Pre- and post-operative anxiety in patients undergoing dental extractions

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ABSTRACT

Background: Anxiety in the dental clinic is very common as most of the patients have a fear of dental treatment. Fear and anxiety can negatively influence post-operative pain and patient recovery. Hence, anxiety and pain management in the dental office is an important task for dentists during routine dental extractions. Objective: The aim of this study was to evaluate the levels of anxiety and fear, preoperatively and postoperatively in patients undergoing dental extractions. Materials and Methods: A prospective study was conducted during the academic year January–March 2018, randomly among 50 dental patients who visited the outpatient Department of Oral and Maxillofacial Surgery, Saveetha Dental College, Saveetha University, Chennai, for single tooth extraction. Anxiety levels of patients were measured using the visual analog scale for dental anxiety (VAS-A), before and after dental extractions. Data collected were analyzed with Statistical Package for the Social Sciences for Windows, Version 20.0 (SPSS Inc., Chicago, IL, USA) and results obtained. Results: There was a statistically significant difference between anxiety scores preoperatively and postoperatively at \( P < 0.05 \). The results showed that the percentage of pre-operative anxiety levels was higher compared to post-operative anxiety levels. Conclusion: Anxiety levels were higher before extraction of teeth compared to post-operative anxiety in most of the patients. Pre-operative dental anxiety has a major implication on pain experienced during and after dental extractions. Most of the patients develop preoperative anxiety due to the fear of pain and the fear of injection. Hence, before dental extraction, the patient should be well informed about the extraction procedures, likely outcomes, and complications that might occur. Furthermore, reduction in pre-operative anxiety levels using pharmacologic modalities such as sedation and anxiolytics during dental extractions in apprehensive patients will help to achieve uneventful recovery in the post-operative period.

KEY WORDS: Anesthesia, Anxiety, Dental extractions, Dental fear, Dental treatment, Pain, Sedation

INTRODUCTION

Anxiety is a feeling of worry, nervousness, or unease about something with an uncertain outcome. Anxiety in dental clinic is very common as most of the patients have fear of dental treatment. The most widely accepted concept of anxiety involves a complex pattern of behavior associated with physiological activation that occurs in response to internal (cognitive and somatic) and external (environmental) stimuli, which patients may experience before or during dental treatment, or both. Dental anxiety is a complex phenomenon affected by several variables.\(^1\)

There are many reasons why some people have dental phobia and anxiety.\(^2\) Fear of pain is a very common reason for avoiding the dental treatment. This fear usually stems from an early dental experience that was unpleasant or painful or from “dental pain and horror” stories told by others. Due to the advances in dentistry made over the years, most of today’s dental procedures are considerably less painful or even pain-free. Fear of injections or the injections won’t work are other causes for anxiety and many people are terrified of needles especially when inserted into their mouth. Beyond this fear, others worry that the anesthesia has not yet taken effect or dose was not large enough to eliminate any pain before the dental procedure begins. Some people fear the potential side effects of anesthesia such as dizziness, feeling faint, or nausea. Others do not like the numbness or “fat lip” associated with local anesthetics.\(^3\) It’s common for people to have a feeling of helplessness or loss of control, considering the situation that sitting in a dental chair with their mouth wide open, unable to see what is happening around

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them. Many people feel uncomfortable about the physical closeness of the dentist or hygienist to their face and feel embarrassed due to loss of personal space. Others may feel self-conscious about the appearance of their teeth or possible mouth odors.[4]

Pain is often cited as both an etiological and a maintaining factor in patients’ dental anxiety. However, not all patients who experience pain during dental procedures develop disabling dental anxiety and not all patients whose overestimation of dental pain is unconfirmed, necessarily reduce their recall of past pain or prediction of future pain.[5] Patients’ anxiety may be affected by age, sex, educational standard, and personality.[6] Some studies have reported that people of lower socioeconomic status and with less education have more anxiety, whereas others have reported more dental anxiety in those with better education.[7]

The main concern of the dentist for their patients is to minimize the experience of pain and its consequences during dental extractions. Fear and anxiety can negatively influence post-operative pain and patient recovery. An increased pre-operative anxiety levels will exaggerate patient’s pain perception, thus resulting in an increased post-operative morbidity.[8]

Hence, achieving a reduction in anxiety levels can result in more satisfactory outcomes. Studies assessing dental anxiety levels during third molar removal and implant placement have been described in the literature. However, only a few studies have been conducted to evaluate the anxiety levels during routine dental extraction procedures. Thus, the rationale of the present study was to assess the anxiety of patients undergoing dental extractions, to analyze if there is a change in the level of pre- and post-operative anxiety, and to describe the factors that can influence anxiety among the patients who were treated in our institution.

MATERIALS AND METHODS

A prospective study was conducted during the academic year January–March 2018 among the dental patients who visited the outpatient Department of Oral and Maxillofacial Surgery, Saveetha Dental College, Saveetha University, Chennai. This study was conducted randomly on 50 healthy patients, who required single tooth extraction for various reasons such as pulpitis, mobility, root stump, periodontal disease, grossly decayed, and fractured teeth. Medically compromised patients and those who required single tooth extraction for various reasons such as pulpitis, mobility, root stump, periodontal disease, grossly decayed, and fractured teeth. Medically compromised patients and those who were not willing to participate in the study were excluded from the study. Demographic details of the patients such as age, sex, occupation, and educational qualification were recorded. Teeth were extracted under local anesthesia only without any premedication or sedation, by a single dentist on all the patients. All procedures were done without any surgical complications. Anxiety levels were measured before the surgery and immediately after the surgery. For each patient, anxiety levels were measured using questionnaires the Visual Analog Scale for Anxiety (VAS-A) with the help of patients [Figure 1].

Data collected were analyzed with Statistical Package for the Social Sciences for Windows, Version 20.0 (SPSS Inc., Chicago, IL, USA) and results obtained. To describe the data descriptive statistics, frequency analysis and percentage analysis were used for categorical variables and the mean and standard deviation were used for continuous variables. To find the significance in categorical data, Wilcoxon signed-ranks test was used with the probability value $P < 0.05$ as statistically significant level.

RESULTS

In our study, 50 patients (26 males and 24 females) in the age range of 19–68 years participated and underwent single tooth extractions. Various data were compiled and calculated as shown in the following tables. Table 1 shows descriptive statistics for anxiety levels. Table 2 gives frequency distribution of values for pre-operative anxiety levels. Table 3 gives frequency distribution of values for post-operative anxiety levels. Table 4 describes Wilcoxon signed-ranks test (ranks) and Table 5 shows differences between pre-operative and post-operative anxiety levels (test statistics).

The pre-operative and post-operative anxiety levels in patients undergoing dental extractions as indicated by the VAS-A scores were evaluated by the Wilcoxon signed-ranks test for total anxiety scores. There was a statistically significant difference between pre-operative and post-operative anxiety scores ($P < 0.05$). The results showed that the percentage of pre-operative anxiety levels was higher compared to post-operative anxiety levels.

DISCUSSION

Surgical extraction or removal of teeth is a common procedure in oral surgery that is rarely life-
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Several studies have shown that dental treatment is associated with anxiety and factors which generate anxiety are fear of hypodermic injections, fear of dental drill, fear of suffocation, fear of the dental instruments, claustrophobia, a sense of helplessness, and minor oral surgeries like tooth extraction.[12-18]

Understanding dental anxiety levels in patients undergoing routine dental extractions will help the dentists to implement measures to decrease them. This will help them to improve patients’ compliance during the procedure and achieving uneventful and faster post-operative recovery. In this study, the anxiety levels were assessed in patients undergoing extraction using the VAS-A. The anxiety levels were recorded immediately before and after extraction, and their differences were evaluated. It was found that the anxiety levels were more preoperatively compared to the anxiety levels after the extraction.

The dental anxiety before the extraction may be influenced by the previous dental treatment experience, surrounding environment, clinical settings, instruments, and the dentist approach to the patient. Pre-operative anxiety levels will be higher inpatient who visits dental office for the first time. Dental anxiety immediately after tooth extraction may be influenced by factors such as operative techniques, type of anesthesia, duration of operation, position of tooth extracted, fear of regaining pain, and fear of post-operative complications.[17] Pre-operative anxiety levels of patients undergoing dental surgery must be assessed using appropriate and reliable scales of measurement.[18]

The number of missing teeth may be an indicator of the number of traumatic experiences; the strength and direction of the association between dental fear and numbers of sound and missing teeth vary considerably according to age. Patients who have never had painful or adverse experiences in dentistry may nevertheless acquire dental fear based on indirect experiences.[11] A clinical study done by Rankin, MA showed that the dental anxiety can also be influenced by patients’ past experience of dental treatment. It was noticed that the patient who had positive previous experience of dental treatment was more relaxed and calm compared to the patient who was visiting the clinic for the first time.[1]

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All the patients in our study showed an increase in pre-operative anxiety levels regardless of age and gender differences. According to our study, there was no difference in the anxiety levels between males and females, which is similar to the studies by Klages et al.[16], Morse et al.[19], Okawa et al.[13], and Astramskaitė et al.[20]. In contrast, several studies have reported that females exhibit more anxiety compared to males.[21,22] Other studies have found higher levels of anxiety in younger people.[17,20,23] whereas we did not find any correlation between age and anxiety levels. Furthermore, in our study, there was no correlation between age, education status, and anxiety levels, which is similar to the study by Reyes - Gilabert et al.[24]
In our study, pre-operative anxiety levels were higher than post-operative anxiety levels, which is similar to many other studies. Reyes – Gilabert et al. in Spain, conducted a study on 45 patients to analyze the pre- and post-operative anxiety level in patients undergoing ambulatory oral surgery in a primary health care center. The anxiety levels were measured using pre- and post-operative anxiety-state (STAI-S), anxiety-traits (STAI-T), and modified Corah dental anxiety scale (MDAS) questionnaire. It was found that the pre-operative anxiety levels were higher than the post-operative ones. They concluded that likelihood of post-operative anxiety was related to pre-operative anxiety and the psychological factors related to pre- and post-operative anxiety should be considered in the ambulatory oral surgical procedures carried out in the dental clinics.

López-Jornet et al. in their study analyzed the amount of anxiety and fear felt before, immediately after, and 1 week after, dental extraction on 70 patients who underwent extractions under local anesthesia. Each patient’s anxiety was measured using Spielberger’s State-Trait Anxiety Inventory (Spanish version), the MDAS, and the Dental Fear Survey. The authors concluded that pre-operative anxiety levels were higher than the post-operative anxiety status and dental anxiety immediately after tooth extraction may be influenced by operative techniques.

Muglali et al. conducted a study on 120 patients to identify factors that may contribute to the anxiety of patients undergoing minor oral surgery before and after the operation. Each patient’s anxiety was measured using Spielberger’s State-Trait Anxiety Inventory and Corah’s Dental Anxiety Scale immediately before, immediately after and 1 week after the operation. Anxiety levels for each given situation about the surgery were determined using visual analog scales. Post-operative anxiety levels were significantly lower than the pre-operative anxiety levels. The authors concluded that to reduce patients’ anxiety, factors such as jaw fatigue and fluid collection in the mouth should be taken into account during oral surgery under local anesthesia. In the post-operative period, swelling, difficulty in eating, pain, should also be considered in relieving patients’ anxiety.

A study was conducted in Western Maharashtra by Suresh et al. on 100 patients requiring surgical extraction of teeth. Patients were given a questionnaire before surgical removal of teeth, and their anxiety levels were evaluated based on the scores of the Corah’s Dental anxiety scale. The results of the study showed that pre-operative dental anxiety was higher among the subjects undergoing surgical extraction of teeth, which is in accordance to our study.

Earl in Manchester did a study on 105 patients undergoing extraction of the third molar. Patients were asked to complete a questionnaire preoperatively and postoperatively, and their anxiety levels were assessed. The results were similar to our study, in which there was a significant increase in dental anxiety preoperatively in most of the patients. In contrary to our study, Kareem et al. reported that post-operative anxiety and stress levels were higher than pre-operative anxiety levels.

It is shown in several studies that a strong relationship exists between pre-operative dental anxiety and pain experienced during and after dental extractions.[8,28-34] Dental anxiety and pain relationship must be well understood by the dentists, as this will have an impact on the quality of life of the patients after dental extractions. Higher pre-operative patient anxiety levels, if not managed can result in lower patient satisfaction after treatment.[35] A study also demonstrated that high post-operative anxiety and stress levels can have an impact on post-operative recovery, resulting in increased post-operative pain. Dental surgeons must be capable of identifying their patients’ anxiety levels before treatment and should initiate methods to reduce anxiety, fear, and dental pain during dental extractions based on the needs of every patient. Pharmacological and non-pharmacological methods can be used in achieving patient compliance and for successful delivery of dental treatment.

Conscious sedation and psychological counseling are some of the useful tools during dental extractions in anxious patients.

Appropriate stress management, both preoperatively and postoperatively are essential for successful delivery of surgical, dental treatment under local anesthesia.[36,39] Provision of pre-operative information of the recovery process will lead to significant anxiety reduction in patients.

**CONCLUSION**

Anxiety levels were higher before extraction of teeth compared to post-operative anxiety in most of the patients. Pre-operative dental anxiety has a major implication on pain experienced during and after dental extractions. Most of the patients develop pre-operative anxiety due to the fear of pain and the fear of injection. Hence, before dental extraction, the patient should be well informed about the extraction procedures, likely outcomes, and complications that might occur. Furthermore, reduction in pre-operative anxiety levels using pharmacologic modalities such as sedation and anxiolytics during dental extractions in apprehensive patients will help to achieve uneventful recovery in the post-operative period.
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