International Journal of **Health Science**

ANXIETY LEVELS IN DENTAL STUDENTS OF A PRIVATE UNIVERSITY IN CHILE

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Abstract: Introduction: A career in dentistry is characterized by high demands both academically and psychologically. In addition to the demands of theoretical knowledge and practical skills, working with patients can also provoke high levels of anxiety in students. Added to this scenario is the context of the COVID-19 pandemic experienced by students. **Objective: To** determine the levels of anxiety in dental students at a private university in Chile. **Material and methods**: A descriptive cross-sectional study was carried out in dental students in the first to sixth years of the course. Informed consent to participate was requested prior to the application of the instrument. Anxiety levels were measured with the Zung Anxiety Scale. In the statistical analysis, the anxiety levels of the students were described according to sex (male/female), course (first to sixth year) and dimension (affective and somatic). The study was approved by the Scientific Ethics Committee of the University. **Results:** 175 students agreed to participate in the study, 75.4% of them were women. Eighty-four percent of the dental students showed some level of anxiety, with minimal to moderate anxiety being the most prevalent. The mean score obtained was 45 points (SD 9.8). The level of anxiety was higher in women and in the first year of the course (p<0.05). **Conclusion:** High levels of anxiety are reported in dental students, with significant differences by sex and course. It is suggested to implement strategies to address this situation, considering that it is a risk factor for the academic performance of the students.

Keywords: Anxiety; education; dentistry; Zung Anxiety Scale.

INTRODUCTION

During the university period, anxiety and stress are mental disorders that occur with greater prevalence in young people, either by stressors such as academic overload, presence of a considerable number of courses with higher demands, uncertainty of the future and in some cases, the distance from the family, however, the need to adapt to this new educational context is considered as a new stressor. Although anxiety activates the alert system to situations of possible danger and stress helps the student in his interest to overcome, when the environment exceeds the threshold of normal, fear, irritability, bad mood, demotivation appear as the main problems that affect their educational process (RODRÍGUEZ, 2020; CASTILLO et al., 2016).

Medicine and Dentistry are considered one of the most stressful professions as health careers. (MORETA-HERRERA et al., 2021; BARRAZA et al., 2015). During the educational process dental students may experience high levels of anxiety or stress, being common the presence of dizziness, fatigue, tachycardia, anxiety, fear and gastrointestinal symptoms (ARBILDO-VEGA et al., 2014).

There are various factors that can trigger situations of anxiety or stress during dental practice. In clinical training, the most common cause of stress generation in the student is the patient being late or not arriving to the appointment (CÓRDOVA & SANTA MARÍA., 2018). Also constituting stressors are exams, little free time and social pressure to work fast and without errors. These situations if prolonged over time, can increase anxiety in the student (ARIETA VERGARA et al., 2013).

Another important factor to mention refers to the significant increase in anxious and depressive disorders that occurred during the health crisis caused by COVID-19. The pandemic impacted the mental health of the general population, with presentations

of anxiety, panic, depression, fear and stress mainly (WANG & ZHAO, 2020). The academic environment was one of the most affected, mainly due to the uncertainty of the new scenario that meant the transition from face-to-face education to online education (GARCÍA MUÑOZ & TRUJILLO-CAMACHO, 2022; DELGADO et al., 2021). There is a direct relationship between the variables depression and anxiety with factors such as COVID-19, since it showed that university students were more likely to present mental disorders during the pandemic. According to CORREA et al., (2021), for students the return to face-to-face classes involves returning to a routine of interaction with those who for two years they only knew virtually, which evidently generates anxiety in the face of the obligation to interact again.

For DELGADO, et al. (2021), anxiety is considered a normal emotional reaction to intimidating situations for the individual, however, when these become frequent they tend to have a pathological connotation, and can cause suffering and disability, in addition to contributing a significant burden in the social and economic spheres. SALAZAR-GARCÍA (2018) refers that anxiety is a defense created in the face of stimuli that break the physiological and psychological balance. Under this context, and two years after the beginning of the pandemic, the objective of this study was to determine the levels of anxiety in dental students at a private university in Chile.

MATERIAL AND METHODS

The study has a quantitative approach and a non-experimental cross-sectional design (HERNÁNDEZ AND MENDOZA, 2018), where the anxiety level variable was studied in dental students at a private university in Chile.

The participants in this study were dental students who were enrolled in undergraduate academic activities for the year 2022. All students of both sexes attending the first to sixth year of dental courses in the dental career were considered.

For the measurement of the anxiety variable, the William K.W. Zung anxiety self-assessment scale, validated by Zung in 1965 (ZUNG, 1971) and in other Spanish-speaking countries, LUSILLA et al. (1990) in Spain and HERNÁNDEZ-POZO et al. (2008) in Mexico, was used as a data collection instrument. This instrument has a reliability of 0.770 (Cronbach's alpha) and has 20 items that quantify anxious symptoms (15 somatic and 5 affective) reported during the last thirty days. Items 1 to 5 consider the description of the affective dimension and items 6 to 20 the description of the somatic dimension. The response pattern is a Likert-type response that is answered: never, sometimes, almost always and always. Each of these options is coded with the number 1, 2, 3 and 4, depending on the intensity, duration and frequency of the symptoms (HERNÁNDEZ-POZO et al., 2008). By adding the individual values a total is obtained, which is converted into an anxiety index by applying an equation dividing the score of each individual by the total score which is 80 and multiplied by 100. If the result is less than 45 the clinical equivalence is of absence of anxiety or within normal limits, between 45-59 minimum to moderate anxiety, between 60-74 marked to severe anxiety and 75 or more anxiety in maximum degree. Anxiety is therefore classified as: absence of anxiety, minimal to moderate anxiety, marked to severe anxiety or anxiety at maximum degree.

The data collection process was carried out between September and October 2022 through a Web tool called Google Forms. To do this, first the approval of the study was requested from the University's Scientific Ethics Committee and the respective permission from the university authority. Subsequently,

all students were invited to participate in the study by sending the link to the questionnaire to their institutional e-mail addresses, where the objective of the study was explained and informed consent to participate was requested, together with instructions for completing the questionnaire. The estimated duration for answering the questionnaire is 15 to 20 minutes. Access to the questionnaire was disabled after two months, the time considered by the researchers for data collection.

To determine the prevalence of global anxiety in the students, categorized according to level (absence of anxiety, minimal to moderate anxiety, marked to severe anxiety or anxiety in maximum degree), proportions were estimated and summary measures were used to describe the score obtained in the Zung scale. In the reliability analysis, Cronbach's α was calculated and the correlation coefficient of each scale item with the overall score was determined. To compare the prevalence of anxiety according to sex, Pearson's Chi-square test (X2) and Fisher's test for the course variable were performed. In all analyses, statistical significance was 0.05. In addition, a description of the anxiety variable by dimension (affective and somatic) was made using measures of central tendency (median) and position (range) and were displayed in a box plot using Stata software version 14.0.

RESULTS

There were 175 dental students who agreed to participate in this study, the majority of whom were women (75.4%). Figure 1 shows the levels of anxiety reported by the dental students. In this sense, it was determined that 46.29% of the students presented a minimal to moderate level of anxiety, 29.71% had marked to severe anxiety and 8.57% showed a maximum level of anxiety. In addition, 15.43% of the students classified with absence of anxiety or anxiety within the normal range.

The score obtained on the Zung anxiety scale ranged from 26 to 77 points, with a mean value of 45 points (S.D. 9.8); the scale presented excellent reliability in the study group with a Cronbach's α of 0.82. When describing the items that make up this scale, those that presented a higher correlation with the final score were those related to trembling hands and legs, weakness and tiredness, tachycardia, and dizziness; in turn, those that presented lower correlation were agitation, clammy and cold hands, restlessness, and breathing is difficult. This is shown in Table 1.

With respect to the variables sex and course, these were significantly associated with the levels of anxiety; the level of anxiety in maximum degree in women, and the level of anxiety from mild to moderate in the first year of the dentistry course stand out. This is shown in Table 2.

To determine the level of anxiety of the students by dimension, the median score obtained in the answers applied to each dimension (affective and somatic) was calculated. For the affective dimension, the highest score was observed for the response "I feel more uneasy and nervous than usual" (Figure 2).

For the somatic dimension, the highest score is observed for the responses "I feel weak and get tired easily" and "I suffer from stomach aches and indigestion", both items have a positive meaning, and those that say "I usually have dry and hot hands" and "I can breathe easily." have a negative meaning, as they describe the opposite feeling to the one most anxious people have (Figure 3).
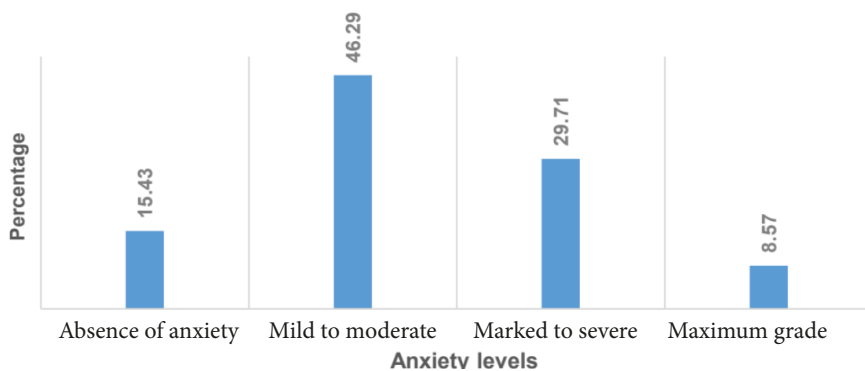
Fig.1 Percentage distribution of anxiety levels in students.

Source: own elaboration

Item of the Zung scale evaluated	Never	Sometimes	Often	Always	Correlation with global score
	F (%)	F (%)	F (%)	F (%)	
1. Restlessness and nerves	12 (6.86)	55 (31.43)	58 (33.14)	50 (28.57)	0.542
2. Fear for no reason	41 (23.43)	61 (34.86)	47 (26.86)	26 (14.86)	0.621
3. Altered, agitation	69 (39.43)	45 (25.71)	39 (22.29)	22 (12.57)	0.625
4. Disrupt	80 (45.71)	50 (28.57)	30 (17.14)	15 (8.57)	0.612
5. Something bad is going to happen	24 (13.71)	49 (28.00)	67 (38.29)	35 (20.00)	0.251
6. Trembling hands and legs	66 (37.71)	57 (32.57)	32 (18.29)	20 (11.43)	0.636
7. Head, neck, back pain	38 (21.71)	53 (30.29)	43 (24.57)	41 (23.43)	0.582
Weakness and fatigue	20 (11.43)	49 (28.00)	59 (33.71)	47 (26.86)	0.673
9. Agitation	19 (10.86)	63 (36.00)	57 (32.57)	36 (20.57)	0.292
10. Tachycardia	53 (30.29)	60 (34.29)	38 (21.71)	24 (13.71)	0.651
11. Dizziness	89 (50.86)	39 (22.29)	32 (18.29)	15 (8.57)	0.632
12. Fainting	119 (68.00)	39 (22.29)	14 (8.00)	3 (1.71)	0.500
13. Breathing is difficult	38 (21.71)	48 (27.43)	44 (25.14)	45 (25.71)	0.226
14. Sleeping fingers	95 (54.29)	40 (22.86)	31 (17.71)	9 (5.14)	0.445
15. Stomach pain	31 (17.71)	48 (27.43)	45 (25.71)	51 (29.14)	0.580
16. Polyuria	44 (25.14)	58 (33.14)	47 (26.86)	26 (14.86)	0.438
17. Wet and cold hands	43 (24.57)	30 (17.14)	33 (18.86)	69 (39.43)	0.150
18. Hot and red face	90 (51.43	46 (26.29)	19 (10.86)	20 (11.43)	0.580
19. Insomnia	41 (23.43)	43 (24.57)	49 (28.00)	42 (24.00)	0.542
20. Nightmares	59 (33.71)	54 (30.86)	40 (22.86)	22 (12.57)	0.607
	Mean±D.E	Median	Range	RI	α Cronbach
Global Score	45,65±9.84	45	26 - 77	51	0,82

Table 1 Reliability analysis and description of the Zung test in students.

S.D.: Standard Deviation. RI: Interquartile Range.

Source: own elaboration.

Variables		Anxiety				p value
		Absence	Mild to moderate	Marked to severe	Maximum grade	
		F (%)	F (%)	F (%)	F (%)	
Sex	Male	10 (37.04)	24 (29.63)	8 (15.38)	1 (6.67)	.039*
	Female	17 (62.96)	57 (70.37)	44 (84.62)	14 (93.33)	
Course	First	11 (40.74)	40 (49.38)	15 (28.85)	5 (33.33)	.005**
	Second	3 (11.11)	2 (2.47)	3 (5.77)	1 (6.67)	
	Third	0 (0.00)	6 (7.41)	3 (5.77)	2 (13.33)	

Fourth	0 (0.00)	1 (1.23)	8 (15.38)	2 (13.33)
Fifth	1 (3.70)	12 (14.81)	13 (25.00)	2 (13.33)
Sixth	12 (44.44)	20 (24.69)	10 (19.23)	3 (20.00)
Total	27 (100.0)	81 (100.0)	52 (100.0)	15 (100.0)

Anxiety levels of the participants by sex and grade.

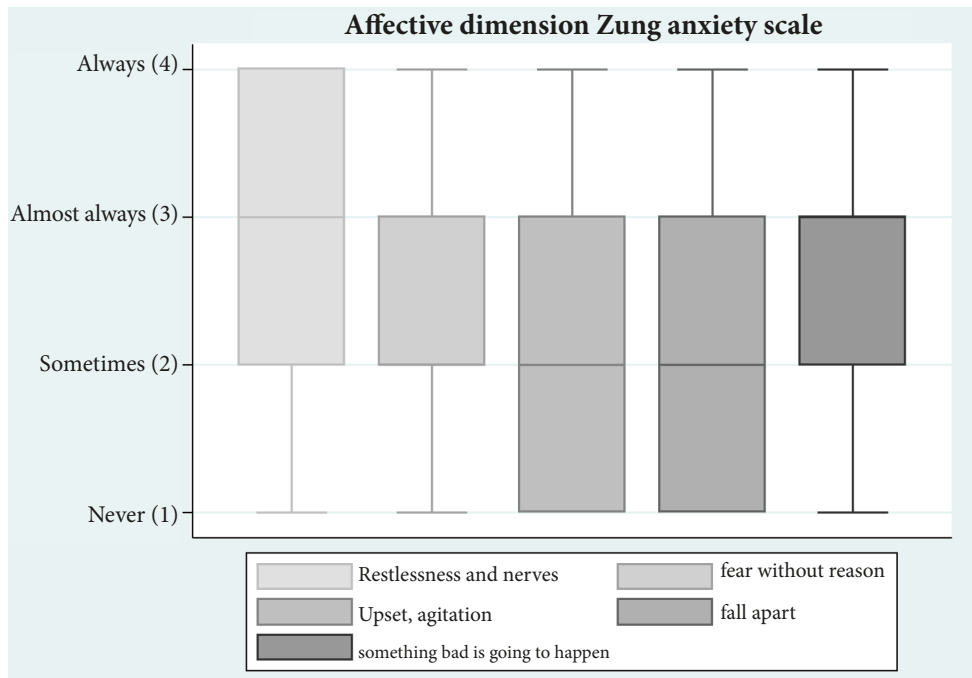*Pearson chi2 <0.05; **Fisher's exact test < 0.05

Fig.2 Affective dimension of participants' anxiety level.
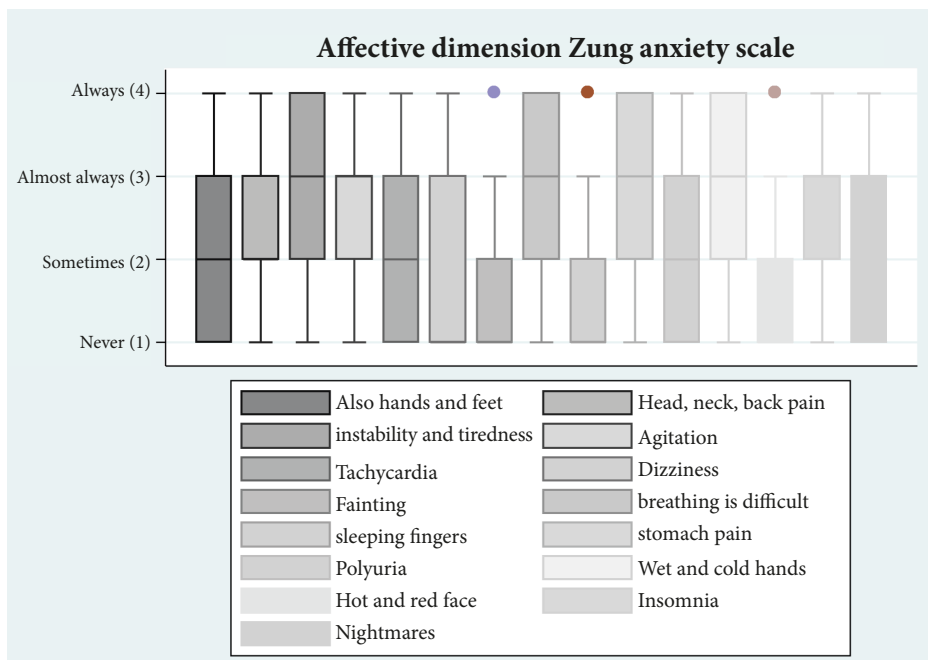

Fig.3 Somatic dimension of participants' anxiety level.

DISCUSSION

The aim of this study was to determine the levels of anxiety in students studying dentistry at a private university in Chile during the year 2022. According to the results of this research, about 85% of the students present some degree of anxiety. Although anxiety is currently considered one of the most prevalent mental disorders in the university population, mainly in health careers (MORETA-HERRERA et al., 2021; BARRAZA et al., 2015), what was observed in this study allows affirming that anxiety is present in dental students. The negative effects of the COVID-19 pandemic on the mental health of students (WANG & ZHAO, 2020) and the stress caused by the return to classroom classes should be considered in this statement. According to NICOLINI (2020), the mental health of the population was affected as a result of social isolation, fear of contagion and loss of loved ones and brought with it major problems of stress, depression and anxiety.

GONZÁLEZ-AGUILAR (2021) points out that university students constitute a risk group for manifesting high levels of anxiety. The academic, social or psychological demands within the higher education system, together with the pressures of academic performance are two factors that negatively affect the mental health of students. The type of career they study also has an impact, being health careers, such as Medicine and Dentistry, those with a greater presence of mental health problems compared to other careers (SCHINDLER et al., 2021; CASTALDELLI-MAIA et al., 2019).

When considering university students as a vulnerable population in terms of mental health, it is imperative that university authorities propose educational strategies to lessen the psychological impact that this return to normality implies, mainly due to the abrupt changes that occur in the teaching-learning process taught in pandemic and now in face-to-face format (ZHAI & DU, 2020). While anxiety is an emotion that can be experienced at any time in life, changes in daily routine, responsibilities, or friendships bring them closer to this emotion. CAYO et al., (2020) recommends several strategies to decrease anxiety in students, such as following up on mental health with professional counseling and encouraging healthy living.

On the prevalence of anxiety cases, about 46% of the participants showed a mild to moderate level of anxiety. This, in part, is in line with the findings of GARCÍA-ESPINOSA et al., (2021) in pointing out a prevalence of significant symptomatology of depression and anxiety among university students and is coincident with the results of the study by GUTIÉRREZ et al., (2021), where about 61 % of medical students have a probable prevalence of depression and 54.9% of probable anxiety. BRENNEISEN-MAYER et al., (2016) refers for Brazilian medical students a prevalence of depressive symptoms of 41 % and over 80% for anxiety. Also, as in this study, significant differences ($p < 0.05$) are shown in anxiety levels by sex. Women showed higher levels of anxiety compared to men, being similar to the findings of RUIZ-VILLA, (2023), LAVIGNE-CERVAN et al., (2021), WATHELET, et al., (2020), in which there is a greater presence of anxiety among women. The fact of being male or female is not only related to the prevalence of mental disorders, but also in the manifestation and expression of symptoms. According to ÁLVAREZ RUA et al., (2019) and COVA SOLAR, (2004), women tend more to recognize their emotional responses if compared to men, in whom it is possible to consider an underreporting of their mental disorders due to the difficulty they present in seeking help. On the contrary, TRUNCE MORALES, (2020) states that these differences respond to the fact that, in health careers, female students usually prevail, which

is related to a higher prevalence of anxiety in this population. In fact, it adds that anxiety is associated with academic performance, but not with stress disorders and depression. It is therefore necessary to take into account the gender differential in order to improve the efficiency of mental health prevention actions among university students.

With respect to the comparison of anxiety levels by course, significant differences (<0.05) were observed among students, with the minimum to moderate level being more prevalent in the first year of the course. There is disparity among the authors on this result, understanding that the causes of presenting anxiety are multifactorial. PINILLA, et al. (2020) while agreeing with the results of CABEZA-PALACIOS, (2018) and CARDONA, (2015) where they found no association between anxiety and the training cycle or course, reveals other risk factors that are associated with a higher level of anxiety, such as living alone, lack of time to eat due to excessive academic work or sleeping less than 5 hours a day considered as non-restorative sleep, among others. This process of adaptation to greater demands in higher education occurs mainly in the first year of the career and may reflect the higher levels of anxiety that were found in this study. Now, in addition to this process, there is the anxiety that could develop with this return to normality in the university context, after having completed two years of virtual education. LADEWIG- BERNÁLDEZ et al., (2022) adds that the greatest concern of students in the health area is the fear of not building the necessary competencies for their professional practice, so anxiety is a predominant feeling throughout the career.

Based on these results, it is important to clarify the limitations of this study that can be taken into consideration for future research on this topic. Given that this is a cross-sectional study, carried out at one point in time, it is not appropriate to conclude on causal effects of the variables studied, such as sex or course, on the presence of anxiety, nor to generalize the results of the study to the entire population, given that participation was voluntary. There is a disproportion between the number of women and men among the participants, which can be explained by the existing asymmetry in health careers and an overrepresentation of first-year students, who could be more motivated to participate in these studies. To minimize this selection bias, it is suggested that a stratified random sampling by sex and course be carried out in future research on this topic.

In conclusion, these results revealed high levels of anxiety in dental students, with differences by sex and course. It is important that at the institutional level strategies are implemented to address this situation, considering that this emotion is considered a risk factor for students' academic performance.

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