

The Impact of COVID-19 Pandemic on Dental Practice in Iran: A questionnaire-based report

Hanie Ahmadi

Shiraz University of Medical Sciences <https://orcid.org/0000-0002-9694-465X>

Alireza Ebrahimi

Shiraz University of Medical Sciences

Farhad Ghorbani (✉ farhad.ghorbani714@gmail.com)

Research article

Keywords: COVID-19, Pandemic, Dentistry, Dental practice

Posted Date: August 19th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-38321/v2>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published on December 3rd, 2020. See the published version at <https://doi.org/10.1186/s12903-020-01341-x>.

Abstract

Background: The highly contagious nature of the novel coronavirus, besides the fact that dental procedures commonly generate blood and saliva droplets that are the routes of contagion lead to the closure of many dental clinics. In the present study, we aimed to evaluate the impact of coronavirus disease 2019 (COVID-19) pandemic on dental practice by conducting an online questionnaire among the Iranian dental practitioners and finding their perspectives on the subject.

Methods: This report is based on a questionnaire that was conducted among Iranian dentists. The survey included questions that evaluate the dentists' attitudes toward the COVID-19 pandemic and its effect on their personal life, financial status, and the quality of dental services for patients.

Results: Overall, 240 dentists contributed to this study (214 general dentists and 26 specialists). The majority of the participants (n=170, 70%) did not perform non-emergency procedures during the pandemic. More than half of the participants (n=156, 64%) believed that the triage of patients should be done regarding the COVID-19 symptoms. Most of the dentists (n=210, 87%) had a problem with providing personal protective equipment during the pandemic. Moreover, 97% (n=234) of the participants reported that they encountered a decrease in their financial income since the eruption of the pandemic

Conclusion: Dental health care workers are at the highest risk of contracting COVID-19. Iranian dentists executed standard protocols more cautiously during the pandemic. Besides, they preferred to lower their work hours and limit dental procedures to emergency treatments until the end of the pandemic. It is recommended that public organizations should support the dental practitioners during the pandemic.

Background

In December, 2019, an outbreak of a novel beta coronavirus disease 2019 (COVID-19) began in Wuhan, China's Hubei province. By now, the virus has spread all around the world and disrupted all aspects of human life. The symptoms of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are similar to the previously known coronavirus infections. These include fever, dry cough, fatigue; however, the SARS-CoV-2 has a higher spreading nature. The virus could spread via respiratory droplets and contaminated surfaces, through the mucous membrane of mouth, eyes, and nose, and even via the fecal-oral route (1, 2). This highly contagious nature of the virus has made many medical institutions to cancel all elective procedures to reduce the risk of contagion.

The use of handpieces and ultrasonic instruments during dental procedures unavoidably results in the generation of blood and saliva droplets (3). Consequently, these droplets could contaminate the dental instruments and the office environment. Hence, both dental practitioners and patients could be at risk of being infected with microbial pathogens (4, 5). In this regard, researchers mentioned that dental clinics might be a possible transmission source of viruses such as human immunodeficiency virus (HIV) and hepatitis B virus (HBV); these viruses could transmit during dental practice to the patients and also the practitioners (6, 7).

The highly contagious nature of the SARS-CoV2, and the fact that dental procedures commonly generate blood and saliva droplets resulting in the spread of the virus ensued the American Dental Association (ADA) to suggest dental practitioners limit their interventions to the emergency treatments. Moreover, strict precautionary protocols must be performed during the pandemic to reduce the risk of infection. For instance, the dentists and their assistants should regularly provide pre-procedural mouth rinse for the patients, and frequently disinfect the dental instruments (8). Additionally, to reduce the the risk of transmission high volume saliva ejectors, anti-retraction handpieces, the rubber dam isolation, and personal protective equipment (PPE) should be used (8).

The closure of dental clinics because of COVID-19 pandemic has disrupted dental services to the patients. Moreover, the Irish Dental Association mentioned that about 75% of dental practitioners are expecting a financial loss of over 70% during the outbreak (9). Besides, it has been mentioned that dental practitioners could be infected with the SARS-CoV-2 virus, unnoticeably, and become carriers of the virus (10). As a result, the dental services were limited to the emergency and urgent cases during the pandemic. In the present study, we aimed to evaluate the impact of COVID-19 pandemic on dental practice in Iran by conducting an online questionnaire among dentists and finding their perspectives on the subject.

Methods

Study design and population

This report is based on a questionnaire conducted from June 10 to 25, 2020, among Iranian dentists. We conducted the chain-referral sampling method as most of the participants were hard to find. Our study population consists of specialists and general dentists who work in Iran regardless of their city and workplace. We asked the dentists to participate in the study via the internet (e-mail or social media) and asked them to distribute the survey among the other colleagues at their convenience. The study protocol was approved by the Medical Ethics Committee of Shiraz University of Medical Sciences. The participants have voluntarily involved in this study and written informed consent was obtained. They were assured that no personal information is required, and their filled data would be kept confidential. An online questionnaire using Google Forms was used to collect the data.

Questionnaire

The preliminary draft of the questionnaire was designed for the present study based on experts' opinions (5 attending dentists, Dental School, Shiraz University of Medical Sciences) and guidance from relevant literature. Experts above and a skilled statistician evaluated the face and content validity of the questionnaire. The content of the survey was also verified in terms of the topic concepts. Therefore, the biased, confusing, guiding, and double questions were omitted. We pilot tested the questionnaire on a sample of 20 dentists.

The survey includes 51 questions and four sections in Persian. The first section included primary demographic data. The second part consisted of closed questions (yes/no questions) about the dentists'

opinion on the COVID-19 pandemic and its effect on their personal life, financial status, and the quality of dental services for patients. The third section consists of multiple-choice questions about the dentists' perspectives on the pandemic. The last part of the survey is based on the 5-point Likert-scale scoring to evaluate dentists' attitudes and views on the outbreak.

Data gathering and statistical analysis

A trained person who was unaware of the names and degrees of the participants has gathered the results. Microsoft Excel sheets have been used to create tables and graphs. Two members of the research group reviewed the extracted data for accuracy. Items in the investigation were described by descriptive statistical analysis. Also, the Chi-square test was used to find any significant association between the parameters, and P-value < 0.05 was considered as statistically significant. The calculation was performed using Statistical Package for the Social Sciences (SPSS (version 22.0 software.

Results

Overall, 240 dentists were enrolled in this study (214 general dentists and 26 specialists). More than half of the participants (n=150, 62%) were between 24 to 35 years with a job experience of fewer than ten years. Among all the participants, 114 (47%) were male, 126 (52%) were female, 108 (45%) were married, and 132 (55%) were single. Moreover, 72% of the married participants had a child or more children (Table 1).

Almost one-third (n=93, 38%) have observed an increase in their phone calls from patients for their dental problems since the COVID-19 outbreak. Only 15 (6%) of the dentists visited high-risk patients since the eruption of the COVID-19 pandemic. Our results showed that 18 (7%) of the participants have observed the symptoms the COVID-19 in themselves, and one dentist had the disease; besides, 9 (3%) of the participants reported that their assistants had the symptoms (Table 2).

Nearly all of the participants (n=222, 93%) believed that dental consultation via phone calls could not resolve the patients' problems. More than half of the participants (n=156, 64%) believed that the triage of patients should be done regarding the COVID-19 symptoms, including, fever, cough, muscle pain, and their history of contact and travel to high-risk areas. Moreover, 162 (66%) of the contributors asserted that the COVID-19 test must be done for the patients before any dental procedure. Besides, 141 (58%) of the participants believed that the reopening of the dental clinics might result in the increase of COVID-19 incidence, and the offices should be closed (Table 3).

Among all dentists, 114 (46%) have found the latest guidelines regarding the COVID-19 pandemic are helpful. Additionally, more than half of the participants (n=162, 66%) believed that dental practice standards would reform because of the pandemic (Table 3). There was no significant association

between the dentists' job experience and following the latest guidelines during the pandemic (P-value > 0.05).

The majority of the participants (n=170, 70%) did not perform non-emergency procedures during the pandemic, and 228 (95%) of them had changed their work hours. The contributors have had different concepts regarding the changes that are needed to be made in dental practice standards; as 90 (37%) reported that they would reduce treatment sessions at the lowest possible, and 30 (12%) said that they would focus on preventive care, in the future (Table 4).

Additionally, 111 (46%) of the participants said that they had canceled all dental procedures temporarily, since the outbreak. Furthermore, almost half of the contributors (n=117, 48%) believed that dental clinics should be closed until the end of the pandemic. Moreover, 108 (45%) of the participants thought that the proper use of PPE could reduce the risk of contagion. (Table 5). No significant association was found between the dentists' job experience and their attitude regarding the closure of the dental clinics (P-value > 0.05).

Finding and providing PPE was a problem for most of the dentists (n=210, 87%), during the outbreak. About half of the participants (n=105, 43%) reported that they had to buy PPE with a considerably higher price. Nearly 90% of the dentists (n= 213, 88%) mentioned that they did not receive any help from any public organization for providing this equipment. While the consumption of PPE had been significantly raised, during the pandemic (n=234, 97%) (Table 6). We did not find any significant association between the consumption of PPE and dentists' job experience (P-value > 0.05).

Most of the participants (n=234, 97%) reported that they encountered a decrease in their financial income since the eruption of the pandemic, while only 6 (2%) of them received financial help from public organizations. More than one-third of them (n=90, 37%) needed another source of income for daily expenditure. In this regard, 138 (57%) mentioned that, by persisting the COVID-19 pandemic, they might encounter financial problems in the near future. Moreover, 105 (43%) of the participants dismissed their assistants because of the economic difficulties, and 57 (23%) recommended their assistants to receive help from unemployment insurances (Table 6). No significant association was found between the decrease in financial income and dentists' job experience or marital status (P-value > 0.05).

Discussion

The results of our study showed that about 7% of Iranian dentists had experienced the symptoms of COVID-19, and nearly 1% of them had a positive COVID-19 test. Besides, the workers in dental clinics are also at considerable risk of contagion, as our investigation showed that 3% of the contributors' assistants had the symptoms mentioned above. This indicates that dental practice should be done even with more infection control cautionary, and the non-emergency treatments should be delayed until the end of the pandemic.

The nosocomial transmission of SARS-CoV-2 has been a concern for dental practitioners, as it could put both patients and dentists at the risk of contagion (11). Previous studies also mentioned that dental professionals are at higher risk of being infected by SARS-CoV-2 (12, 13). Dentists were considered to be the highest risk group of health-care workers exposed to COVID-19 (14, 15).

The majority of the participants of the present study also reported a tremendous increase in the demand for remote dental consultations. However, they did not consider remote consultation as an effective way of delivering dental services. We believe these results could be because of the characteristics of dental procedures and the lack of appropriate infrastructure. Future studies must be conducted to hypothesize and design advanced technologies that can virtually deliver dental services (16).

Consistently, Occupational Safety and Health Administration has mentioned that using remote dental consultations should be considered for the non-emergent cases during the pandemic (17). Additionally, before the current pandemic, remote consultation was found to have sufficient quality for oral treatments (18). The telehealth-based delivery of dental services seems to be an attractive and flexible concept, especially during these unprecedented times (19). Despite this, most clinics do not have the proper equipment such as network infrastructures and adequately trained staff to provide telehealth services (15).

Most of the contributors mentioned that they follow and implement the latest national and international COVID-19 guidelines. More than half of them believed that the standards in that regard must be reformed by the local authorities. The guidelines may differ in different regions of the world according to their facilities and supplies. Though, we believe that a comprehensive worldwide instruction must be provided for dental settings to minimize the risk of infection, effectively. A significant number of participants mentioned that they do not perform any non-emergency procedures, and they have lowered their work hours to minimize the spread of the virus.

In our study, several suggestions have been made regarding dental practice guidelines such as reducing the treatment sessions, emphasis on preventive care, triaging patients for the related symptoms, conducting COVID-19 tests for the referred patients, and proper use of PPE. Some participants considered that the reopening of the dental clinics for non-emergency cases might increase COVID-19 incidence, and the offices should be closed until the end of the pandemic.

In response to the current pandemic, several organizations such as the Centers for Disease Control and Prevention (CDC), ADA, British Dental Association, and National Health Service have designed and developed response groups, and guidance for dental settings. The patients should be closely examined considering the clinical symptoms and epidemiological history, and the COVID-19 test should be done for them to reduce the risk of transmission (15). In the early days of the pandemic, the guidelines recommended that dental care procedures should be done for urgent and emergency diagnosis while providing appropriate PPE and patient care supplies (2). Hence, a high demand for removable prosthetic treatments might be observed in the future, as a result of tooth extraction that is a highly-requested

procedure during the pandemic (20). Moreover, it has been suggested that the general population should increase their oral hygiene and implement preventive care to reduce the need for dental procedures (15).

As the pandemic continued, it has been proposed that dental settings can deliver non-emergency treatments. A survey led by the ADA Health Policy Institute demonstrated that over 90% of dental clinics are now open for elective care services (21). CDC has also designed a standard for health-care systems and health-care workers for the delivery of non-emergent services to minimize the risk of the contagion (22).

Effective use of PPE, including gowns, gloves, face shields, goggles, and face masks, is an essential regulation for preventing the spread of the virus to and from health-care providers and patients (23). While the rapid enhance of demand for PPE resulted in the shortage of these supplies all around the world (24). The majority of the participants of the present study have asserted that the consumption of PPE had been significantly raised, and more than half of them had trouble finding facemask since the COVID-19 outbreak. Furthermore, they reported that the price of personal protective equipment (PPE) had been significantly raised, which could be a sign of shortage. This increasing price of PPE might lead to the rise of dental treatment costs (15). Although, no public organization did not help the participants to provide this equipment.

A significant number of the participants had financial problems caused by their lowered work hours and restricted dental procedures. Consistently, a study revealed that the COVID-19 pandemic imposed financial distress on dental offices (25). More than half of the Iranian dentists have been expending their saves for daily expenditure. Still, a small number of them have received financial help from public organizations. These results indicate that the related organizations must increase their efforts to fund the dentists and their assistants during these unprecedented times. Should not providing the support funds for the dental care workers, by persisting the COVID-19 pandemic, the number of workers that encounter financial problems will increase (15).

Our study also showed that about half of the participants had symptoms of depression and anxiety. It has been noted that the health-care workers are encountering far more emotional stress compare with the general population, during the COVID-19 pandemic (26, 27). Increased workload, fear of being infected with the disease, working with repeatedly changing protocols, using PPE, social-distancing, self-isolation, and caring deteriorating patients are found to be the main concerns among the medical staff during the pandemics. Moreover, difficult decisions should be made by the workers during the pandemics as the resources are limited. The dentists also mentioned that they need to consult with a psychiatrist or a therapist.

Our study has some limitations. One of the most important weaknesses of our study is the sampling method. Although chain-referral sampling is an easy and quick method to find participants, people may refuse to participate in the study after the invitation. Furthermore, participants may recommend the dentist whom they know with a similar age range. Our investigation is a descriptive study that focuses on descriptive analysis of the situation and objects, therefore it was unable to test or verify the causal

relationship. Another weakness of our study is that we had a limited time frame to conduct the questionnaires to be more up to date.

Conclusion

Most of the Iranian dentists have followed the latest COVID-19 guidelines. Besides, they preferred to lower their work hours and limit dental procedures to emergency treatments until the end of the pandemic. They also believed that the full reopening of the dental clinics might lead to an increase of the COVID-19 transmission. Besides, the dentists encountered financial problems because of the closure of dental clinics. Depression and anxiety were common symptoms among dentists during these times. We believe that the public organizations must intervene to financially and psychologically support the dentists during these unprecedented times. Moreover, researchers must take reasonable steps to find and evaluate the impacts of COVID-19 on dental practice to find the solutions that can be used during the current and future pandemics.

Abbreviations

(ADA)	American Dental Association
(CDC)	Centers for Disease Control and Prevention
(COVID-19)	Coronavirus disease 2019
(HBV)	Hepatitis B virus
(HIV)	Human immunodeficiency virus
(PPE)	Personal protective equipment
(SARS-CoV-2)	Severe acute respiratory syndrome coronavirus 2

Declarations

Ethical consideration

The study protocol was approved by the Medical Ethics Committee of Shiraz University of Medical Sciences. The participants have voluntarily involved in this study and written informed consent was obtained. They were assured that no personal information is required, and their filled data would be kept confidential.

Consent for publication

All authors have approved the paper and agree to its submission and publishing in this journal.

Competing interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Funding

The authors received no financial support for the research and authorship.

Authors' Contributions

HA: Conceptualization, Methodology, Software, Validation, Formal analysis; AE: Data Curation, Visualization, Writing- Reviewing and Editing, Supervision; FG: Investigation, Supervision, Project administration

Acknowledgment

The authors want to thank SIMR Co. and Medipress™ for the scientific editing of the paper.

References

1. Guo Y-R, Cao Q-D, Hong Z-S, Tan Y-Y, Chen S-D, Jin H-J, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak—an update on the status. 2020;7(1):1-10.
2. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. International journal of oral science. 2020;12(1):9.
3. Kohn WG, Collins AS, Cleveland JL, Harte JA, Eklund KJ, Malvitz DM. Guidelines for infection control in dental health-care settings-2003. 2003.
4. Bolyard EA, Tablan OC, Williams WW, Pearson ML, Shapiro CN, Deitchman SD, et al. Guideline for infection control in healthcare personnel, 1998. Infection Control & Hospital Epidemiology. 1998;19(6):407-63.
5. To KK-W, Tsang OT-Y, Yip CC-Y, Chan K-H, Wu T-C, Chan JM-C, et al. Consistent Detection of 2019 Novel Coronavirus in Saliva. Clin Infect Dis. 2020;71(15):841-3.
6. Updated U. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR Recomm Rep. 2001;50(1):1-52.
7. Ippolito G, Puro V, Heptonstall J, Jagger J, De Carli G, Petrosillo N. Occupational human immunodeficiency virus infection in health care workers: worldwide cases through September 1997.

- Clinical Infectious Diseases. 1999;28(2):365-83.
8. CDC. Guidance for Dental Settings: Centers for Disease Control and Prevention; June 17, 2020 [Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>].
 9. Farooq I, Ali S. COVID-19 outbreak and its monetary implications for dental practices, hospitals and healthcare workers. Postgraduate Medical Journal. 2020:postgradmedj-2020-137781.
 10. Wax RS, Christian MD. Practical recommendations for critical care and anesthesiology teams caring for novel coronavirus (2019-nCoV) patients. Canadian Journal of Anesthesia/Journal canadien d'anesthésie. 2020:1-9.
 11. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. The New England journal of medicine. 2020;382(10):970-1.
 12. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. Journal of Dental Research. 2020;99(5):481-7.
 13. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren BJIJoOS. Transmission routes of 2019-nCoV and controls in dental practice. 2020;12(1):1-6.
 14. Jamal M, Shah M, Almarzooqi SH, Aber H, Khawaja S, El Abed R, et al. Overview of transnational recommendations for COVID-19 transmission control in dental care settings. Oral Diseases. 2020;n/a(n/a).
 15. Barabari P, Moharamzadeh K. Novel Coronavirus (COVID-19) and Dentistry-A Comprehensive Review of Literature. Dent J (Basel). 2020;8(2):53.
 16. EBRAHIMI A, EBRAHIMI S, ASHKANI ESFAHANI S. How COVID-19 pandemic can lead to promotion of remote medical education and democratization of education? %J Journal of Advances in Medical Education & Professionalism. 2020;8(3):144-5.
 17. OSHA. COVID-19 Guidance for Dental Practitioners: Occupational Safety and Health Administration; May 2020 [cited 2020 June 2020]. Available from: <https://www.osha.gov/Publications/OSHA4019.pdf>.
 18. Ignatius E, Perälä S, Mäkelä K. Use of videoconferencing for consultation in dental prosthetics and oral rehabilitation. Journal of Telemedicine and Telecare. 2010;16(8):467-70.
 19. Volgenant CM, Persoon IF, de Ruijter RA, de Soet JJOD. Infection control in dental health care during and after the SARS-CoV-2 outbreak. 2020.
 20. Ali Z, Baker S, Barabari P, Martin N. Efficacy of Removable Partial Denture Treatment: A Retrospective Oral Health-Related Quality of Life Evaluation. The European journal of prosthodontics and restorative dentistry. 2017;25(2):101-7.
 21. ADA. HPI polling shows robust, sustained rebound in dental care: American Dental Association Health Policy Institute June 05, 2020 [June 2020]. Available from: https://www.ada.org/en/publications/ada-news/2020-archive/june/hpi-polling-shows-robust-sustained-rebound-in-dental-care?utm_source=cpsorg&utm_medium=covid-main-lp&utm_content=cv-hpi-view-poll-results&utm_campaign=covid-19.

22. CDC. Framework for Healthcare Systems Providing Non-COVID-19 Clinical Care During the COVID-19 Pandemic: Centers for Disease Control and Prevention May 12, 2020 [Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/framework-non-COVID-care.html>].
23. Sarkarat F, Tootoonchian A, Haraji A, Rastegarmoghaddam Shaldoozi H, Mostafavi M, Naghibi Sistani SMMJRDS. Evaluation of dentistry staff involvement with COVID-19 in the first 3 month of epidemiologic spreading in Iran. 2020;17(2):137-45.
24. Cook TM. Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic – a narrative review. 2020;75(7):920-7.
25. Schwendicke F, Krois J, Gomez JJJoD. Impact of SARS-CoV2 (Covid-19) on dental practices: Economic analysis. 2020:103387.
26. Greenberg N, Docherty M, Gnanapragasam S, Wessely SJB. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. 2020;368.
27. Tan BY, Chew NW, Lee GK, Jing M, Goh Y, Yeo LL, et al. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. 2020.

Tables

Table 1 Demographic data of dentists.

Patients information		Number	Percentage
Age (years)	24-35	150	62
	36-45	42	17
	46-56	42	17
	57-67	6	2
Years of experience	<10	150	62
	10-20	42	17
	20-30	42	17
	>30	6	2
Gender	Male	114	47
	Female	126	52
Marital Status	Single	132	55
	Married	108	45
Number of children if married	1	49	6
	2	21	19
	3	7	46
	No children	31	28
Field of practice	Pediatric Dentistry	3	1
	Prosthodontics	3	1
	Orthodontics	6	2
	Oral and Maxillofacial Radiology	3	1
	Oral and Maxillofacial Surgery	3	1
	Endodontics	3	1
	Operative Dentistry	3	1
	General Dentist	216	90
Health sector	Private sector	36	15
	Public sector	84	35

	Independent private clinic	120	50
--	----------------------------	-----	----

Table 2 Dentists' experience regarding the pandemic.

Have you experienced the following statements since the eruption of the COVID-19 pandemic?	Yes		No		Not applicable	
	Number	Percentage	Number	Percentage	Number	Percentage
A rise in phone calls from patients	93	38	84	35	63	26
Visited high-risk patients	15	6	225	93	-	-
Had symptoms of COVID-19	18	7	222	92	-	-
Had a positive test for COVID-19	3	1	12	5	225	93
Your assistants had symptoms of COVID-19	9	3	231	96	-	-
Your assistants had a positive test of COVID-19	0	0	117	48	123	51

Table 3 Dentists' perception of the COVID-19.

How do you agree/disagree with the following statements?	Completely agree		Agree		Somewhat Agree		Disagree		Completely disagree	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Phone call is effective to resolve patients' dental problems	3	1	15	6	69	28	81	33	72	30
Examine the patient for COVID-19 symptoms such as fever, cough, muscle pain, or history of contact or traveling to high-risk areas	105	43	51	21	42	17	30	12	12	5
Take COVID-19 test for patients	105	43	57	23	36	15	51	6	27	11
Reopening of dental clinics result in spreading of the virus	81	33	60	25	51	21	15	6	33	13
Possibility of continuing the dental profession by persisting coronavirus-19	12	5	33	13	72	30	63	26	60	25
Had problems with paying basic fees	105	43	51	21	48	20	15	6	21	8
A decrease in financial income by continuing the pandemic in the future	90	37	96	40	30	12	15	6	9	3
Had symptoms of anxiety and depression during the COVID-19 pandemic	54	22	51	21	45	18	45	18	45	18
Need to talk to a psychiatrist or therapist	21	8	75	31	39	16	39	16	66	27
Follow the latest news of the COVID-19 pandemic	102	42	78	32	36	15	18	7	6	21
Latest news of COVID-19 pandemic is useful	36	15	57	23	84	351	42	7	21	8
Following the latest news is cause of my depression and anxiety	45	18	63	26	51	21	63	26	18	7
Latest guidelines of dental settings during COVID-19 are	33	13	81	33	99	41	24	10	3	1

useful										
The guidelines toward dental practice during COVID-19 will change in the future	45	18	117	48	57	23	21	8	0	0
PPE is effective to prevent virus transmission	57	23	84	35	60	251	30	2	9	3

Table 4 Dentists' proposed concept of dental practice during the COVID-19 pandemic.

Have you experienced the following statements since the eruption of the COVID-19 pandemic?	Yes		No		Not applicable		
	Number	Percentage	Number	Percentage	Number	Percentage	
Performed non-emergency procedures	Because of the patients' request	20	8	170	70	-	-
	Because of financial problems	50	20				
Changed in working time and dental practice	228	95	12	5	-	-	
Changed the dental practice standards	Focus on preventive care	30	12	33	14	-	-
	Not performing unnecessary treatment	87	36				
	Reducing the treatment sessions	90	37				
Reviewed the latest guidelines towards the COVID-19 pandemic	195	81	45	18	-	-	
Implemented the latest guidelines about doing dental procedures during the COVID-19 pandemic	204	85	36	15	-	-	

Table 5 Dentists' attitude regarding the dental practice during the pandemic.

Question		Dentist Number	Percentage
How have you changed your treatment plans during the COVID-19 pandemic?	Nothing has changed	3	1
	Canceled all treatments until the end of the pandemic	63	26
	Canceled all treatment until the end of the alert phase of the pandemic	111	46
	Performed emergency treatment	63	26
What kind of non-emergency treatments should you do during the pandemic?	Do not perform any non-emergency treatment	198	82
	Aesthetic dental procedures	6	2
	Restorative treatment of asymptomatic caries lesion	3	1
	Extraction of asymptomatic teeth	6	2
	Initial examination	27	11
When the dental clinics should revive their normal work hour?	Until the end of the COVID-19 pandemic	117	48
	Till the end of the alert phase	111	46
	The clinic should be open now	12	5
What is your strategy of choice regarding the reopening of dental clinics?	I do not intend to work until the end of COVID-19 pandemic	72	30
	Visiting patients who don't have COVID-19 symptoms	21	8
	Taking COVID-19 test for patients	39	16
	Using PPE	108	45
Should you have more free time these days, how do you fill the time?	Do not have free time	15	6
	Do research	15	6
	Communicate with others	27	11
	Study	144	60
	Do exercise	39	16
Which of the following equipment has been a scarce item during the pandemic?	I have not had a problem finding PPE	9	3
	Disinfectant solutions	24	10
	Facemask	135	56
	Medical gown	9	3
	Eyewear or shield	9	3

	Gloves	54	22
--	--------	----	----

Table 6 Dentists' problems during the pandemic.

Have you experienced the following statements since the eruption of the COVID-19 pandemic?	Yes		No		Not applicable		
	Number	Percentage	Number	Percentage	Number	Percentage	
Had problem with providing personal protective equipment (PPE)	210	87	30	12	-	-	
Rising in the price of PPE	Up to 25%	18	7	6	2	-	-
	Between 25% to 50%	42	17				
	Between 50% to 75%	36	15				
	Between 75% to 100%	33	13				
	More than 100%	105	43				
Received help from a public organization for providing PPE	27	11	213	88	-	-	
Increased in the consumption of PPE while performing dental procedures	234	97	6	2	-	-	
A decrease in income	234	97	6	2	-	-	
Received financial help from a public organization	6	2	231	96	3	1	
Used another source of income for daily expenditure	90	37	150	62	-	-	
Encountered with financial problems	138	57	Up to 2 months	39	16	-	-
			Up to 6 months	30	12		
			Up to a year	15	6		
			Never	18	7		
Dismissed your assistants because of financial problems	105	43	135	56	-	-	

Your assistants decided not to work during COVID-19 pandemic	99	41	141		-	-
Paid assistants' salary regardless of the closure of dental clinics	126	52	48		66	27
Recommended your assistants for getting help from unemployment insurances	57	23	183	76	-	-

Figures

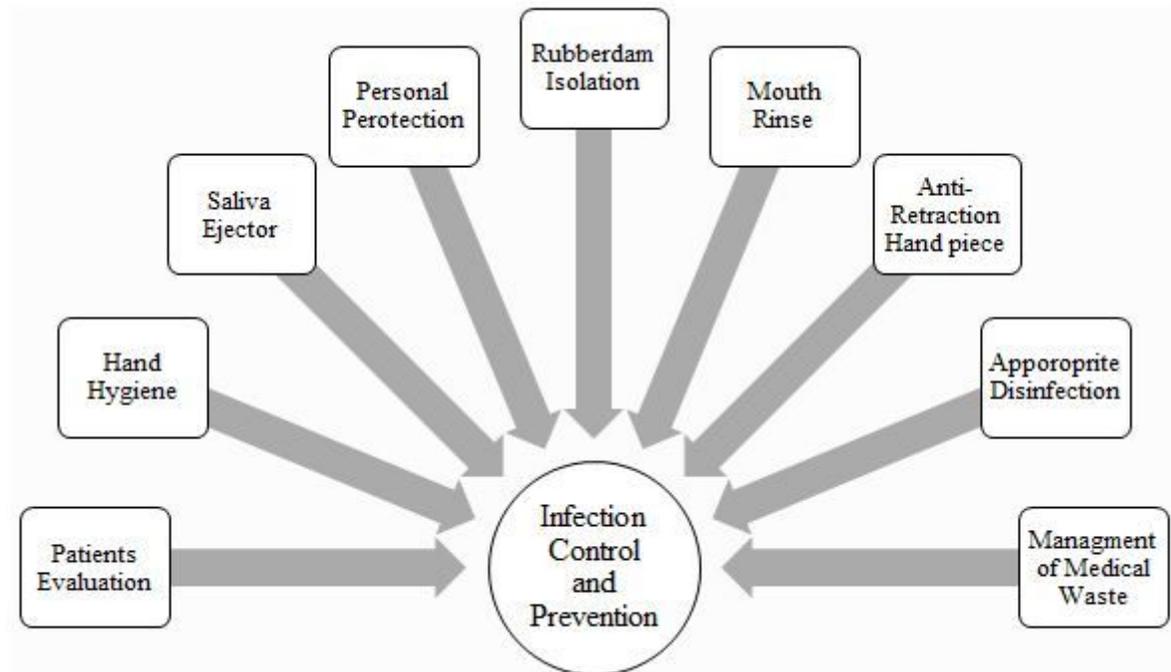


Figure 1

Infection control in dental clinics during the COVID-19 pandemic.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Questionnaireform.docx](#)