

## Impact of anxiety on the success of endodontic treatment: Strategies to improve the patient experience

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### KEYWORDS

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### ABSTRACT

Endodontic treatment, commonly known as root canal treatment, can be a significant source of anxiety for many patients. Dental anxiety can negatively influence pain perception, patient satisfaction, and ultimately treatment success. The objective was to analyze the impact of anxiety on the success of endodontic treatment. This article reviews the literature on the impact of patient anxiety on endodontic treatment outcomes and proposes strategies to mitigate anxiety and improve the patient experience. The research is framed in a qualitative-quantitative methodological approach, with a bibliographic and descriptive design and association of variables. The sample used for the study was non-probabilistic for convenience; To collect the information, survey and interview techniques were used through a structured and semi-structured questionnaire, respectively, as an instrument. The common reasons for anxiety in endodontic treatment are 85% fear of pain, 36% lack of knowledge of the procedure, 65% negative previous experiences at the dentist, and 15% the sound of instruments. It was concluded that reducing anxiety through a combination of communication strategies, relaxation techniques and a comfortable environment is essential to improve the patient experience and increase the success of endodontic treatment. In cases of severe anxiety, a multidisciplinary approach with psychological support can optimize clinical outcomes and patient satisfaction.

### INTRODUCTION

In the present research we will address the impact of anxiety on the success of endodontic treatment and strategies to improve the patient experience, the objective was to analyze the impact of anxiety on the success of endodontic treatment, for which in the first instance, dental anxiety is currently considered as a negative mood. it can be identified by various symptoms and body signs such as tachycardia, palpitations, difficulty breathing, sweating, pallor, nausea, diarrhea and headaches; In the same way, he mentions that anxiety disorders are a dysregulation of normal defensive mechanisms, resulting in forms of maladaptive, dysfunctional, pathological, unhealthy behaviors that produce suffering, maladjustment and unhappiness in people. (Barreiro, Armijos, & Silvia, 2023)(PsicoOdontología, 2024)

Inflammation of the nerve of a tooth is very painful so, given the possibility of it occurring, it is better to perform the root canal beforehand. The importance of endodontic treatment lies in avoiding having to extract the tooth with problems. If it is not performed, the tooth continues with its degeneration, as well as the dental infection will be greater and larger and the extraction of the tooth must be performed according to .(tonicollar, 2014)

(Ríos , Herrera , & Rojas, 2014)According to the study carried out by the study carried out by the United Kingdom, the prevalence of dental anxiety with rates ranging from 4% to 23% in European countries, being a phenomenon that is extremely widespread in the

United Kingdom. In South America, studies show rates of 34.7% in preschoolers, showing that the parents of these children also have a high incidence of dental anxiety (41.1%). In the United States, 10 to 12 million people suffer from severe dental phobia (the most severe state of dental anxiety), while 35 million people suffer from dental anxiety, which is contrasted by the study of the prevalence of anxiety in dental patients (Baker et al., 2018).

(Domínguez, 2014) The study refers to the impact of anxiety on endodontic treatment, which in the Modified Corah Dental Anxiety Scale (MDAS), resulted in 47.5% of patients having mild or no anxiety prior to endodontic treatment, which differs from several studies such as that of Aisha Wali et al. so that it is affirmed with the same study on the relationship between anxiety and the perception of pain by (Katz et al., 2019).

In this sense, the effect of anxiety on treatment success, studied by (Friedman & Mor, 2016) and the study on some effects of anxiety on school performance reveal that school assessments should be considered as another moment of learning and become a constant and permanent activity. In order to reduce the emotional tension they cause, especially in the anxious student. (Jadue, 2001)

It is commendable to point out that there are also consequences of untreated anxiety, such as the case, with the research of (Jiang et al., 2020) with the increase in the rate of endodontic failures and the study on Dental anxiety: causes, complications and management methods, in which it points out that the consequences are visible in negative thoughts, fear, crying, aggressiveness, sleep and eating habit disturbances, and increased self-medication. The impact produced on social interaction, work performance, self-esteem and self-confidence has also been reported. Other problems dentists face when treating anxious patients include low satisfaction with the treatment planned or provided. As expected, a patient's attitude toward dentists has been shown to have an inverse linear relationship with dental anxiety, i.e., the most anxious patients were less positive about their dentists. What's more, it was observed that as the patient's perception of the dentist's competence decreased, their dental anxiety increased. (Hmud & Walsh, 2024)

On the other hand, the factors that contribute to dental anxiety have been characterized by personal problems (age, sex, temperament, emotional and behavioral problems, cultural inheritance, general presence of fear and anxiety, etc.) to situational problems (experience of pain and displeasure in the dental office, lack of control, dentist with inappropriate behavior, etc.), according to . In the same way, he affirms it (Fisher et al., 2021) in his study on previous experiences, expectations of treatment. (Villar, 2019)

(Miller & Goldstein, 2017) states that clear communication with the patient is of vital importance, using different strategies to improve the patient experience, to which he defines effective communication as a type of communication in which we manage to convey the message in an understandable and very clear way for the receiver without causing doubts. confusion or possible misinterpretations. (Castro, 2023)

Relaxation techniques are also important, such as meditation and deep breathing (Chong et al., 2021). The appropriate use of analgesics and sedation in cases that are necessary to support endodontic treatment and in turn a comparison of different sedation methods must be made (González et al., 2020). On the other hand, the office environment becomes a

key element, as mentioned (Smith & Jones, 2018) when recommending to endodontic dentists the creation of a welcoming environment.

Finally, another strategy to minimize anxiety in the patient is to educate them, since the provision of adequate information about the procedure (Levine & Khan, 2022) minimizes disorders of insecurity or fear in the consultation.

## **METHODS**

The research design is non-experimental, as indicated (Hernández, Collado, Baptista, 2014) "A non-experimental research design is one in which the researcher does not manipulate or control the study variables, instead the researcher observes and analyzes the phenomena as they occur in their natural context.

The research has a descriptive scope that seeks to detail variables related to the study, such as the characteristics of the population, a specific phenomenon, etc. That is, it focuses on providing an accurate and detailed representation of the observed facts, without trying to establish cause-and-effect relationships. (CIMEC, 2019). Accordingly, the topic of the impact of anxiety on the success of endodontic treatment has not been widely researched, so the present research will contribute to the literature and allow a general understanding of the topic.

On the other hand, documentary and field research was also used, which allowed the review of secondary sources, such as books, journal articles and online documents, as well as collecting information directly in the place where the phenomenon occurs. This contributed to obtaining relevant information regarding the study variables.

The present research had a mixed qualitative-quantitative approach, since the qualitative allowed to understand the experiences and perceptions of endodontists and, quantitative because it allowed to obtain representative data on anxiety in endodontic treatment

The inductive method was used, which is based on the observation and analysis of particular cases to reach general conclusions according to the definition of (Sampieri, 2014). In the present case, it was applied to: analyze the information collected from patients and endodontists. Whereas, the deductive method is based on formulating hypotheses from theories or general principles and then testing those hypotheses through data collection. (Sampieri, 2014). In the present research, the deductive method was used in the collection of data through surveys.

Research techniques help with the collection, classification, measurement and analysis of information that allows the researcher to get closer to reality. The research techniques used in this research were survey and interview.

The survey is a research technique that collects information, data and comments through a series of specific questions, it is carried out through a previously prepared questionnaire that aims to obtain information on the knowledge, expectations, beliefs, attitudes and behaviors of the people related to the research. (Gómez, 2023)

For the survey, a structured questionnaire of 13 closed questions was developed and validated, and for the interview, a semi-structured questionnaire was designed that

included questions on the level of anxiety prior to treatment, perception of pain and discomfort, impact of communication, influence of relaxation strategies, and general satisfaction and success of treatment.

The study population was endodontists and patients who have obtained and are undergoing endodontic treatment in the city of Guaranda, from which, for the two populations, representative samples have been selected through a non-probabilistic sampling for convenience. For (Sampieri, 2006), non-probability sampling is a sampling technique in which the researcher selects samples based on a subjective judgment rather than making the selection at random, such as the pilot survey (a survey that is implemented in a smaller sample, compared to the predetermined sample size).

The data collected were processed in a Microsoft Excel spreadsheet, allowing frequencies and percentages to be calculated.

## **RESULTS**

For the present research, two types of samples were defined, for which a survey was applied to patients and an interview to independent professionals who are specialists in endodontics.

In this sense, the survey was structured in 5 sections in order to inquire about: 1. Level of anxiety prior to treatment, 2. Perception of pain and discomfort, 3. Impact of communication, 4. Influence of relaxation strategies and 5. Overall satisfaction and treatment success.

It was found that most patients report high and moderate levels of anxiety before a root canal treatment. And the common reasons for anxiety are 85% fear of pain, 36% unfamiliarity with the procedure, 65% previous negative experiences at the dentist, and 15% the sound of instruments. Whereas, with the perception of pain and discomfort, 98% of anxious patients tend to perceive greater pain and discomfort than those with lower levels of anxiety. Therefore, 80% defined the use of appropriate anesthesia as a mechanism to minimize discomfort, 23% distracting techniques (such as music or videos), and 100% clear communication about the procedure and pain control.

With the impact of communication, 100% of patients who have received clear and detailed information about treatment and pain management techniques report less anxiety. Therefore, it becomes necessary to explain each step of treatment, answer questions before starting, and offer emotional support. For this reason, 100% of patients who have used relaxation techniques such as deep breathing, guided visualization, or the use of relaxing music show a reduction in anxiety and greater satisfaction with the treatment.

Finally, for a direct influence of relaxation strategies to exist, 65% of respondents established that headphones with music should be provided, breathing exercises should be performed with the patient or mindfulness techniques should be used. The reduction of anxiety is directly related to a more positive perception of the treatment and, in some cases, to better results in the clinical success of the procedure, given that 100% responded that psychological support should be integrated or referrals should be made when the patient has high levels of anxiety to significantly improve the experience when attending endodontic treatment.

On the other hand, in the interview with endodontic specialists and using the discourse analysis technique, it has been determined that:

Most specialists consider anxiety to be one of the most influential factors in the experience and perception of the success of endodontic treatment, since anxious patients tend to have an increased perception of pain and are more predisposed to interrupt treatment, which compromises success in the short, medium and long term. It is even a decision factor for the immediate change of the professional who will attend to you.

Many specialists agree on the need to assess the level of anxiety before starting treatment. This allows strategies to be adapted according to the profile of each patient. And, among the most recommended methods is the use of short self-assessment questionnaires, observation of physical signs of anxiety, or short interviews before the procedure. And they even highlight that effective communication significantly reduces the patient's anxiety and it is necessary to explain in detail each step of the procedure and answer questions patiently to create an environment of trust or at the same time use visual material or short explanatory videos, make sure that the patient understands the procedure and remind them that they have control over the process.

Some professionals said they integrate these techniques directly into their consultations, such as lending headphones, using relaxing essences or even offering conscious sedation options in cases of severe anxiety. Therefore, they suggest that in those cases they could involve psychologists to address the anxiety more deeply before or during treatment when necessary. Elevated anxiety is associated not only with a worse perception of treatment, but also with a lower clinical success rate, due to the patient's resistance to following subsequent instructions or completing treatment.

## **DISCUSSION**

Once the research has been carried out, this section proposes the strategies based on the results, synthesizes the findings, analyzes the implications for clinical practice and exposes the limitations of the studies reviewed.

Figure 1.  
 Strategies to improve the patient experience in endodontic treatment

Comunicación efectiva	<ul style="list-style-type: none"> <li>•Explicar el procedimiento</li> <li>•Responder preguntas y ofrecer opciones</li> <li>•Lenguaje simple y positivo</li> </ul>
Evaluación de la ansiedad	<ul style="list-style-type: none"> <li>•Identificar el nivel de ansiedad</li> <li>•Adaptar el plan de tratamiento</li> </ul>
Técnicas de relajación	<ul style="list-style-type: none"> <li>•Uso de técnicas como la meditación y respiración profunda</li> <li>•Uso de música relajante</li> <li>•Visualización guiada o de distracción</li> </ul>
Analgésicos y sedación	<ul style="list-style-type: none"> <li>•Asegurarse de un control efectivo del dolor</li> <li>•Sedación consciente</li> </ul>
Ambiente de consulta	<ul style="list-style-type: none"> <li>•Creación de un ambiente acogedor</li> <li>•Temperatura y fragancias agradables</li> <li>•Sillas ergonómicas y cómodas</li> </ul>
Educación del paciente	<ul style="list-style-type: none"> <li>•Provisión de información adecuada sobre el procedimiento</li> <li>•Establecer señales de control</li> <li>•Empoderar al paciente</li> </ul>

Note: strategies made based on the findings. In original language Spanish

In practice, strategies suggest a comprehensive approach, combining anxiety management techniques with communication strategies and personalized attention, is key to improving the experience and success of endodontic treatment. In other words, anxiety can be reduced through a combination of communication strategies, relaxation techniques and a comfortable environment that becomes essential to improve the patient's experience and increase the success of endodontic treatment. In cases of severe anxiety, a multidisciplinary approach with psychological support can optimize clinical outcomes and patient satisfaction.

On the other hand, the implications for clinical practice in endodontic treatments highlight the importance of a comprehensive and personalized approach that considers the impact of anxiety on patients. The main implications for improving the experience and success of treatment are the Incorporation of Previous Anxiety Assessments, Personalization of the Treatment Plan, Strengthening Communication and Education, Post-Treatment Follow-up and Personalized Attention, among others.

Studies on the impact of anxiety on endodontic treatment success and strategies to improve the patient experience face several common limitations; for example, some studies on anxiety in dental treatments usually have small samples, which limits the generalization of the results. This is due, in part, to the difficulty of recruiting patients for research into specific treatments such as endodontics. And, as many studies do not adequately represent different demographic groups (age, gender, socioeconomic status). Anxiety and responses to treatment may vary depending on these factors, but the lack of diversity limits the applicability of the results to specific populations.

## CONCLUSIONS

Patients' anxiety before and during endodontic treatment can negatively affect the success of the procedure, increasing the risk of complications, increased pain perception, and decreasing overall satisfaction with treatment, so reducing anxiety through a combination of communication strategies, relaxation techniques, and a comfortable environment is critical to improving the patient experience and increasing the success of the treatment. Endodontic treatment. In cases of severe anxiety, a multidisciplinary approach with psychological support can optimize clinical outcomes and patient satisfaction.

Limitations of existing studies include small sample sizes, self-reporting biases, lack of external endpoint controls, and limited standardization in intervention strategies. Addressing these limitations in future studies will allow for a more complete understanding of the role of anxiety in the success of endodontic treatment and improve management strategies for patient well-being. It is necessary to continue researching the relationship between emotional and psychological factors in other dental treatments, as well as to explore new methods for the management of anxiety that may be applicable in daily practice.

Patients with high levels of anxiety often experience increased perception of pain and discomfort during and after the endodontic procedure, which can interfere with recovery and their predisposition to future treatments. Therefore, the preparation of the dental staff and their ability to manage the patient's anxiety, with effective communication and an empathetic attitude, is essential to improve the environment during treatment. In turn, clearly explaining the procedure, the possible results and resolving doubts in advance can reduce uncertainty and fear, promoting a calmer and safer environment for the patient.

## REFERENCES

1. Baker, R., et al. (2018). Prevalence of dental anxiety among patients. *\*Journal of Dental Research\**, 97(4), 367-374.
2. Chong, L. Y., et al. (2021). Relaxation techniques for anxiety in dental patients. *\*Dental Clinics of North America\**, 65(1), 123-134.
3. Fisher, A., et al. (2021). The role of patient expectations in dental anxiety. *\*International Journal of Dental Hygiene\**, 19(3), 237-245.
4. Friedman, S., & Mor, A. (2016). Anxiety and endodontic treatment outcomes. *\*Endodontic Practice Today\**, 10(2), 123-130.
5. González, R., et al. (2020). Sedation methods for anxious dental patients: A review. *\*Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology\**, 130(4), 389-397.
6. Jiang, J., et al. (2020). Anxiety and its effects on endodontic treatment success. *\*Journal of Endodontics\**, 46(5), 657-664.
7. Katz, J., et al. (2019). The relationship between dental anxiety and pain perception. *\*Pain Research and Management\**, 2019, 1-8.
8. Levine, B., & Khan, S. (2022). Patient education in endodontics: Reducing anxiety through information. *\*American Journal of Dentistry\**, 35(6), 367-372.
9. Miller, D. D., & Goldstein, H. (2017). Effective communication in dental practice. *\*Journal of Dental Education\**, 81(8), 1024-1030.
10. Smith, J., & Jones, R. (2018). Creating a welcoming dental environment. *\*Dental Management\**, 38(2), 34-39.

11. Hernández-Sampieri, R., Fernández-Collado, C., & Baptista-Mondragón, P. (2014). *Research Methodology* (6th ed.). McGraw-Hill Education.
12. CIMEC. (2019). Cimec. Retrieved from <https://www.cimec.es/investigacion-descriptiva-caracteristicas/>
13. Gómez, M. (2023). Hubspot. Retrieved from <https://blog.hubspot.es/service/que-es-unaencuesta#tipos>
14. Barreiro, C., Armijos, J., & Silvia, G. (2023). Dental anxiety in patients during dental treatment. *Journal of Medical Sciences of Pinar del Río*, vol.27 suppl.1 Pinar del Río 2023 Epub 01-Jul-2023.
15. PsychoDentistry. (2024). *Practical guide to address dental anxiety*. Retrieved from <https://copcantabria.es/wp-content/uploads/2022/09/Guía-Practica-Para-Abordar-La-Ansiedad-Dental-Psicodontología.pdf>
16. Tonicollar. (2014, 06, 4). *Endodontics and its importance*. Retrieved from <https://tonicollar.com/la-importancia-de-la-endodoncia/>
17. Ríos, M., Herrera, A., & Rojas, G. (2014). Dental Anxiety: Evaluation and Treatment. *Advances in Odontostomatology*, Vol.30 no.1 Madrid Jan./Feb. 2014.
18. Domínguez, T. (September 10, 2014). *Psychological impact of endodontics on patients at the UCSG clinic*. Retrieved from <http://repositorio.ucsg.edu.ec/bitstream/3317/23616/1/UCSG-C422-23090.pdf>
19. Jadue, G. (2001). SOME EFFECTS OF ANXIETY ON SCHOOL PERFORMANCE. *Estudios Pedagógicos*, N° 27, 2001, pp. 111-118.
20. Hmud, R., & Walsh, L. (2024). Dental anxiety: causes, complications and management methods *Journal of Minimal Intervention in Dentistry*.
21. Villar, B. (2019). Factors that influence dental anxiety in child patients. *cient. dent.*, VOL. 16 NO. 1. JANUARY-FEBRUARY-MARCH-APRIL 2019. PAGE. 59-66.
22. Castro, S. (2023, October 26). *Institute of Positive Psychology*. Retrieved from Effective Communication: <https://www.iepp.es/comunicacion-efectiva/>