Original paper

Impact of the COVID-19 pandemic on patients' anxiety levels related to dental appointments in Poland

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Abstract

Background. The reasons for the fear of coronavirus disease 2019 (COVID-19) infection are the ease of the transmission of the virus, the severe course of the disease and possible complications, as well as treatment difficulties. The dental office is a place of increased risk. Despite the applied epidemiological protection measures and the hygienic regimen, a dental visit may cause anxiety and generate stress.

Objectives. The aim of the study was to determine the level of fear of coronavirus infection in dental patients during the COVID-19 pandemic, taking into account the patients' age, gender and education, the number of people in the household, and the reason for the appointment. In addition, the patients assessed the epidemiological comfort provided during their visit to the dental clinic.

Material and methods. The survey was conducted among 100 adults who visited the University Dental Clinic (UKS) in Cracow, Poland, for dental treatment. The patients completed 2 questionnaires: "Assessment of the level of anxiety associated with COVID-19"; and "Impact of the COVID-19 pandemic on the need of dental treatment and the level of epidemiological safety of patients". The results were statistically analyzed and interpreted.

Results. The level of anxiety assessed with the questionnaire was moderate, and there were no statistically significant differences with regard to the age, gender and education of the respondents or the number of people in the same household. The main reason for reporting to the clinic was the desire to start and continue treatment. Most of the respondents believed that wearing a mask and measuring the temperature protect against infection, but 27% assessed the security measures as insufficient. Nearly half feared impeded access to dental services, and more than half were afraid of increased costs of treatment.

Conclusions. Despite the safety measures taken in place, patients felt anxious about dental appointments during the COVID-19 pandemic.

Keywords: anxiety, dental treatment, COVID-19, masks, epidemiological protection

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Introduction

Coronavirus disease 2019 (COVID-19) is an acute infectious disease of the respiratory system caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The most common symptoms of infection are a high fever, a dry cough, shortness of breath, muscle aches, fatigue, and loss of smell and taste. In most cases, infection takes a mild form, but it can proceed aggressively, leading to severe pneumonia, multi-organ failure, sepsis, a septic shock, and even death.[1–3]

The virus is transmitted via droplets, i.e., through sneezing and coughing. It is contracted through direct contact with a sick person, or by rubbing the eyes, nose or mouth with an infected hand.[4] The ease of pathogen transmission, non-specific symptoms and a long incubation period led to a worldwide epidemiological emergency a month after the first cases were diagnosed in the Chinese province of Hubei. In March 2020, the World Health Organization (WHO) granted COVID-19 a pandemic status, i.e., an epidemic on a global scale, and issued unified epidemiological recommendations.[5] Hygiene regimens, mouth and nose protection, and social isolation were the primary health protection methods, which could be modified by a given country depending on the number of patients and health service efficiency.[6] A surge in infections in the autumn and winter seasons in Poland forced the necessary introduction of orders and restrictions, resulting in changes in citizens' lives. To limit person-to-person contact, schools, offices, shopping centers, and sports and recreation venues were closed. In addition, organizing social meetings was forbidden and remote working was recommended. The ease of virus transmission, social isolation, and the sheer volume of information on the pandemic in the media and social networks affected mental health, and generated anxiety and depression.[7]

During the pandemic, access to healthcare was limited, which was mainly aimed at combating COVID-19. Teleconsultations were recommended for patient diagnostics and treatment to limit coronavirus transmission.[8] The planned procedures were postponed, and if in-person contact with a physician was essential, the visit followed epidemiological recommendations, i.e., maintaining a distance between the waiting patients, intervals between visits, and the protection of the mouth and nose of the patient and the doctor during the examination. The nature of some medical specialties hindered treatment, which could only be undertaken remotely or in compliance with sanitary requirements that limit viral transmission. One of such fields of medicine was dentistry. According to "The New York Times" report, it is one of the occupations most vulnerable to COVID-19 infection.[9] Indeed, the lack of a mask on the patient's face, the droplets of saliva or blood depositing on surfaces, and the inhalation of the aerosols generated by rotary and ultrasonic instruments all pose a threat to dental patients and dentists.[10] Therefore, new prophylactic and therapeutic protocols were introduced in medical facilities to protect medical personnel and patients during the pandemic.[11] Recommendations for patients included initial segregation through epidemiological interviews, temperature measurements, social distancing, and an obligation to cover the nose and mouth in public places.[12] The dental team was provided with protective clothing, gloves, visors, masks, and disinfectants.[13,14] However, despite an attempt to create optimal sanitary conditions for treatment, certain patients feared visiting the dentist, which could have worsened their oral health.

The study aimed to assess the feeling of anxiety caused by COVID-19 in dental patients during the pandemic with regard to the patients' age, gender and educational level, the number of people living in the same household, and the reason for reporting to the dental clinic, as well as to assess the patients' comfort with the preventive measures provided during their visit.

Material and methods

The study was approved by the Bioethics Committee at the Jagiellonian University, Cracow, Poland, on September 24, 2020 (No. 1072.6120.254.2020).

The research involved 100 patients aged 18–87 years who reported for general dental treatment to the University Dental Clinic (UKS) in Cracow, Poland, between October 21 and November 7, 2020. In the 1st week of the study, the daily increase in SARS-CoV-2 infections in Poland was 13,781 people, including 234 deaths, which was nearly doubled in the 2nd week (21,068 infected and 286 dead).

The research used 2 questionnaires. The 1st survey –"Assessment of the level of anxiety associated with COVID-19" – used the Fear of COVID-19 Scale (FCV-19S), developed by Ahorsu et al.,[15] which was adapted to Polish and validated. To the sheet consisting of 7 items, 4 items were added and summarized in the form of a table. The respondents marked their answers on a 5-point Likert scale, where '1' referred to 'strongly disagree' and '5' to 'strongly agree' (Appendix 1 available on request from the corresponding author). The maximum number of points that could be obtained was 55, and the minimum was 11. Scores of 11–25 points indicated a low sense of fear, 26–40 points demonstrated a moderate sense of fear, and 41–55 points meant a high sense of fear. Additionally, the patients subjectively rated their level of COVID-19 fear, using a numerical scale with scores from 1 to 10.

The 2nd questionnaire – "Impact of the COVID-19 pandemic on the need of dental treatment and the level of epidemiological safety of patients" – consisted of 19 closed

single-choice questions and collected sociodemographic data, i.e., age, gender, education, and the number of people in the household. The patients were asked about their reason for visiting UKS and the assessment of the epidemiological safeguards used (Appendix 2 available on request from the corresponding author). The questionnaire was distributed to patients registered for a visit by the UKS Central Registration Office employees. After reading the information about the study, the patients agreed to participate and consented for their data to be used for research purposes.

Statistical analysis

The study results were statistically analyzed using IBM SPSS Statistics for Windows, v. 29.0 (IBM Corp., Armonk, USA), and the Jamovi software, v. 2.3.28 (https://www.jamovi.org), which were employed to calculate basic descriptive statistics for quantitative variables and for other statistical analyses.

To verify the structure of the questionnaire, an exploratory factor analysis with Varimax rotation was performed, taking into account the Kaser–Mayer–Olkin (KMO) coefficient and Bartlett's test of sphericity. The age- and gender-dependent anxiety levels were compared using the multivariate analysis of variance (MANOVA). Pearson's χ^2 test and Fisher's exact test (the 2nd questionnaire) determined differences in the evaluation of epidemiological protective measures, face masks, temperature monitoring, treatment costs, as well as sociodemographic variables.

Results

A total of 46 males and 54 females aged 18–87 years participated in the study. The least numerous group consisted of 12 people aged below 29, and the largest was the senior group, which consisted of 38 people aged over 65. The educational level among the respondents was as follows: primary (n = 4); secondary (n = 44); vocational (n = 22); and higher (n = 30).

Most patients (n = 43) attended UKS to start treatment, 32 were interested in continuing treatment that started before the pandemic, and 25 experienced severe pain that required emergency outpatient intervention. After the symptoms disappeared, 9 people continued their treatment as planned.

The maximum number of points for responses to the individual questions of the 1st questionnaire was 50, and the minimum was 11. Seventeen participants reported low levels of anxiety related to the coronavirus pandemic, 70 reported moderate levels, and 13 reported high levels.

When asked about epidemiological safety during dental visits (the 2nd questionnaire), 13 males and 14 females believed that the applied preventive measures were insufficient. Meanwhile, 86 participants believed that wearing a mask protects other people, and 64 stated that measuring the temperature was sufficient for identifying infected individuals. Sixty-two respondents were concerned about the increased treatment costs caused by the additional protection required due to the pandemic. According to 19 males and 24 females, global coronavirus infections would result in impeded access to dental services. The youngest people (18–29 years of age) indicated that masks and temperature measurements were effective methods of protecting against the virus significantly less often than the oldest people (over 65 years of age). Those aged 30–50 years pointed to impeded access to dental services during the pandemic significantly more often than people aged 51–65 and over 65 years.

Evaluation of the results of the 1st questionnaire: "Assessment of the level of anxiety associated with COVID-19"

Assessment of the psychometric properties of the questionnaire

To verify the structure of the questionnaire, an exploratory factor analysis of principal components was performed using Varimax rotation. The KMO correlation coefficient was 0.86, and Bartlett's test of sphericity was statistically significant, which confirms the validity of distinguishing the factors. Based on the eigenvalues, 2 factors were isolated, which explained 61% of the variance in the anxiety levels. The scree plot confirmed the two-factor structure (Fig. 1).

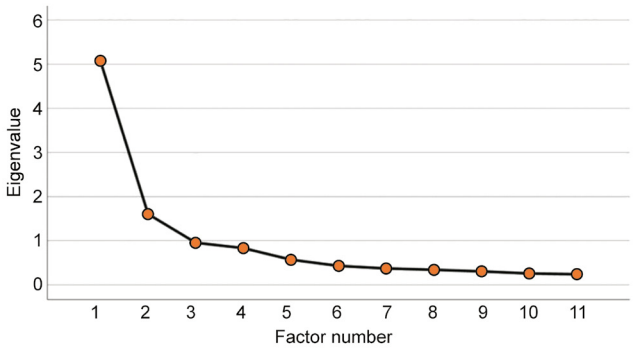

Fig. 1. Scree plot used in the exploratory factor analysis

Table 1 presents the matrix of the rotated components. The first 7 questions of the original scale constituted the 1st factor, and the additional questions were the 2nd one. Both factors had a satisfactory level of reliability of >0.8. The distribution of the respondents' answers to particular questions is presented in Fig. 2.

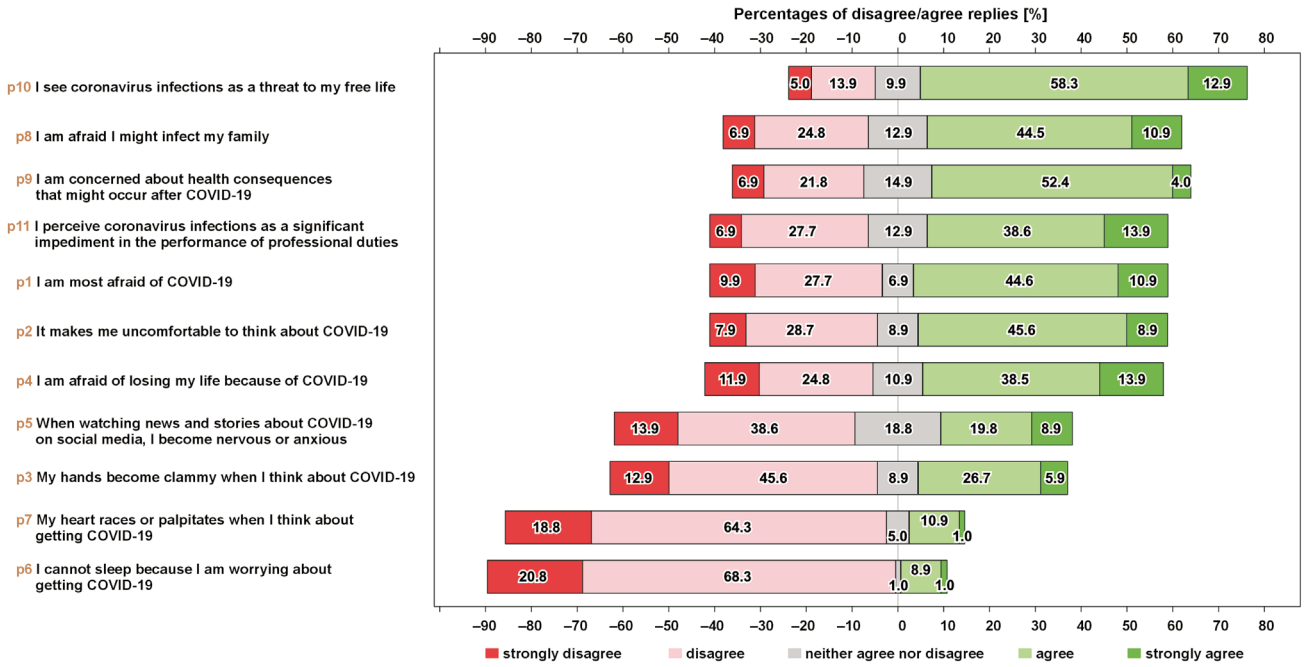

Fig. 2. Percentage distribution of the patients' responses to particular questions (Questionnaire 1: "Assessment of the level of anxiety associated with COVID-19") COVID-19 – coronavirus disease 2019.

Table 1. Matrix of the rotated components

Question	Factor	
	1	2
p1	**0.71**	0.21
p2	**0.81**	0.13
p3	**0.78**	0.24
p4	**0.73**	0.29
p5	**0.69**	0.28
p6	**0.74**	–0.03
p7	**0.62**	0.16
p8	0.26	**0.76**
p9	0.47	**0.65**
p10	0.22	**0.82**
p11	–0.01	**0.83**
Percentage of variance [%]	46.15	14.60
Reliability	0.868	0.816

Anxiety level and sociodemographic variables

To determine differences in the anxiety levels for factor 1 and factor 2 with regard to the patient's gender and age, the two-factor ANOVA was performed for many variables, with gender and age considered between-subject factors. The analysis showed no significant main effects for gender for factor 1 ($F(1.93) = 1.79$; $p = 0.185$; $\eta^2 = 0.02$) and factor 2 ($F(1.93) = 3.40$; $p = 0.069$; $\eta^2 = 0.04$). The main effects for age were also insignificant for factor 1 ($F(3.93) = 2.10$; $p = 0.106$; $\eta^2 = 0.06$) and factor 2 ($F(3.93) = 1.26$; $p = 0.293$; $\eta^2 = 0.04$). In addition, the interactions between the 2 between-subject factors were insignificant for factors 1 ($F(3.93) = 0.50$; $p = 0.682$; $\eta^2 = 0.02$) and 2 ($F(3.93) = 2.53$; $p = 0.062$; $\eta^2 = 0.08$). As such, the anxiety level was independent of the participant's gender and age.

The subjective assessment of the feeling of fear regarding COVID-19 was based on a numerical scale ranging from 1 to 10. The analysis of the correlation between this subjective assessment and factor 1 showed a strong positive relationship with anxiety ($r = 0.68$; $p < 0.001$), and a moderate positive relationship for factor 2 ($r = 0.47$; $p < 0.001$).

Evaluation of the results of the 2nd questionnaire: "Impact of the COVID-19 pandemic on the need of dental treatment and the level of epidemiological safety of patients"

The analysis showed no differences between genders in the assessments made. Detailed results are presented in Table 2. There were statistically significant differences between age groups in terms of opinions on protective masks, temperature measurements and access to treatment. The youngest subjects indicated that masks and temperature measurements were effective methods of preventing contact with people who could be a threat significantly less frequently than the oldest subjects. There were no differences between age groups in their assessment of epidemiological safeguards and treatment costs (Table 3).

Also, the educational level did not result in any differences in responses to the questionnaire. Regardless of the educational level, over 60% of respondents feared increased treatment costs (Table 4).

Table 2. Frequency analysis with Pearson's χ^2 test for the comparison of safety measures by gender

Safety measures	Gender		χ^2	*p*-value	φ
	male *n* = 46	female *n* = 54			
Epidemiological safeguards	14 (30.4)	13 (24.1)	0.59	0.442	0.08
Protective mask	40 (87.0)	46 (85.2)	0.22	0.640	0.05
Temperature measurement	31 (67.4)	33 (61.1)	0.59	0.443	0.08
Treatment costs	27 (58.7)	35 (64.8)	0.26	0.612	0.05
Access to treatment	24 (52.2)	19 (35.2)	3.18	0.074	0.18

Data presented as number (percentage) (*n* (%)).

Table 3. Frequency analysis with Fisher's exact test for the comparison of safety measures by age

Safety measures	Age [years]				*p*-value	*V*
	18–29 *n* = 12	30–50 *n* = 24	51–65 *n* = 27	>65 *n* = 37		
Epidemiological safeguards	4 (33.3)	6 (25.0)	6 (22.2)	11 (29.7)	0.876	0.08
Protective mask	7 (58.3)[a]	19 (79.2)[a,b]	23 (85.2)[a,b]	37 (100.0)[b]	0.005*	0.35
Temperature measurement	4 (33.3)[a]	12 (50.0)[a,b]	18 (66.7)[a,b]	30 (81.1)[b]	0.014*	0.32
Treatment costs	9 (75.0)	19 (79.2)	14 (51.9)	20 (54.1)	0.098	0.25
Access to treatment	5 (41.7)[a,b]	17 (70.8)[b]	8 (29.6)[a]	13 (35.1)[a]	0.013*	0.33

Data presented as *n* (%). * statistically significant; values with different superscript letters differ at $p < 0.05$.

Table 4. Frequency analysis with Fisher's exact test for the comparison of safety measures by the educational level

Safety measures	Educational level				*p*-value	*V*
	primary *n* = 4	secondary *n* = 44	vocational *n* = 22	higher *n* = 30		
Epidemiological safeguards	1 (25.0)	14 (31.8)	4 (18.2)	8 (26.7)	0.718	0.12
Protective mask	3 (75.0)	38 (86.4)	19 (86.4)	26 (86.7)	0.463	0.16
Temperature measurement	3 (75.0)	29 (65.9)	16 (72.7)	16 (53.3)	0.519	0.15
Treatment costs	3 (75.0)	27 (61.4)	16 (63.6)	18 (60.0)	1.000	0.03
Access to treatment	2 (50.0)	17 (38.6)	6 (27.3)	18 (60.0)	0.104	0.25

Data presented as *n* (%).

Discussion

Scientific research demonstrates the negative impact of the COVID-19 pandemic on mental health globally.[15–17] The fear of coronavirus infection, the socio-economic impact of the pandemic, the persistent tracking of information in the media and social networks, xenophobia, and traumatic thoughts about the disease have been defined by scientists in Canada and the United States as COVID Stress Syndrome.[18] The severe course of the disease, hospitalization, health complications, and the death of relatives may lead to post-traumatic stress, depression and anxiety disorders. Many tools have been developed to analyze the psycho-emotional state of society during the COVID-19 pandemic in more detail, including surveys and questionnaires, which have also been adapted to the Polish language. These include FCV-19S, the Obsession with COVID-19 Scale (OCS), the COVID Stress Scale (CSS), and others routinely used in psychological research.[15,18–20]

The current study used the FCV-19S questionnaire, to which 4 statements were added to cover the socio-economic aspect of the pandemic, i.e., material effects, and changes in family and professional life that may negatively impact the patient's psychological comfort. After statistical analysis, the questionnaire was deemed a reliable psychometric tool, and showed that the fear of COVID-19 was low, moderate or high, and similar to the level assessed by the respondents on a scale from 1 to 10.

The results show that the level of fear related to coronavirus was independent of the respondent's age. Similar to our research, a meta-analysis of data collected from 10 countries found the lowest level of anxiety in the youth and the elderly.[21] This finding is explained by a lower awareness of the real threat of the pandemic amongst young people, and reconciliation with fate and the passage of time in the elderly.[22] A different relationship was observed by researchers from Italy,[22] China,[23] Japan,[24] Turkey,[25] and Poland,[7] who showed that the anxiety levels

increased with age. The reason for this can be found in the more severe course of viremia, a worse prognosis and numerous complications correlated with the burden of comorbidities in the elderly.

Comparing the level of fear of COVID-19 between males and females did not show statistically significant differences, though it was higher in women. This result confirms the hypothesis put forward by Tolin and Foa,[26] and supported by many studies, stating that females have increased sensitivity to stress and react more strongly to pandemic threats.[26,27] Susceptibility to stressful situations also depends on the marital status, education, and family and professional situations. Indeed, surveys conducted among the Indian population demonstrated a greater reactivity to stress in married people, those with a lower educational level and individuals working in the health service.[28] However, this was not observed in the current study, although the presence of stress makes it possible to use FCV-19S to identify the occupations and professions most exposed to infection and stress.

Regardless of gender, 86% of the respondents believed that mask-wearing protects against SARS-CoV-2 infection, with the elderly being the largest percentage. Over 60% assessed that the temperature measurement and the pre-visit interview eliminated the potential risk. Besides the possibility of coronavirus infection, the patients visiting the clinic during the pandemic were most concerned about increased treatment costs and limited access to healthcare. Being aware of the possibility of contracting the virus during the procedure and while waiting, and transmitting it to their relatives, they mainly attended the clinic to start treatment or receive emergency pain relief. The fear of COVID-19 and the phobias caused by the traumatic nature of dental work contribute to the cancelations of dental visits. A survey conducted in Turkey showed that 73% of participants feared dental treatment because of the possibility of contracting the virus in the dental office.[29] Moreover, the literature reports that the likelihood of treatment discontinuation is 6 times higher in people with a high level of fear of coronavirus and 8 times higher in the elderly.[14] Almost 25% of respondents changed their treatment date during the periods of increased infection rate due to the possibility of infection.[14] These findings differ from an analysis carried out in Madrid, Spain, which showed that over 90% of those asked would go to the dentist willingly despite the risk.[30]

Conclusions

The state of the pandemic and concerns about contracting SARS-CoV-2 caused fear in dental patients. Despite the restrictions introduced and attempts made to create optimal sanitary conditions, the fear of infection reduces patient confidence in medical staff, which may result in dental visit postponement and worsen oral cavity health.

Ethics approval and consent to participate

The study was approved by the Bioethics Committee at the Jagiellonian University, Cracow, Poland, on September 24, 2020 (No. 1072.6120.254.2020). The informed written consent was obtained from all the participants.

Data availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Consent for publication

Not applicable.

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References

1. Grant MC, Geoghegan L, Arbyn M, et al. The prevalence of symptoms in 24,410 adults infected by the novel coronavirus (SARS-CoV-2; COVID-19): A systematic review and meta-analysis of 148 studies from 9 countries. *PLoS One*. 2020;15(6):e0234765. doi:10.1371/journal.pone.0234765
2. Straburzyński M, Nowaczewska M, Budrewicz S, Waliszewska-Prosół M. COVID-19-related headache and sinonasal inflammation: A longitudinal study analysing the role of acute rhinosinusitis and ICHD-3 classification difficulties in SARS-CoV-2 infection. *Cephalalgia*. 2022;42(3):218–228. doi:10.1177/03331024211040753
3. Straburzyński M, Kuca-Warnawin E, Waliszewska-Prosół M. COVID-19-related headache and innate immune response – a narrative review. *Neurol Neurochir Pol*. 2023;57(1):43–52. doi:10.5603/PJNNS.a2022.0049
4. Esakandari H, Nabi-Afjadi M, Fakkari-Afjadi J, Farahmandian N, Miresmaeili SM, Bahreini E. A comprehensive review of COVID-19 characteristics. *Biol Proced Online*. 2020;22:19. doi:10.1186/s12575-020-00128-2
5. World Health Organization. Advice for the public: Coronavirus disease (COVID-19). https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public. Accessed July 4, 2021.
6. Polish Ministry of Health. Regulation of the Minister of Health of 20 March 2020 on recalling the state of epidemic threat in the territory of the Republic of Poland. https://covidlawlab.org/item/regulation-of-the-minister-of-health-of-20-march-2020-on-recalling-the-state-of-epidemic-threat-in-the-territory-of-the-republic-of-poland. Accessed February 3, 2023.
7. Babicki M, Mastalerz-Migas A. The occurrence of anxiety disorders among Poles during the COVID-19 pandemic. *Psychiatr Pol*. 2021;55(3):497–509. doi:10.12740/PP/OnlineFirst/126230
8. World Health Organization. Considerations for the provision of essential oral health services in the context of COVID-19. https://www.who.int/publications/i/item/who-2019-nCoV-oral-health-2020.1. Accessed February 3, 2023.
9. The New York Times. Gamio L. The workers who face the greatest coronavirus risk. https://www.nytimes.com/interactive/2020/03/15/business/economy/coronavirus-worker-risk.html. Accessed July 14, 2021.
10. Banakar M, Lankarani KB, Jafarpour D, Moayedi S, Banakar MH, Sadeghi AM. COVID-19 transmission risk and protective protocols in dentistry: A systematic review. *BMC Oral Health*. 2020;20(1):275. doi:10.1186/s12903-020-01270-9

11. Dominiak M, Różyło-Kalinowska I, Gedrange T, et al. COVID-19 and professional dental practice. The Polish Dental Association Working Group recommendations for procedures in dental office during an increased epidemiological risk. *J Stoma*. 2020;73(1):1–10. doi:10.5114/jos.2020.94168
12. Villani FA, Aiuto R, Paglia L, Re D. COVID-19 and dentistry: Prevention in dental practice, a literature review. *Int J Environ Res Public Health*. 2020;17(12):4609. doi:10.3390/ijerph17124609
13. Derruau S, Bouchet J, Nassif A, et al. COVID-19 and dentistry in 72 questions: An overview of the literature. *J Clin Med*. 2021;10(4):779. doi:10.3390/jcm10040779
14. González-Olmo MJ, Delgado-Ramos B, Ortega-Martínez AR, Romero-Maroto M, Carrillo-Díaz M. Fear of COVID-19 in Madrid. Will patients avoid dental care? *Int Dent J*. 2022;72(1):76–82. doi:10.1016/j.identj.2021.01.013
15. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID-19 Scale: Development and initial validation. *Int J Ment Health Addict*. 2022;20(3):1537–1545. doi:10.1007/s11469-020-00270-8
16. Alnazly E, Khraisat OM, Al-Bashaireh AM, Bryant CL. Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers. *PLoS One*. 2021;16(3):e0247679. doi:10.1371/journal.pone.0247679
17. Stanton R, To QG, Khalesi S, et al. Depression, anxiety and stress during COVID-19: Associations with changes in physical activity, sleep, tobacco and alcohol use in Australian adults. *Int J Environ Res Public Health*. 2020;17(11):4065. doi:10.3390/ijerph17114065
18. Taylor S. COVID Stress Syndrome: Clinical and nosological considerations. *Curr Psychiatry Rep*. 2021;23(4):19. doi:10.1007/s11920-021-01226-y
19. Lee SA. How much "Thinking" about COVID-19 is clinically dysfunctional? *Brain Behav Immun*. 2020;87:97–98. doi:10.1016/j.bbi.2020.04.067
20. Pilch I, Kurasz Z, Turska-Kawa A. Experiencing fear during the pandemic: Validation of the fear of COVID-19 scale in Polish. *PeerJ*. 2021;9:e11263. doi:10.7717/peerj.11263
21. Lin CY, Hou WL, Mamun MA, et al. Fear of COVID-19 Scale (FCV-19S) across countries: Measurement invariance issues. *Nurs Open*. 2021;8(4):1892–1908. doi:10.1002/nop2.855
22. De Leo D, Trabucchi M. COVID-19 and the fears of Italian senior citizens. *Int J Environ Res Public Health*. 2020;17(10):3572. doi:10.3390/ijerph17103572
23. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): Emerging and future challenges for dental and oral medicine. *J Dent Res*. 2020;99(5):481–487. doi:10.1177/0022034520914246
24. Midorikawa H, Aiba M, Lebowitz A, et al. Confirming validity of the Fear of COVID-19 Scale in Japanese with a nationwide large-scale sample. *PLoS One*. 2021;16(2):e0246840. doi:10.1371/journal.pone.0246840
25. Kaya N, Bayındır F. Evaluation of the relationship between the geriatric anxiety and COVID-19 anxiety and fear levels in geriatric dental patients during the COVID-19 pandemic. *Dent Med Probl*. 2023;60(1):5–11. doi:10.17219/dmp/157345
26. Tolin DF, Foa EB. Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychol Bull*. 2006;132(6):959–992. doi:10.1037/0033-2909.132.6.959
27. Broche-Pérez Y, Fernández-Fleites Z, Jiménez-Puig E, Fernández-Castillo E, Rodríguez-Martin BC. Gender and fear of COVID-19 in a Cuban population sample. *Int J Ment Health Addict*. 2022;20(1):83–91. doi:10.1007/s11469-020-00343-8
28. Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV. Assessing coronavirus fear in Indian population using the Fear of COVID-19 Scale. *Int J Ment Health Addict*. 2021;19(6):2383–2391. doi:10.1007/s11469-020-00332-x
29. Daltaban Ö, Aytekin Z. Fear and anxiety of COVID-19 in dental patients during the COVID-19 pandemic: A cross-sectional survey in Turkey. *Dent Med Probl*. 2022;59(3):343–350. doi:10.17219/dmp/150075
30. González-Olmo MJ, Ortega-Martínez AR, Delgado-Ramos B, Romero-Maroto M, Carrillo-Diaz M. Perceived vulnerability to coronavirus infection: Impact on dental practice. *Braz Oral Res*. 2020;34:e044. doi:10.1590/1807-3107bor-2020.vol34.0044