MEDICAL SCIENCE MONITOR

CLINICAL RESEARCH

e-ISSN 1643-3750
© Med Sci Monit, 2022; 28: e936535
DOI: 10.12659/MSM.936535

Received: 2022.03.01
Accepted: 2022.04.02
Available online: 2022.04.13
Published: 2022.05.06

COVID-19: Another Cause of Dental Anxiety?

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCDEF 1 Marija Nikolić
ABE 1 Aleksandar Mitić
ABCD 2 Jelena Petrović
ABCD 2 Dragana Dimitrijević
ABDE 1 Jelena Popović
ABE 1 Radomir Barac
ABE 3 Ana Todorović

1 Department of Restorative Dentistry and Endodontics, Clinic of Dental Medicine Niš, Faculty of Medicine, University of Niš, Niš, Serbia
2 Department of Pedagogy, Faculty of Philosophy, University of Niš, Niš, Serbia
3 Department of Orthodontics, Clinic of Dental Medicine Niš, Faculty of Medicine, University of Niš, Niš, Serbia

Corresponding Author: Marija Nikolić, e-mail: makinis80@yahoo.com
Financial support: None declared
Conflict of interest: None declared

Background: Fear has always been closely linked to dentistry but it could be intensified by the objective risks imposed by the pandemic. The objective of this study was to determine the profile of the frightened dental patient during the COVID-19 pandemic and determine measures taken by dentists to reduce fear and increase security among their patients.

Material/Methods: An anonymous online survey was conducted between March 15 and April 15, 2021. The respondents were 2060 adult citizens of the Republic of Serbia. In addition to demographic data, data related to the COVID-19 pandemic, dental fear, and attitudes and fear of dental interventions during the ongoing pandemic were compiled. The data were analyzed using descriptive statistics: the chi-square test and Pearson's coefficient.

Results: Seventy percent of the respondents felt some level of fear of the ongoing pandemic, 50% felt fear of going to a dentist during the pandemic, 20% considered a dental office a hotspot for the transmission of SARS-CoV-2, and 43% would visit their dentist only in the case of emergency.

Conclusions: The COVID-19 pandemic has affected the attitudes and behavior of people pertaining to visits to dental offices. Identifying frightened patients and their opinions and fears at this challenging time would make it easier for dentists to include protocols in their everyday practice to increase a sense of security among their patients, such as implementing preventive measures in front of the patients, ensuring an empty waiting room, and providing telephone consultations.

Keywords: COVID-19 • Dental Anxiety • Dentistry

Full-text PDF: https://www.medscimonit.com/abstract/index/idArt/936535

4038 6 — 31

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Background

Dentistry has always been related to anxiety and pain. Dental fear and anxiety are important characteristics that contribute to the avoidance of dental treatment [1,2]. Dental fear or anxiety affects approximately 36% of the population, of which approximately 12% have extreme fear [3,4].

While anxiety is a state that precedes facing a threatening stimulus, fear is a reaction that occurs when that stimulus is spotted and leads to a fight or flight response. Consequently, anxiety related to the idea of visiting a dentist for preventive care or dental procedures is called dental anxiety, and the reaction to threatening stimuli in the dental environment is called dental fear [5]. In dental practice, it is not necessary to separate these 2 terms, which in the broadest sense represent the fear of anything that has to do with dentistry. Therefore, it is convenient to use the umbrella term: dental fear and anxiety [6]. The overpowering and irrational fear of dentistry is also known as odontophobia, which leads to the complete avoidance of the dentist and is classified as a phobia in the Diagnostic and Statistical Manual of Mental Disorders-IV and the International Statistical Classification of Diseases and Related Health Problems [7].

The etiology of dental anxiety is multicausal and very complex. The etiological factors are mostly either endogenic, such as genetics, personality type, and intelligence or exogenic (or conditioning experience), such as role models, the media, and previous experience [6].

The emergence of the SARS-CoV-2 virus has changed the world, from individual lives to global functioning. Care for one's own health and life and the lives of loved ones, fear of pandemic consequences, and daily disturbing images coming from around the globe have had an impact on mental health [8]. For a long time, this problem was not the focus of the scientific community, since the preservation of life came first. However, over time, studies emerged which confirm the negative impact of the pandemic on mental health [9,10]. If we could identify the concerns and fears of potential patients at this challenging time, we might be able to better meet their needs [10].

It is believed that a dental office, and dentistry as a high-risk profession, are hotspots for the transmission of contagious diseases [11,12]. It is not possible to completely exclude the risk of getting infected in a dental office [13]. A dental intervention precludes 2 basic recommendations for the prevention of the spread of COVID-19: social distancing and wearing protective masks. Direct contact with a patient is required (60 cm and less), and most interventions include the use of rotating instruments with the production of aerosol, which not only potentially endangers those present, but could contaminate surrounding surfaces [12,14]. The highly contagious nature of SARS-CoV-2 presents a risk for dental office employees and patients, especially because asymptomatic carriers can also transmit the virus [15]. Dentists have always taken care about the prevention of contagious diseases. However, in this new pandemic, the situation may require the implementation of additional preventive measures, especially since the SARS-CoV-2 virus has been around longer than expected [14].

The duration of the pandemic has taught us to live with the virus, and dental care is available again, but the fear has not disappeared. The ever-present dental fear has been assigned a new exogenic etiological factor; namely, fear of contracting the SARS-CoV-2 virus in a dental office, which became a challenge for dentists and their patients.

The aims of this study were to determine the profile of the frightened dental patient during the COVID-19 pandemic and determine the measures which, when implemented by dentists, could decrease fear and increase a sense of security among their patients.

Material and Methods

Study Design and Respondents

An online survey was conducted between March 15 and April 15, 2021. It was distributed via online channels and social media. The research included a sample of 2060 adult citizens from the Republic of Serbia (35% male, 65% female). The representative sample was calculated using a 95% confidence level and error margin of 3%. Available statistical data on the population from 2021 indicated that the representative sample size for the defined criteria was a minimum of 1067 respondents (data from the Statistical Office of the Republic of Serbia) [16].

Ethics

Participation in the survey was anonymous and voluntary, and the respondents could stop participating at any phase. They were informed about the study and gave their consent prior to the beginning of the survey. The study was conducted in accordance with the Helsinki Declaration and with previous approval from the Ethics Committee of the Faculty of Medicine-University of Niš, Serbia (approval no: 12-2213-2/3). The online study design was chosen owing to its simplicity and lack of social contact, which is recommended during a pandemic.

Questionnaire

The survey questions were designed based on the study objectives, according to the Stehr-Green steps for developing a

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

questionnaire [17]. The expert assessment of the questionnaire was performed by 2 university professors from the relevant field of dentistry who were not involved in the study, and the evaluation of the question construction (eg, avoiding ambiguity and suggestibility) was conducted by 2 experienced experts in questionnaire construction. In accordance with their suggestions, and after a pilot study, a definitive version of the questionnaire was formed using the Google Forms platform. Reliability was determined based on the value of the Cronbach Alpha test, which was 0.801. Twenty closed-ended questions were grouped into 4 sections: section 1, demographic data (2 questions); section 2, COVID-19-related information (6 questions); section 3, fear of dental interventions unrelated to the pandemic (3 questions); and section 4, fear of dental interventions during the pandemic (9 questions).

The degree of determined fear is not a clinical assessment but an individual's self-assessment that dictates a person's fear-driven behavior, which is why it was considered more relevant to this study. The respondents rated fear of the dentist, fear of visiting the dentist in a pandemic, and fear of a pandemic using a 5-point Likert scale (0, I do not feel fear; 1, I am slightly scared; 2, I am quite scared; 3, I am very scared; 4, I am extremely scared).

The number of questions in the questionnaire was limited to 20, because owing to the set goals of the study (such as determining the profile of a frightened dental patient during a pandemic), the authors decided that the central data processing method should be a correlation analysis which, when working on a large number of questions, would provide a certain amount of data in the results that would exceed the amount of data that are usually presented in a single scientific paper. The questions are shown in **Table 1**.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS, version 22.0) software was used for descriptive statistical analysis. The chi-square test was used to show statistical significance of the obtained data with the level of statistical significance set at $P<0.01$. Pearson's coefficient was used to find the correlation between the responses (level of significance $P<0.01$).

Results

Seventy percent of the respondents felt some level of fear of the COVID-19 pandemic. Most described the extent of this fear as mild (48%). Almost 60% of the respondents had not contracted COVID-19 up until the beginning of the survey, while others had had symptoms but had not been tested (14%) or had tested positive to the virus and recovered (26%). At the time of the survey, 31.5% of the respondents had been vaccinated. Most evaluated the epidemiological situation as unfavorable (74%) and had reduced their activities to a minimum (60%). Ten percent of the respondents avoided information about the pandemic because it upset them, while 20% tried to keep up with the current global information.

A total of 49.5% of respondents felt some level of dental fear. Most described the extent of that fear as mild (32.5%), then strong (5%) and extreme (2%). Only 8% of the respondents feared that they could contract a disease (other than COVID-19) during a dental intervention, but 27% experienced a distressing sense of powerlessness and lack of control in a dental office.

Approximately 20% of the respondents considered a dental office a hotspot for the transmission of COVID-19, while 43% of them would only go there in an emergency. Most (80%) would not cease ongoing treatment, irrespective of the COVID-19 pandemic.

Most (70%) of the respondents felt safer when the dentist implemented preventive measures in their presence and 50% felt safer when there were no other patients in the waiting room. The possibility of telephone consultations during a pandemic was considered desirable by 76% of the respondents. Approximately 14% stated that a waiting room with chairs evenly spaced apart, containing disinfectant, and without the presence of other people or magazines seemed distressing. Irrespective of the beginning of mass vaccination and the fact that many people recovered from the virus, 26.5% of the respondents still did not feel safe in a dental office.

Statistical analyses showed that the responses which reflected fear of dental interventions during the pandemic (section 4 of the survey) differed based on demographic data (section 1), COVID-related information (section 2), and data regarding fear of dental interventions unrelated to COVID-19 (section 3).

The statistical analysis showed a statistically significant positive correlation between fear of COVID-19 and fear of going to a dental office during the COVID-19 pandemic (correlation coefficient=0.460, $P<0.01$) and going to a dental office only in an emergency/urgency (correlation coefficient=0.292, $P<0.01$). All other correlations are presented in **Tables 2-6**.

Discussion

The first studies in the field of dentistry that appeared after the outbreak of the pandemic were aimed at infection control under the new conditions [11,12,14]. Patient concern (for outcomes and duration of the treatment) was the topic of mostly orthodontic studies [18-20]. A few studies that emerged later

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Table 1. The questions included in the questionnaire.

Section 1: Demographic data
Q1. How old are you?
Q2. What is your gender?
Section 2: COVID-19-related information
Q3. How would you evaluate the level of your fear of the ongoing COVID-19 pandemic?*
Q4. Have you recovered from COVID-19?
Q5. Have you been vaccinated against COVID-19?
Q6. I have reduced my activities during the pandemic to a minimum (work/school/college/shopping, etc.).
Q7. What is your evaluation of the current epidemiological situation?*
Q8. How would you evaluate your level of information about COVID-19 and the current state of the pandemic?*
Section 3: Fear of dental interventions unrelated to the pandemic
Q9. How would you evaluate the level of your dental fear unrelated to the ongoing COVID-19 pandemic?*
Q10. I am afraid that I could contract some other disease in a dental office (other than COVID-19).*
Q11. In a dental office I feel a distressing sense of powerlessness and loss of control (I cannot move, speak, or terminate the intervention when I would like to).*
Section 4: Fear of dental interventions during the pandemic
4/1 – Attitudes and behavior related to going to a dental office during the pandemic
Q12. How would you evaluate the level of your dental fear during the COVID-19 pandemic?*
Q13. I consider a dental office a hotspot for the transmission of COVID-19.*
Q14. I would only go to a dental office during the pandemic in an emergency (urgency).*
Q15. I would cease (or have ceased) ongoing dental treatment due to fear of contracting the coronavirus (COVID-19). *
Q16. Irrespective of the initiation of mass vaccination, and the fact that many people have recovered from the virus and cannot transmit it, I still do not feel completely secure in a dental office.*
4/2 – The sense of security in a dental office during the pandemic
Q17. I would feel more secure if I could see the dentist implementing all the preventive measures (disinfecting "in front of me", with a full set of protective equipment).*
Q18. I would feel more secure if there were no other patients in the waiting room or office except for me.*
Q19. I think it is a good thing that the dentists offer telephone consultations during the pandemic regarding potential dental problems or advice.*
Q20. A waiting room with chairs spaced apart, with disinfectant, with no magazines or people additionally distresses me.*

Questions based on 5-point Likert scale (*).

provided data on the fear of dental patients during a pandemic, in addition to other information [21-24]. To the best of our knowledge, only 1 study looked at the profile of patients who have changed their dental care habits during the pandemic [24], and the present study is the only one that provides practical recommendations that can be implemented in everyday practice to reduce fear of a dental patient during the COVID-19 pandemic.

Fear of the COVID-19 pandemic was reported by 70% of the respondents in this study. Fifty percent felt some form of dental fear during the pandemic, and 43% would go to a dental office only in an emergency. The respondents who stated that they felt a great fear of the pandemic also expressed a greater fear of visiting dental offices during the pandemic and more frequently opted to go only if urgent treatment was needed. These findings agree with previously published results of other authors who also noted the negative impact of COVID-19 on

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Table 2. Correlation analysis. The correlation coefficients for the responses to the questions from section 4 (Q12, Q14, Q15) and sections 1 and 2 (Q1, Q4, Q5, Q6, Q7, Q8).

	How would you evaluate the level of your dental fear during the ongoing COVID-19 pandemic?	"I would only go to a dental office during the pandemic in an emergency."	"I would cease (or have ceased) ongoing dental treatment due to fear of contracting the coronavirus (COVID-19)."
How old are you?	Correlation coefficient=0.187 *P*=0.000***	Correlation coefficient=0.168 *P*=0.000***	Correlation coefficient=0.223 *P*=0.000***
Have you recovered from COVID-19?	χ^2=22.697 DF=8 *P*=0.004**,***	χ^2=14.973 DF=8 *P*=0.060** (not statistically significant)	Correlation coefficient=-0.053 *P*=0.017***
Have you been vaccinated against COVID-19?	χ^2=62.341 DF=4 *P*=0.000**,***	χ^2=43.436 DF=4 *P*=0.000 **,***	Correlation coefficient=0.137 *P*=0.000***
"I have reduced my activities during the pandemic to a minimum (work/school/college/shopping, etc.)."	χ^2=71.217 DF=4 *P*=0.000**,***	χ^2=75.096 DF=4 *P*=0.000**,***	Correlation coefficient=0.229 *P*=0.000***
What is your evaluation of the current epidemiological situation?	Correlation coefficient=-0.179 *P*=0.000***	Correlation coefficient=-0.115 *P*=0.000***	Correlation coefficient=-0.131 *P*=0.000***
How would you evaluate your level of information about COVID-19 and the current state of the pandemic?	Correlation coefficient=0.132 P=0.000***	Correlation coefficient=0.076 *P*=0.000***	Correlation coefficient=0.056 *P*=0.010***

DF – degrees of freedom. ** Chi-square test; *** Statistically significant for *P*<0.01.

Table 3. Correlation analysis. The correlation coefficients for the responses to the questions from section 4 (Q16) and sections 1 and 2 (Q1, Q4, Q5, Q7, Q8).

	"Irrespective of the initiation of mass vaccination, and the fact that many people have recovered from the virus and cannot transmit it, I still do not feel completely secure in a dental office."
How old are you?	Correlation coefficient=0.242 *P*=0.000***
Have you recovered from COVID-19?	χ^2=21.512 DF=8 *P*=0.006**,***
Have you been vaccinated against COVID-19?	χ^2=56.157 DF=4 *P*=0.000**,***
What is your evaluation of the current epidemiological situation?	Correlation coefficient=-0.227 *P*=0.000***
How would you evaluate your level of information about COVID-19 and the current state of the pandemic?	Correlation coefficient=0.133 *P*=0.000***

DF – degrees of freedom. ** Chi-square test; *** Statistically significant for *P*<0.01.

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Table 4. Correlation analysis. The correlation coefficients for the responses to the questions from section 4 (Q13) and sections 2 and 3 (Q8, Q10, Q11).

	"I consider a dental office a hotspot for the transmission of COVID-19."
How would you evaluate your level of information about COVID-19 and the current state of the pandemic?	Correlation coefficient= 0.082 *P*=0.000***
"I am afraid that I could contract some other disease in a dental office (other than COVID-19)."	Correlation coefficient=0.413 *P*=0.000***
"In a dental office I feel a distressing sense of powerlessness and loss of control (I cannot move, speak, or terminate the intervention when I would like to)."	Correlation coefficient=0.246 *P*=0.000***

*** Statistically significant for *P*<0.01.

Table 5. Correlation analysis. Correlation coefficients for the responses to the questions from section 4 (Q18) and sections 1, 2 and 4 (Q1, Q4, Q5, Q6, Q12, Q14).

	"I would feel more secure if there were no other patients in the waiting room or office except for me."
How old are you?	Correlation coefficient=0.130 *P*=0.000***
Have you recovered from COVID-19?	Correlation coefficient=0.069 *P*=0.002***
Have you been vaccinated against COVID-19?	χ^2=63.144 DF=4 *P*=0.000**,***
"I have reduced my activities during the pandemic to a minimum (work/school/college/shopping, etc.)."	Correlation coefficient=0.229 *P*=0.000***
How would you evaluate the level of your dental fear during the ongoing COVID-19 pandemic?	Correlation coefficient=0.328 *P*=0.000***
"I would only go to a dental office during the pandemic in an emergency (urgency)."	Correlation coefficient=0.389 *P*=0.000***

DF – degrees of freedom. ** Chi-square test; *** Statistically significant for *P*<0 0.01.

Table 6. Correlation analysis. Correlation coefficients for the responses to the questions from section 4 (Q17) and sections 2 and 3 (Q8, Q10, Q11).

	"I would feel more secure if I could see the dentist implementing all the preventive measures (disinfecting 'in front of me', with a full set of protective equipment)."
How would you evaluate your level of information about COVID-19 and the current state of the pandemic?	Correlation coefficient=0.114 *P*=0.000***
"I am afraid that I could contract some other disease in a dental office (other than COVID-19)."	Correlation coefficient=0.166 *P*=0.000***
"In a dental office I feel a distressing sense of powerlessness and loss of control (I cannot move, speak, or terminate the intervention when I would like to)."	Correlation coefficient=0.119 *P*=0.000***

*** Statistically significant for *P*<0.01.

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

the "flow" of dental patients and their willingness to complete their treatment [19,25]. The fear of transmitting the infection in the dental environment has been reflected in the increase in the number of canceled visits and the reduced number of first examinations and new patients [20,22]. Oshima et al noted that the number of patients attending regular dental checkups due to the pandemic was reduced by 30% [24]. Cotrin et al studied the willingness of patients to undergo orthodontic treatment during the pandemic. More than 50% stated they would get treatment, 25% would only go in an emergency, and 15% would not go at all [18]. In our study, no provision was made for the "I would not go at all" response, so we can assume that the respondents who would choose not to go opted for "I would only go in an emergency" (42%), agreeing with the results of Cotrin et al [18]. On the other hand, the percentage of patients who would go only in an emergency was quite smaller than the percentage reported in a study carried out in Italy, in which 66.6% of parents stated that they would take their child to a dental office only in an emergency or would not take them at all (15.1%) [21]. The reason behind these incongruent results might be found in the different epidemiological situations in the 2 countries at the time of the survey.

Our results showed that dental fear during the pandemic increased with the increase in the age of the respondents (80% of those over 65 years were frightened, while 42% from the youngest category, 18-34 years, were frightened). The attitudes that one would only go to a dental office in an emergency during the pandemic or would cease treatment due to fear of transmission of COVID-19 were also more common among the older respondents (**Table 2**). These results did not agree with those of Cotrin et al, who found no correlation between age and willingness to go to a dental office during the pandemic [18]. The SARS-CoV-2 virus presents a particular risk for vulnerable groups; namely, the elderly and individuals with a compromised immune system, comorbidities, or social risk [11]. Most patients with COVID-19 who were hospitalized or deceased belonged to these groups [26]. The fact that our results did not agree with those of Cotrin et al [18] probably had to do with their study only including individuals under the age of 50 years.

Governments worldwide have introduced measures to prevent the spread of the epidemic. The existing literature provides contradictory data on how many individuals respected the quarantine [18,21]. Our correlation analysis showed that the respondents who reduced their activities to a minimum during the pandemic showed a higher level of fear of going to a dental office, were more ready to cease treatment, and were more often of the opinion that they would only go to a dental office in an emergency (**Table 2**). This agrees with previously published results of authors who determined that dental treatments during the pandemic were more readily undertaken by individuals who did not respect the quarantine [18].

In the rapidly increasing body of available information about COVID-19, there are a lot of incorrect data, which is why medical experts should provide sources of reliable information in order to prevent the negative impact of supposed dubious/false information [27,28]. The respondents who considered themselves more informed and those who evaluated the epidemiological situation as unfavorable were more frightened of dental interventions during the pandemic, would only go to a dental office in an emergency, and would more often cease treatment owing to fear of infection (**Table 2**). These results agree with the results of Bäuerle et al, who determined that people who consider themselves better informed have a greater COVID-19-related fear. This result can be explained by the fact that fear of disease during the pandemic cannot be considered an anxiety in the pathological sense but is more of a rational response to the current situation [9].

The results of the present study showed that patients who had had the COVID-19 virus were less frightened of going to a dental office during the pandemic than those who had not. They were also more willing to undergo dental treatment, which was expected and logical (**Table 2**). Conversely, there was the initial rather confusing finding that vaccinated individuals were more afraid of going to a dental office during the pandemic, would go only in an emergency, and would cease treatment (**Table 2**). This could be explained by the fact that, at the time of the study, vaccination had just begun in Serbia. Among the first to be vaccinated were the vulnerable groups who already felt more at risk and frightened; citizens who wanted to receive the vaccine followed. It could be assumed that, among those first willing to be vaccinated, we would find individuals most frightened of COVID-19 infection, making the obtained results logical.

Every fifth respondent considered a dental office to be a hotspot for the transmission of the SARS-CoV-2 virus. Even though mass vaccination was ongoing and many people had been immunized naturally through previous infection, 26.5% of the respondents still did not feel secure in a dental office (vaccinated patients, those who considered themselves to be more informed, and those who had not contracted the disease) (**Table 3**). The results showed that implementing preventive measures in front of the patient had a positive impact on their sense of security (70% of the respondents), as did ensuring empty waiting rooms (50%), and providing telephone consultations. According to Cotrin et al, for 78% of orthodontic patients, it was important to avoid other people at the reception desk, while the availability of protective equipment for the patients was deemed important by 35% [18]. Similar results were published by Alassiry and Hakami, who reported that 76% of the respondents were not afraid to visit their dentist, under the condition that adequate preventive measures were followed [20].

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Dental offices have always been a place where it is possible to transmit contagious diseases due to direct or indirect exposure, body fluids, and potentially contaminated instruments, materials, and surfaces [12]. It is the moral duty of every doctor to monitor and implement all recommended measures put in place to control infection [29]. For most dentists this is a key element of their everyday practice. The pandemic, which spread worldwide in 2020, made both dentists and their patients suspicious of whether existing measures were sufficient in the current situation. Over 60% of dentists considered their profession to be a high risk, and most of them feared that they could get infected by the SARS-CoV-2 virus at work [27]. A study conducted among dentistry faculty members and students showed that approximately 95% of the students thought they were at a higher risk of contracting the virus at work. The present study showed that a dental office was considered a particular hotspot by respondents who considered themselves more informed about the pandemic, those who knew that it was possible to contract another contagious disease in a dental environment, and those who felt a distressing powerlessness and loss of control in a dental office (**Table 4**).

Numerous studies have already provided recommendations on how to include special measures in everyday practice which could reduce the possibility of transmission of the virus: reducing the number of seats and patients in a waiting room, removing magazines and unnecessary objects, making disinfectant available, and providing patient triage and consultations over the telephone [11,12,21,29]. Most dentists from all over the world who were included in the study by Gambarini et al stated that they were ready to use COVID-19 rapid tests for themselves and all their patients in everyday practice. It is almost certain that this method would be the most effective for controlling the infection and eliminating the fear of dental intervention during the pandemic [30]. However, the application of this measure would be more complicated than the others mentioned above because it requires the consent of the patient and represents a material cost. The present study has shown that many of the aforementioned measures can increase the sense of security among frightened persons. A doctor being available on the telephone during the pandemic was considered desirable by more than 76% of the respondents. An increase in the number of calls from patients was reported by 38% of dentists in the study by Ahmadi et al [15]. Patients who contacted their dentist by telephone or text message felt less concerned about treatment [19,20]. About 40% of dentists use some form of teledentistry (most often teleconsultation and emergency calls), but nevertheless most admit that they do not know the regulations of teledentistry and that they need education [31]. A waiting room and office without other people in it increased the sense of security among older patients, those who had already had COVID-19, those who had reduced their activities, and those who were more frightened of dental interventions during the pandemic (**Table 5**). These results agree with a study conducted in Italy, where the most widely accepted new measure taken by dentists was the infrequent scheduling of patients so as to avoid social contact [27]. Most dental professionals have earmarked crowded waiting rooms as one of the main factors for the transmission of the virus (along with procedures which generate aerosol and the unintentional violation of preventive measures) [25]. Kanathila et al also recommend fewer scheduled patients and patients coming to the dental office unaccompanied [12]. Our results showed that implementing preventive measures in front of the patient made those who considered themselves well-informed, those who thought that it was possible to contract some other disease in a dental office, and those distressed by a sense of powerlessness and loss of control feel more secure (**Table 6**). These results agree with those of Cotrin et al, whose respondents stated that the use of protective measures were important, and that they had a favorable impact on the relationship with the dentist [18]. Although our study included a small number of respondents, it is interesting that an empty waiting room with chairs spaced apart and without magazines and other people distressed approximately 14% of the respondents. Cagetti et al confirmed that 78% of dentists removed magazines and books from their waiting rooms as a preventive measure [27]. The sense of distress can be explained by the fact that such an environment still reminds patients of the unfavorable and risky circumstances they found themselves in, even though they were aware that it was for their protection.

Study Limitations

An online study is recommended during a pandemic owing to the lack of social contact and simplicity. However, the required access to the internet is a possible reason why there were few elderly respondents (65+ years) in the studied population. The cross-sectional design of the study had its limitations since it was not possible to determine a cause-and-effect relationship. Although the size of the sample was representative, this was still a convenience sample with potential bias.

Collecting data such as whether someone had been vaccinated, had had the disease, kept activities to a minimum, and assessed the epidemiological situation were not in themselves the goal of the research because these data change from day to day and they can reflect the situation at only a given moment. These data were collected because they reflected the fear and discomfort of patients caused by the pandemic and were current regardless of the moment in time. The aim of the research was not to determine the proportion of people who were vaccinated or contracted the disease, but to determine the attitudes and behaviors of people who belong to these groups when it came to visiting the dentist in a pandemic.

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

To the best of our knowledge, this is the first study that deals with the fear of dentists during the pandemic in Serbia and that gives practical recommendations to dental professionals on how to behave to positively influence the fear of their patients. The length of the pandemic, with all the changes it has brought, such as the number of infected people, the availability of vaccines, and new strains of the virus, but also the habituation of people to the situation, imposes the need for further research.

Conclusions

One of the basic objectives of treating dental anxiety is to diminish or remove the cause of fear among patients so that they could be motivated for long-term repeat visits [5]. The pandemic as an exogenic factor cannot be removed, and therefore it is important to know the profile of the frightened dental patient during the pandemic, as well as what increases fear and what increases a sense of security. Our results showed that the individual most afraid of a dental intervention during the COVID-19 pandemic is an elderly adult who has not had the disease, is vaccinated, has reduced activities to a minimum, and is regularly informed about the current situation around the world. Implementing preventive measures in front of the patient, ensuring an empty waiting room, and enabling telephone consultations increase a sense of security. Knowing this, it is easier for dentists to identify a frightened patient and to implement certain protocols in their daily practice because they can view the dental intervention during the COVID-19 pandemic through the eyes of a frightened patient. In this way, dentists would give their patients' fear as much importance as they do the success of the intervention.

References:

1. Pohjola V, Lahti S, Vehkalahti MM, Tolvanen M HH. Association between dental fear and dental attendance among adults in Finland. Acta Odontol Scand. 2007;65(4):224-30
2. Gatchell R, Ingersoll B, Bowman L, Robertson MWC. The prevalence of dental fear and avoidance: A recent survey study. J Am Dent Assoc. 1983;107(4):609-10
3. Hill KB, Chadwick B, Freeman R, et al. Adult Dental Health Survey 2009: Relationships between dental attendance patterns, oral health behaviour and the current barriers to dental care. Br Dent J. 2013;214(1):25-32
4. Humphris GM, Dyer TA, Robinson PG. The modified dental anxiety scale: UK general public population norms in 2008 with further psychometrics and effects of age. BMC Oral Health. 2009;9:20
5. Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: Literature review. Clin Cosmet Investig Dent. 2016;8:35-50
6. Beaton L, Freeman R, Humphris G. Why are people afraid of the dentist? Observations and explanations. Med Princ Pract. 2014;23:295-301
7. van Wijk A HJ. The Fear of Dental Pain questionnaire: Construction and validity. Eur J Oral Sci. 2003;111(1):12-18
8. Ornell F, Schuch JB, Sordi AO, Kessler FHP. "'Pandemic fear"' and COVID-19: Mental health burden and strategies. Braz J Psychiatry. 2020;42:232-35
9. Bäuerle A, Teufel M, Musche V, et al. Increased generalized anxiety, depression and distress during the COVID-19 pandemic: A cross-sectional study in Germany. J Public Heal (United Kingdom). 2020;42(4):672-78
10. Knipe D, Evans H, Marchant A, et al. Mapping population mental health concerns related to COVID-19 and the consequences of physical distancing: A Google trends analysis. Wellcome Open Res. 2020;5:82
11. Gurzawska-Comis K, Becker K, Brunello G, et al. Recommendations for dental care during COVID-19 pandemic. J Clin Med. 2020;9(6):1833
12. Kanathila H, Pangi A, Bharathi B. COVID-19 – threat to dentistry – how to overcome? J Evol Med Dent Sci. 2020 Sep 14;9(37): 2746-50.
13. Volgenant CMC, de Soet JJ. Cross-transmission in the Dental Office: Does This Make You Ill? Curr Oral Heal Rep. 2018;5(4):221-28
14. Volgenant CMC, Persoon IF, de Ruijter RAG, de Soet JJ. Infection control in dental health care during and after the SARS-CoV-2 outbreak. Oral Dis. 2021;27(3):674-83
15. Ahmadi H, Ebrahimi A, Ghorbani F. The impact of COVID-19 pandemic on dental practice in Iran: a questionnaire-based report. BMC Oral Health. 2020;20:354
16. Republički zavod za statistiku Srbije [Internet]. [Accessed 2021 June 1] Available from: https://www.stat.gov.rs/sr-Latn/oblasti/stanovnistvo [in Croatian]
17. Nardi M P. Developing a questionnaire. Doing Surv Res. 2020;2(2):80-121
18. Cotrin P, Peloso RM, Oliveira RC, et al. Impact of coronavirus pandemic in appointments and anxiety/concerns of patients regarding orthodontic treatment. Orthod Craniofacial Res. 2020;23(4):455-61
19. Tunis TS, Ratson T, Matalon S, et al. The impact of the COVID-19 pandemic on Israeli orthodontic practice: A clinic's activity and patients' attitudes. Int J Environ Res Public Health. 2022;19(4):1965
20. Alassiry AM, Hakami Z. The attitude, perception, and mental health of patients receiving orthodontic treatment during the COVID-19 pandemic in Saudi Arabia. Patient Prefer Adherence. 2022;16(February):363-72
21. Campagnaro R, Collet G de O, Andrade MP de, et al. COVID-19 pandemic and pediatric dentistry: Fear, eating habits and parent's oral health perceptions. Child Youth Serv Rev. 2020;118:105469
22. Migas K, Marczak M, Kozłowski R, et al. Impact of the COVID-19 pandemic on the dental preferences of patients in the private sector. Int J Environ Res Public Health. 2022;19(4):2183
23. Ciardo A, Simon MM, Sonnenschein SK, et al. Impact of the COVID-19 pandemic on oral health and psychosocial factors. Sci Rep [Internet]. 2022;12(1):1-12
24. Oshima K, Miura H, Tano R, Fukuda H. Factors associated with regular dental checkups ' discontinuation during the COVID-19 pandemic : A nationwide cross-sectional web-based survey in Japan. Int J Environ Res Public Health 2022;19(5):2917
25. Jum'ah AA, Elsalem L, Loch C, et al. Perception of health and educational risks amongst dental students and educators in the era of COVID-19. Eur J Dent Educ. 2021;25:506-15
26. Jordan RE, Adab P, Cheng KK. COVID-19: Risk factors for severe disease and death. BMJ. 2020;368:m1198
27. Cagetti MG, Cairoli JL, Senna A, Campus G. COVID-19 outbreak in North Italy: An overview on dentistry. A questionnaire survey. Int J Environ Res Public Health. 2020;17(11):3835
28. Lin CY, Broström A, Griffiths MD, Pakpour AH. Investigating mediated effects of fear of COVID-19 and COVID-19 misunderstanding in the association between problematic social media use, psychological distress, and insomnia. Internet Interv. 2020;21:100345
29. Patel M. Infection control in dentistry during COVID-19 pandemic: What has changed? Heliyon. 2020;10(6):E05402
30. Gambarini E, Galli M, di Nardo D, et al. A survey on perceived COVID-19 risk in dentistry and the possible use of rapid tests. J Contemp Dent Pract. 2020;21(7):718-22
31. Giraudeau N, Bauer M, Tramini P, et al. A national teledentistry study on the knowledge, attitudes, training and practices of private dentists. Digit Heal. 2022;8:205520762210850

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]