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The relationship between DMFT status and dental anxiety

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Abstract

Objective: This study aimed to assess the anxiety trait, the anxiety state, the dental anxiety, as well as the oral health of a group of patients who were referred to a maxillofacial surgery department.

Material and Method: The study was conducted between 1 May 2019 and 31 May 2019. All patients were administered the anxiety-trait and anxiety state using the State-Trait Anxiety Inventory questionnaires and Corah's Dental Anxiety Scale. Then, they were clinically examined, and a DMFT index score was calculated according to the WHO criteria and recorded for each patient. Demographics, smoking, and alcohol habits were also recorded for each patient.

Results: Overall, 81 patients (52 females, 29 males) completed the study. Statistical analyses revealed a statistically significant association between occasional or daily smoking and high DMFT scores ($p < 0.005$). As for anxiety, a statistically significant association was observed between both high anxiety state and trait and high DMFT scores ($p < 0.05$), as well as between moderate or severe dental anxiety and high DMFT scores ($p < 0.05$).

Conclusion: A higher anxiety is associated with a higher DMFT score. The assessment of dental anxiety may be necessary for routine diagnostic work-ups during dental practice. In more severe cases, a multidisciplinary approach with the aid of behavioral health or psychological professionals may be a valid option.

Keywords: Anxiety, Dental anxiety, DMFT, Oral health, Smoke
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Introduction

Anxiety is a frequently observed mental disorder that can be defined as a state of persistent tension associated with a sense of impending disaster, which can lead to fear. Anxious subjects report lower satisfaction with life and present higher functional inability.[1-11] As for dental anxiety, this is an unreasonable apprehension about dental procedures or the context of treatment.[3] The development of dental anxiety may be due to a conditioned reaction to previous aversive dental experiences, including both painful and traumatic experiences during dental treatment, or it may be due to a general fearfulness.[4] The most severe form may be defined as dental phobia. Dental anxiety is a significant public health concern because of its negative psychosocial implications that may lead to avoidance behaviours. Dental fear has a significant impact on dental care utilization behaviors, so patients avoid dental therapy, which may worsen dental health and might lead to social withdrawal and isolation, poor well-being, and a worse quality of life.[4-8] In fact, dental fear may be one of the main reasons for cancelled appointments.[1-10] Patients usually start with anxiety-related avoidance of dental care, then they undergo a subsequent deterioration in oral health, thus entering a vicious cycle so that they seek treatment mainly because of pain, which potentially may increase the dental anxiety caused by the necessary acute invasive treatments.[1-7] In the literature, there is limited information on the association of anxiety, and specifically dental anxiety, with their impact on oral health.[1-4]

Therefore, our study aimed to assess the anxiety trait, the anxiety state, the dental anxiety, as well as the oral health of a group of patients that were referred to a maxillofacial surgery department and to investigate the eventual correlation between dental anxiety and oral health.

Material and Methods

The study was conducted in May 2019. One hundred consecutive patients who attended the Department of Maxillofacial Surgery for third molar removal were considered for inclusion. The inclusion criteria for all groups were: age 14–65 years (both genders); at least 20 remaining teeth; patients who attended the Department for the first time. The exclusion criteria were known previous diagnosis of mental and psychiatric disorders; drug or alcohol abuse; malignancy; habitual assumption of sedative, anxiolytic, or analgesic drugs; pregnancy or lactation; an acute dental or periodontal condition, such as acute pain, abscesses, or pulpitis. Informed written consent was obtained from all participants. We followed Helsinki Declaration guidelines. All patients were clinically examined on their first visit after completing questionnaires. A decayed, missing, and filled teeth (DMFT) index score was calculated according to the

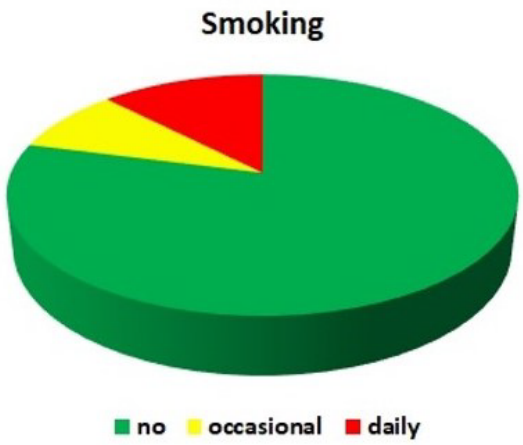

Figure 1. **Smoking habits in the study population**

Figure 2. **Alcohol consumption in the study population**

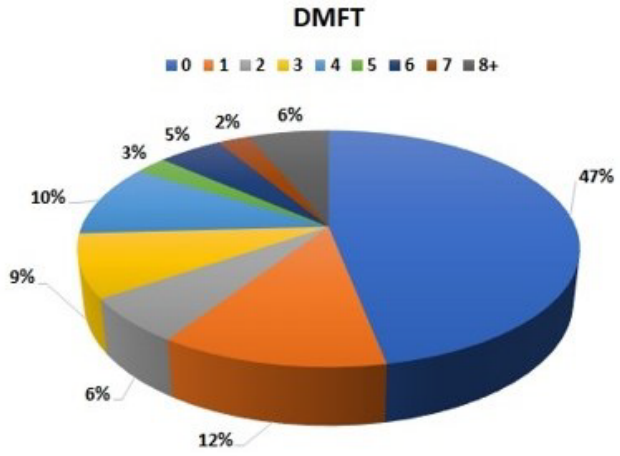

Figure 3. **DMFT scores in the study cohort**

WHO criteria and recorded for each patient. Demographics, smoking, and alcohol habits were also recorded for each patient. To quantify the level of anxiety, the anxiety-trait and anxiety-state state-trait anxiety inventory (STAI) questionnaires were used. The anxiety-trait questionnaire has 20 self-assessment questions about habitual situations that the patient perceives as threatening, ranging from one to four, from "almost never" to "almost always." The anxiety-state questionnaire has 20 self-assessment questions, ranging from one to four, and evaluates the transient emotional state of subjective feelings of stress and apprehension that tend to fluctuate in intensity over time. A score of 37 identifies an absent or low anxiety (both trait and state) level; a score between 38 and 44 identifies a moderate anxiety level; a score of 45 or more identifies a high anxiety.[10] We used Corah's Dental Anxiety Scale (DAS) to measure dental anxiety. In the DAS questionnaire, participants score their level of anxiety regarding four dental scenarios using a 5- 5-point scale (total score range: 4–20). The following anxiety levels were considered: no anxiety (DAS score: 1-4); physiological dental anxiety (DAS score: 5– 8); low dental anxiety (DAS score: 9–12); moderate dental anxiety (DAS score: 13–16); and dental phobia (DAS score: 17–20). Differences between groups were calculated by univariate analysis; significance was set at $p < 0.05$.

Results

Overall, 81 patients (52 females, 29 males) completed the study. Mean age was 27,6 years (range, 14 – 62). As for smoking habits, 64 patients declared not to smoke, seven patients reported occasionally smoking, and ten patients reported to daily smoke figure 1. As for alcohol consumption, 27 patients declared not to drink alcohol, 54 patients reported to occasionally drink alcohol, whereas no one reported to smoke daily figure 2. The mean DMFT in the study cohort was 2 (range, 0 – 10; SD, 2, 7), with 38 patients (47%) scoring 0 figure 3. As for Anxiety traits, the STAI questionnaire revealed that 18 patients (22%) were characterized by no or low anxiety, 23 patients (28%) by moderate anxiety, and 40 patients (49%) by high anxiety figure 4. Instead, STAI questionnaires about Anxiety state showed that 24 patients (30%) were characterized by no or low anxiety, 26 patients (32%) by moderate anxiety, and 31 patients (38%) by high anxiety figure 5. The assessment of dental anxiety by CORAH test revealed that about 40% of patients manifested no anxiety or a physiological dental anxiety (4 and 28 patients, respectively), 44% of patients showed low dental anxiety, whereas just 12 patients (15%) and a patient (1%) revealed moderate or severe dental anxiety respectively figure 6. Statistical analyses revealed a statistically significant association between occasional or daily smoking and high DMFT scores ($p<0.005$), whereas no statistically

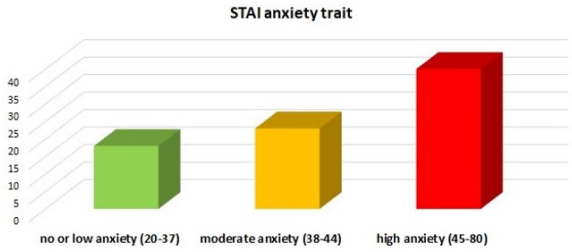

Figure 4. **STAI anxiety trait results**

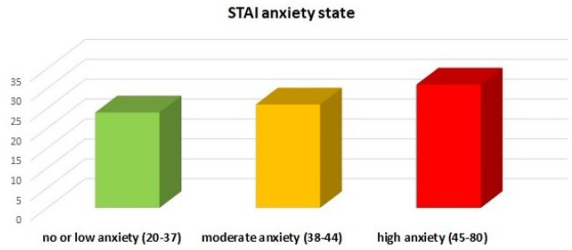

Figure 5. **STAI anxiety state results**

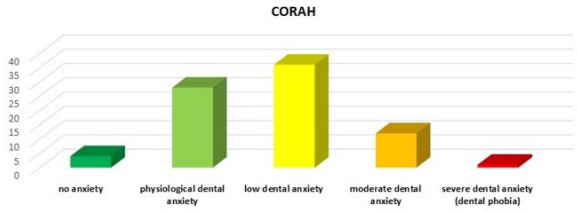

Figure 6. **Corah dental anxiety scale results**

significant association was found between occasional alcohol consumption and higher DMFT scores. As for anxiety, a statistically significant association was observed between both high anxiety state and trait and high DMFT scores ($p < 0.05$), as well as between moderate or severe dental anxiety and high DMFT scores ($p < 0.05$).

Discussion

Dental anxiety is defined as fear or anxiety that is associated with the dental treatment of individuals without external stimulus. Understanding a patient's dental anxiety level may help perform a more appropriate and effective dental treatment and follow up.[1-8] In fact, dentally anxious patients show worse oral hygiene, and they often avoid or delay dental treatment, thus creating a serious barrier to dental care that may significantly impact their oral health, daily routine, and social life.[1-9] It has been reported that the deterioration of dental health associated with dental anxiety may also lead to increasing social isolation, which in turn may exacerbate depression and other severe psychiatric conditions.[1-5] Our results seem to confirm that higher anxiety is associated with a higher DMFT score, that is, with more caries, more missing teeth, and more filled teeth.[1-6] In fact, other previous studies already revealed that dentally anxious subjects were more likely to be edentulous.[1-7] Therefore, dental anxiety correlates with negative effects on dental health. Of course, there is an important role in other risk factors, among which smoking is crucial. However, dental anxiety should not be neglected. Our results suggest that patients with anxiety in general, and specifically dental anxiety, need a more appropriate and effective approach that should aim to the improvement of oral hygiene and the increased frequency of dental consultations. Dental anxiety still represents a challenge for dentists and oral surgeons. Dental practitioners should avoid exacerbating pain perception through negative experiences and reinforcing negative attitudes, making subsequent appointments even worse. The primary goal should be the promotion of positive experiences during dental consultations. An aid might come from relaxation-based techniques or pharmacological interventions.[4]

Conclusion

In conclusion, dental anxiety assessment may be important for routine diagnostic assessment during dental practice. In more severe cases, a multidisciplinary approach with the aid of behavioral health or psychological professionals may be a valid option.

Acknowledgment

None.

Conflict of Interest

The authors report no conflict of interest

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