Self-reported anxiety in first-year medical students at the University of Zaragoza during the COVID-19 confinement

Ansiedad autorreportada en estudiantes de primer curso de Medicina de la Universidad de Zaragoza durante el confinamiento por la COVID-19

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Abstract: Objectives: The objective of this work is to determine the proportion of anxiety in Spanish medical students during the COVID-19 pandemic. Methodology: 31 undergraduate medical students from a Spanish university answered an online questionnaire in April 2020. The GAD-7 scale was used to assess self-reported anxious symptomatology, and the cut-off points were used to classify them as probable anxiety. Results: 64.5% of the sample presented anxiety, being more prevalent among women and the youngest. Conclusions: The prevalence of anxiety in the analyzed sample suggests the need to assess anxious symptomatology among medical students during the COVID-19 pandemic and to establish adequate psychological support programs. Future epidemiological studies with large and representative samples are necessary to monitor the mental health of this group.

Keywords: Medical students; Anxiety; COVID-19; GAD-7.

Abstract: Aims: The aim of this study is to determine the proportion of anxiety in Spanish medical students during the COVID-19 pandemic. Methodology: 31 undergraduate medical students from a Spanish university answered an on-line questionnaire in April 2020. The GAD-7 scale was used to measure anxiety levels, and the presence of probable anxiety was calculated with cut-off points. Results: Anxiety was observed in 64.5% of the sample, being more common among women and younger students. Conclusions: The proportion of anxiety found in the sample highlight the urgent need to evaluate anxiety symptomatology in medical students during the COVID-19 pandemic and to establish adequate psychological support programs. Future epidemiological studies with large and representative samples are warranted to survey mental health in this population.

Keywords: Medical students; anxiety; COVID-19; GAD-7.

1. Introduction

The COVID-19 disease, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first detected in December 2019 in China (1), rapidly spreading throughout the world.

In March 2020, the World Health Organization (WHO) officially declared a pandemic situation (2), due to the alarming levels of spread and severity of the disease.

From the beginning, the COVID-19 pandemic is having a significant impact on the psychological well-being of the general population (3). In fact, the confinement and social distancing measures are causing feelings of loneliness and anguish in the population (4,5). In addition, the sustained high morbidity and mortality rates that affect countries around the world and the feeling of vulnerability to infection have brought psychological suffering to the citizenry (6). Thus, a meta-analysis led by the first author of this study already reported that the prevalence of anxiety in the general population during the pandemic tripled compared to the proportions of anxiety before the pandemic (7).

Regarding medical students, a recent study carried out in 42 Spanish Medical Schools, before the COVID-19 pandemic, reported that they experience high rates of anxiety in general (8). Long hours of study, a high emotional and work load and considerable competitive pressure would be related to the risk of anxiety in these students (9). Medical studies are considered one of the most demanding academic and emotional training programs (10), so it is not surprising that medical students have a higher risk of presenting anxiety symptoms than the general population (11–13).

In the current time of pandemic, fear, lockdown measures, social distancing, and restrictions in different countries have increased psychological distress among college students (14). College students may also be experiencing stressors such as a high academic workload, financial difficulties, and interpersonal relationship difficulties during the pandemic (15).

Some studies indicate that medical students, in particular, report symptoms of anxiety during the pandemic associated with social isolation, long hours in front of the computer screen, and a less healthy lifestyle (16). In addition, high knowledge about the pandemic and the disease and concern about getting infected were associated with negative thoughts and actions, which in turn were related to a higher probability of psychological disorders (17). Regarding the prevalence of anxiety in these students, the present author led a meta-analysis, estimating it at 28% (18).

The current evidence comes from work carried out mainly on Chinese medical students (18) and, to date, no study has been carried out on the prevalence of anxiety among Spanish medical students during the COVID-19 pandemic. Therefore, the present work aims to report this prevalence, as well as to investigate the influence of sociodemographic characteristics on it.

2. Methods

2.1 Design. Observational, cross-sectional and analytical study.

2.2 Study population and sample selection

The participants in the study were Medicine degree students who were in their first year at the Faculty of Health and Sports Sciences (Huesca Campus) of the University of Zaragoza, Spain. Recruitment was carried out using a non-probabilistic convenience sampling. Students were asked to voluntarily participate in the research project. All those who volunteered had to fill out a Google form regarding demographic information along with the Generalized Anxiety Disorder-7 scale (19) in April 2020. The researcher was available to answer any questions from the participants. After completing the questionnaires, the students were thanked for their participation. The survey was completed by 31 students of the 35 enrolled in the Huesca campus of the University of Zaragoza (response rate: 88.6%).

2.3 Instruments

Sociodemographic characteristics (age and sex) were collected through an ad hoc questionnaire for this study. To collect the level of self-reported anxiety, the GAD-7 scale was used. This scale, validated in Spanish (20), is a useful instrument for screening symptoms of generalized anxiety disorder. It consists of 7 questions related to the presence and frequency of feelings of anxiety (GAD), uncontrollable worry, etc. during the last 15 days. The scores for each question range from 0 (not at all) to 3 (almost every day). The maximum score is 21, with a score between 5-9 indicating mild anxiety, 10-14 moderate anxiety, and 15-21 severe anxiety. The Spanish version has shown that with a cut-off point of 8, used in this study, it offers a sensitivity of 0.93 and a specificity of 0.85 for the diagnosis of probable GAD (20).

2.4. Statistic analysis

The normality of the variables under study was evaluated using the Shapiro-Wilk test for small samples. The distribution of the score on the GAD-7 was adjusted to a normal one. The comparison of the scores in GAD-7 according to the sociodemographic characteristics of the study sample was presented by means of the mean ± standard deviation, using the Student's t-parametric contrast to perform inferential techniques for the comparison of two independent samples for the total score of the GAD-7. GAD-7, and as frequency and percentage for the GAD-7 categories, using the chi-square test for the comparison of two groups with the Yates correction. All p-values are based on bootstrap resampling techniques recommended for small samples (21). Data analysis was carried out with the statistical package IBM SPSS version 26 for Mac-OS.

Ethical aspects

The coordinator of the Degree in Medicine of the Faculty of Health and Sports Sciences (Huesca) of the University of Zaragoza approved the study protocol. The students were told that their participation was voluntary, that the data would be used for the benefit of the student, that what was declared would not affect the grade they could obtain in the subject, and that the instrument was anonymous. Once their consent was obtained, the questionnaire was applied.
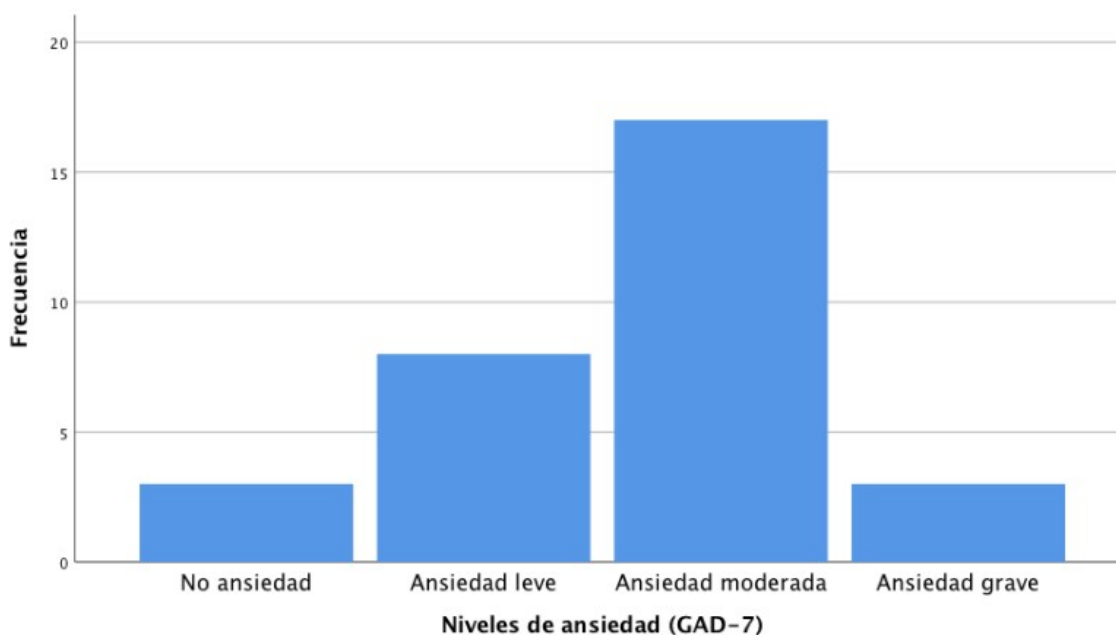

Figure 1. Anxiety levels (%) in medical students (from left; No, Low, Moderate and Severe).

3. Results

In total, 24 (77.4%) of the participants were female and 21 (67.7%) were 18 years of age. The results of the GAD-7 scale showed that 64.5% (95% CI: 47-82%) of the students manifested some degree of self-reported anxiety during the COVID-19 pandemic (mean score: 9.8 (SD=4.3). Figure 1 shows the anxiety levels found in the investigated group.

It is important to note that 90.3% of the participants expressed pathological concern about the current world situation, with 87.1% showing nervousness, lack of self-control and inability to relax (Table 1). Table 2 also shows the comparison of the total scores and prevalences in the GAD-7 according to the sex and age of the study participants. Women and those over 18 years of age showed significantly higher scores on the anxiety scale than men and those over 18 years of age, respectively (p<0.05). Specifically, the prevalence of anxiety was 65% and 90% higher in women and those older than 18 years, respectively.

Table 1. Anxiety symptoms and percentages achieved.

GAD-7 Items	No. (%)
Nervousness	27 (87.1%)
Lack of self-control	27 (87.1%)
Pathological concern	28 (90.3%)
Inability to relax	27 (87.1%)
Restlessness	25 (80.6%)
Irritation	27 (87.1%)
Pathological fear	21 (67.7%)

Table 2. Summary of the total score in the sample stratified by sex and age.

	Sex			
	Men (n=7)	**Women (n=24)**	OR (95% CI)	p
Mean (SD)	6.6 (4.7)	10.8 (3.8)	-	0.021
Anxiety, n (%)	3 (42.8%)	17 (70.8%)	1.65 (0.67-4.04) (ref. men)	0.210
	Age			
	18 years (n=21)	**>18 years (n=10)**	OR (95% CI)	p
Mean (SD)	11.0 (3.9)	7.3 (4.3)	-	0.023
Anxiety, n (%)	16 (76.2%)	4 (40.0%)	1.90 (0.86-4.22) (ref. > 18 years)	0.106

4. Discussion

In this observational study, carried out with a sample of Spanish medical students during the COVID-19 pandemic, it is suggested that 64.5% have significant levels of self-reported anxiety measured with the GAD-7 scale. Significantly higher result than that reported by a study prior to the COVID-19 pandemic on anxiety in Spanish medical students, conducted in 2020 and based on a total sample of 5,216 students, which reported a global prevalence of 25% (8).

According to the currently available bibliography, this is the first study in Spain that reports data on anxiety in medical students during the COVID-19 outbreak and in Europe in terms of the prevalence of anxiety in this population.

The higher proportion of women or young students (18 years of age) in the sample could explain these high rates of anxiety. In the general population, the literature has consistently shown a higher proportion of cases of anxiety among women, compared to men (22). Similarly, the

previous study conducted with samples of Spanish medical students before the COVID-19 pandemic (8) found that the prevalence of anxiety was higher in women than in men. In addition to the presence of more women in our sample, this high proportion of cases of anxiety during the pandemic in medical students could be explained, on the one hand, by the greater general susceptibility to affective problems in this type of population, as anxiety and depression (23,24); on the other hand, to the growing psychological burden caused by the pandemic and the measures and restrictions associated with it. This has been able to cause significant deviations in normal university routines, such as the implementation of online teaching (25). Prolonged screen use or switching to less healthy habits, such as a sedentary lifestyle, has also been associated with higher levels of stress and anxiety (26). In turn, the social distance imposed to prevent the spread of the virus has decreased social contact among university students and the feeling of perceived social support, while there is a greater feeling of loneliness (27).

Greater knowledge about the pandemic and the fear of being infected or infecting loved ones could also play a role in the appearance of anxiety symptoms among medical students. However, previous studies have found that young people tend to obtain a great deal of information about COVID-19 through social networks, which could increase their levels of stress and anxiety (28).

It should be noted that previous studies in Spanish university samples have shown high levels of anxiety and depression. For example, a study carried out on a sample of nursing students in Galicia showed a prevalence of depression, measured with the HAD, of 62% and 60% in the case of anxiety (measured with the EADG scale). These data are similar to those observed in our sample of medical students.

Compared to other populations, we also found notable differences. A previous meta-analysis of anxiety during the COVID-19 pandemic in the general population, based on a total of 43 studies, reported a prevalence of 25% (7). Similarly, another meta-analysis carried out with 71 studies in samples of health professionals reported an overall proportion of anxiety of 25%, reaching 43% if they were front-line health workers (29). Therefore, the results of our study suggest that the proportion of anxiety in medical students during the COVID-19 crisis is similar to that observed in high-risk populations exposed to stressors related to COVID-19, such as health workers who They work on the front lines. The levels of anxiety observed in the sample of medical students at the University of Zaragoza are even higher. However, epidemiological studies are needed that include representative samples of this population and that include, as far as possible, diagnostic instruments in order to establish the prevalence of anxiety during the pandemic, as well as at different stages of it.

Some limitations to take into account when interpreting the results of this study are the following: First, the study carried out with a sample of medical students was based on a non-probabilistic convenience sample. This, together with a small sample size, makes us cautious when generalizing the results to the population of medical students. Observational studies with sufficiently large samples and that follow a probabilistic design would be necessary in order to obtain generalizable proportions. Second, the use of dimensional instruments to assess the presence of self-reported anxiety may lead to an overestimation of the true prevalence. Diagnostic instruments are preferable for obtaining a clinical diagnosis of anxiety. However, the dimensional instruments and scales are especially useful in epidemiological studies due to their speed and economy, and specifically, the GAD-7 scale is one of the most used in this type of study.

5. Conclusions

- This study conducted with a sample of medical students from a Spanish university indicates that almost two-thirds of students show significant levels of anxiety during the COVID-19 pandemic.

- This result underscores the high susceptibility of medical students during the pandemic, and suggests the need to assess the presence of significant levels of anxiety with rapid and reliable instruments, such as the GAD-7 scale, in order to establish emotional support programs in difficult times. of pandemic.

- It is necessary to develop studies that also analyze what determinants are associated with psychological problems, such as the presence of unhealthy lifestyles (for example, sedentary lifestyle, poor diets, alcohol and tobacco consumption), the sources of information used to find out about the pandemic, or levels of loneliness and stress. Knowing these determinants can help incorporate elements in the intervention for its modification.

Declaration of conflict of interest: The authors declare that they have no conflict of interest.

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