Relationship between Dental Anxiety, Self-assessed Dental Status, and DMFT among Patients in a Tertiary Health Care Center at Pune: A Cross-sectional Study

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Abstract

Aim and objective: To measure dental anxiety and to evaluate the relationship between dental anxiety, self-assessed dental status, and decayed, missing, and filled teeth (DMFT) scores.

Materials and methods: Male patients in the age group of 18–55 years were randomly selected amongst those attending the outpatient department (OPD) at a tertiary health care center in Pune. A questionnaire was used to collect the data, which included self-assessment of dental status as well as the Modified Dental Anxiety Scale (MDAS). Dental caries status was evaluated using the World Health Organization (WHO) caries diagnostic criteria for DMFT.

Results: Slightly more than half of the participants assessed their dental status as good, 47.6% as fair, and 1.2% as bad. Approximately 50% of the participants reported not anxious, 21.2% as moderately anxious, 20.8% as highly anxious, and 6.8% as extremely anxious. The mean MDAS score was 11.23 ± 4.17 amongst the participants. The study showed a significant relationship between dental anxiety, self-assessed dental status, and high DMFT scores (p < 0.05).

Conclusion: The present study strongly suggests that in younger people, dental anxiety is associated with a host of preventive behavior problems as well as poor dental health.

Clinical significance: Dental anxiety is widely prevalent in the general population and can lead to variable avoidance behavior toward dental treatment.

Keywords: Cross-sectional study, Decayed, missing, and filled teeth, Dental anxiety, Self-assessed dental status.

Journal of Oral Health and Community Dentistry (2020): 10.5005/jp-journals-10062-0076

Introduction

Anxiety is an emotion that is distressing and may have no specific cause. It produces the same physiological response as fear leading to an increase in sympathetic activity in the autonomic nervous system, which may remain constant if the source is not identified and removed. Dental anxiety is common with about 6–15% of the world population suffering from it consequently leading to dental treatment avoidance.¹

Anxiety about dental treatment and fear remain widespread, despite technological advances, such as better anesthesia and treatment techniques. It is believed that dental anxiety operates through behavioral mechanisms (e.g., avoidance of dental treatment), which has a detrimental effect on oral health. Several studies have shown that patients seeking treatment in dental fear clinics generally have poorer dental health than other patients.²–⁴

One of the most widely used instruments for measuring dental anxiety is Corah’s Dental Anxiety Scale (DAS).⁵,⁶ It was developed to assess the tendency to appraise dental treatment situations as dangerous and threatening which was modified later to Modified Corah’s Dental Anxiety Scale (MDAS) by the addition of a question related to anesthetic injection in the DAS.⁷ Dental caries is one of the most prevalent chronic pathologies affecting mankind, hugely impacting the quality of life. The WHO caries diagnostic criteria for decayed, missing, and filled teeth (DMFT) are the simplest and most commonly used in epidemiologic surveys of dental caries.⁸

The aim of this study was to measure dental anxiety and to evaluate the relationship between self-assessed dental status, dental anxiety, and DMFT scores.

Materials and Methods

A cross-sectional, questionnaire-based study was conducted to find the association between self-assessed oral health status, DMFT, and dental anxiety amongst male patients aged 18–55 years visiting OPD at a tertiary health care center in Pune for treatment from Nov. 10, 2019, to Jan. 10, 2020.

Voluntary written informed consent was taken from the selected patients. The purpose of the study was clearly explained to them before obtaining their consent.

A sample size of 500 participants was estimated from the pilot study for a confidence level of 95% and a design effect of 0.65. Uncooperative, medically and physically compromised, and those under psychiatric treatment were excluded from the study.

A self-administered close-ended questionnaire was used to collect the data. A pilot study was done to check for the validity and

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Table 1: Interpretation of modified dental anxiety scale

| Anxiety score | Interpretation |
|---------------|----------------|
| <11           | Not anxious    |
| 11–14         | Moderately anxious |
| 15–18         | Highly anxious  |
| >19           | Extremely anxious |

Table 2: Age-wise distribution of study subjects

| Age group (in years) | Total patients n (%) |
|----------------------|----------------------|
| 18–25                | 168 (33.6)           |
| 26–35                | 212 (42.4)           |
| 36–45                | 70 (14)              |
| 46–55                | 50 (10)              |
| Total                | 500 (100)            |

Table 3: Distribution of study population based on dental anxiety levels

| Dental anxiety levels | Patients n (%) |
|-----------------------|----------------|
| Not anxious           | 256 (51.2)     |
| Moderately anxious    | 106 (21.2)     |
| Highly anxious        | 104 (20.8)     |
| Extremely anxious     | 34 (6.8)       |

Table 4: Distribution of the study subjects according to the dental anxiety score and self-assessed dental status

| Self-assessed dental status | Dental anxiety |
|-----------------------------|----------------|
|                            | Good | Fair | Poor |
| Not anxious                 | 28.4 | 22.8 | 0    |
| Moderately anxious          | 5.6  | 14.4 | 1.2  |
| Highly anxious              | 12   | 8.8  | 0    |
| Extremely anxious           | 5.2  | 1.6  | 0    |

Table 5: Distribution of the study subjects according to dental anxiety and decayed, missing, and filled teeth (DMFT) scores

| DMFT | Dental anxiety |
|------|----------------|
|      | 0–3 N (%)      | 4–7 N (%) | 8–11 N (%) | ≥12 N (%) |
| Not anxious | 128 (25.6) | 90 (18) | 20 (4.0) | 18 (3.6) |
| Moderately anxious | 32 (6.4) | 64 (12.8) | 10 (2.0) | 0 (0) |
| Highly anxious | 38 (7.6) | 50 (10) | 10 (2.0) | 6 (1.2) |
| Extremely anxious | 8 (1.6) | 10 (2) | 6 (1.2) | 10 (2) |

Table 6: Correlation between self-assessed dental status, decayed, missing, and filled teeth (DMFT), and dental anxiety

| Dental anxiety | p-value |
|----------------|---------|
| Dental status  | –0.010  | 0.820   |
| DMFT           | 0.247*  | 0.000   |

*p < 0.05
As expected, a significant negative correlation was found between self-assessed dental status and dental anxiety. In the present study, the mean dental anxiety score for patients was $11.23 + 4.17$ in $48.8\%$ of the patients. Dental anxiety has been associated with poor oral health status, as measured clinically and by self-assessment. DMFT of $4–7$ was observed in about $20\%$ of the patients.

A high DMFT was associated with moderate dental anxiety, and a positive but significant weak correlation was found between the DMFT score and dental anxiety. Even in the subgroup with high dental anxiety, several subjects reported visiting the dentist during the last one or two years. The high anxiety group also had the largest number of fillings, indicating that much restorative work had been performed. It can be argued that the high-anxiety group received more treatment at each visit and that this might be a variable related to the accessibility of services. However, there is no reason to believe that there are differences regarding the accessibility of services for high and low anxiety patients, as in this tertiary care institute, usually there is easy accessibility of dental services.

**Conclusion**

The present study suggests strongly that in younger people, dental anxiety is associated with a host of preventive behavior problems as well as poor dental health. Substantial proportions of patients with dental anxiety undergo dental treatment but are quite fearful while getting the treatment. In dental practice, possible preventive problems should also be addressed to prevent negative dental health progression, which can further aggravate treatment-induced anxiety reactions.

In this study, the participants consisted of males only, thus no gender differences could be found. It would be interesting to conduct a similar study for females and compare the results.

Our findings showed that the use of patient self-assessment was a good predictor of patient dental status. The information presented in this study could serve as a tool for public and preventive dentistry, as well as to help the dental practitioner in managing patients according to their complaints and self-assessment. Dental practitioners could ask patients to assess their dental status prior to treatment or appointment. This will help the practitioner to accomplish more effective time and patient management. Furthermore, the use of patient self-assessment should be a part of dental training. Students should be urged to ask questions to their patients regarding their dental status during the first interview.

**Clinical Significance**

Dental anxiety is widely prevalent in the general population and can lead to variable avoidance behavior toward dental treatment. The clinician should identify and allay their fear and anxiety for better patient management.

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