

# The Effect of Fear of COVID-19 on Dental Anxiety Levels



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**OBJECTIVE:** Dental anxiety can be adversely affected by pandemics like corona virus. Most patients have preferred to defer their dental appointments and that patients generally neglect their health in epidemics. The investigation was carried out to determine the effect of the current coronavirus pandemic on dental anxiety by comparing through and post 1st wave of pandemic dental anxiety scores.

**METHODOLOGY:** A cross-sectional study was conducted on the Pakistani population using online surveys from June to August 2020. A total of 681 participants were recruited. Standardized and validated questionnaires were used to measure dental anxiety scores during and after the 2nd wave of pandemic. Statistical analysis was performed using SPSS version 22. Independent t-test was used to compare dental anxiety scores through and after the 2nd wave of COVID-19. Fear of COVID-19 among the participants was also evaluated.

**RESULTS:** From a total of 681 participants, 668 responses were retained in accordance to the inclusion criteria. A statistically significant difference was obtained regarding the dental anxiety levels during and after the 2nd wave of COVID-19 (p value = 0.001). However, there was no significant difference between fear of COVID-19 scale and dental anxiety scores during COVID-19 (p value = 0.284).

**CONCLUSION:** The coronavirus pandemic has demonstrated an adverse effect on patient dental anxiety scores. We also noted that the majority of the people were not willing to attend their dental appointment during this pandemic.

**KEYWORDS:** COVID-19, coronavirus infection, dental anxiety, fear.

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## INTRODUCTION

Dental fear or phobia that is defined as "fear related to seeking or receiving dental care" is the 5th most common cause of anxiety.<sup>1</sup> A study has shown that approximately 80% people feel uncomfortable before any dental procedure.<sup>2</sup> In another study conducted by the American Dental Association showed that 12% adults had dental phobia. The reasons for this dental phobia were diverse and included prior painful or unpleasant experiences, and dental fear

inculcated in them by parents in childhood.<sup>3</sup>

There is also a link between general anxiety and dental phobia.<sup>4</sup> Patients with dental phobia have significantly higher levels of psychological distress and general anxiety.<sup>5</sup> A study demonstrated that some patients with dental anxiety may have prior psychological diagnoses; such as panic disorder, social phobia or general anxiety.<sup>6</sup>

Psychological status of a person can have an impact on an individual's life. It is seen that coronavirus (COVID-19) has affected the psychological well-being of a person. Prior epidemics like the Middle East Respiratory Syndrome resulted in a heavy psychological impact on healthcare workers and general public by causing depression, anxiety, panic attacks, and psychotic symptoms such as functional impairments.<sup>7,8</sup> The current pandemic of COVID-19 is expected to have similar effects on the psychological health of the general public.<sup>9-12</sup> This psychological impact coupled with the categorization of dentists as high-risk professionals has adversely affected dental anxiety.<sup>13</sup> This can be based on the

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fact that most patients have preferred to defer their dental appointments as they fear of getting infected by the dentists and that patients also tend to generally neglect their health in epidemics.<sup>14,15</sup> Another study also established a link between the patient's feelings in COVID-19 and willingness to attend dental appointments.<sup>16</sup>

The purpose of this study was to compare the dental anxiety during and after the 2nd wave of pandemic in the Pakistani population. It also aimed to compare the dental anxiety scores with the fear of COVID-19. In addition, it determined the willingness of the patients to attend regular appointments and precautions they find satisfactory in dental settings.

### METHODOLOGY

A cross-sectional study design was used for evaluating the dental anxiety levels during and after 2nd wave of COVID-19. This study was approved by the Ethical Research Committee of Riphah International University prior to data collection (Ref No. IIDC/IRC/2020/07/001). Data was collected from June to August 2020 and a convenience sampling technique was used. Sample size was calculated through the WHO sample size calculator. Individuals over the age of 18 who saw dentists were included in the study. Anyone who had not seen dentists was excluded.

A standard validated Modified Dental Anxiety Scale questionnaire for assessing dental phobia was used in participants after the 2nd wave.<sup>17</sup> The same questionnaire was modified to determine dental phobia through the 2nd wave. Another validated Fear of COVID-19 Scale questionnaire was also applied in this study.<sup>18</sup> The final questionnaire uploaded on to Google Forms consisted of 18 questions divided into 4 sections that evaluated the anxiety level of the participants. Section 1 required demographic information like age, gender, education, occupation and information regarding dental hygiene like oral hygiene habits and how often do they visit their dentists. Section 2 evaluated fear of COVID-19 among the participants, Section 3 assessed dental anxiety during COVID-19 and dental anxiety in patients when the pandemic settled down as in after the 1st wave of COVID-19 giving a picture of how much dental phobic they are in their regular days and also Section 4 determined information on dental appointment scheduling. The questionnaire was then shared with the general public using social media platforms like gmail, WhatsApp and facebook.

Six hundred and eighty-one participants filled the questionnaire during the 2nd wave. Email addresses were retained to allow for the form to be sent out after the 2nd wave ended.

Data analysis was performed on the result of submitted forms using Statistical Package for Social Sciences (IBM SPSS v 22). The p-value  $\leq 0.05$  was considered significant at 95% confidence interval. Descriptive analysis was obtained for the age of participants, dental anxiety scores and fear of COVID-19 scores. Percentages and frequencies were obtained for gender, education level, occupation, dental habits and preferred precautionary measures. Independent t-test was applied to find out any statistically significant difference between the mean scores of dental anxiety levels during and after the 2nd wave of COVID-19. Another comparison was also done by comparing the mean scores of dental anxiety during COVID-19 and fear of COVID-19 scale scores by applying independent t-test.

### RESULTS

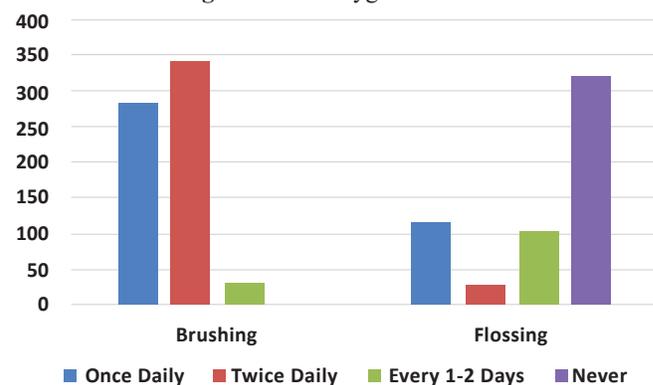
#### Demographics

A total of 681 participants filled in the Google Form; only 668 complete responses were returned after the 2nd wave ended. There were 156 (23.4%) males and 509 (76.2%) females. Three individuals did not specify gender. The mean age of the participants was 26.49 ± 9.59 years. There were 157 (23.5%) participants with high school education, 356 (53.4%) had undergraduate degrees, and 151 (22.6%) had post-graduate degrees. One hundred and fifty-eight (23.6%) participants were associated with healthcare. These responses were retained because they also form part of the general population.

#### Oral Hygiene Habits

Out of 668; 342 (51.2%) brushed their teeth twice a day, while 284 (42.5%) brushed once a day, 32 (4.8%) brushed once every 1-2 days and 10 (1.5%) brushed once a week. Three-hundred and ninety-eight (59.6%) flossed once a week/ never. There were 121 (18.1%) participants that flossed once daily, 107 (16.0%) flossed every 1-2 days while only 30 (4.5%) participants flossed twice a day. (Fig 1) From

Figure 1: Oral Hygiene Habits



668; 294 (44.2%) rarely visited their dentist, 53 (8%) visited every 2 years, 174 (26.2%) saw their dentist's once a year, 82 (12.3%) went every 6 months while 62 (9.3%) went every 2-3 months.

### Dental Anxiety and Fear of COVID-19

Dental anxiety scores during and after the 2nd wave of COVID-19 were analyzed. The scores of anxiety during the COVID-19 ranged from 5 to 25 with a mean score of  $14.97 \pm 5.73$ , while the mean anxiety score for patients after 2nd wave of COVID-19 was  $10.03 \pm 4.38$ . A cut-off value of 19 and above indicated a highly anxious patient, we did not have this subgroup in our sample. The mean score during the COVID-19 pandemic was higher than the mean score after the 1st wave of COVID-19. The independent t-test between the two groups showed a statistically significant difference with a p-value = 0.001.

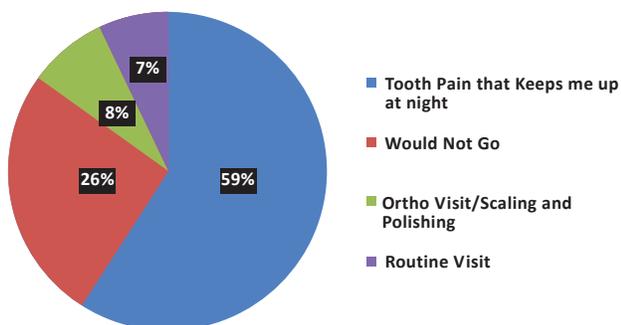
Females exhibited higher dental anxiety scores than males mean scores of  $15.44 \pm 5.73$  and  $13.49 \pm 5.39$  respectively. (p value= 0.001)

Individual scores were evaluated for fear of COVID-19 scale ranging from 5 to 25. A mean score of  $14.67 \pm 4.52$  was calculated. There was no statistically significant difference between fear of COVID-19 and dental anxiety scores during COVID-19 (p value = 0.284). (Table 1)

**Table 1:** Comparing Dental Anxiety Scores and Fear of COVID-19 score using Independent t test

Comparison		Mean Scores ± SD	p value
Dental Anxiety Scores	During COVID-19	14.97±5.73	0.001
	After COVID-19	10.03 ±4.38	
Dental Anxiety During COVID-19 and Fear of COVID-19	During COVID-19	14.97±5.7	0.284
	Fear of COVID-19	14.67 ±4.52	

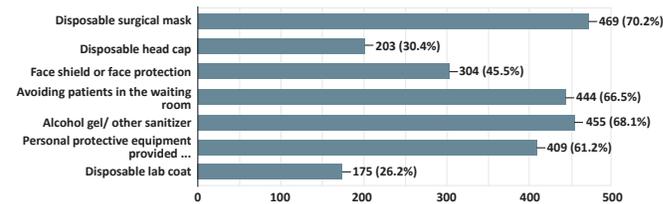
**Figure 2:** Reasons to Visit Dentist during Pandemic



### Visiting the Dentist during COVID-19

Majority of patients; 294 (44%) were unwilling to go for routine dental appointments during COVID-19. Two hundred (29.9%) would keep their appointments, while 174 (26%) were uncertain. Three hundred and ninety-four (59%) would see the dentist only in case of an emergency (tooth pain), 54 (8.1%) would attend routine orthodontic visit/scaling polishing, 47 (7%) would schedule visits similar to before the pandemic, while 173 (25.9%) would not see the dentist at any cost. (Fig 2) As there is an increased fear among the

**Figure 3:** Frequency of Measures of Protection considered while attending a Dental Emergency Appointment



participants regarding the COVID-19 infection; the participants preferred protective measures are summarized in Figure 3.

## DISCUSSION

Dental anxiety can be a distressing problem for patients requiring dental care.<sup>19</sup> It prevents regular dental visits and compromises oral health, which turn can adversely affect the patient's quality of life.<sup>20</sup> Dental anxiety is a consequence of numerous endogenous and exogenous factors.<sup>21</sup> The foremost of these is a prior bad experience with a dentist; personal or narrated by people around. The second most common reason is the fear of pain.<sup>22</sup> Other factors include age, gender, level of education, parental anxiety and culture.<sup>19</sup> Similarly, general anxiety affects the life of individuals by exacerbating the fear of routine occurrences.<sup>23</sup> Given this premise, the current pandemic has synergistically affected the general anxiety of the population, this was verified through our survey as well. But we postulated that this may have had a detrimental effect on dental anxiety as well.<sup>24-27</sup> If this is proven true, the pandemic can have dire implications on dental economics.

Our study showed an inverse relationship between age and dental anxiety. Younger participants exhibited more anxiety than older ones. A similar trend has been reflected by Iranian and Indian studies.<sup>28,29</sup> According to a survey carried out in India, increased dental anxiety levels were found in individuals age less than 40 years and professional workers.<sup>20</sup> A Turkish study, however, demonstrated a higher anxiety in the older population.<sup>30</sup>

While we were unable to demonstrate a relationship

between education and anxiety, prior studies have demonstrated higher anxiety levels in patients' education (below primary).<sup>28,31</sup> While other studies have shown that women are less anxious than men concerning dental treatment, our results have demonstrated higher dental anxiety scores in women.<sup>32</sup> This may be attributed to higher levels of anxiety in women through the pandemic.

We also noted that almost 44% of the patients were unwilling to go for their dental appointments. Our results were slightly higher than those published by a Brazilian study (38.3%).<sup>33</sup> Since we recruited participants through an online survey, it is likely that our participants were better informed than the population seeking treatment at a dental facility, as in the Brazilian study.<sup>33</sup> Majority of our participants were willing to go to the dental clinics for only emergency treatment. However, a little over one-third were concerned about the pandemic affecting dental health.

Half of our participants claimed to have good oral hygiene habits. A little less than half were regular with their visits to the dentist in normal situation but were less likely to visit the dentist through the pandemic. This also demonstrates increased dental anxiety through the pandemic.

For precautionary measures, majority of our participants thought that surgical masks, hand sanitizers/ alcohol gels, social distancing in the waiting area and PPE were sufficient for protecting both patients and dentists. These findings were supported by Peloso's study.<sup>16</sup> This implies that our participants had awareness about protective wear.

#### LIMITATIONS AND RECOMMENDATIONS

One of our limitations was that the data was collected through an online questionnaire, this restricted access to the population that did not have internet. We believe that collecting a larger sample size by approaching patients in routine dental settings may produce better opportunities for definitive assessment.

#### CONCLUSION

Our study found increased dental anxiety levels in patients through the pandemic when compared with scores after the 2nd wave of pandemic. Increase in general anxiety was also noted. Majority of the people were not willing to attend their dental appointments during this pandemic. This postulates that dental practices will be economically compromised through the pandemic and measures need to be taken by the dental community to control COVID-19 infection and build trust with patients.

#### CONFLICT OF INTEREST

None declared

#### REFERENCES

1. Agras S, Sylvester D, Oliveau D. The epidemiology of common fears and phobia. *Compr Psychiat*. 1969;10:151-6. [https://doi.org/10.1016/0010-440X\(69\)90022-4](https://doi.org/10.1016/0010-440X(69)90022-4)
2. de Jongh A, ter Horst G. What do anxious patients think? An exploratory investigation of anxious dental patients' thoughts. *Community Dent Oral Epidemiol*. 1993;21:221-3. <https://doi.org/10.1111/j.1600-0528.1993.tb00760.x>
3. Sohn W, Ismail AI. Regular dental visits and dental anxiety in an adult dentate population. *J Am Dent Assoc*;136:58-66. <https://doi.org/10.14219/jada.archive.2005.0027>
4. Yildirim TT, Dundar S, Bozoglan A, Karaman T, Dildes N, Kaya FA, et al. Is there a relation between dental anxiety, fear and general psychological status? *Peer J*. 2017;5:e2978. <https://doi.org/10.7717/peerj.2978>
5. Henning Abrahamsson K, Berggren U, Carlsson SG. Psychosocial aspects of dental and general fears in dental phobic patients. *Acta Odontol Scand*. 2000;58:37-43. <https://doi.org/10.1080/000163500429415>
6. Locker D, Poulton R, Thomson W. Psychological disorders and dental anxiety in a young adult population. *Community Dent Oral Epidemiol*. 2001;29:456-63. <https://doi.org/10.1034/j.1600-0528.2001.290607.x>
7. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, et al. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. *Compr Psychiat*. 2012;53:15-23. <https://doi.org/10.1016/j.comppsy.2011.02.003>
8. Jeong H, Yim HW, Song Y-J, Ki M, Min J-A, Cho J, et al. Mental health status of people isolated due to Middle East Respiratory Syndrome. *Epidemiol Health*. 2016;38. e2016048 <https://doi.org/10.4178/epih.e2016048>
9. Xiang Y-T, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry*. 2020;7:228-9. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)
10. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci*. 2020; 12:1-6. <https://doi.org/10.1038/s41368-020-0075-9>
11. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020; 395(10227):912-20 [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
12. Neher RA, Dyrdak R, Druelle V, Hodcroft EB, Albert J. Potential impact of seasonal forcing on a SARS-CoV-2 pandemic. *Swiss Med*

- Wkly. 2020;150(1112).  
<https://doi.org/10.4414/smw.2020.20224>
13. 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.* 2020; 172:766-67  
<https://doi.org/10.7326/L20-0175>
14. González-Olmo MJ, Ortega-Martínez AR, Delgado-Ramos B, Romero-Maroto M, Carrillo-Díaz M. Perceived vulnerability to Coronavirus infection: impact on dental practice. *Brazilian Oral Res.* 2020;34:e044.  
<https://doi.org/10.1590/1807-3107bor-2020.vol34.0044>
15. Shigemura J, Ursano R, Morganstein J, Kurosawa M, Benedek D. Public responses to the new coronavirus 2019 (2019-nCoV) in Japan: consequences for mental health and target populations. *Psychiatry Clin Neurosci.* 2020;74:277-283  
<https://doi.org/10.1111/pcn.12988>
16. Peloso RM, Pini NIP, Sundfeld Neto D, Mori AA, Oliveira RCGd, Valarelli FP, et al. How does the quarantine resulting from COVID-19 impact dental appointments and patient anxiety levels? *Brazilian Oral Res.* 2020;34:e84  
<https://doi.org/10.1590/1807-3107bor-2020.vol34.0084>
17. Humphris GM, Morrison T, Lindsay SJ. The modified Dental Anxiety Scale: validation and United Kingdom norms. *Community Dent Health.* 1995;12:143-150.
18. 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.* 2020:1-9.  
<https://doi.org/10.1007/s11469-020-00270-8>
19. Murad MH, Ingle NA, Assery MK. Evaluating factors associated with fear and anxiety to dental treatment-A systematic review. *J Family Med Prim Care.* 2020;9:4530-5.  
[https://doi.org/10.4103/jfmpc.jfmpc\\_607\\_20](https://doi.org/10.4103/jfmpc.jfmpc_607_20)
20. Jeddy N, Nithya S, Radhika T, Jeddy N. Dental anxiety and influencing factors: A cross-sectional questionnaire-based survey. *Indian J Dent Res.* 2018;29:10-5.  
[https://doi.org/10.4103/ijdr.IJDR\\_33\\_17](https://doi.org/10.4103/ijdr.IJDR_33_17)
21. Hamissi J HH, Ghoudosi A, Gholami S, . Factors affecting dental anxiety and beliefs in an Iranian population. *Int J Collab Res Intern Med Public Health* 2012;4:585-93.
22. Eli I UN, Blumensohn N and Baht R Factors of dental anxiety. *Br Dent J.* 2004;196:689-94.  
<https://doi.org/10.1038/sj.bdj.4811352>
23. Little JW. Anxiety disorders: dental implications. *Gen Dent.* 2003;51:562-8; quiz 9.
24. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res.* 2020:112954.  
<https://doi.org/10.1016/j.psychres.2020.112954>
25. Asmundson GJ, Taylor S. Coronaphobia: Fear and the 2019-nCoV outbreak. *J Anxiety Disord.* 2020;70:102196.  
<https://doi.org/10.1016/j.janxdis.2020.102196>
26. Cotrin P, Peloso R, Oliveira R, Oliveira R, Pini N, Valarelli F, et al. Impact of coronavirus pandemic in appointments and anxiety/concerns of patients regarding orthodontic treatment. *Orthod Craniofac Res.* 2020; 23:455-61  
<https://doi.org/10.1111/ocr.12395>
27. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen Psychiatry.* 2020;33:e100213.  
<https://doi.org/10.1136/gpsych-2020-100213>
28. Acharya S. Factors affecting dental anxiety and beliefs in an Indian population. *J Oral Rehab.* 2008;35:259-67.  
<https://doi.org/10.1111/j.1365-2842.2007.01777.x>
29. Tunc EP, Firat D, Onur OD, Sar V. Reliability and validity of the Modified Dental Anxiety Scale (MDAS) in a Turkish population. *Community Dent Oral Epidemiol.* 2005;33:357-62.  
<https://doi.org/10.1111/j.1600-0528.2005.00229.x>
30. Saatchi M, Abtahi M, Mohammadi G, Mirdamadi M, Binandeh ES. The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. *Dent Res J.* 2015;12:248.
31. Erten H, Akarslan ZZ, Bodrumlu E. Dental fear and anxiety levels of patients attending a dental clinic. *Quintessence Int.* 2006;37.
32. Jefferson T, Foxlee R, Del Mar C, Dooley L, Ferroni E, Hewak B, et al. Interventions for the interruption or reduction of the spread of respiratory viruses. *Cochrane database of systematic reviews.* 2007; 37:304-10.  
<https://doi.org/10.1002/14651858.CD006207.pub2>
33. Fung ICH, Cairncross S. Effectiveness of handwashing in preventing SARS: a review. *Trop Med Int Health.* 2006;11:1749-58.  
<https://doi.org/10.1111/j.1365-3156.2006.01734.x>