

## Dental Anxiety among Patients Undergoing Different Dental Treatments in College of Dentistry, Riyadh Elm University

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### Original Research Article

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**Abstract:** To assess the anxiety level of patients before, during, and after dental visits and injection of local anesthesia, and to compare the dental anxiety level among different age groups. A total of 296 patients who underwent different dental treatments in Namuthajiya and Muneseya campuses were included in this study. The subjects were divided into four age groups: 10–20-year, 21–30, 31–40, and above 41. Six questions were developed to assess the extent of anxiety levels among dental patients. The questions were “dental patient in relation to open mouth completely by the dentists”, “patients during different treatments from instruments”, “during and after local anesthesia injections”, “night before the dental appointments”, and “when the dentist is angry with the nurse”. Significant difference was considered at  $P < 0.05$ . Patients aged 21–30 had the highest frequency, followed patients aged 31–40 at 28%. The frequency of the relaxed level of anxiety was the highest among most of the questions, at 68%, 44%, 43%, and 33% for questions number 4, 3, 1, and 5, respectively, and significant differences were found ( $P < 0.050$ ). The anxious level of stress had the highest frequency of 30% in the question “During drilling from instruments”, whereas the frequency of the very anxious level of stress was high at 35% for the question related to “When the dentist is angry with the nurse”. No significant differences were found on both questions, with  $P$  values of 0.324 and 0.275. The recorded anxiety levels of patients before dental visits were low but were high during dental visits and treatments. Young and old patients showed increased stress levels during dental procedures.

**Keywords:** Dental anxiety, gender differences, age, dental treatments, Saudi Arabia.

## INTRODUCTION

Anxiety is anticipatory, which grows with time, especially before visiting a dentist. A slight demarcation exists between anxiety and fear [1, 2].

Dental patients are prone to different levels of stress that is associated with dental treatment. The anxiety is not just linked with the younger age group but also quite common among teenagers [3]. The majority of patients and teenagers either cancel or deliberately miss their appointments, resulting in increased incidence of dental anxiety among young patients [3, 4]. Dental anxiety among children is of great concern and has played a vital role in the incomplete provision of dental care. Overcoming the fear in the beginning is crucial for the dentist to help a child; otherwise, providing quality and successful dental treatment would be difficult [5, 6]. Previous studies have highlighted the key points that are related

to dental anxiety, which include the high percentage of young female patients that experience stress and anxiety compared with other patients [7]. Some patients relate their dental anxiety to the high cost of different dental treatments [8, 9]. Anxiety among these patients leads to the ineffective provision of dental care to a high percentage of patients, resulting in poor oral health [10].

A group of local studies evaluated the anxiety level and stress, provided comparison based on gender, and investigated the relationship between anxiety and age in Riyadh [11], Jeddah [9,12,13], Dammam [14], Amadinah Al Monawareh [15], Qassiem [16,17], Hail [18], Majmaah [19], and Al Goufe [20, 21]. The studies used different scales to measure stress levels before, during, and after different dental treatments, the modified dental anxiety scale (MDAS), the dental anxiety question (DAQ), the revised Corah's dental

anxiety scale, and the children's fear survey schedule-dental subscale questionnaire.

A distinct improvement in the provision of dental treatment facilities has been observed in Saudi Arabia, especially in the last couple of decades, but the oral health condition of Saudi people has not changed substantially [22-24]. This lack of improvement is a consequence of dental treatment anxiety among the majority of the population [8]. Thus, this study aimed to assess the anxiety levels of patients before, during, and after dental visits and injection of local anesthesia. Moreover, this study aimed to compare the dental anxiety level among different age groups and their stress levels before and during dental treatments.

## **SUBJECTS AND METHODS**

This close-ended cross-sectional questionnaire study was conducted in full accordance with the World Medical Association Declaration of Helsinki. The ethical committee of the Colleges of Dentistry, Riyadh Elm University, and Riyadh, Saudi Arabia approved the study proposal. A total of 296 patients were included in this study. The subjects were divided into four age groups: 10–20, 21–30, 31–40, and above 41. The study was conducted between January 2018 and March 2018. The sample size consisted of 303 patients who had reported in both Namuthajiya and Muneseya campuses for different dental treatments. The participants were selected through non-probability convenience sampling. A standardized questionnaire consisting of 6 questions was developed to assess the extent of anxiety level among dental patients. Among the different age groups, the questionnaire registered the level of stress among the “dental patient in relation to open mouth completely by the dentists”, “patients during different treatments from instruments”, “during and after local anesthesia injections”, “night before the dental appointments”, and “when the dentist is angry with the nurse”. The patients answered the questionnaires after signing the written consent form. The questionnaires were handed to the patients by a dentist in one of their regular dental visits. Patients above the age of 10 and patients from both genders were included to obtain comprehensive data.

The collected data from the questionnaire were analyzed using SPSS 20.1 for Windows (SPSS IBM, Inc., Chicago, Illinois, USA). Descriptive statistics in the form of frequencies and percentages was calculated for both genders, age groups, and before and during different dental treatments. Moreover, chi-square test was used, and a significant difference was considered at  $P < 0.05$ .

## **RESULTS**

A total of 303 questionnaires were distributed to dental patients who received dental care at the Colleges of Dentistry, Riyadh Elm University, Riyadh, SA in Namuthajiya and Muneseya campuses. A total of 296 participants returned the answered questionnaires,

accounting for a response rate of 97.7%. A total of 123 patients were male (42%) and 176 (58%) were female. The patients were divided into the following age groups: 10–20, 21–30, 31–40, and above 41. Patients aged 21–30 had the highest frequency of 39%, followed by patients aged 31–40 (28%), 10–20 (15%), and above 40 (Figure 1).

Regarding the stress level among dental patients when “asked by the dentist to open their mouth”, relaxed patients had the highest frequency of 40%, followed by patients that felt slightly uneasy (36%). Patients who were very anxious only had a frequency of 5% (Figure 2).

Figure 3 shows the stress level of the subjects “during the treatments from dental instruments”. The highest frequency of 30% was recorded patients with anxious level, 27% for relaxed and little uneasy level, and 16% for very anxious level in terms of the stress parameter. After injection of local anesthesia, the percentages of stress levels were 44%, 34%, 16%, and 6%, for relaxed, little uneasy, anxious, and very anxious levels, respectively (Figure 4).

Among the different age groups, in relation to the question “a night before dental appointment”, the percentage of the relaxed level of stress was slightly higher for patients aged 31–40 and 10–20 at 73% and 70%, respectively. The percentage was slightly lower at 68% and 62% among patients aged 21–30 and over 40. The percentage of the anxious levels of stress was low, ranging from 11%–26% in all age groups. The lowest percentage of the very anxious stress level at 5% was recorded among patients aged 31–40, followed by 4% for patients aged 10–20 and 21–30, and 3% for patients above the age of 40 (Figure 5).

Regarding the stress level of the different age groups “during local anesthesia injection”, Figure 6 shows that the highest percentage for the relaxed level of stress was 40% or above for all age groups, except for patients aged 21–30 (23%). A percentage between 20%–31% was registered for the anxious level of stress in the different age groups. The lowest level of stress was related to the very anxious level at 22%, 16%, 15%, and 11% for the 21–30-year, 10–20-year, 31–40-year, and above 40-year age groups, respectively (Figure 6).

The analysis of the results for the percentage of the stress level in relation to “when the dentist is angry to the nurse” showed great variation. In relation to the very anxious status, the highest stress level percentage was recorded for patients above the age of 40 at 40%, whereas it ranged from 35%–32% for the 21–30-year and 31–40-year age groups and was slightly lower for the 10–20-year age group at 22%. The percentage of the slightly uneasy level of stress was 40%, 27%, 27%, and 20% for the 10–20-year, 21–30-

year, 31–40-year, and over 40-year age groups, respectively. The lowest percentage for the relaxed level of stress ranged from 7%–18% for all age groups (Figure 7).

The frequency of the relaxed level of anxiety was the highest among most of the questions at 68%, 44%, 43%, and 33% for questions number 4, 3, 1, and 5, respectively. These frequency values had significant

differences ( $P < 0.050$ ). In addition, the frequency of anxious level of stress was the highest at 30% in the question “During ‘drilling’ from instruments” with no significant differences ( $P < 0.324$ ), whereas the frequency of the very anxious level of stress was quite high at 35% in the question “When dentist is angry with the nurse” with no significant differences ( $P = 0.275$ ) (Table 1).

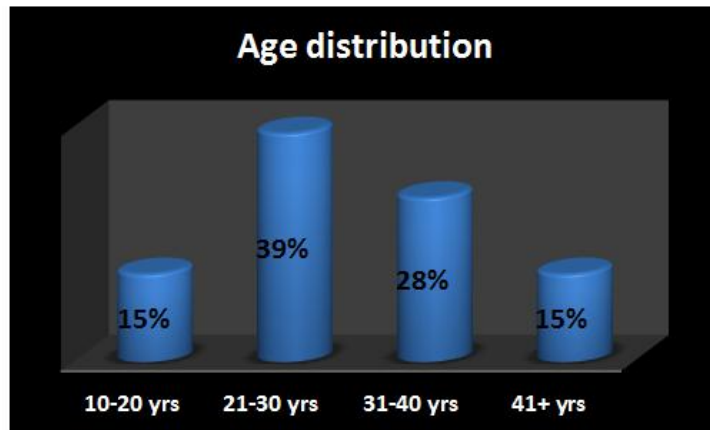


Fig-1: Age distribution of the participants

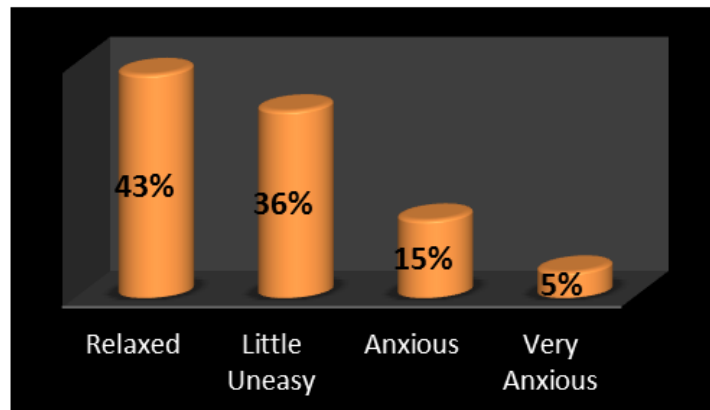


Fig-2: Stress level when the patients were asked to open the mouth completely by the dentist

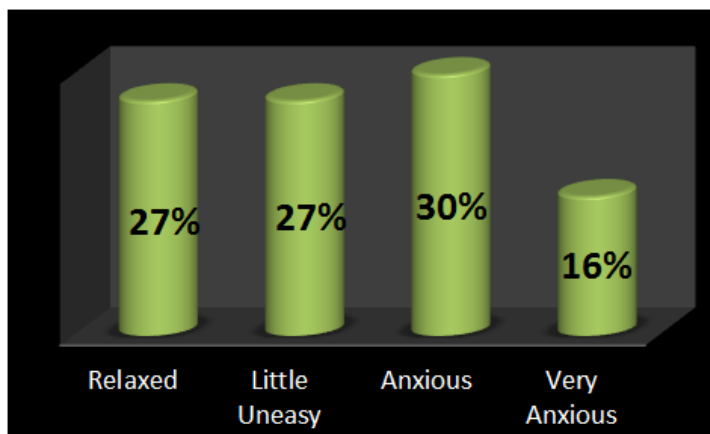


Fig-3: Stress level of patients during treatment from instruments

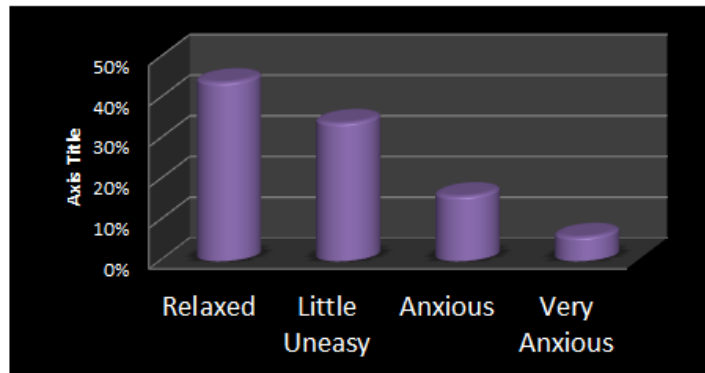


Fig-4: Stress levels of participants after the injection of local anesthesia

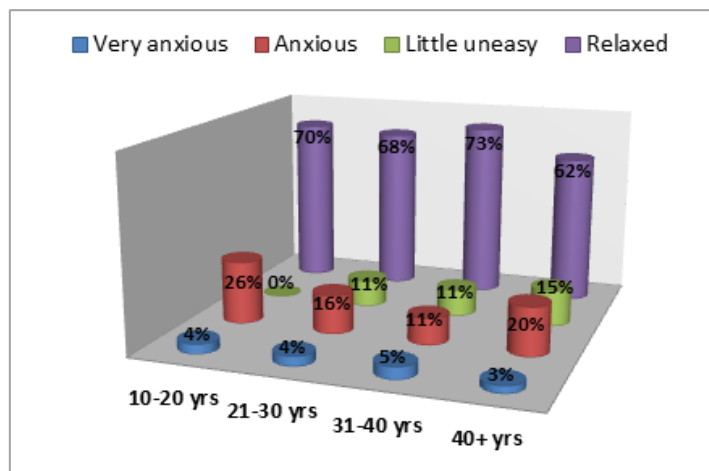


Fig-5: Stress levels of various age groups a night before dental appointment

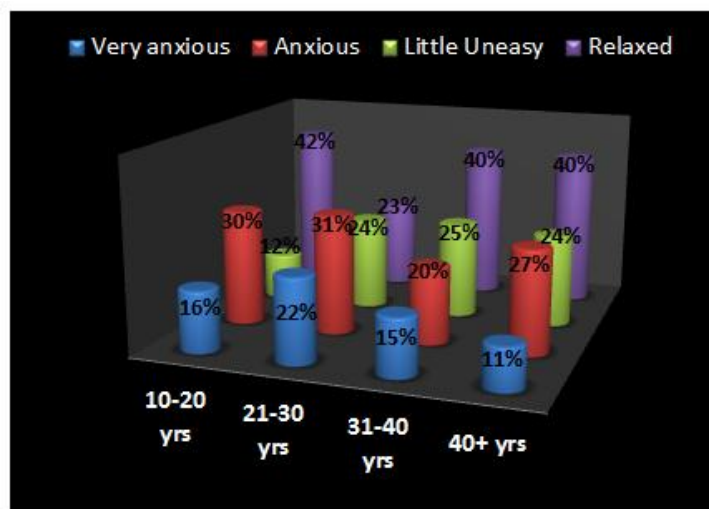


Fig-6: Stress levels of different age groups during the injection of local anesthesia

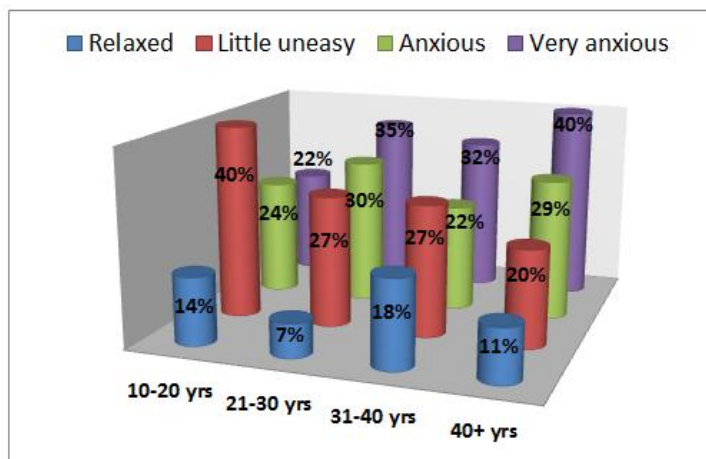


Fig-7: Stress levels of different age groups when the dentist was angry at the nurse

Table-1: Shows the overall level of stress in relation to the all questions

Sl no	Questions	Relaxed %	A little uneasy %	Anxious %	Very anxious %	P
1	Open the mouth completely by the dentist	43	36	15	6	0.042*
2	During ‘drilling’ from instruments	27	27	30	16	0.324
3	When their mouth is numb due to injection	44	34	16	6	0.032*
4	A night before the dental visit	68	9	16	7	0.000*
5	Receiving an injection	33	21	26	20	0.003*
6	When dentist is angry with the nurse	12	27	26	35	0.275

\*Significant

**DISCUSSION**

The present study was conducted to assess the level of stress among patients before, during, and after dental visits and injection of local anesthesia in the outpatient clinics of College of Dentistry, in Namuthajiya and Muneseya campuses, Riyadh, SA. It was also conducted to compare the dental anxiety level among different age groups and their stress levels before and during dental treatments.

Figure 1 shows that among the age groups of the subjects involved, patients aged 21–30 had the highest frequency of 39%, followed by the 31–40-year age group at 28%. This finding agrees with the results of the studies of Al-Khalifa KS, Gaffar *et al.* Alafaleg R, Alatram A-R, and Fayad *et al.* [9, 14, 17, 19-20] in Aljouf, Buraidah, Dammam & Jeddah, Dammam, and Majmaah. Many local studies have concluded that female patients have higher stress levels than male patients [11, 21, 23-25]; however, other studies have found the opposite [20, 22].

By comparing the anxiety levels at various age groups during different stages of dental visits and treatments, we found that stress level is high for young patients, especially when the treatment is ongoing [19,

26]. Our results show that young and old patients have less dental anxiety score than middle-age subjects. This finding agrees with the findings of Alafaleg R/Buridah, Alshammary *et al.*/Hail, and Fayad *et al.* /Al-jouf, [17, 18,20]. However, this finding is contrary to the findings of Ibrahim *et al.*/Jeddah, and Al-Towayan & Osman/Gassim [12, 16], wherein dental fear and anxiety are not affected by age. These results might be due to a general decrease in anxiety with level of education, lifestyle, and age with increased exposure to other diseases.

This study aimed to record the stress level of the participants during and after injection of local anesthesia (Figures 4 & 6). Results showed that stress level increased during the injection of local anesthesia, and this was consistent with the findings of local studies by Ibrahim *et al.*/Madinah Almonwareh and Taani DQ/Saudia[15,22] and studies conducted outside the country by Caltabiano *et al.* (Australia), Kakkur *et al.* (India) and SUHANI *et al.* (Romania) [25, 27, 28]. In some instances, the stress level increased when the participants showed increased amount of anxiety levels during procedures, treatments with dental instruments, and upon hearing the sound of drilling. This finding is consistent with the local results from Al-Towayan &

Osman/Gassim, Alafaleg R/ Buridah and Taani DQ/Saudia, and a study conducted in Australia by Caltabiano et al. [16-17, 22, 25].

The levels of anxiety among teenagers drastically increased when the dentist got angry with the nurse. Middle-aged patients showed a slight increase in stress levels compared with old patients. This result is consistent with the findings of Gassim prevalence [16].

From Table 1, the overall results show that among the patients, the stress levels are mostly relaxed in all questions. This finding favors an excellent outcome of dental treatments. The stress level was slightly higher on the questions “during drilling from the dental instruments”, “patients receiving injections” and “when a dentist was angry with the nurse”. This finding could be explained by the normal physiological response reflected by the human body. This finding agrees with the study of SUHANI et al. in Romania [28] and others local studies conducted in Hail, Majmaah, and Aljouf among dental students [18-19, 21]. The general response from the subjects suggests that majority of the patients were not anxious a night before the dental visit, which indicates a good sign among our subjects (Table 1). This finding is consistent with those of previous studies [12, 28].

As mentioned in the introduction, the oral health condition of Saudi population is not good, and it is associated with the anxiety level of the people. Hence, we determined whether the stress level could be improved, because it is among the major reasons for skipping dental appointments, especially in younger patients. We strongly recommend further investigations to assess other factors that may play a role in the incidence of stress level. A stress reduction protocol should be implemented for all potentially anxious and frightened patients.

Among the limitations of this study are the small sample size and the way of recording the level of stress between different genders to compare their results with other local studies at other regions in SA. The scope of this research should be expanded to involve other areas in Riyadh and SA, considering that the results merely depict the response on two places from the outpatients in Riyadh Colleges. It is highly recommended to enhance the awareness of the community about the importance of oral health and the means to control dental anxiety through educational campaigns for both genders, different age groups, and a larger sample size.

## CONCLUSIONS

Within the current study limitations, it was found that the anxiety level of patients before dental visit was low but was high during dental visits and treatments. Young and old patients showed higher stress

levels during dental procedures than middle-aged patients.

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