

## Variations in childhood preoperative anxiety in dentistry: A cross-sectional study.

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**Abstract: Introduction:** Dental care anxiety is common and has a direct impact on oral health. Children often experience anxiety and trauma during dental visits, which can hinder timely care. **Objective:** To evaluate anxiety levels in pediatric patients before dental care, according to age and sex. **Methods:** The study was carried out under a non-experimental, observational, cross-sectional design, with a quantitative approach, with a sample of 176 pediatric patients between 3 and 12 years of age, who attended the pediatric dentistry service of a private university in Cusco, during the period from September to December 2023, selected according to selection criteria. The instruments used were: the modified Corah dental anxiety scale, which identifies anxiety in five levels. **Results:** The results showed a predominance of severe anxiety or phobia among patients of both sexes. It was identified that the level of anxiety has a significant relationship with age. **Conclusions:** The importance of considering age as a determining factor in dental anxiety in children is emphasized, which requires adapting strategies for each age group due to the fact that the older the age the less anxiety. There is a lack of dependence between anxiety and sex, which suggests the universality of dental anxiety without distinction of gender.

**Key words:** Dental Anxiety, Dentistry, Fear of Dental Treatment, Dental Phobia, Dentophobia, Children, Dental Care.

## Variaciones en la ansiedad preoperatoria infantil en odontología: Un estudio transversal.

**Resumen: Introducción:** La ansiedad en la atención dental es frecuente y tiene un impacto directo en la salud bucal. Los niños a menudo experimentan ansiedad y traumas durante las visitas al dentista, lo que puede obstaculizar una atención oportuna. **Objetivo:** Evaluar los niveles de ansiedad en pacientes pediátricos antes de la atención dental, según edad y sexo. **Métodos:** El estudio se realizó bajo un diseño no experimental, observacional, de corte transversal, de enfoque cuantitativo, con una muestra constituida por 176 pacientes pediátricos entre 3 y 12 años de edad, que asistieron al servicio de odontopediatría de una universidad privada del Cusco, durante el periodo de setiembre a diciembre del año 2023, seleccionados bajo criterios de selección. Los instrumentos empleados fueron: la escala de ansiedad dental de Corah modificada, la que identifica la ansiedad en cinco niveles. **Resultados:** Los resultados mostraron el predominio del nivel de ansiedad severa o fobia entre los pacientes de ambos sexos. Se identificó que el nivel de ansiedad tiene relación significativa con la edad. **Conclusiones:** Se destaca la importancia de considerar la edad como un factor determinante en la ansiedad dental en niños, lo que requiere adaptar estrategias para cada grupo etario debido a que a mayor edad menor ansiedad. Existe la falta de dependencia entre la ansiedad y el sexo, lo que sugiere la universalidad de la ansiedad dental sin distinción de género.

**Palabras clave:** Ansiedad Dental; Odontología, Miedo al Tratamiento Odontológico, Fobia Dental, Dentofobia, Niños, Atención Dental.

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## Variações na ansiedade pré-operatória infantil em odontologia: Um estudo transversal.

**Resumo:** **Introdução:** A ansiedade nos cuidados dentários é comum e tem um impacto direto na saúde oral. As crianças frequentemente apresentam ansiedade e traumas durante as consultas odontológicas, o que pode dificultar o atendimento oportuno. **Objetivo:** Avaliar os níveis de ansiedade em pacientes pediátricos antes do atendimento dentário, de acordo com a idade e o gênero. **Métodos:** O estudo foi realizado sob um desenho não experimental, observacional, transversal, com uma abordagem quantitativa, com uma amostra de 176 pacientes pediátricos entre 3 e 12 anos de idade, que frequentaram o serviço de odontologia pediátrica de uma universidade privada em Cusco, durante o período de setembro a dezembro de 2023, selecionados de acordo com os critérios de seleção. Os instrumentos utilizados foram: a escala de ansiedade odontológica de Corah modificada, que identifica a ansiedade em cinco níveis. **Resultados:** Os resultados mostraram uma predominância de ansiedade grave ou fobia entre os pacientes de ambos os sexos. Identificou-se que o nível de ansiedade tem uma relação significativa com a idade. **Conclusões:** Destaca-se a importância de considerar a idade como um fator determinante na ansiedade dentária em crianças, o que requer a adaptação de estratégias para cada faixa etária, uma vez que quanto maior a idade menor a ansiedade. Verifica-se uma ausência de dependência entre a ansiedade e o sexo, o que sugere a universalidade da ansiedade dentária sem distinção de gênero.

**Palavras-chave:** Ansiedade dentária, Medicina dentária, Medo de tratamento dentário, Fobia dentária, Dentofobia, Crianças, Cuidados dentários.

### Introduction

Dental anxiety is one of the most common emotions that affect humans throughout their lives and can pose a significant challenge to oral health.<sup>1</sup> These emotions can manifest at various ages and in certain situations; however, they are particularly evident in the field of pediatric dentistry.<sup>2</sup> For many children, a visit to the dentist's office can be an unpleasant and, it must be said, traumatic experience, leading to a lasting aversion to dental appointments.<sup>3</sup>

Depending on the level of anxiety experienced, this can result in avoidance of dental care and, as a consequence, worsen untreated oral health problems. Therefore, thoroughly understanding how these emotions affect pediatric patients is essential to providing effective, quality dental care.<sup>4-6</sup>

Dental anxiety in pediatric patients is not limited to clinical factors alone, but

is also influenced by socioeconomic and environmental factors.<sup>7</sup> Several studies reveal that factors such as family income and educational level play a crucial role in the perception of dental anxiety. For example, pediatric patients who are not financially well off may experience higher levels of dental anxiety due to less exposure to quality dental care or a lack of resources for proper oral hygiene.<sup>8</sup> Therefore, understanding these factors is essential for tailoring anxiety management strategies and providing appropriate care to pediatric patients in a variety of settings.<sup>9-12</sup>

Pediatric dental care has strived to address fear and anxiety in children to ensure a positive experience.<sup>13</sup> Various approaches and strategies have emerged as a result of research in this area. One of these involves assessing and measuring dental anxiety in children using specific scales designed for this purpose.<sup>14</sup>

Furthermore, it should be noted that based on these results, practical and strategic interventions such as cognitive-behavioral play therapy and audiovisual distraction have been implemented to reduce anxiety before and during dental procedures. These methods seek not only to alleviate fear, but also to improve cooperation during dental appointments and, ultimately, promote better oral health.<sup>15-17</sup>

Dental procedures in children represent a constant challenge. For example, in the area of dental surgery and operations, in some cases brief procedures are performed under local anesthesia; however, when children have behavioral problems combined with a lack of management techniques or the use of medication, the experience becomes even more complex. In the past, general anesthesia was often used for simple procedures in these patients due to undesirable manifestations during treatment. As a result, dentists were forced to seek alternative approaches, seeking updates on topics related to pediatric mental health and developing treatment protocols to minimize risks and complications in these cases.<sup>18</sup>

In view of the above, the purpose of this study is to identify the levels of anxiety experienced by children in the dental environment before being treated, in relation to age and gender, with the aim of adapting care to individual needs, preventing future problems, suggesting management strategies, and facilitating interaction between the patient, guardians, and the professional,

to optimize dental care in children and promote a positive experience and long-term oral health.

## Methods

The study was conducted using a non-experimental, observational, cross-sectional design, with a sample consisting of 176 pediatric patients between the ages of 3 and 12 who attended the pediatric dentistry service on an ad hoc basis at a private university in Cusco during the period from September to December 2023.

The selection criteria were: Children between 3 and 12 years of age who needed at least one dental treatment such as restoration, extraction, sealants, prophylaxis, fluoride, children without mental disorders and without invasive medical treatments were included. Patients with chronic systemic diseases that could affect blood pressure or heart rate were excluded, as were children with psychological disabilities and those who did not want to be part of the study, aspects that were evaluated based on information from the admission medical record.

The instruments used were: the modified Corah Dental Anxiety Scale (MDAS) (Figure 1), which identifies anxiety on five levels. For this purpose, younger children aged 3 and 4 responded with the help of their guardians.<sup>19</sup>

Procedure: With prior authorization from the competent authority of the private university, information was collected, the procedure to be carried out was explained

Please indicate with an X in the most appropriate box					
1	If you had to go to the dentist tomorrow for treatment, how would you feel?				
	No anxiety <input type="checkbox"/>	Slight anxiety <input type="checkbox"/>	Anxious <input type="checkbox"/>	Very anxious <input type="checkbox"/>	Extremely anxious <input type="checkbox"/>
2	If you had to go to the dentist tomorrow for treatment, how would you feel?				
	No anxiety <input type="checkbox"/>	Slight anxiety <input type="checkbox"/>	Anxious <input type="checkbox"/>	Very anxious <input type="checkbox"/>	Extremely anxious <input type="checkbox"/>
3	If you were about to see <u>them</u> use the noisy instrument to treat your teeth, how would you feel?				
	No anxiety <input type="checkbox"/>	Slight anxiety <input type="checkbox"/>	Anxious <input type="checkbox"/>	Very anxious <input type="checkbox"/>	Extremely anxious <input type="checkbox"/>
4	If they were about to extract or polish your teeth, how would you feel?				
	No anxiety <input type="checkbox"/>	Slight anxiety <input type="checkbox"/>	Anxious <input type="checkbox"/>	Very anxious <input type="checkbox"/>	Extremely anxious <input type="checkbox"/>
5	If they were about to administer local anesthesia to your gums, how would you feel?				
	No anxiety <input type="checkbox"/>	Slight anxiety <input type="checkbox"/>	Anxious <input type="checkbox"/>	Very anxious <input type="checkbox"/>	Extremely anxious <input type="checkbox"/>

Each point is scored as follows:

No anxiety	1
Slight anxiety	2
Anxious	3
Very anxious	4
Extremely anxious	5

Level of anxiety

Less than 9 points	No anxiety
Between 11 and 15 points	Moderate anxiety
Between 16 and 18 points	High anxiety
Between 19 and 25 points	Severe anxiety or dental phobia

**Figure 1.** The modified Corah Dental Anxiety Scale  
The total score is the sum of the five items, ranging from 5 to 25.

to both the child and the parents, and the child's assent and the consent of one of the child's parents or guardians for their participation in the research was obtained. This study took into account the Declaration of Helsinki, which provides the ethical principles that guide health professionals in research involving human subjects, in addition to maintaining the confidentiality of participant data.<sup>20</sup>

Once the information was obtained, it was entered into a Microsoft Excel database for subsequent import into the SPSS V26 program to prepare descriptive statistics for analyzing the situation, as well as the Chi-square test to investigate possible relationships between variables.

## Results

Table 1 shows that, in terms of the distribution of anxiety levels according to gender, severe anxiety or phobia predominated in both female and male patients, with 47.1% and 49.5%, respectively. In comparison, mild or no anxiety levels accounted for 20.0% in females and 13.2% in males. Moderate levels reached 21.2% in women and 25.3% in men, while high levels were less frequent in both sexes (11.8% in women and 12.1% in men).

Although the percentage of severe anxiety or phobia was slightly higher in males, this difference was not statistically significant according to the Chi-square test ( $p = 0.657$ ). Overall, 48.3% of all participants presented severe anxiety or phobia, which was the most frequent level within the sample, with no significant differences between sexes.

Table 2 shows the distribution of anxiety levels in pediatric patients grouped into age ranges (3 to 5, 6 to 9, and 10 to 12 years), classified into three-

year intervals to facilitate analysis. A statistically significant association was found between age and anxiety level ( $p = 0.006$ ), indicating that anxiety varies with age.

In the 3-5 age group, severe anxiety or phobia predominated (60.0%), followed by high anxiety (25.7%), moderate anxiety (8.6%), and mild or no anxiety (5.7%). The 6-9 age group showed a similar pattern, with a higher frequency of severe anxiety or phobia (42.7%), followed by moderate anxiety (27.1%), mild or no anxiety (18.8%), and high anxiety (11.5%). In the 10-12 age group, severe anxiety or phobia also predominated (51.1%), followed by moderate anxiety (26.3%), mild or no anxiety (20.0%) and, to a lesser extent, high anxiety (2.2%).

The findings indicate that the level of anxiety about dental care varies significantly with age. Although severe anxiety or phobia predominates in all groups, there is a tendency toward lower levels as age increases. This could be attributed to the progressive development of cognitive skills, emotional maturity,

**Table 1.** Level of anxiety by gender

		Level of anxiety				Total	
		Mild or none	Moderate	High	Severe or fobia		
Sex	Female	Frequency	17	18	10	40	85
		Percentage	20,0%	21,2%	11,8%	47,1%	100,0%
	Male	Frequency	12	23	11	45	91
		Percentage	13,2%	25,3%	12,1%	49,5%	100,0%
Total	Frequency	29	41	21	85	176	
	Percentage	16,5%	23,3%	11,9%	48,3%	100,0%	

Chi-square test:  $X^2 = 1,611$

$p = 0,657$

**Table 2.** Level of anxiety according to age

		Level of anxiety				Total	
		Mild or none	Moderate	High	Severe or fobia		
Idade	[3 - 5]	Frequency	2	3	9	21	35
		Percentage	5,7%	8,6%	25,7%	60,0%	100,0%
	[6 - 9]	Frequency	18	26	11	41	96
		Percentage	18,8%	27,1%	11,5%	42,7%	100,0%
	[10 - 12]	Frequency	9	12	1	23	45
		Percentage	20,0%	26,7%	2,2%	51,1%	100,0%
Total	Frequency	29	41	21	85	176	
	Percentage	16,5%	23,3%	11,9%	48,3%	100,0%	

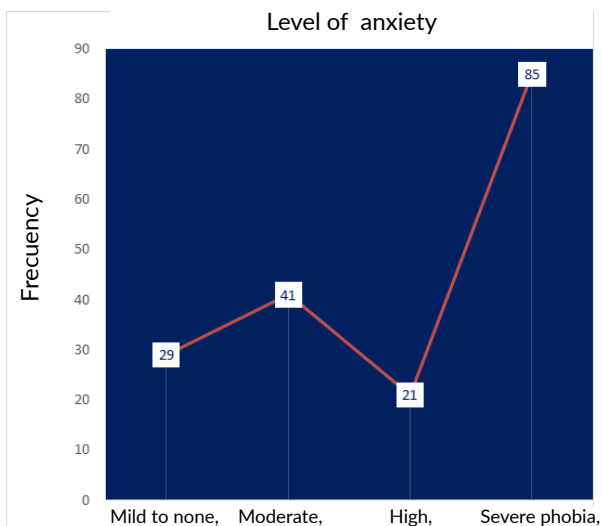
Chi-square test  $X^2 = 18,001$

$p = 0,006$

and greater understanding of clinical situations. Therefore, age should be considered a relevant factor in the design of strategies for managing anxiety in the pediatric population.

Figure 2 shows the distribution of anxiety levels in pediatric patients, revealing that severe anxiety or phobia is the most common, with 85 cases (48.3%). In

contrast, the least common level was high anxiety, with 21 cases (11.9%). Moderate and mild or no anxiety levels were in the middle, with 41 (23.3%) and 29 cases (16.5%), respectively. These results reflect a high prevalence of intense anxiety about dental care in children aged 3 to 12 years, regardless of gender, as demonstrated in the previous statistical analysis ( $p = 0.657$ ).



**Figure 2.** Anxiety level according to the total sample

## Discussion

This study showed that severe anxiety or phobia prior to dental care predominates in children aged 3 to 12 years, with anxiety levels tending to decrease with age. These findings are consistent with those reported by Stein Duker LI<sup>4</sup>, who investigated general anxiety in pediatric populations, considering sensory factors, dental behaviors, and oral health. His study revealed a predominance of moderate and high anxiety in children, which coincides with the results of this research, which

found high levels of anxiety regardless of gender.

On the other hand, Mali S<sup>5</sup> provides relevant evidence on the variation in anxiety according to age and gender, as well as on the validity of the scales used to measure this phenomenon. In line with this approach, the present study used the Modified Corah Dental Anxiety Scale (MDAS), validated in previous studies, which proved to be a useful tool for identifying different levels of anxiety in the pediatric population.

Likewise, the results coincide with the study by Prado<sup>6</sup>, who found no significant association between gender and anxiety levels, but did report a high prevalence of anxiety in pediatric patients of both genders. This consistency reinforces the robustness of the present finding, which highlights the high level of anxiety in children when visiting the dentist.

Similarly, Mobin<sup>9</sup> points to a higher prevalence of fear of the dental environment in young children, which is closely related to the high frequency of phobia observed in this study. This pattern has also been reported in other studies, which indicate that younger children are more susceptible to experiencing anxiety before dental treatment.

Likewise, Amorim et al.<sup>10</sup> agree that younger children have higher levels of dental anxiety, which reinforces the finding of the present study regarding the inverse relationship between age

and anxiety. In addition, they considered other factors prior to dental care that influenced anxiety, broadening the scope of the analysis. As in this study, no significant difference was found between anxiety levels according to gender, reinforcing the consistency of this result.

Finally, the results are consistent with those described by Shindova MP<sup>11</sup>, who highlights the multifactorial etiology of childhood anxiety and the need to promote innovative strategies to reduce it. In this regard, the present study suggests the implementation of clinical interventions aimed at reducing anxiety levels prior to dental care, in order to improve the child's experience and facilitate behavior management in the office.

## Conclusions

With regard to gender, no statistically significant differences were found in anxiety levels prior to dental treatment, as similar proportions of anxiety (mild or none, moderate, high, and severe or phobia) were observed in both men and women, with the latter being the most prevalent.

With regard to age, a significant difference was found. The findings show that anxiety levels vary according to age group. Although severe anxiety or phobia predominated in all groups, a trend toward lower anxiety levels was observed as age increased.

In general, a high proportion of patients

aged 3 to 12 years were identified as having high levels of anxiety prior to dental care, with no direct relationship to gender. These results highlight the need to implement age-specific strategies for a more effective approach to anxiety in pediatric dental practice.

### Conflicts of interest:

The authors declare no Conflicts of Interests.

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