

Assessment of general pre and postoperative anxiety in patients undergoing tooth extraction: a prospective study

Pia López-Jornet^{*}, Fabio Camacho-Alonso, Mariano Sanchez-Siles

Department of Oral Medicine, Faculty of Medicine and Dentistry, University of Murcia, Spain

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Abstract

Our aim was to analyse the amount of anxiety and fear felt before, immediately after, and one week after, dental extraction. We studied 70 patients (35 men and 35 women (mean (SD) age 43 (\pm 10) years), who were listed for dental extraction under local anaesthesia in a private clinic that specialised in oral surgery. Patients were evaluated on 3 consecutive occasions: immediately preoperatively, immediately postoperatively, and 7 days later. Each patient's anxiety was measured using Spielberger's State-Trait Anxiety Inventory (Spanish version), the Modified Corah Dental Anxiety Scale (MDAS) and the Dental Fear Survey. There were significant differences in the STAI-Trait scale between before and 7 days after extraction ($p=0.04$), and in the MDAS between before and immediately after extraction ($p=0.02$), and between immediately after and 7 days after extraction ($p<0.001$). The DFS also differed between before and immediately after extraction ($p=0.002$), and between immediately and 7 days after extraction ($p<0.001$). Dental anxiety immediately after tooth extraction may be influenced by operative techniques (type of anaesthesia, duration of operation, or position of tooth extracted), but anxiety at 7 days after extraction is not.

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Introduction

The most widely accepted concept of anxiety involves a complex pattern of behaviour 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.^{1–7} Fear and anxiety in dentistry is usually associated with poor oral health, poor oral health-related quality of life, and compromised psychosocial health, including low self-esteem and reduced morale.^{8–10} McGrath and Bedi¹¹ reported that people with the worst oral health-related quality of life were most commonly among those with high levels

of dental anxiety. Schuller et al.,¹² stated that, compared with people who had little dental fear, people with a great deal of dental fear had more decayed tooth surfaces, decayed teeth, and missing teeth and fewer filled and sound teeth.¹³ Hägglin et al.,⁸ also noted that severe dental anxiety was associated with more missing teeth. Dental anxiety is a complex phenomenon affected by several variables.^{14–18} Pain is often cited as both an aetiological and a maintaining factor in patients' dental anxiety.¹⁹ However, not all patients who experience pain during dental procedures develop disabling dental anxiety,^{20,21} and not all patients whose overestimation of dental pain is unconfirmed necessarily reduce their recall of past pain or prediction of future pain. Patients' anxiety may be affected by age, sex, educational standard, and personality. 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.^{14,15,22–25}

^{*} Corresponding author at: Clínica Odontológica Universitaria, Hospital Morales Meseguer, Adv. Marques de los Velez s/n, Murcia 30008, Spain. Tel.: +34 968 398 588.

E-mail address: majornet@um.es (P. López-Jornet).

Our hypothesis was that oral surgery is highly stressful for the patient, that the patient's state of anxiety fluctuates over time, and that studies that have set out to establish qualitative dimensions of fear and anxiety based on assessing patients' memories have tended to have equivocal findings. Dental anxiety can be assessed successfully with simple self-reported scales. In the present study our objective was to evaluate the degree of anxiety and fear of dental extraction before and immediately after the procedure, and 7 days later, using Spielberger's State-Trait Anxiety Inventor (STAI) (Spanish version), the Modified Dental Anxiety Scale (MDAS), and the Dental Fear Survey (DFS).

Patients and methods

Participants

We designed a prospective study with 3 assessment points: before extraction, immediately after, and 7 days later. The study, between January and December 2011, included 90 consecutive patients over the age of 18 years of both sexes who required dental extraction under local anaesthesia and who attended a private dental clinic in Murcia, Spain. All patients were healthy, with no serious medical conditions or blood dyscrasias. Patients who presented with acute infections were excluded, as were those who were unwilling to take part, those with psycho-organic or behavioural disorders, or those with language or cognitive problems. The study was conducted in accordance with the Declaration of Helsinki. The protocol and informed consent form were approved by the University of Murcia Ethics Committee. Informed consent to participate in the study was obtained from all patients.

During the first consultation patients were assessed medically, and personal data were recorded (age, race/ethnicity, sex, standard of education, and alcohol and tobacco use) during a semistructured interview. The patients were given routine information and reassurance verbally by the operating surgeon. The teeth were extracted under normal conditions (local anaesthesia only, with no premedication or sedation). The degrees of anxiety and fear were recorded preoperatively. Before patients entered the treatment room they were left alone in a quiet "non-dental" room to fill out the questionnaires. There were three questionnaires: Spielberg's State-Trait Anxiety Inventory (STAI) and the dental anxiety questionnaires, the Modified Corah Dental Anxiety Scale (MDAS) and the Kleinknecht Dental Fear Scale (DFS).

Numerical rating scale

The STAI-State form consists of 20 statements, and the answers to these are used to judge a patient's degree of anxiety at a specific time. The STAI-Trait form consists of a different set of 20 statements, and the answers to these are used to calculate a patient's underlying (ongoing/personality) degree of anxiety.

Each statement in the STAI-State is rated on a 4-point scale according to the patient's agreement with that statement (not at all, somewhat, moderately so, or very much so). This form was used at all 3 time points. Statements in the STAI-Trait are also rated on a 4-point scale. The overall (total) score for STAI ranges from a minimum of 20 to a maximum of 80; STAI scores are commonly classified as "little or no anxiety" (20–37), "moderate anxiety" (38–44), or "extreme anxiety" (45–80).

The MDAS is a questionnaire designed specifically to measure anticipatory fear and anxiety. It is made up of 5 questions with multiple choice single-selection responses, whereby the subject chooses the response closest to his or her feelings. Scores range between 5 (no anxiety) and 25 (maximum anxiety); the lower limit for marking subjects with extreme anxiety is 19.

The DFS consists of 20 items grouped into 3 dimensions: avoidance, physiological reactions, and specific dental stimuli, according to which a patient's dental anxiety is assessed on a Likert scale of intensity ranging from 1 (no fear) to 5 (extreme fear). Scores range from 20 (no fear) to 100 (terrified) and the lower limit for an appreciable degree of fear is considered to be 63.

Operation

Teeth were extracted under local anaesthesia, and all procedures were done by a single experienced surgeon. Each tooth was removed using a standard technique. The duration of operation and type of extraction were recorded by the surgeon. The duration of the intervention was timed from the start of the anaesthetic until the last suture or gauze had been put in place. No antibiotics were prescribed. Patients were given appropriate instructions about the postoperative recovery period. All verbal instructions were reinforced in writing.

Each patient was evaluated 3 times: time 1 (T1) = immediately before extraction, time 2 (T2) = immediately afterwards, and time 3 (T3) = 7 days later.

Statistical analysis

The significances of differences were assessed with the help of the Statistical Package for the Social Sciences (version 12.0, SPSS® Inc., Chicago, IL, USA). A descriptive study was made of each variable. The Kolmogorov–Smirnov normality test and Levene variance homogeneity test were applied. The data showed a normal distribution and so were analysed using parametric tests.

The associations between the different qualitative variables were assessed using the chi square test. Student's *t* tests for two independent samples and for related samples were used for the study of dental anxiety and fear at different times, and one-way analysis of variance (ANOVA) for more than two samples. In each case we calculated whether the variances were homogeneous. A bivariate analysis was

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