





Assessing anxiety symptoms and Traumatic Event Scale scores among medical staff during the COVID-19 pandemic in Colombia: a descriptive cohort study in Bogotá

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ABSTRACT

Objective This study aims to assess anxiety and suffering symptoms amid the pandemic, determine factors linked to physicians' anxiety with COVID-19 patients and describe symptom progression in the initial year of follow-up.

Methods Descriptive cohort study involving general practitioners, specialists and interns in the city of Bogotá. The Zung Anxiety Scale and the Traumatic Event Scale (TES) were employed and completed four times during the pandemic. A sample of 558 participants was taken. Physicians with prior diagnoses of psychiatric disorders were excluded. Bivariate tests and a logistic regression model were used.

Results Some 7.3% of respondents had anxiety symptoms during the first survey (29/397 physicians) with a clinically significant impact of the traumatic event on 279 of the 397 (70%). Female gender ($p=0.04$), comorbidities ($p=0.01$), use of surgical gown (protective, $p=0.01$), perception of negative thoughts on the part of society ($p=0.05$), thoughts of wanting to give up or death ($p<0.001$) and presenting some clinical level of traumatic event impact ($p<0.001$) were associated with these anxiety symptoms. The multivariate model associated thoughts of quitting (OR 4.55; 95% CI 1.8 to 11.6) and the clinically significant level of TES (OR 7.8; 95% CI 1.0 to 62.5) with anxiety symptoms and the use of a surgical gown as a personal protection element (OR 0.222; 95% CI 0.12 to 0.73; $p=0.009$) with the protective factor.

Conclusions The pandemic significantly impacted Bogotá physicians, with around 7.3% of exhibiting anxiety symptoms during the initial assessment. This traumatic experience had a clinically significant effect on 70% of respondents. Over time, anxiety symptoms diminished. Addressing post-traumatic stress phenomena is crucial in similar scenarios to alleviate the impact on healthcare personnel's anxiety.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Health personnel register increased levels of stress and anxiety when they face a pandemic. Currently, few studies have been done in Colombia.

WHAT THIS STUDY ADDS

⇒ The pandemic produced a high traumatic impact on physicians in Bogotá that resulted in some developing symptoms of anxiety that diminished over time.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ In the case of events similar to this pandemic, the phenomenon of post-traumatic stress should be addressed at the beginning rather quickly to mitigate the impact it has on the lives of health professionals and prevent some level of anxiety.

BACKGROUND

The SARS-CoV-2, or the new coronavirus, is the causative agent of the respiratory infection known as COVID-19, derived from the term 'coronavirus disease 2019' in English. This infection was initially reported in the city of Wuhan, China and subsequently rapidly spread worldwide, leading to its classification as a pandemic by the WHO on 11 March 2020.¹ The uncertainty and lack of knowledge surrounding this disease, its rapid transmission, infectious nature and impact on personal safety induced widespread panic. This heightened levels of anxiety and stress² due to constraints on social and daily life activities for an indefinite period, affecting the mental health of the entire population, including medical personnel.²

Anxiety and stress are general responses or mechanisms involving physiological activation and cognitive processes that enable the organism to cope with various stressors.³ Healthcare personnel often experience heightened stress levels during a pandemic, with variations based on their knowledge of the disease.⁴ Studies have revealed that 17% of healthcare workers exhibited significant mental stress symptoms during different pandemics and epidemics, including SARS.^{4 5} A University of Toronto study demonstrated that the SARS outbreak resulted in significant clinical distress for one-third of healthcare workers. This anxiety stemmed from factors such as quarantines, caring for colleagues with SARS, fear of contagion, concern for family health, work-related stress and individual isolation.⁶

Two studies conducted among Chinese hospital healthcare workers during previous epidemics reported significant rates of post-traumatic stress disorder among those subjected to quarantine.^{2 4} Furthermore, 20% experienced feelings of stigmatisation and rejection within their communities due to their profession, with 9% contemplating resigning from their positions. These findings align with an elevated perception of discrimination and societal indifference.^{2 4}

Currently, few studies have been conducted in Colombia to gauge doctors' anxiety levels, how these have fluctuated throughout the pandemic and their correlation with various associated factors. A Colombian study conducted in the city of Medellín between March and May 2020 found that one in five surveyed individuals exhibited anxiety symptoms, including restlessness, worry for various reasons, difficulty relaxing and fear.⁷ This study conducted an assessment of the prevalence of anxiety symptoms and distress during the pandemic while identifying factors associated with the anxiety levels of physicians following patients in the city of Bogotá, Colombia.

METHODS

Study design

A descriptive observational cohort study⁸ was conducted during the pandemic period from May 2020 to November 2021, focusing on medical personnel in Bogotá.

Participants were invited to join the study through an open invitation via social media and mass emails. Videos and infographics explaining the study were disseminated to engage potential participants. After consenting and authorising their participation, data management and agreeing to be contacted for follow-up surveys, participants completed the survey using Google Forms, linked to their email and phone for future follow-up. The survey, conducted every 3 months, totalled four cycles. Three follow-up emails and a 15-day reminder preceded each survey cycle. Data analysis followed each cycle, with a comprehensive compilation at the study's end. Confidential participant contact details were maintained to enhance study validity.

Exclusion and inclusion criteria

To be included, those surveyed had to be interns (final-year medical students), general practitioners, residents, clinical specialists with first or second specialty, have a master's or doctorate degree, be working at any health-related institution in the city of Bogotá and have had contact during their daily practice with patients who were suspected of or diagnosed with COVID-19. Personnel diagnosed with anxiety disorder prior to the pandemic, those without internet access to complete the survey and those under 18 years of age were excluded from the study, considering that in Colombia, this age marks legal adulthood.

Sample size calculation

The sample was calculated using the Epidat V.4.2 program⁹ and took the following into consideration: a population of 34 400 physicians in Bogotá (31 914 physicians and 2400 interns from 12 medical schools in the city), an anxiety rate of 44.6% based on the Lai *et al*'s 2020 study,¹⁰ a confidence level of 95%, an accuracy level of 5% and a total of 376 participants. An approximate loss during follow-up of 10% was added to this calculation, resulting in an initial cohort of 414 participants. Likewise, an assumed response rate of approximately 65%⁴ led to the contact of 558 participants to invite them to take part in the study.

Surveys

A literature search was conducted to establish the variables of interest as factors associated with anxiety during the pandemic and the measurement scales used. Subsequently, a questionnaire was created using Google Forms. The first part of the survey included demographic characteristics of the participating healthcare professionals (sex, age, economic level, marital status, the number of children, head of household, financial responsibility for the household and makeup of the family group), work-related and professional characteristics (position, specialty, work experience, level of complexity and work area), comorbidities, availability of protective gear and perception of support (self-medication, symptoms associated with COVID-19, COVID-19 training, personal protective equipment (PPE), sources of information, information on protective measures, knowledge of factors that change the level of mortality, vaccination against COVID-19, perception of probability of contagion, possibility of resignation and death). Survey: data collection form is available as online supplemental material.

The second part included the Zung Anxiety Scale,¹¹ a self-report scale consisting of 20 items used to identify different levels of anxiety and categorise them into non-existence, mild anxiety, moderate and severe anxiety. This scale has been validated for use in Colombia. The third part included the Impact of Traumatic Event Scale (TES) used to measure the degree of suffering caused by a particular event (subjective stress). This evaluates two reactions associated with stress—avoidance and

intrusion—and consists of 15 items. It has been adopted for use in several Latin American countries.¹¹

Anxiety was classified according to the Zung scale with the following cut-off points: no anxiety within 20–45, mild to moderate anxiety within 46–59, moderate to severe anxiety within 60–74 and markedly severe anxiety greater than 75 points. Regarding the impact scale, the cut-off points were scores of 0–8 in the subclinical range, 9–25 in the mild range, 26–43 in the moderate range and more than 44 in the severe range.^{11 12}

Statistical analysis

In each of the four surveys, a descriptive analysis of the population was conducted, using absolute and relative frequencies for qualitative variables, and measurements of central tendency and dispersion for quantitative variables based on their distribution. The factors were examined using bivariate tests for categorical variables, employing either χ^2 tests or Fisher's exact test depending on the distribution. For quantitative variables, either the Student's t-test or the Mann-Whitney U test was employed, depending on normalcy. Tests with a p value less than 0.05 were considered statistically significant. A logistic regression model was employed to investigate the association of anxiety symptoms with variables such as sex, age, comorbidities, surgical gown usage, N95 mask usage, thoughts of quitting, thoughts of death, TES and level of complexity. To compare the variables at the four follow-up points, a repeated measure of analysis of variance was conducted for quantitative variables in cases where normality was observed. Conversely, if normality was not present, the Friedman test was employed. Prevalence ORs were calculated for categorical variables. Subsequently, a logistic regression model was developed, incorporating factors deemed statistically significant and clinically coherent. We used the Epi Info software for statistical calculations and to efficiently conduct logistic regression analysis.

Patient and public involvement

This study was classified as low-risk research, and participants provided their consent for participation, treatment and processing of anonymously collected data. Participants were informed about the survey results prior to the subsequent survey, and survey results were communicated via email. Participants at mild or moderate risk were provided with mental health recommendations through pages incorporated into the Colombian College of Psychology website. Those with a high level of anxiety were advised to seek emergency services or schedule a priority appointment with their health insurance provider. Participants voluntarily joined the study, and the sequential, free and autonomous completion of surveys ensured that their voices were heard. Physician participants' involvement in the study design: Physicians participated in the study design through email invitations, allowing them to contribute to the study's design and ensuring their needs and preferences were taken

into account. However, they did not participate in the recruitment and execution of the study, as this was voluntary and conducted through periodic survey completion. Dissemination of results to participants: The study results will be communicated to participants through email following each survey. Participants with high scores on the scale, such as low-risk or moderate-risk patients, were provided with pages containing mental health recommendations from the Colombian College of Psychology. For those with a high level of anxiety, it was recommended to seek emergency services or schedule a priority appointment with their health insurance provider. Assessment of the intervention's burden: Since this study was not a randomised controlled trial, participants did not evaluate the intervention's burden themselves.

RESULTS

Sociodemographic characteristics

During the study, 1400 surveys were completed by 413 participants. 16 were excluded, 15 because they did not report their profession and 1 who did not authorise the inclusion of their results in the research. In the first survey, 413 participants responded, the second follow-up had 128 responses, the third moment had 219 responses and the fourth moment had 203 responses, this is consistent with the calculated loss to follow-up in the sample size. Sociodemographic information of respondents in the first survey is presented in [table 1](#), their work factors are presented in [table 2](#) and information on PPE available at the time of the survey is presented in [table 3](#).

Support from employer and society during the pandemic

During the follow-up period, PPE was provided by the employer or the university if they were trainees. However, it is noteworthy that 21% (n=172) obtained their PPE through their own means. Most of them received training on the proper use of PPE, with a total of 86% receiving COVID-19 training.

In the first survey, the sources of information on the pandemic were scientific articles and database consultation for 57% of the respondents (n=228), colleagues accounted for 26% and social networks for 9%. The presence of symptoms related to COVID-19 was evident on average for 30% of the respondents in the four follow-up surveys, and the most common symptoms were cough, headache and odynophagia. Seven per cent (n=66) reported using some medication, including homeopathic components (39%, n=13), ivermectin (9%, n=83) and colchicine (3%, n=81).

Of the total, 57% (n=228) perceived employer support (met expectations), but the perception of government support was low, with an average of 80% choosing the 'below expectations' option (n=317) in the first survey, decreasing to 63% (n=111) in the last survey. Regarding the government's measures to combat the pandemic, these fell below expectations of 60% (n=237) and 62% (n=70) in the first two measurements, with a slight

Table 1 Sociodemographic factors associated with anxiety symptoms in the first survey

Sociodemographic characteristics	Total n=397% (n)	Anxiety n=29% (n)	No anxiety n=368% (n)	P value
Sex, woman	64.9 (258)	82.8 (24)	63.6 (234)	0.037*†
Age, average (max-min; 25%–75%)	29 (18–72; 26–34)	28 (22–52; 23–43)	29 (18–72; 22–61)	0.481‡
Economic level				0.172§
Low (levels 1 and 2)	3.0 (12)	6.9 (2)	2.7 (10)	
Middle (levels 3 and 4)	77.6 (308)	82.8 (24)	77.2 (284)	
High (levels 5 and 6)	19.4 (77)	10.4 (3)	20.1 (74)	
Marital status				0.197†
Single	65.9 (262)	55.2 (16)	66.9 (368)	
Married/civil union	30.7 (122)	41.4 (12)	29.9 (110)	
Separated/divorced/widowed	3.3 (13)	3.5 (1)	3.3 (12)	
Children	24.9 (99)	24.1 (7)	25 (92)	0.918†
Number of children, average (max-min; 25%–75%), n=99	2 (1–5; 1–2)	n=7, 1 (1–2; 1–1)	n=92, 2 (1–5; 1–3)	0.489‡
Economic responsibility				0.338†
No responsibility	36.8 (146)	41.4 (12)	36.4 (134)	
Share responsibility	42.6 (169)	31.0 (9)	43.5 (160)	
Sole responsibility	20.6 (82)	27.6% (8)	20.1 (74)	
Family household				
Live with parents	35.5 (141)	34.5 (10)	35.6 (131)	
Live alone	22.2 (88)	13.8 (4)	22.8 (84)	
Live with spouse and children	15.4 (61)	13.8 (4)	15.5 (57)	
Live with spouse	14.4 (57)	17.3 (5)	14.1 (52)	
Live with spouse, children and parents	7 (28)	10.4 (3)	6.8 (25)	
Live with a coworker	5.5 (22)	10.4 (3)	5.1 (19)	
Comorbidities	28.5 (113)	48.3 (14)	26.9 (99)	0.014*†
System affected				
Immunological	8.8 (113)	7.1 (1)	9 (9)	
Respiratory	28.3 (32)	14.3 (2)	30.3 (30)	
Endocrinological	25.7 (29)	21.4 (3)	26.3 (26)	
Cardiovascular	23.9 (27)	42.9 (6)	21.2 (21)	
Neurological	5.3 (6)	7.1 (1)	5.0 (5)	
Gynaecological	4.4 (5)	0 (0)	5.0 (5)	
Haematological	2.6 (3)	7.1 (1)	2.0 (2)	
Renal	2.6 (3)	7.1 (1)	2.0 (2)	
Gastrointestinal	1.8 (2)	0 (0)	2.0 (2)	
Psychiatric	0.9 (1)	0.0 (0)	1.0 (1)	
Ophthalmologic	0.9 (1)	0.0 (0)	1.0 (1)	
Medication intake	8.3 (33)	13.8 (4)	7.9 (29)	0.267†
Drug				
Colchicine	3.0 (81)	0.0 (0)	3.5 (1)	
Homeopathic	39.4 (13)	75 (3)	34.5 (10)	
Antiaggregant	3.0 (1)	0.0 (0)	3.5 (1)	
Ivermectine	9.0 (83)	25 (1)	6.9 (2)	
Vaccination	6.0 (2)	0.0 (0)	6.9 (2)	
Antimucolitic	3.0 (1)	0.0 (0)	3.5 (1)	
Experimental drug	3.0 (1)	0.0 (0)	3.5 (1)	

*Statistically significant difference.

† χ^2 test.

‡Mann-Whitney test.

§Fisher's exact test.

Table 2 Work factors associated with anxiety symptoms in the first survey

Job characteristics	Total n=397% (n)	Anxiety n=29% (n)	No anxiety n=368% (n)	P value
Profession(s)				0.334*
Last year medical student (intern)†	10.8 (43)	20.7 (6)	10.0 (37)	
General practitioner/rural physician	28.5 (113)	27.6 (8)	28.5 (105)	
Resident/fellow	36.3 (144)	34.5 (10)	36.4 (134)	
Specialist	24.4 (97)	17.2 (5)	25 (92)	
Years of experience				0.445*
Less than 1 year	16.4 (61)	17.2 (5)	15.2 (56)	
1–10 years	67.3 (267)	58.6 (17)	67.9 (250)	
10–15 years	7.3 (29)	13.8 (4)	6.8 (25)	
More than 15 years	10 (40)	10.3 (3)	10.0 (37)	
Level of complexity‡				
Level 1	12.6 (50)	27.6 (8)	11.4 (42)	
Level 2	12.1 (48)	10.4 (3)	12.2 (45)	
Level 3	22.7 (90)	17.2 (5)	23.1 (85)	
Level 4	52.6 (209)	44.8 (13)	53.3 (196)	
Sector				
Private	67.5 (268)	65.5 (19)	67.7 (249)	
Public	12.4 (57)	24.1 (7)	13.6 (50)	
Both	18.1 (72)	10.3 (3)	18.8 (69)	
Service or area				
Triage/emergency	31.8 (119)	40.7 (11)	30.8 (107)	
Hospitalisation	24.9 (93)	22.2 (6)	25.1 (87)	
Outpatient consultation	23.5 (88)	18.5 (5)	23.9 (83)	
ICU	8.3 (31)	7.4 (2)	8.4 (29)	
Operating room	7.5 (28)	7.4 (2)	7.5 (26)	
Administrative	2.9 (11)	3.7 (1)	2.9 (10)	
Pathology	0.9 (3)	0 (0)	0.8 (3)	
Radiology	0.3 (1)	0 (0)	0.3 (1)	
Specialty				
Paediatric clinical specialties	35.6 (139)	27.6 (8)	36.2 (131)	
Adult clinical specialties	18.7 (73)	13.8 (4)	19.1 (69)	
General medicine	16.9 (66)	27.6 (8)	16 (58)	
Surgical specialties	13 (51)	10.3 (3)	13.3 (48)	
Medical student	7.2 (28)	13.8 (4)	6.3 (24)	
Basic sciences/epidemiology	4.6 (18)	6.9 (2)	4.4 (16)	
Administrative specialties/occupational health	1.8 (7)	0 (0)	1.9 (7)	
Intensive care	1.5 (6)	0 (0)	1.7 (6)	
Special diagnostic aids	0.8 (3)	0 (0)	0.8 (3)	

*Fisher's exact test.

†Intern: senior medical student.

‡In Colombia, healthcare institutions are classified based on 4 levels of complexity: Level 1 - basic primary care and emergencies, Level 2 - basic specialties and some surgeries, Level 3 - advanced specialties and intensive care, and Level 4 - highly specialized services and advanced procedures.

ICU, intensive care unit.

improvement in the last two. On average, 56% of physicians perceived society members as indifferent towards them. This was followed by feelings of discrimination,

peaking at 29% (n=114) in the first survey and declining to 12% (n=22) in the fourth survey (see [table 4](#)).

Table 3 Factors during the pandemic associated with anxiety symptoms in the first survey

Characteristics during the pandemic	Total n=397% (n)	Anxiety % (n)	No anxiety % (n)	P value
First line	73 (289)	72.4 (21)	73.0 (268)	0.933*
Personal protective equipment				
Surgical gown/suit	77.8 (309)	58.6 (17)	79.4 (292)	0.01*†
Surgical mask	96 (381)	96.6 (28)	95.9 (353)	0.671*
N95 Mask	80.9 (321)	69 (20)	81.8 (301)	0.091*
Facial mask	64.5 (256)	65.5 (19)	64.4 (237)	0.904*
Full suit	43.6 (173)	31 (9)	44.6 (164)	0.157*
Half-face and full-face respirator	19.1 (76)	6.9 (2)	20.1 (74)	0.58‡
Change of personal protective equipment				0.081‡
No change	41.8 (166)	62.1 (18)	40.2 (148)	
Change	20.2 (80)	13.8 (4)	20.7 (76)	
Not applicable	38.0 (151)	24.1 (7)	39.1 (144)	
Protective equipment manager				
Occupational risk manager	5.8 (23)	6.9 (2)	5.7 (21)	
Employer	45.3 (180)	41.4 (12)	45.7 (168)	
One's own means	21.7 (86)	17.2 (5)	22.0 (81)	
University where you study	27.2 (108)	34.5 (10)	26.6 (98)	
Support of employer				0.311‡
Below expectations	36.0 (143)	44.8 (13)	35.3 (130)	
Meets expectations	57.4 (228)	55.2 (16)	57.6 (212)	
Surpassed expectations	6.6 (26)	0.0 (0)	7.1 (26)	
Support of government				0.743‡
Below expectations	79.9 (317)	86.2 (25)	79.4 (292)	
Meets expectations	18.9 (75)	13.8 (4)	19.3 (71)	
Surpassed expectations	1.3 (5)	0.0 (0)	1.4 (5)	
Government measures				0.793‡
Below expectations	59.7 (237)	58.6 (17)	59.8 (220)	
Meets expectations	37.8 (150)	37.9 (11)	37.8 (139)	
Surpassed expectations	2.5 (10)	3.5 (1)	2.5 (9)	
Perception of members of society				0.053‡
Discriminated against	28.7 (114)	48.3 (14)	27.2 (100)	
Indifferent	49.9 (198)	41, 4 (12)	50.5 (186)	
Supported	21.4 (85)	10.3 (3)	22.3 (82)	
Symptoms related to COVID-19	67.3 (267)	55.2 (16)	68.2 (251)	0.15*
What symptoms?				
Dyspnoea	9.4 (12)	0.0 (0)	10.4 (12)	
Dysphagia	0.8 (1)	0.0 (0)	0.9 (1)	
Odynophagia	32.8 (42)	25 (3)	33.6 (39)	
Amnesia	0.8 (1)	0.0 (0)	0.9 (1)	
Otitis	0.8 (1)	0.0 (0)	0.9 (1)	
Ageusia	3.9 (5)	0.0 (0)	4.3 (5)	
Anosmia	14.1 (18)	8.3 (1)	14.7 (17)	
Headache	25 (32)	41.7 (5)	23.3 (27)	
Cough	44.2 (57)	33.3 (4)	45.3 (53)	
Myalgia	13.3 (17)	8.3 (1)	13.8 (16)	

Continued

Table 3 Continued

Characteristics during the pandemic	Total n=397% (n)	Anxiety % (n)	No anxiety % (n)	P value
Arthralgia	3.9 (5)	0.0 (0)	4.3 (5)	
Rhinorrhoea	19.5 (25)	33.3 (4)	18.1 (21)	
Adinamia	17.0 (22)	25 (3)	16.2 (19)	
Fever	12.4 (16)	0.0 (0)	13.7 (16)	
Training	87.4 (347)	93.1 (27)	87 (320)	0.559‡
Training in the use of PPE	90.2 (358)	82.8 (24)	90.8 (334)	0.187‡
Source of information used				
Social Media	8.8 (35)	6.9 (2)	9 (33)	0.518‡
Internet	1 (4)	0.0 (0)	1.1 (4)	0.737‡
Training/classes	0.5 (2)	0.0 (0)	0.5 (2)	0.859‡
Scientific articles, databases and scientific journals	57.4 (228)	55.2 (16)	57.6 (212)	0.798*
Colleagues	26.2 (104)	27.6 (8)	26.1 (96)	0.829‡
Communication media	6.3 (25)	10.3 (3)	6 (22)	0.413‡
Do you feel more at risk?	95.7 (380)	96.6 (28)	95.7 (352)	0.104‡
Have you thought about quitting?	28.5 (113)	72.4 (21)	25 (92)	0.00*†
Have you had thoughts of death?	38.5 (153)	69 (20)	36.1 (144)	0.00*†
Traumatic Event Scale				0.00*†
Subclinical	29.7 (118)	3.5 (1)	31.8 (117)	
Mild	43.1 (171)	24.1 (7)	44.6 (164)	
Moderate	20.9 (83)	41, 4 (12)	19.3 (71)	
Severe	6.3 (25)	31 (9)	4.4 (16)	

* χ^2 test.
†Statistically significant difference.
‡Fisher's exact test.
PPE, personal protective equipment.

Anxiety

In the first survey, 7.3% (n=29) reported symptoms of anxiety. The most frequent ones were restlessness nervousness, headache and weakness. In the second survey, there was a slight increase in symptoms of anxiety that reached 11.5% (n=13), with a subsequent decrease in the third and fourth surveys, leaving it at 4.9% (n=3) and 7.3% (n=13) (figure 1A).

Traumatic Event Scale

In the first survey, 279 participants (70%) presented a clinically significant traumatic event impact that varied between mild, moderate and severe (figure 1B).

In the second survey, the reported impact (TES) was 58% (n=276); in the third survey, it was 44% (n=27), and in the last survey, it was 53% (n=94). In all these latter surveys, mild stress predominated. A comparative review between the Zung Anxiety Scale and the TES showed that, despite having low levels of anxiety, there is a high level of traumatic event impact, which decreased over the months. However, in the third follow-up, there is a slight rise which could be related to an epidemiological peak.

Factors associated with the presence of anxiety

In the first survey, women were found to be more anxious than men ($p=0.037$), as were those who had a comorbidity ($p=0.14$). No differences were found in age, socio-economic class, marital status, the presence of children or economic responsibility (table 1). No differences were found in any of the labour factors (table 2). Considering quitting or thoughts of death was related to the presence of anxiety symptoms ($p<0.001$) (table 3). Seven out of the 29 participants with anxiety symptoms (24%) had mild TES, 41% (n=12) had moderate and 9 (31%) had severe TES. When comparing participants with anxiety symptoms versus those without anxiety symptoms and considering TES levels, statistically significant differences were found ($p<0.001$).

Risk and protective factors related to the presence of anxiety

The logistic model found the thought of giving up (OR 4.6; 95% CI 1.8 to 11.6; $p=0.002$) or having some level of stress evaluated with TES (OR 7.8; 95% CI 1.0 to 62.5; $p=0.051$) as risk factors for experiencing anxiety. The use of a surgical gown or suit as personal protective gear was found to be a protective factor (OR 0.22; 95% CI 0.12

Table 4 Support from employer and society during the pandemic in the four surveys

Support from employer and society during the pandemic	First survey n=397% (n)	Second survey n=113% (n)	Third survey n=61% (n)	Fourth survey n=177% (n)
Protective equipment manager				
Occupational risk manager	5.8 (23)	6.2 (7)	1.6 (1)	6.8 (12)
Employer	45.3 (180)	45.1 (51)	55.7 (34)	55.4 (98)
One's own means	21.7 (86)	22.1 (25)	21.3 (13)	16.9 (30)
University where you study	27.2 (108)	26.6 (30)	21.3 (13)	20.9 (37)
Support of employer				
Below expectations	36 (143)	26.1 (24)	27.3 (15)	17.1 (30)
Meets expectations	57.4 (228)	63 (58)	63.6 (35)	71.4 (125)
Surpassed expectations	6.6 (26)	10.9 (10)	9.1 (5)	11.4 (20)
Support of government				
Below expectations	79.8 (317)	70.8 (80)	65.6 (40)	62.7 (111)
Meets expectations	18.9 (75)	28.3 (32)	29.5 (18)	33.3 (59)
Surpassed expectations	1.3 (5)	0.9 (1)	4.9 (3)	4 (7)
Government measures				
Below expectations	59.7 (237)	62 (70)	49.4 (40)	49.7 (89)
Meets expectations	37.8 (150)	36.3 (41)	44.4 (36)	44.7 (80)
Surpassed expectations	2.5 (10)	1.8 (2)	5.2 (5)	5.6 (10)
Perception of members of society				
Discriminated against	28.7 (114)	14.0 (16)	15 (9)	12.4 (22)
Indifferent	49.9 (198)	65.8 (75)	51.7 (31)	55.4 (98)
Supported	21.4 (85)	20.2 (23)	33.3 (20)	32.2 (57)
Medication intake	8.3 (33)	5.4 (5)	7 (4)	7.9 (14)
Symptoms related to COVID-19	32.8 (130)	30.1 (34)	26.8 (15)	30.3 (53)
Training	87.4 (347)	84.8 (78)	81.8 (45)	88.6 (155)
Training in the use of PPE	90.2 (358)	87.6 (99)	95.1 (58)	93.2 (165)

PPE, personal protective equipment.

to 0.73; $p=0.009$). No statistical differences were found in sex, comorbidity, use of N95 masks, thoughts of death and level of complexity (table 5).

DISCUSSION

This study found a low prevalence of symptoms of anxiety as assessed by the Zung scale and a high percentage of physicians with clinically significant levels of TES that declined during follow-up.

Symptoms of anxiety

A low level of anxiety was evident in the first survey, with a slight increase in the second survey. As indicated in the literature, a systematic review and meta-analysis performed by Li *et al*¹² disclosed an average anxiety prevalence of 22% across 57 studies. Notably, this prevalence exhibited considerable variability, ranging from 5% to 90%.¹²

Regarding characteristics associated with the presence of anxiety in other studies, a systematic review by Danet Danet in 2021, which included 12 studies, found higher

levels of stress in women and in younger professionals with comorbidities, less work experience and who were single.¹³ In relation to the variable of gender, similar studies had a predominantly female population, though they belonged to the nursing staff.^{14–16} Other characteristics of our population included a majority of individuals who were single and childless, shared economic responsibilities and lived with their parents, spouse and children. This contrasts with the findings of Liu *et al*, where participants were married and had at least one child. Higher levels of anxiety were observed among unmarried and childless participants and young individuals, which was characteristic of our study population. However, these variables did not show a statistically significant difference.¹⁷

Regarding the allocation of front-line personnel in our study, individuals were assigned to various departments, including the emergency department, hospitalisation, operating rooms and the intensive care unit (ICU). This allocation strategy drew inspiration from prior research that predominantly emphasised the assignment of

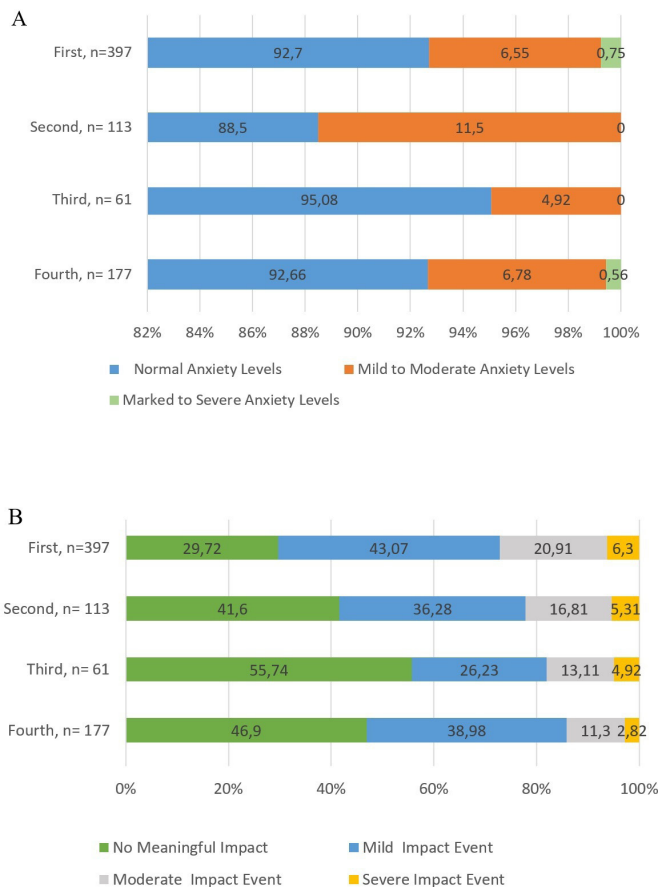


Figure 1 (A) and (B) Zung Scale and Impact of Traumatic Event Scale during the pandemic in the four surveys. (A) Zung Scale and (B) Traumatic Event Scale.

personnel to the emergency department, ICU and pneumology physicians.¹³ In Spain, COVID-19 hospitalisation personnel from the specialties of internal medicine, infectious diseases, pneumology and gastroenterology were considered part of the front line.¹⁴ Li *et al*'s meta-analysis showed a higher level of anxiety in participants who had contact with SARS-CoV-2-positive patients.¹² In contrast, our study found no significant difference.

Table 5 Risk factors associated with logistic regression anxiety

Risk factor	OR	95% CI	P value
Sex	1.6	0.568 to 4.666	0.364
Comorbidities	1.9	0.819 to 4.392	0.135
Surgical gown	0.2	0.119 to 0.733	0.009
N95 Mask	0.8	0.296 to 2.106	0.638
Have you thought about quitting?	4.6	1.789 to 11.649	0.002
Have you had thoughts of death?	1.7	0.660 to 4.114	0.284
Traumatic Event Scale	7.9	0.990 to 62.48	0.051
Level of complexity	0.7	0.266 to 1.651	0.378

Concerning the most prevalent anxiety symptoms, the following manifestations were identified: restlessness nervousness, headache and weakness. A study by Chew *et al*¹⁸ conducted in Singapore and India, encompassing 906 healthcare workers, revealed that 142 individuals (15.7%) exhibited anxiety symptoms. The reported symptoms included increased appetite, feeling short of breath and sweating, with headaches being the most frequently reported (32% and 33%).¹⁹ In the context of Colombia, Restrepo-Martínez *et al* conducted a study in the city of Medellin between March and May 2020. The study indicated that one out of five respondents displayed symptoms of anxiety, such as restlessness nervousness, worrying over various matters, difficulty relaxing and fear⁷—symptoms akin to those identified in this study. In line with the reviewer's advice, our study presents its own findings and conducts a thorough comparison with other relevant research in the field.

Traumatic event impact

The results revealed a clinically significant TES impact on a large group of respondents. In Ecuador, Pazmiño Erazo *et al*²⁰ found a 16.3% moderate and severe impact. However, their level of anxiety measured with the generalized anxiety disorder-7 (GAD) instrument was higher (29.2%) than what was reported in our study.²⁰ A study with characteristics similar to ours, conducted in a university hospital, found a low level of anxiety and traumatic event impact, with no differences found among front-line staff.²⁰ In Toronto, half of the healthcare personnel had some clinical level of TES. This showed that physicians had lower scores on this scale than nurses and staff in other areas. Factors associated with TES included female sex, having comorbidities, feeling at risk due to a lack of PPE and training.^{21–24} Although the participants in our study met the first two criteria, they had a positive perspective regarding employer support and the adequate provision of PPE. A comparison of the percentages of ICU COVID-19 occupancy reported by the District Health Secretariat of Bogotá at the time of the surveys showed that the median occupancy rate for the first survey was 83%, decreasing to 58% for the second survey and 67% for the third survey, respectively. There was a subsequent rise to 80% for the last survey, consistent with the increase in TES.

Factors associated with anxiety

Using the regression model, our own findings identified thinking of quitting and having a clinical level of TES as significant risk factors while no significant differences were observed in other variables such as age or belonging to the first line of care. This stands in contrast to the study conducted by Xing *et al*, which highlighted risk factors such as being under 30 years of age (OR 4.4; 95% CI 1.6 to 12.2), working with patients with confirmed COVID-19 (OR 2.3; 95% CI 1.4 to 4.0) and concern about insufficient disinfection measures (OR 2.0; 95% CI 1.5 to 4.3).¹⁵ Notably, in a study conducted

in Jilin, China, it was suggested that the non-use of PPE posed a risk for anxiety, with an OR of 6.22; 95% CI 2.2 to 17.4.²⁵ Interestingly, our study indicated that the use of a surgical gown was considered a protective factor, aligning with this observed pattern. Furthermore, when comparing the level of care complexity, an Italian study on health workers in the paediatric service reported a higher level of anxiety in personnel working in secondary care compared with those in primary care.²⁵ In our investigation, however, no statistical significance was found for this variable. In adherence to the reviewer's advice, our study provides its own findings and conducts a comprehensive comparison with other relevant studies in the field.

One factor that may have influenced the outcome of the current study regarding low anxiety can be explained by the findings of a study by the Mexican National Institute of Health, which indicated that despite facing challenges and risks during the pandemic, medical professionals were mentally better prepared to handle the situation compared with their non-medical counterparts.²⁶ They also concluded that a sense of self-care and self-efficacy are protective factors for better psychological adjustment to the situation. This could be achieved through recommendations for fostering mental health, which has been shown to be useful in preserving mental health during pandemics.²⁷ Like Greenberg *et al*, the importance of actively monitoring healthcare workers by healthcare organisations after an initial crisis to identify those struggling with the long-term effects of the traumatic experience and who need psychological help should be emphasised.²⁸

It is intriguing to observe that, despite the elevated levels of traumatic stress reported, only a minority of participants acknowledged experiencing significant anxiety. This phenomenon prompts a noteworthy discussion on the possibility that the repercussions of traumatic stress may have manifested through alternative channels, such as depression, burn-out or even obsessive-compulsive tendencies.^{7 12 15} It raises the question of whether the conventional indicators of anxiety might not fully capture the nuanced ways in which individuals respond to traumatic events.¹² The pervasive sense of powerlessness experienced by many during the initial wave of the COVID-19 pandemic, fueled by uncertainty and unprecedented restrictions, might have led to a diverse array of psychological responses. In this context, it becomes evident that anxiety may not have been the sole or predominant impact on mental well-being; instead, a spectrum of mental health challenges, such as cognitive and attention deficits, psychosis, depression, psychotic symptoms, burn-out and obsessive-compulsive tendencies, could have emerged as individuals grappled with the unique stressors imposed by the pandemic.^{20 21 24 26–28} Exploring these alternative manifestations of distress is pivotal for a comprehensive understanding of the multifaceted psychological effects of such unprecedented global events.²⁷

Limitations

The main limitation in this study was the difficulty of giving the participants who were reluctant to answer the questions within the established time limits proper follow-up. In addition, we need to clarify the fact that the Zung Anxiety Scale and the Impact of TES are screening instruments for symptoms that match these conditions rather than diagnostic scales for them. Although an improvement in symptomatic anxiety and impact was registered during the period of the study, it is possible that resilience was a factor that could explain the low level of anxiety symptoms. However, this was not within the scope of this study.

CONCLUSIONS

In this study, we observed a low level of anxiety, which decreased over the course of the follow-up. However, we identified a high level of traumatic impact on physicians. In addition to high TES scores, the main factors associated with anxiety were being female, having comorbidities, perceiving social discrimination from society and having thoughts related to either resigning or wanting to die. In contrast, the availability of personal protective elements was perceived as a protective factor. Based on our findings, we can infer that in events similar to this pandemic, it is crucial to address the psychological well-being of healthcare professionals promptly to prevent elevated and debilitating levels of anxiety and trauma associated with the event.

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