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Evaluating Anxiety in Patients visiting Dental Clinics in the Midst of COVID-19 Pandemic

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Abstract.

Objective: To determine the anxiety levels of the patients visiting or planning to visit dental clinics and undergoing dental procedures in the midst of the coronavirus pandemic.

Materials and Methods: In this cross-sectional survey-based study, we recruited 502 participants, residing in Karachi, Pakistan.The study was conducted in August 2020. Online questionnaire was formulated assessing the dental anxiety levels of participants using the standard Modified Dental Anxiety Scale, along with demographic data and questions regarding coronavirus and dental treatment. Descriptive statistics and multiple linear regression tests were used to detect the impact of any variable on the Modified Dental Anxiety Score.

Results: Out of the 502 participants, 316 (62.9%) were females and 186 (37.1%) males who completed the online questionnaire. 65 (12.9%) participants reported suffering from high dental anxiety. The majority of participants did not suffer from coronavirus but were fearful of contracting it if they visited dental clinics. The majority of the participants (91.4%) did not test positive for coronavirus. Age and gender had a significant relation with the Modified Dental Anxiety scale, although similar was not seen with the level of education and occupation.

Conclusion: Currently, the coronavirus outbreak is on the rise with patients requiring dental treatment when urgency arises. Although normally dental anxiety is present, the additional presence of coronavirus has further enhanced it. Dental anxiety continues to be prevalent since the risk of contracting the virus is present. Implementation of proper guidelines to prevent transmission of coronavirus could be a critical factor to decrease dental anxiety of the patients.

Keywords: Coronavirus, anxiety, stress, dental clinics, general population.

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Introduction

From Wuhan, China marked the beginning of global health crises, the novel coronavirus (SARS-CoV-2) outbreak, which on 11th March 2020 was declared as a pandemic.[1] These are challenging times for both the government and healthcare officials as different measures are being taken to contain the virus, limiting the morbidities and mortalities to a minimum if not eliminating it. Leading healthcare organisations such as the World Health Organisation (WHO) has put forth various protection modalities for individuals to follow for their own protection and others as well.[2]

The primary modality through which a person can contract coronavirus is by respiratory droplets that are sneezing and coughing.[3] Coronavirus has an incubation period of around 14 days, although this can vary, after which the infected person begins to fall ill.[4] The primary symptoms that the infected patient usually presents with are fever, dry cough, shortness of breath, myalgia, and sore throat.[5] Moreover, it is known that many patients later on as the disease progresses tend to develop disturbance in their taste and smell sensation, although gastric upset such as vomiting and diarrhoea are not rare to occur.[6] Coronavirus is known to infect any person but some individuals with underlying medical conditions such as hypertension, diabetes, chronic respiratory pathology, and compromised immune system are more prone to contract as well as suffering from severe infection.[7] Additionally, elderlies are more likely to contract the virus as compared to young adults mainly due to the weakened immune system that occurs during the normal aging process as well as having co-morbidities but is not always the case as young adults can also develop severe infections. Healthcare professionals are more likely to contract the virus since they are treating the patients suffering from coronavirus.[8] The same is the case with dentists, who work in close contact withthe patients, and aerosols are generating during routine dental procedures and this is the primary way by which one gets infected.[9] Since the infected person remains asymptomatic for some time or may remain symptomless, the patient can infect the dentist and vice versa. Dental procedures such as fillings, root canal treatment, surgical and aesthetic treatments generate aerosols, so to limit such procedures being performed, American Dental Association (ADA) has issued guidelines to performing only emergency procedures and delay non-emergency procedures indefinitely.[10]

Although dental practices are trying to abide by the guidelines such as performing only emergency procedures and screening patients (checking temperature and wearing masks), this is not always the case which tends to increase the anxiety of the patients when visiting a dental clinic. Dental anxiety is an increasing concern during the current situation for the patients as well as the dentists as patients are hesitant to visit the dentist for any procedure and are delaying appointments. Many times, patients are already under some anxiety of undergoing dental procedures, current conditions further exacerbate the anxiety because of the fear to contract the virus. The dental community is presented with the challenge of implementing strict protocols to decrease the risk of transmission and this is in turn decrease patient's anxiety as well when a safe environment is observed. Currently, little is known about the anxiety levels of patients when planning to visit a dentist or urgent treatment is required. This study has aimed to evaluate the impact of novel coronavirus pandemic on anxiety levels of the patients when they are planning to visit a dental clinic and when they are undergoing a dental treatment on a routine or emergency basis. Furthermore, abiding by the appointments given to the patients is also assessed.

Materials and methods

This cross-sectional survey-based study was conducted in August 2020. A total of 502 eligible participants were selected using a convenience sampling method, belonging to Karachi, Pakistan. A questionnaire was formulated using Google Forms, which consisted of questions regarding demographic data, questions in general about being infected with coronavirus or not, visiting a dentist for any treatment, and Modified Dental Anxiety Scale was used to measure anxiety levels of the participants. Distribution of the questionnaire was carried out through various social media platforms such as emails, WhatsApp® and Facebook® to record their responses. In this

questionnaire, the consent statement was included for ensuring voluntary participation and the response was recorded. OpenEpi sample size calculator was used for this study to calculate the sample size with a percentile of 50, confidence interval being 95%. The total sample size was calculated to be 384(n=[Z12-α/2.p.q]/d2)**.**[11]

Primarily, in our study, we focused on measuring the anxiety levels of the patients that might visit a dental clinic or patients requiring emergency dental procedure. Secondly, information regarding demographics data of the participants including age, gender, occupation, and level of education was also recorded to determine any possible relation with anxiety levels. Lastly, questions about being tested positive with coronavirus and general anxiousness were asked. Anxiety levels of the participants were measured using the standard Modified Dental Anxiety Scale (MDAS).[12] There are a total of 5 questions in this scale and each question has 5 options in Likert scale rating which are 0=Not anxious, 1=Slightly anxious, 2=Fairly anxious, 3=Very anxious, and 4=Extremely anxious. Each option has its own numerical value which when added represents the total score of a participant. The total score ranges from 5-25, and cut off value was 19 which suggests high clinically significant dental anxiety and possible dental phobia. All these questions were formulated in the questionnaire and made in the English language. Participation in this study was based on adults to assess their anxiety when asked about visiting dental clinics for any procedure and book a dental appointment if required or those who had to visit a dental clinic for their treatments during the current pandemic situation. Children and adolescents were excluded from this study. The survey was anonymously distributed and information of the respondents was kept confidential. Ethics Review committee of Altamash Institute of Dental Medicine approved this study (AIDM / EC / 08 / 2020 / 02). In this study, for data analysis, SPSS statistical software version 25 was used. Descriptive statistics and Multiple Linear Regression test were used to determine any significant relation of age, gender, level of education, and occupation with the Modified Dental Anxiety Score of each patient. A $p \leq 0.05$ was considered to be as statistically significant.

Results

In this study, we received a total of 560 filled questionnaires, out of which 58 were excluded from the sample based on being incomplete and irrelevance. The response rate of the participants was found to be 89.6%. A multiple linear regression statistical test was used to analyze any significant relationship between Age, Gender, Level of education, and Occupation with the Modified Dental Anxiety Scale Total Score (MDAS) in the current coronavirus pandemic situation. As shown in Table 1, out of 502 participants, the majority of 404 (80.5%) participants belonged to the 18-30 years of age group, with a small number of participants being above 60 years of age. Predominantly, the participants had an undergraduate (46.8%) and graduate (26.6%) level of education. Moreover, the commonly selected occupation by the respondents were students (57.1%), healthcare professional, (12.3%) and business (7.1%) with a few

Table 1: Demographic data of the participants (*n*=502)

Demographics	Number/Percentage
Age	
18-30 years	404 (80.5)
31-40 years	41 (8.2)
41-50 years	25 (5.0)
51-60 years	14 (2.8)
Above 60 years	18 (3.6)
Gender:	
Male	186 (37.1)
Female	316 (62.9)
Level of Education:	
Undergraduate	234 (46.6)
Graduate	134 (26.7)
Post-graduate	65 (12.9)
Below Undergraduate	69 (13.7)
Occupation:	
Student	286 (57.0)
Healthcare Professional	62 (12.4)
Engineer	13 (2.6)
Business	36 (7.2)
Teacher	25 (5.0)
Labor Work	0 (0.0)
Unemployed	30 (6.0)
Others	50 (10.0)

being unemployed as well. A majority of 459 (91.4%) participants responded that they did not test positive for coronavirus, and 430 (85.7%) did not experience any symptoms of it. Of the 43 participants being tested positive with coronavirus, 6 (14%)

reported suffering from high dental anxiety, with generalised anxiety in all who tested positive. Furthermore, 75 (14.9%) respondents experienced coronavirus symptoms, of which 10 (13.3%) experienced high dental anxiety with generalised anxiousness in all of them. When asked about any current dental pain, the majority of 355 (70.7%) respondents declined from suffering any pain that might require dental treatment. Furthermore almost all of the participants (93.1%) did not have any dental appointments booked for treatment. Additionally, few of the 73 (14.5%) participants were delaying their dental appointment when they had it booked earlier due to the coronavirus pandemic. More than half of 271 (53.8%) participants suggested booking a dental appointment if they had any pain which requires a dentist's attention. Predominantly 449 (89.1%) respondents were not under any dental treatment but a minority of 53 (10.9%) were undergoing orthodontic and restorative treatments. When visiting dental clinics 129 (25.6%) participants were worried about contracting the coronavirus, and 63 (12.5%) considered dental clinics as a high-risk environment.Using the Modified Dental Anxiety Scale to measure anxiety levels of participants, a total score of 19 was kept as cut off

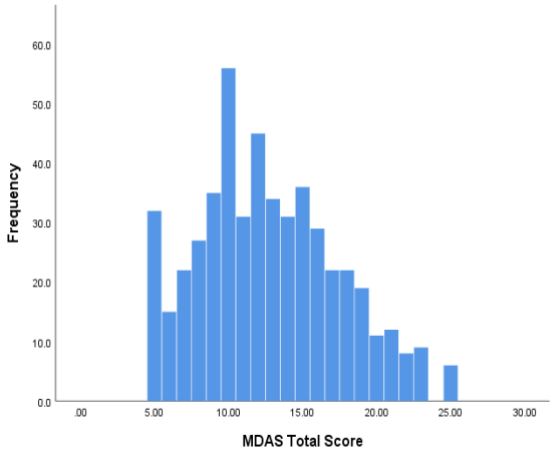

Figure 1: Mean Modified Dental Anxiety Score (MDAS) of the Participants

value for clinically significant anxiety levels. Of the 502 participants in this study, 65 (12.9%) were considered to suffer from clinically significant dental anxiety. Out of these 65 participants, there were 51 (78.5%) females tend to experience more anxiety as compared to 14 (21.5%) males. Most of the participants experiencing significant dental anxiety belonged to the 18-30 years to age group (80%) and anxiety levels were noted to fall as the individual ages. Undergraduate was the predominant level of education in these 65 participants with students being the commonest occupation selected. Of the 55 participants currently undergoing dental treatment, 3 (5.5%) responded with experiencing high clinically significant dental anxiety, with general anxiousness present among the respondents. Of the 502 participants, the mean Modified Dental Anxiety Score was found out to be 12.7 ± 4.7 asshown in figure 1. Considering any significant relationship between age, gender, level of education, and occupation with Modified Dental Anxiety Score, ithat age ($p \leq 0.05$) and gender ($p \leq 0.05$) had a significant relation as shown in table 2.

Table 2: Distribution of Age, Gender, Level of Education and Occupation in relation to MDAS score using Multiple Linear Regression test.

Variables	Coefficient	Standard Error	t-test Value	*p*-value
Age	-0.81	0.25	-3.27	0.001
Gender	1.49	0.43	3.43	0.001
Level of Education	0.14	0.12	-0.33	0.75
Occupation	0.02	0.09	0.23	0.82

Discussion

At the present moment, the Coronavirus pandemic is on the rise and present throughout the globe. Until the vaccine is formulated, it's difficult to contain the virus. Due to this situation, generally, people are afraid and anxious to go to the dentist for any dental procedure unless excruciating pain rises which requires emergency treatment.[13] Moreover, even when undergoing

emergency dental procedures, anxiety levels seem to be high particularly in young adults especially females who generally tend to experience more anxiety as compared to males.[14] However, under normal circumstances, females are more compliant with dental treatments as compared to males.[15]

Many dental procedures generate aerosols and these aerosols are primarily responsible for the transmission of coronavirus to the patients as well as to the dental surgeons, so dental clinics are considered as the high-risk environment and when visiting such a place, it's an unpleasant experience for the patients.[16] As per WHO guidelines, healthcare professionals including dental surgeons arebound to use personal protective equipment to protect themselves as well as their patients.[17] Observing such protective modalities being followed in the dental clinics could be a factor to decrease patient's anxiety. Furthermore, the implementation of these protocols has been a dilemma since many dental practices have not been up to the mark to follow these guidelines mainly to due shortage and hoarding of personal protective equipment.[18] Coronaphobia, which is the fear of contracting coronavirus, is currently increasing day by day as people are gathering various information on symptoms, morbidities, and mortalities of individuals infected by it.[19] Although mortalities from coronavirus are mainly found in elderlies and those with underlying co-morbidities, young adults are also facing some psychological distress as they are not accustomed to being confined in homes due to worldwide lockdown imposed by various countries. It is found in this study that as the person ages, anxiety levels tend to decrease, which could be due to maturity and increased understanding of the situation, although studies suggest an increased prevalence of anxiety among older adults.[20] Moreover, regardless of having any underlying medical conditions, precautionary measures should be adhered to by the general population along with avoiding going outside unnecessarily.

According to WHO, dental professionals should only perform emergency procedures currently, thereby deferring procedures not requiring urgent attention. It has been observed that some dental practices are not following these guidelines and carrying out non-emergency procedures, which could encourage people to get their treatments done and further spreading the virus.[21] When a patient visits the dental clinic with unbearable pain, guidance, and relief should be provided assuring them of the best safety measures to reduce their anxiety regarding contracting the virus. The dental procedure is not entirely a pleasant experience for the patient, having anxiety of contracting coronavirus, could further prove to be a hectic task to complete any sort of treatment. Keeping the current situation in mind, many participants were not under any sort of dental treatment and when possible, delaying the appointment if booked was regarded as the most appropriate option. Small number of participating who were undergoing dental treatment, many of them displayed anxiousness along with some having high dental anxiety which could be due to constant fear of contracting the virus. When visiting a dental clinic, screening should be mandatory by checking the temperature along with assuring the mask is being worn by the patient.[22] Additionally, in the waiting room of the clinic, social distancing protocols should be implemented so that patient is assured that precautionary measures are well adhered to which can prove to decrease their anxiety. The impact of dental anxiety is of considerable importance as this leads to delaying and cancelling appointments, increased dental procedure time, and unpleasant and stressful experience for both the dentist and the patient. Psychological distress, particularly anxiety, is a major concern among the general population these days as individuals are stressed by various reasons such as contracting the virus, social distancing, are to be performed and patients present with high clinically significant anxiety, dental surgeons may use drugs such as benzodiazepines, and at times intravenous sedation and finally nitrous oxide as well.[24] These methods have shown to be particularly useful to reduce the anxiety levels of the patients. We evaluated the anxiety levels of the patients visiting or planning to visit dental clinics and undergoing dental procedures in the midst of the coronavirus pandemic using validated tools. Despite the mentioned strength of this study, we were met with few limitations. Firstly, this study included only adults, so inclusion of children and

adolescents could further increase the scope of the study as significant anxiety is found in this age group. Secondly, a comparison of dental anxiety levels amidst of coronavirus between different countries can help predict factors that could exacerbate and manage the anxiety levels.

Conclusion

Currently, the coronavirus pandemic is on the rise with generalised anxiety through the population being experienced. Dental anxiety is a significant factor that could be detrimental for the patients requiring urgent treatment which they might delay because of fear. Dental clinics should strictly adhere to the precautionary measures and the entire dental staff should wear personal protective equipment. This could reduce the dental anxiety of the patients when they are perceiving a relatively protective environment.

Ethical Approval

Ethical Review Committee of Altamash Institute of Dental Medicine approved this study. (AIDM/EC/08/2020/02)

Author Contribution

1. A.L: Writing -Original draft, conceptualization, data collection, data analysis.

2. S.S: Final review of the manuscript and data collection.

3. A.H: Writing Original draft, data collection, conceptualization.

4. A(Anweer). J(Jahan): Writing Original draft, data collection, conceptualization.

5. A(Areeba). J(Javed): Writing Original draft, data collection, conceptualization.

6. M.K.M.S: Data collection and conceptualization.

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References

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. Acta Biomed [Internet]. 2020;91(1):157–60. Available from: http://www.ncbi.nlm.nih.gov/pubmed/32191675

2. Advice for the public [Internet]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

3. Ijaz MK, Brunner AH, Sattar SA, Nair RC, Johnson-Lussenburg CM. Survival Characteristics of Airborne Human Coronavirus 229E. J Gen Virol [Internet]. 1985 Dec 1;66(12):2743–8.

4. Linton N, Kobayashi T, Yang Y, Hayashi K, Akhmetzhanov A, Jung S, et al. Incubation Period and Other Epidemiological Characteristics of 2019 Novel Coronavirus Infections with Right Truncation: A Statistical Analysis of Publicly Available Case Data. J Clin Med [Internet]. 2020 Feb 17;9(2):538.

5. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. Lancet [Internet]. 2020 Feb;395(10223):470–3.

6. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet [Internet]. 2020 Feb 15;395(10223):507–13.

7. Wang T, Du Z, Zhu F, Cao Z, An Y, Gao Y, et al. Comorbidities and multi-organ injuries in the treatment of COVID-19. Lancet [Internet]. 2020 Mar;395(10228):e52.

8. Ng K, Poon BH, Kiat Puar TH, Shan Quah JL, Loh WJ, Wong YJ, et al. COVID-19 and the Risk to Health Care Workers: A Case Report. Ann Intern Med [Internet]. 2020 Jun 2;172(11):766–7.

9. Ge ZY, Yang LM, Xia JJ, Fu XH, Zhang YZ.Possible aerosol transmission of COVID-19 and special precautions in dentistry

[Internet]. Vol. 21, Journal of Zhejiang University: Science B. 2020. p. 361–8.

10. ADA. ADA develops guidance on dental emergency, nonemergency care [Internet]. March 18. 2020.

11. Cotrin P, Peloso RM, Oliveira RC, Oliveira RCG, Pini NIP, Valarelli FP, et al. Impact of coronavirus pandemic in appointments and anxiety/concerns of patients regarding orthodontic treatment. Orthod Craniofac Res [Internet]. 2020 Jun 23;ocr. 12395.

12. Humphris GM, Freeman R, Campbell J, Tuutti H, D'Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. Int Dent J [Internet]. 2000 Dec;50(6):367–70.

13. Peloso rm, pini nip, sundfeld neto d, mori aa, oliveira rcg de, valarelli fp, et al. How does the quarantine resulting from COVID-19 impact dental appointments and patient anxiety levels? Braz Oral Res [Internet]. 2020;34:e84.

14. Özdin S, Bayrak Özdin Ş. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender. Int J Soc Psychiatry [Internet]. 2020 May 8;002076402092705.
15. Demetriou N, Tsami-Pandi A, Parashis A. Compliance With Supportive Periodontal Treatment in Private Periodontal Practice. A 14-Year Retrospective Study. J Periodontol [Internet]. 1995 Feb;66(2):145–9.
16. Ge Z, Yang L, Xia J, Fu X, Zhang Y. Possible aerosol transmission of COVID-19 and special precautions in dentistry. J Zhejiang Univ B [Internet]. 2020 May 16;21(5):361–8.
17. Suspected I prevention and control during health care when novel coronavirus (nCoV) infection is. World Health Organisation.
18. Shortage of personal protective equipment endangering health workers worldwide. 2020;
19. Endler NS, Kocovski NL. Editorial Board. J Anxiety Disord [Internet]. 2019 Mar;62(1):
20.elzel FD, Stein J, Röhr S, Fuchs A, Pentzek M, Mösch E, et al. Prevalence of Anxiety Symptoms and Their Association With Loss Experience in a Large Cohort Sample of the Oldest-Old. Results of the AgeCoDe/AgeQualiDe Study. Front Psychiatry [Internet]. 2019 May 8;10
21. Sanaullah A, Saleem MKM, Lal A, Hemani S, Ahmed N, Muzamil M. Analysis of Current COVID-19 Situations in Dental Practice among Karachi Population. Pakistan J Med Dent [Internet]. 2020 Jul 31; Available from: https://pjmd.zu.edu.pk/volume-9-issue-3/analysis-of-current-covid-19-situations-in-dental-practice-among-karachi-population/
22. Baghizadeh Fini M. What dentists need to know about COVID-19. Oral Oncol [Internet]. 2020 Jun;105:104741.
23. Wang H, Xia Q, Xiong Z, Li Z, Xiang W, Yuan Y, et al. The psychological distress and coping styles in the early stages of the 2019 coronavirus disease (COVID-19) epidemic in the general mainland Chinese population: A web-based survey. Hashimoto K, editor. PLoS One [Internet]. 2020 May 14;15(5):e0233410.
24. Melini M, Forni A, Cavallin F, Parotto M, Zanette G. Conscious sedation for the management of dental anxiety in third molar extraction surgery: a systematic review. BMC Oral Health [Internet]. 2020 Dec 28;20(1):155.

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