with pandemics and that during the period of this survey, there was little information about the disease management.[19]

Accordingly, given the high cost of protective equipment and dental materials and the need to limit the number of patients treated per day, the cost of dental treatments increases and burdens the patient. This may explain the decrease in patient flow. With the lack of a defined end date for COVID-19, individuals tend to prioritize their expenditures and save their savings for essentials, deferring nonessential dental needs for later.[7]

Participants reported that they needed economic relief from the government through support and subsidies given by social security institutions. However, they did not find support from the government because the country was facing a precarious financial and political situation that deteriorated the health-care system.[19]

This study provided an overview of the epidemiological and psychological effects of the pandemic. However, it had some limitations. As for any self-administered questionnaire, participants' responses may not reflect their real behavior or measures taken for protection. Besides, we did not investigate their real behavior before the pandemic.

This study was performed in the first year of the pandemic when vaccination had not been provided yet. The economic impacts were severe in Tunisia, particularly due to the national lockdown for long periods, and the number of infected or dead was not as important as in the next waves. The pandemic started with a significant delay compared with the European countries that had already reached the exponential phase of infection distribution.[19] Afterward, the progression of the pandemic was more serious in 2021. For instance, there was an important number of deaths among health-care professionals. However, dentists went to their offices and continued to work with PPE. Our study was conducted during the second wave, during which Tunisia presented an average of 1000 cases per day and 50 deaths. The country has experienced much more dangerous waves, with between 6 and 7 thousand new cases per day and between 100 and 200 deaths, in July 2021. It was the highest mortality rate in Africa and the Arab world. Faced with a lack of staff, reanimation beds, and oxygen, hospitals were saturated.

Longitudinal studies are needed to investigate these impacts on dentists following the outbreak's evolution.

Conclusion

The COVID-19 outbreak has negative socioeconomic and psychological impacts on Tunisian dentists. Their professional and ethical responsibility is imposed to follow new instructions and reinforce prevention measures. These new conditions have prompted them to become concerned about their health, the

health of their relatives and patients, and feared about their professional future, particularly in light of the current economic crisis.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of University of Monastir, Faculty of Dental Medicine (Approval No: 25032020, Date: March 25, 2020).

Informed Consent: Written informed consent was obtained from the participants who participated in this study.

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