



**ORIGINAL RESEARCH**

**THE RELATIONSHIP BETWEEN DENTAL ANXIETY AND POSTOPERATIVE PAIN PERCEPTION AFTER SURGICAL EXTRACTION OF TOOTH: A PROSPECTIVE OBSERVATIONAL STUDY**

Fareedi Mukram Ali<sup>1</sup>, Abdullah Mohammed Yahya Muqri<sup>2</sup>, Nouf Fawwaz Zaqaan<sup>3</sup>, Mohammed Hasan M. Wadani<sup>4</sup>, Abdulaziz Abdulrahman Madkhali<sup>5</sup>, Nadia Ahmed Swaid<sup>6</sup>, Layla Mohammed Arishy<sup>7</sup>, Ebtissam Sahli<sup>8</sup>

<sup>1</sup>Department of Maxillofacial Surgery and Diagnostic Sciences, College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email id: [faridi17@rediffmail.com](mailto:faridi17@rediffmail.com). **Orcid id:** 0000-0002-6315-8273.

<sup>2</sup>College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email: [Dra.muqri@gmail.com](mailto:Dra.muqri@gmail.com) **Orcid id:** 0009-0007-1341-9838.

<sup>3</sup>General Dental Practitioner, Jazan. Saudi Arabia. Email: [nalzaqaan@gmail.com](mailto:nalzaqaan@gmail.com) **Orcid id:** 0009-0003-9345-4916

<sup>4</sup>College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email: [Wdany879@gmail.com](mailto:Wdany879@gmail.com)  
**Orcid:** 0009-0007-5779-4314.

<sup>5</sup>College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email: [amadkhali24@gmail.com](mailto:amadkhali24@gmail.com) **Orcid id:** 0009-0004-7331-0904.

<sup>6</sup>College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email: [Nadiaswaid17@gmail.com](mailto:Nadiaswaid17@gmail.com) **Orcid id:** 0009-0003-2964-6999

<sup>7</sup>College of Dentistry, Jazan University, Jazan. Saudi Arabia. Email: [Lelaerishy3x@gmail.com](mailto:Lelaerishy3x@gmail.com) **Orcid id:** 0009-0006-0146-4490

<sup>8</sup>. Department of Oral and Maxillofacial surgery; Jazan Specialized Dental center; Jazan. Saudi Arabia Email: [Drebtissam126@gmail.com](mailto:Drebtissam126@gmail.com) **Orcid id:** 0000-0001-8961-2190.

**Corresponds Author:** Dr. Fareedi Mukram Ali Department of Maxillofacial Surgery and Diagnostic Sciences, College of Dentistry, Jazan University, Jazan. Saudi Arabia. **Email id:** [faridi17@rediffmail.com](mailto:faridi17@rediffmail.com)

**Received:** Sep.22 2025; **Accepted:** Oct. 29, 2025; **Published:** Nov 25,2025

**ABSTRACT**

**Background:** Dental anxiety is commonly present in patients undergoing dental procedures, especially those involving the surgical extraction of third molars. This psychological factor can influence the pain perception and postoperative recovery in patients. The current study aimed to assess the correlation between preoperative dental anxiety and perception of postoperative pain in patients who had undergone surgical tooth extraction in our hospital.

**Methods:** This prospective observation was conducted in the department of oral and maxillofacial surgery on 71 eligible patients who underwent surgical extraction of third molar teeth under local anesthesia. Data was collected regarding demographic profile, and preoperative dental anxiety was determined using the Modified Dental Anxiety Scale (MDAS), and the Visual Analog Scale (VAS) was used to estimate postoperative pain intensity for seven consecutive days.

**Results:** Out of 71 cases, 57.7% were males and 42.3% were females. The results of dental anxiety preoperatively on the MDAS scale showed moderate anxiety was commonly prevalent in 50% cases, and severe anxiety was present in 13.6% of cases. Overall, female patients were found to have significantly higher dental anxiety and postoperative pain scores as compared to males ( $p = 0.03$  and  $p = 0.002$ ), respectively. Based on the age, it was found that the younger age group patients showed significantly higher VAS scores, although not statistically significant.

**Conclusion:** The study concludes that preoperative dental anxiety is commonly found in patients undergoing dental operative procedures. Therefore, an assessment of anxiety preoperatively will lead to better application of psychological counseling to such patients, which can help in improved pain control, recovery, and overall experience following surgical tooth extraction.

**Keywords:** Dental anxiety, Postoperative pain, Surgical extraction, Modified Dental Anxiety Scale, Visual Analog Scale.

## INTRODUCTION

Anxiety related to dental procedures is a common presentation in clinical dentistry. It influences the behaviour of the patient, treatment compliance, as well as postoperative recovery <sup>[1]</sup>. Anxiety is a multisystem reaction to anticipated external or internal danger, which involves activation of the sympathetic nervous system, leading to restlessness, tachycardia, and tachypnoea <sup>[2]</sup>. The highest levels of anxiety and stress are experienced in surgical tooth extraction in general and third molar surgery in particular <sup>[3]</sup>. This emotional response is a result of fear associated with pain and anticipation of discomfort following surgical tooth extraction, or could be because of previous negative dental experiences <sup>[4]</sup>. Pain perception is a subjective and multifaceted phenomenon that is determined by biological, psychological, and social factors. Although nociceptive pain is regulated by tissue trauma and inflammation, a person's emotional condition, particularly anxiety, is very important in changing the perception and tolerance of pain <sup>[5]</sup>. It has been demonstrated in many experiments that dental anxiety in preoperative patients can increase the intensity of postoperative discomfort in the aftermath of surgical extraction and enhance the post-surgical recovery <sup>[6, 7]</sup>. Anxious patients usually develop reduced pain thresholds; these patients overreact to the nociceptive stimuli and consume more analgesics <sup>[8]</sup>. Dental anxiety and postoperative pain are two concepts whose effects on each other are two-fold. When a person is anxious, it activates the sympathetic nervous system and promotes the release of hormones that indicate stress levels, including cortisol and Adrenaline, which can be allergic to pain pathways <sup>[9]</sup>. Besides, nervous patients can develop muscle spasms, a less cooperative attitude in the operating room, and negative pain perceptions, which are further complications of postoperative results <sup>[10]</sup>. On the other hand, dental anxiety in the experience of pain itself may be reinforced, and a cycle of fear and avoidance may be formed that hinders subsequent dental care <sup>[11]</sup>. This relationship is critical to oral surgeons and dental practitioners because surgical third molar extractions are quite common in dental practice and are generally associated with moderate to severe pain <sup>[12]</sup>. Despite the use of good local anesthesia and postoperative analgesics, the psychological condition of the patient can significantly affect the perceived level of pain, its duration, and the overall outcome of treatment <sup>[13]</sup>. Early recognition and management of dental anxiety is thus seen to be critical towards enhancing the comfort levels in the postoperative period and the treatment experience <sup>[14]</sup>. There are a number of systems that are in use for the assessment of dental anxiety. These include the Modified Dental Anxiety Scale (MDAS), Dental Anxiety Scale (DAS) created by Corah, and the Visual Analog Scale (VAS) of anxiety and pain <sup>[15]</sup>. These tools help to have a standard approach to assess the emotional state of patients and how anxiety is related to pain outcomes following

dental surgery. There is increased awareness regarding dental anxiety; however, in many dental settings, it is a poorly dealt issue, because dentists are more trained in the procedural aspects of surgery and less trained in psychological support <sup>[16]</sup>. With this background, our study was designed to investigate how preoperative dental anxiety relates to postoperative perception of pain after undertaking a surgical extraction of teeth. This study aimed to determine the role played by anxiety in the occurrence of postoperative pain, thereby emphasizing the need to include an assessment and management of anxiety in the overall dental practice. This approach will not only help in increasing patient comfort but also increase clinical outcomes and patient satisfaction when dealing with oral surgery.

## MATERIAL AND METHODS

This prospective observational study was done on patients referred for surgical extraction in the Department of Oral and Maxillofacial Surgery, at College of Dentistry, Jazan University, Jazan, Kingdom of Saudi Arabia. Institutional Ethical approval (REC-45/05/885) was obtained for the study after duly following the protocol for human research based on the Helsinki Declaration. Written informed consent was obtained from all the participants of the study after explaining the nature of the study as well as the expected outcomes in the vernacular language. The sample collection method was convenience sampling.

The sample size calculation was done on feasibility and expected effect size from a previous study by Onwuka CI et al. <sup>[17]</sup>, determining the correlation between dental anxiety and postoperative pain. The sample size of 71 in this study, with approximately 80% power to detect correlation ( $r \geq 0.35$ ) and 5% significance level ( $\alpha = 0.05$ ), was adequate for this type of study.

### Inclusion criteria

- Indicated surgical extraction of impacted third molars
- Aged from 18 to 70 years
- Males and females
- Those undergoing surgical extraction under Local anesthesia only
- No previous history of psychiatric disorders such as anxiety, depression, or psychiatric treatment.
- Those willing to complete preoperative and postoperative anxiety assessment using the [MDAS-DEP] Questionnaire

### Exclusion Criteria

- Cases with uncontrolled diabetes mellitus or hypertension
- On treatment with analgesics or corticosteroids
- Complicated extractions or simple extractions converted to surgical extraction.
- Pregnant and lactating females
- Those who were unable to comprehend the questionnaire and respond because of limited literacy.

After enrolment, each participant was asked to complete the biodata form, which included the demographic profile, past medical history, and dental history. They were asked to fill out the Modified Dental Anxiety Scale Questionnaire while

waiting for treatment in the waiting area. Assistance was provided by the trained staff in case patients found it difficult to understand or comprehend the questionnaire.

**Surgical procedure:** All the cases were operated on under local anesthesia containing 2% mepivacaine with 1:100,000 adrenaline by the inferior alveolar nerve, lingual nerve, and long buccal nerve blocks. The surgical details were recorded in a separate proforma, which included the duration of surgery. This was from the time of the first incision to the completion of the last suture. Other details included additional anesthetic if required, any complications during the surgery. Postoperative instructions were given orally as well as in written form for reference. Patients were placed on oral Amoxicillin 500 mg TID for 5 days and ibuprofen 400 mg TID for 3 days. The patients were followed up every day for a minimum of 7 days. **Modified Dental Anxiety Scale for Dental extraction procedure [MDAS-DEP] Questionnaire:** The MDAS-DEP was translated into Arabic. The MDAS-DEP was then translated back into English to ensure accuracy of results. The Arabic version of the MDAS-DEP was tested on a pilot group (n=10) prior to commencement of data collection. The MDAS has five questions asking about anxiety toward different stimuli scored on a 5-point Likert scale (not anxious: 1, slightly anxious: 2, fairly anxious: 3, very anxious: 4, and extremely anxious: 5). Subjects with anxiety scores 5–9 (mildly anxious), 10–18 (moderately anxious), a score of 19 or above (highly anxious).

**Visual Analogue Scale (VAS):** A 10-point visual analog scale (VAS) for pain assessment was given to each participant to be completed once each day at approximately the same time as the surgery time until day 7 after the surgery.

**Statistical analysis:** all the available data were refined and uploaded to an MS Excel spreadsheet and imported and analyzed by SPSS version 25 on Windows format. All the continuous variables were represented as mean, standard deviation, frequency, and percentages. The categorical variables were calculated by the chi-square test for differences between two groups. ANOVA was applied to assess the association between variables. The level of significance was ( $P < 0.05$ ).

Table 1 shows the distribution of participants across different categories for several variables in a study on surgical tooth extraction. Out of n=71 cases, **Gender:** 41 Male (57.7%) and 30 Female (42.3%) participants. **Level of Education:** There appears to be a higher proportion of females with Tertiary education compared to males. **Level of Dental Anxiety:** Males have a higher proportion in the "Low" anxiety category, as compared to Females, who have a higher proportion in the "Moderate" and "Severe" categories. **Duration of Surgery:** The distribution of participants based on surgery duration ( $< 30$  minutes or  $\geq 30$  minutes) for both genders appears to be similar.

Table 2 shows the distribution of patients across different MDAS score ranges (Low, Moderate, Severe) for various

categories. In this, we found 36.3% of patients have a Low MDAS score, 50.0% have a Moderate score, and 13.6% have a Severe score. Overall, a higher proportion of patients seem to fall into the Moderate MDAS score category compared to Low or Severe. There is a significant difference in mean anxiety scores between males and females; the p-values are ( $p < 0.05$ ), suggesting a possible association between gender and MDAS score. There appears to be no difference in the patient's level of education and the MDAS score distribution.

Table 3 shows the mean VAS scores with different demographic parameters in the cases of the study. The mean VAS score appears to decrease with increasing age groups. The highest score is in the 21-30 age group, and it progressively decreases to 1.0 in the 61-70 age group. However, the Chi-square test ( $X^2 = 3.339$ ,  $p = 0.793$ ) for age groups suggests this difference was not statistically significant. **Gender:** The mean VAS score is slightly higher for females (1.89) compared to males (1.06). The p-value (0.002) suggests a statistically significant difference between genders, with females reporting higher average pain scores. **Education Level:** The mean VAS score is lowest for the "Primary" education group (2.67) and highest for the "Tertiary" group (6.55). However, the p-value (0.571) for education level suggests this difference is unlikely to be statistically significant. Table 4: showing the Mean VAS scores in relation to the Modified Dental Anxiety Scale in the cases of this study. **VAS scores and MDAS:** Patients with higher VAS Scores had higher levels of anxiety. The VAS scores appeared to decrease over a period of time, suggesting a gradual reduction in pain following tooth extraction, and correspondingly, there were no cases reported in severe anxiety levels from the 4<sup>th</sup> to the 7<sup>th</sup> day. There were significant differences in VAS scores between different categories of MDAS scores, as shown by significant p-values. Therefore, it appears that patients with greater postoperative pain had greater anxiety levels. The pain decreased over time, indicating the effectiveness of pain management strategies in our hospital.

**Table 1. Showing the variables recorded in the cases of the study**

| Variable                       | Male<br>(n=41)<br>Frequency<br>(%) | Female (n=30)<br>Frequency (%) |
|--------------------------------|------------------------------------|--------------------------------|
| <b>Level of education</b>      |                                    |                                |
| Primary                        | 5 (12.1)                           | 3(10.0)                        |
| Secondary                      | 20 (48.7)                          | 10(33.3)                       |
| Tertiary                       | 16 (39.0)                          | 17(56.7)                       |
| <b>Level of Dental Anxiety</b> |                                    |                                |
| Low                            | 20(48.7)                           | 4(13.3)                        |
| Moderate                       | 20(48.7)                           | 18(60.0)                       |
| Severe                         | 1(2.4)                             | 8(26.7)                        |
| <b>Duration of surgery</b>     |                                    |                                |
| $< 30$ minutes                 | 25(60.9)                           | 18(60.0)                       |
| $\geq 30$ minutes              | 16(39.0)                           | 12(40.0)                       |

**Table 2. Depicting the values of modified dental anxiety scores (MDAS) with different parameters in cases of surgical extraction of teeth**

|           | MDAS Score |           |           | X <sup>2</sup> | P value |
|-----------|------------|-----------|-----------|----------------|---------|
|           | Low        | Moderate  | Severe    |                |         |
| 11 - 20   | 0(00.0%)   | 6(60.0%)  | 4(40%)    | 3.218          | 0.697   |
| 21 - 30   | 8(36.3%)   | 11(50.0%) | 3(13.6%)  |                |         |
| 31 - 40   | 9(47.3%)   | 8(42.1%)  | 2(10.5%)  |                |         |
| 41 - 50   | 3(27.2%)   | 6(54.5%)  | 2(18.1%)  |                |         |
| 51 - 60   | 4(66.7%)   | 2(33.3%)  | 0(00.0%)  |                |         |
| 61 - 70   | 2(66.7%)   | 1(33.3%)  | 0(00.0%)  |                |         |
| Male      | 21(51.2%)  | 19(46.3%) | 1(2.4%)   | 12.525         | 0.03    |
| Female    | 5(40.0%)   | 15(60.0%) | 10(20.0%) |                |         |
| Primary   | 3(37.5%)   | 2(25.0%)  | 3(37.5%)  | 5.121          | 0.417   |
| Secondary | 12(41.3%)  | 14(48.3%) | 3(10.3%)  |                |         |
| Tertiary  | 10(30.3%)  | 18(54.5%) | 5(15.1%)  |                |         |

**Table 3. showing the mean VAS with different demographic parameters in the cases of the study with surgical extraction of the tooth**

|           | Mean $\pm$ SD   | X <sup>2</sup> | P value |
|-----------|-----------------|----------------|---------|
| 11 - 20   | 3.33 $\pm$ 3.05 | 3.339          | 0.793   |
| 21 - 30   | 7.33 $\pm$ 4.04 |                |         |
| 31 - 40   | 6.33 $\pm$ 3.8  |                |         |
| 41 - 50   | 3.67 $\pm$ 2.08 |                |         |
| 51 - 60   | 2.0 $\pm$ 2.0   |                |         |
| 61 - 70   | 1.0 $\pm$ 1.0   |                |         |
| Male      | 1.06 $\pm$ 1.19 | 14.361         | 0.002   |
| Female    | 1.89 $\pm$ 2.39 |                |         |
| Primary   | 2.67 $\pm$ 0.57 | 4.912          | 0.571   |
| Secondary | 6.08 $\pm$ 6.08 |                |         |
| Tertiary  | 6.55 $\pm$ 6.55 |                |         |

**Table 4. showing the Mean VAS scores in relation to the Modified Dental Anxiety Scale in the cases of the study**

| Day             | Mean VAS scores at different times with MDAS |                 |                 | P value |
|-----------------|----------------------------------------------|-----------------|-----------------|---------|
|                 | Mild                                         | Moderate        | Severe          |         |
| 1 <sup>st</sup> | 2.35 $\pm$ 2.31                              | 4.76 $\pm$ 4.14 | 3.85 $\pm$ 3.43 | 0.158   |
| 2 <sup>nd</sup> | 2.28 $\pm$ 3.08                              | 3.27 $\pm$ 3.71 | 4.22 $\pm$ 3.36 | 0.141   |
| 3 <sup>rd</sup> | 1.58 $\pm$ 2.29                              | 2.97 $\pm$ 3.36 | 2.8 $\pm$ 3.34  | 0.437   |
| 4 <sup>th</sup> | 2.0 $\pm$ 2.89                               | 2.0 $\pm$ 2.25  | 0.0 $\pm$ 0.00  | 0.002*  |
| 5 <sup>th</sup> | 1.09 $\pm$ 1.77                              | 1.81 $\pm$ 2.61 | 0.0 $\pm$ 0.00  | 0.021*  |
| 6 <sup>th</sup> | 1.13 $\pm$ 2.72                              | 1.92 $\pm$ 1.87 | 0.0 $\pm$ 0.00  | 0.037*  |
| 7 <sup>th</sup> | 0.75 $\pm$ 2.77                              | 0.0 $\pm$ 0.00  | 0.0 $\pm$ 0.00  | 0.001*  |

\* Significant

## DISCUSSION

The current study was done to determine the relationship between dental anxiety and postoperative pain perception in 71 cases who underwent surgical tooth extractions of third molars in our hospital. The important finding of this study was that patients with higher preoperative anxiety had higher postoperative pain scores assessed by VAS scores, highlighting that anxiety can significantly affect the pain perception by psychological and physiological mechanisms [5, 18]. The demographic profile of the cases in this study showed that there was male predominance with 57.7%. The assessment of anxiety levels showed that females had higher anxiety levels as compared to males, as demonstrated by higher Modified Dental Anxiety Scale (MDAS) scores, and the comparison with males showed that the differences were significant (Table 2). In a similar study by Appukuttan et al. [2] and Carter et al. [3], it was also found that females generally reported higher dental anxiety scores, which could be due to greater emotional expressiveness and lower pain thresholds in females. The educational status of the participants showed that most of the patients were educated up to secondary or tertiary level of education; interestingly, higher education levels were found to have a higher level of anxiety, although the differences did not reach the level of significance. This is in agreement with a prior study where they found that higher educational levels may influence awareness of procedures, although it may not decrease the anxiety levels [1].

The assessment of pain was using the Visual Analog Scale (VAS), which showed that the VAS score was considerably greater in females than in males ( $p = 0.002$ ). Previous studies have also found that women tend to report a higher degree of postoperative pain as analyzed by VAS scores as compared to male patients [16]. It was also found that age was negatively associated with pain, and younger patients (21-30 years) scored high VAS scores for pain, followed by older patients with lower pain scores. This might be explained by the fact that it is a biological and even psychological phenomenon where younger people might experience stronger inflammation and a weaker coping threshold, also because older individuals might have experienced similar situations previously and are less likely to be anxious compared to their younger counterparts [19]. One of the most notable findings was the apparent correlation between dental anxiety and postoperative pain. The mean VAS scores were found to be higher in patients with moderate or severe scores on the MDAS and in the initial days of the postoperative period (Days 13) in particular (Table 4). The degree of pain reduced in all groups with increasing days postoperatively, indicating normal healing and good management of the postoperative pain was present in this study.

The relationship between anxiety and perception of pain was found to be statistically significant on several days ( $p < 0.05$ ), which indicates the role of psychological factors in perception of pain [6, 11].

The pathway of anxiety on perception of pain shows that increased activity of the sympathetic nervous system causes the release of catecholamines, which augments the transmission of pain through nociceptors [9]. These findings are in agreement with observations of Van Wijk et al. [6], who reported that preoperative anxiety leads to increased perception of postoperative pain. Klages et al. [8] and Kain et al. [9] in their studies have shown that preoperative anxiety leads to increased pain perceptions postoperatively and increased the need for analgesics postoperatively. Therefore, these findings highlight the need for undertaking interventions preoperatively, which include patient education, reassurance, and relaxation techniques, which can substantially improve the postoperative outcomes [4, 7]. Finally, our study showed the importance of the psychological component of pain in dental surgery. Although advances in local anesthetics have decreased procedural discomfort, postoperative pain affects recovery and patient satisfaction. The limitations of this study were that it had a modest sample size, which could be a limiting factor. The study was conducted in a single center, and future multicentric studies with larger sample sizes and longer follow-up will provide a deeper understanding of this relationship.

## CONCLUSION

Within the limitations of the current study, we found that there was a significant correlation between dental anxiety and perception of postoperative pain after surgical extraction of third molars. Patients who had higher preoperative anxiety scores had higher postoperative pain scores on the VAS scale, especially in their initial recovery period. Women and younger age groups received a higher score on both anxiety and pain, which highlighted the impact of psychological and demographic variables on pain. The results of this research indicate that dental anxiety should be evaluated and treated as a part of preoperative treatment. The methods of anxiety reduction can also be implemented to increase patient comfort, decrease their postoperative pain, and raise the satisfaction rates with dental surgical procedures.

## DECLARATION

### Acknowledgments

N/A

### Conflict of interests

There are no conflicts of interests

### Funding

This study did not receive any funding

REFERENCES

1. Armfield JM. The extent and nature of dental fear and phobia in Australia. *Aust Dent J*. 2010;55(4):368–77.
2. Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: literature review. *Clin Cosmet Investig Dent*. 2016; 8:35–50.
3. Carter AE, Carter G, Boschen M, AlShwaimi E, George R. Pathways of fear and anxiety in dentistry: a review. *World J Clin Cases*. 2014;2(11): 642–53.
4. Humphris GM, Dyer TA, Robinson PG. The modified dental anxiety scale: UK norms and evidence for validity. *Community Dent Health*. 2009;26(4): 207–12.
5. Rhudy JL, Meagher MW. Fear and anxiety: divergent effects on human pain thresholds. *Pain*. 2000;84(1): 65–75.
6. Van Wijk AJ, Hoogstraten J. Anxiety and pain during dental injections. *J Dent*. 2009;37(9):700–04.
7. Appukuttan DP, Subramanian S, Tadeipalli A, Damodaran LK. Dental anxiety among adults: an epidemiological study in South India. *J Indian Prosthodont Soc*. 2015;15(2):128–32.
8. Klages U, Kianifard S, Ulusoy O, Wehrbein H. Anxiety sensitivity as predictor of pain in patients undergoing restorative dental procedures. *Community Dent Oral Epidemiol*. 2006;34(2):139–45.
9. Kain ZN, Sevarino F, Alexander GM, Pincus S, Mayes LC. Preoperative anxiety and postoperative pain in women undergoing hysterectomy. *Anesth Analg*. 2000;90(6):1413–17.
10. Loggia ML, Mogil JS, Bushnell MC. Empathy hurts: compassion for another increases both sensory and affective components of pain perception. *Pain*. 2008;136(1–2):168–76.
11. Locker D, Shapiro D, Liddell A. Negative dental experiences and their relationship to dental anxiety. *Community Dent Health*. 1996;13(2):86–92.
12. de Santana-Santos T, de Souza-Santos aA, Martins-Filho PRS, da Silva LCF, de Oliveira E Silva ED, Gomes ACA. Prediction of postoperative pain after third molar surgery: prospective study. *Oral Maxillofac Surg*. 2013;17(3):255–61.
13. Graziani F, Karapetsa D, Alonso B, Herrera D. Nonsurgical and surgical treatment of periodontitis: how many options for one disease? *Periodontol* 2000. 2017;75(1):152–88.
14. \_\_\_\_\_
15. Moore PA, Hersh EV. Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions: translating clinical research to dental practice. *J Am Dent Assoc*. 2013;144(8):898–08.
16. Humphris GM, Freeman R, Campbell J, Tuutti H, D’Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. *Int Dent J*. 2000;50(6):367–70.
17. Alshoraim MA, El-Housseiny AA, Farsi NM, Felemban OM, Alzain AA. Effects of dental anxiety on the pain perception of children during dental extraction. *Eur J Dent*. 2018;12(4):579–83.
18. Onwuka CI. Does preoperative dental anxiety play a role in postoperative pain perception after third molar surgery? *Ann Afr Med*. 2020 Oct-Dec;19(4):269-73.
19. Fillingim RB, King CD, Ribeiro-Dasilva MC, Rahim-Williams B, Riley JL 3rd. Sex, gender, and pain: a review of recent clinical and experimental findings. *J Pain*. 2009;10(5):447–85.
20. Rhodus NL, Little JW. Dental management of the medically compromised patient. 9<sup>th</sup> ed. St. Louis: Elsevier; 2020. P. 210-215.

**Fareedi Mukram Ali, Abdullah Mohammed Yahya Muqri, Nouf Fawwaz Zaqaan The Relationship between Dental Anxiety and Postoperative Pain Perception after Surgical Extraction of Tooth: A Prospective Observational Study Bulletin of Stomatology and Maxillofacial Surgery.2025;21(10)516-521 doi:10.58240/1829006X-2025.21.10-516**