



**ORIGINAL RESEARCH PAPER**

**General Medicine**

**ASSESSMENT OF THE LEVEL OF ANXIETY AND STRESS IN FIRST-LINE HEALTHCARE PERSONNEL OF SARS COV 2 IN QUITO, ECUADOR DURING THE YEAR 2020-2021**

**KEY WORDS:** health personnel, anxiety, covid 19, stress, psychosocial risk, Hamilton scale

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**ABSTRACT**

Due to the pandemic caused by COVID-19, it has been proven that it has an enormous effect on our lives, mainly in the health personnel who are on the front line. Healthcare personnel are constantly faced with challenges that can be stressful, overwhelming, and elicit strong emotions during shifts. Public health measures, such as social distancing, are necessary to reduce the spread of COVID-19, but they can leave us feeling isolated and increase stress and anxiety. The objective of this study is to determine the level of psychosocial involvement in the field of anxiety and work stress, as well as fear of COVID-19 in health personnel in Quito-E health personnel, anxiety, covid 19, stress, psychosocial risk, hamilton scale cuador; **Methodology.** This is a retrospective longitudinal study from February 2020 to February 2021 in which the first linear healthcare personnel were assessed through the Hamilton test for anxiety, with prior informed consent, anonymously and voluntarily, the participants entered a virtual form with questions general anxiety. The questionnaire sought to find psychosomatic problems using the Scale for Generalized Anxiety Disorder with the symptoms of anxiety, work stress and fear of COVID-19. **Results:** 202 people who hold positions in hospitals or clinics with an average age of 30 years participated. 1.98% presented a level of serious anxiety; 34.65% presented moderate anxiety; 36.63% presented mild anxiety; and 26.73% did not present anxiety. (p = 0.044). **Discussion:** It was found that psychosocial factors and also psychosomatic ones are related to fear of contagion of covid **Conclusion:** Six out of ten participants presented moderate symptoms of anxiety or work stress, while only 2 out of ten presented severe anxiety

**INTRODUCTION**

On December 31, 2019, the Authorities of the People's Republic of China reported several cases of pneumonia of unknown etiology to the WHO in Wuhan, a city located in the Chinese province of Hubei. A week later he confirmed that it was a new coronavirus that has been designated SARS-CoV-2. Like others in the coronavirus family, this virus causes various clinical manifestations under the term COVID-19, which include respiratory conditions that vary from the common cold to severe pneumonia with respiratory distress syndrome, septic shock and multi-organ failure.

The routes of transmission of SARS-CoV-2 are similar to those described for other coronaviruses: Through the secretions of infected people by respiratory droplets larger than 5 microns, which are capable of transmitting at distances of up to 2 meters.

In Ecuador, the COVID-19 virus outbreak was declared a global pandemic in March 2020, and a state of alarm and confinement were decreed. In this situation, first-line health personnel are working normally, which leads to high levels of stress due to work overload and its conditions. The objective of this study was to evaluate the level of stress and anxiety presented in all personnel and how it is related to

psychosocial risk.

Given the conditions of the health security crisis, they are going to generate anxiety, stress and even panic in the general population, as well as in health professionals, when they feel fear of acquiring the disease and dying as a result of the infection. In addition, it can be verified in several writings that health workers usually fear spreading the infection to their families, friends or colleagues and, likewise, experience symptoms of stress, anxiety or depression with long-term psychological implications

It has been reported that health professionals have presented significant rates of depression, anxiety, insomnia and stress in the current COVID-19 epidemic.

At the South American level, there are not enough studies of anxiety and stress levels in health personnel Nor was it possible to evidence studies at the level of Ecuadorian health personnel on mental health in exposed to the pandemic caused by COVID-19.

**HAMILTON ANXIETY TEST (Hamilton Anxiety Rating Scale, HARS)**

The Hamilton Anxiety Scale is a state scale whose objective is to assess the intensity of anxiety. It consists of a total of 14 items that evaluate the psychological, physical and behavioral aspects of anxiety.

In addition, an item specifically assesses depressed mood. The items are nonspecific manifestations of anxiety, without having demonstrated their usefulness for the evaluation of a specific anxiety disorder. Therefore, it is not a diagnostic instrument, but rather assesses the amounts of anxiety in patients previously diagnosed as anxious.

The time frame of reference is the last days (at least the last 3) in all items, except the last one, in which the subject's behavior is assessed during the interview. It is a heteroapplied scale. Simple instructions have been created to assign the most appropriate scores to each patient, in order to increase inter-rater reliability. They are briefly described below (they are valid for the first 13 items):

- 1) Identify among all the possible symptoms for each item the most problematic in recent days, and which is certainly due to anxiety.
- 2) Determine these 3 aspects for this symptom: its severity, its frequency of presentation and the disability or dysfunction it produces.
  - a) Severity: 1, mild, minor; 2, moderate severity and alterations; 3, severe disturbances arising from symptoms, very annoying; 4, the worst symptom you've ever had.
  - b) Time / frequency: 1, occurs infrequently for short periods of time; 2, occurs part of the day or less than half of the days (less than a third of the waking time); 3, occurs a large part of the day, during most days (more than a third of the waking time); 4, it happens almost all the time.
  - c) Disability / dysfunction: 1, awareness of symptoms, but not interfering with normal activities; 2, the symptoms interfere with some activity or worsen due to disturbances; 3, the symptoms cause the inability to carry out (or seriously interfere with) social, family or work activities; 4, the symptoms cause inability to perform (or lead to avoid) activities in 2 or more of the above areas.
- 3) Average the severity and time / frequency scores and round the average based on the disability score. The corresponding score should be selected for each item, according to the experience described by the patient during the application. The definitions that follow the item's statement are examples that serve as a guide. The number that best defines the intensity of each symptom in the patient should be marked in the box on the right. Item 14 is scored according to how the patient presents himself during the interview. All items must be scored.

**CORRECTION AND INTERPRETATION**

Provides a global measure of anxiety, which is obtained by adding the score obtained in each of the items. Scores range from 0 to 56 points. A higher score indicates a greater intensity in anxiety. It is sensitive to variations over time or after receiving treatment, which makes it an excellent instrument to assess change after psychiatric and / or psychological treatment, or combined. Although there are no cut-off points since it is not a standardized instrument for the Chilean population, the following cut-off points are recommended:

- 0 - 5: no anxiety.
- 6 - 14: mild anxiety.
- 14 - 30: moderate anxiety.
- ≥ - 30: severe anxiety.

**METHODOLOGY**

The Hamilton Anxiety Questionnaire was applied through a free electronic form in Google Forms to conduct surveys and

acquire opinion-based statistics. The platform was chosen due to its relative frequent use in educational, work and social settings, in addition to allowing us to coordinate virtually and it is easy to fill out. Participants were asked to apply the responses in the period from December 15 to January 28, 2021, while Ecuador was experiencing one of the maximum peaks related to COVID-19.

The form was designed specifically for this study contained fourteen questions. The questions asked about staff behavior and expressions of fear of the pandemic.

In the questionnaire, also called the Job Stress Test. It is a simple tool with fourteen questions, but little known, it allows us to analyze the presence of psychosomatic symptoms associated with stress and estimate the presence and severity of this in the workplace. At the time of this review, no studies were identified where reliability tests were carried out. The Hamilton test consists of fourteen Likert-type items, in which the answers are scored as follows: absent = 0 point, mild intensity = 1, moderate = 2, severe = 3, disabled = 4. The summation establishes 0 - 5: no anxiety, 6 - 14: mild anxiety, 14 - 30: moderate anxiety, ≥ - 30: severe anxiety.

Generalized Anxiety Disorder Scale (GAD-7). Used to evaluate anxiety problems or symptoms in clinical contexts and in the general population. It has good internal consistency (Cronbach = 0.92) and test-retest reliability (intraclass correlation = 0.83). It consists of seven Likert-type questions: Never = 0; Less than half the days = 1; More than half the days = 2; and Almost every day = 3. It offers a total score between 0 and 21 points, which diagnoses the participant as follows: 0-4 points = No symptoms of anxiety are appreciated; 5-9 = Mild anxiety symptoms; 10-14 = Moderate anxiety symptoms; and 15-21 = Severe anxiety symptoms. A score of ten or more defines the presence of anxiety symptoms and indicates the need for specific evaluation by a specialized professional.

From the Google platform, the database that is automatically generated in Microsoft Excel was downloaded and the data was cleaned. To observe the results according to the evaluated spheres. Continuous data were expressed in medians (Me) with interquartile ranges (RI) and categorical in absolute, percentages and 95% confidence intervals. The differences between groups were evaluated with the Mann-Whitney U test or ANOVA (according to the homogeneity of the variance for continuous variables), and with Mantel-Haenszel or Fischer's test for the categorical ones, according to the theoretical frequencies. Unadjusted logistic regression was performed between with symptoms of anxiety, work stress or fear of COVID-19 (dependent variable). The value of p < 0.05 was considered statistically significant.

To preserve anonymity, only one person was designated to download and rate the database from the platform and replaced the participant's email column with an individual alphanumeric code. By participating, the people who filled out the questionnaire expressly identified themselves as first-line health personnel; Upon completing it, they accepted the terms and granted informed consent that complies with the guidelines according to the Declaration of Helsinki. The study was classified as Minimal Risk Research.

**RESULTS**

In the first days of March 2021, 202 forms filled out by the google forms page were received electronically. No were found incomplete. The study was carried out with the information provided by 202 people employed in clinics and hospitals as the first line.

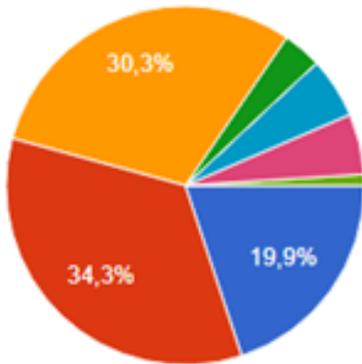
Among the participants, 105 worked in public entities (51.9%) and 97 in private entities (48.1%). The median age was 30 years. More than half were in the 21-30 age range and those who worked for public entities were older than the former, p

<0.05. More than 50% reported being doctors.

In the answers to the questions about the perception and opinion of aspects related to the pandemic, 10% said they had felt discrimination due to their medical professional status, without significant differences between the groups. Those who worked in public entities more frequently reported having believed they had symptoms related to COVID-19; feeling afraid of bringing the infection home; live with family members who were in the high-risk group for COVID-19 and comply with the exhaustive disinfection protocol when arriving home, compared with those who worked in a non-capital municipality,  $p < 0.05$ .

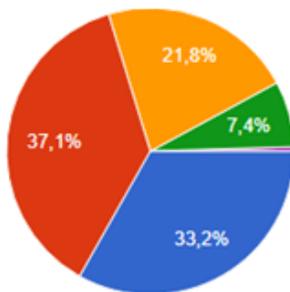
**The results for each question on the Hamilton test are reviewed below:**

1. Anxious state: worries, fear that the worst will happen, anticipated fear, irritability: absent 40 (19.9%), mild intensity 80 (39.6%), moderate intensity 72 (35.6%), severe intensity 9 (4.4%), totally disabled 0



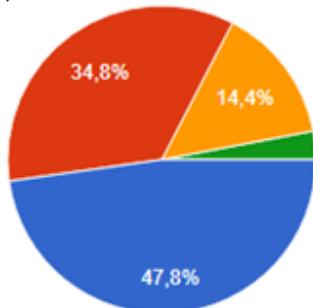
**Figure 1 Anxious state**

2. Tension: Sensations of tension, fatigue, startled response, easy crying, tremors, feeling of restlessness, inability to relax: absent 67 (33.2%), mild intensity 75 (37.1%), moderate intensity 44 (21.8%), severe intensity 15 (7.4%), totally incapacitated 1 (0.5%)



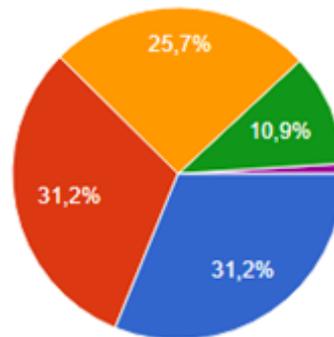
**Figure 2 tension**

Fears: Darkness, strangers, being left alone, animals, traffic, crowds: absent 96 (47.8%), mild intensity 70 (34.8%), moderate intensity 29 (14.4%), intensity severe 6 (3%), totally disabled 0 (0%)



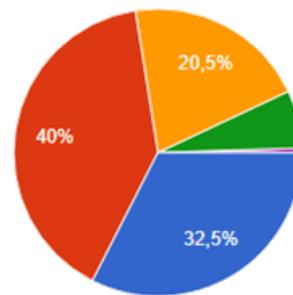
**Figure 3 fears**

4. Insomnia: Difficulty falling asleep. Interrupted sleep, unsatisfactory sleep and feeling of fatigue upon waking, nightmares, night terrors: absent 63 (31.2%), mild intensity 63 (31.2%), moderate intensity 52 (25.7%), severe intensity 22 (10.9%), totally disabled two (1%)



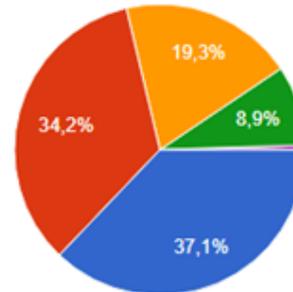
**Figure 4 insomnia**

5. Intellectual (Cognitive) Functions: Difficulty concentrating, poor or poor memory: absent 65 (32.5%), mild intensity 80 (40%), moderate intensity 41 (20.5%), severe intensity 13 (6.5%), totally disabled 1 (0.5%)



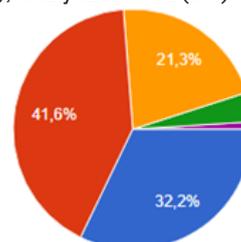
**Figure 5 intellectual**

6. Depressive mood: Loss of interest. Lack of pleasure in hobbies, depression, waking up earlier than expected. Mood variations throughout the day: absent 75 (37.1%), mild intensity 69 (34.2%), moderate intensity 39 (19.3%), severe intensity 18 (8.9%), totally disabled 1 (0.5%)



**Figure 6 depressive mood**

7. Somatic muscle symptoms: Muscle aches, muscle spasms or cramps, muscle stiffness, tics, teeth grinding, wavering voice, increased muscle tone: absent 65 (32.2%), mild intensity 84 (41.6%), moderate intensity 43 (21.3%), severe intensity 8 (4%), totally disabled 2 (1%)



**Figure 7 somatic muscle symptoms**

8. Somatic sensory symptoms: ringing in the ears, blurred vision, hot and cold waves, feeling weak. Paresthetic sensations (pricking, itching or tingling): absent 93 (46%), mild intensity 71 (35.1%), moderate intensity 32 (15.8%), severe intensity 5 (2.5%), totally incapacitated 1 (0.5%)

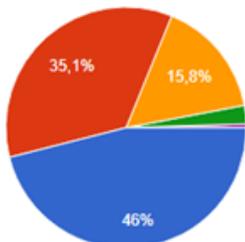


Figure 8 Somatic sensory symptoms

9. Cardiovascular symptoms: Tachycardia, palpitations, chest pain, pronounced vascular pulsations, feeling of "low pressure" or fainting, arrhythmias: absent 112 (55.4%), mild intensity 56 (27.7%), moderate intensity 22 (10.9%), severe intensity 11 (5.4%), totally disabled 1 (0.5%)

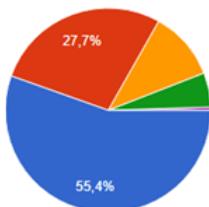


Figure 9 Cardiovascular symptoms

10. Respiratory symptoms: Tightness or constriction in the thorax (chest), choking sensation, sighing, dyspnea (sensation of shortness of breath or respiratory distress): absent 113 (56.8%), mild intensity 51 (25.6%), moderate intensity 27 (16.6%), severe intensity 7 (3.5%), totally disabled 1 (0.5%)

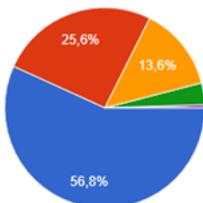


Figure 10 Respiratory symptoms

11. Gastrointestinal symptoms: Swallowing difficulties, flatulence, abdominal pain, burning sensation, abdominal heaviness, nausea, vomiting, gurgling, loose stools, weight loss, constipation: absent 100 (49.5%), mild intensity 62 (30.7%), intensity moderate 33 (16.3%), severe intensity 7 (3.5%), totally disabled 0 (0%)

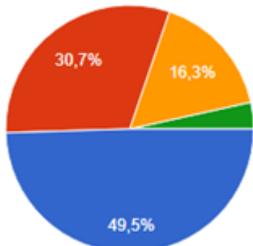


Figure 11 Gastrointestinal symptoms

12. Genitourinary symptoms: Frequent urination, urgent urination, amenorrhea (lack of menstrual period), menorrhagia, frigidity, premature ejaculation, loss of libido, sexual impotence: absent 140 (69.3%), mild intensity 41 (20.3%), moderate intensity 15 (7.4%), severe intensity 5 (2.5%), totally disabled 1 (0.5%)

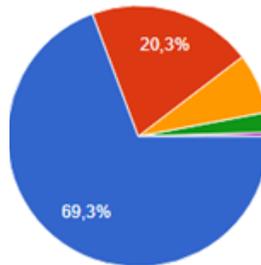


Figure 12 Genitourinary symptoms

13. Autonomic nervous system symptoms: Dry mouth, flushing, paleness, tendency to sweat, dizziness, tension headaches (headache), hairy erectism (goose bumps): absent 103 (51.2%), mild intensity 35 (31.3%), moderate intensity 23 (11.4%), severe intensity 9 (4.5%), totally disabled 1 (0.5%)

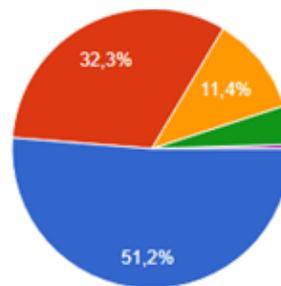


Figure 13 Autonomic nervous system symptoms

14. Behavior during the test: Restlessness, impatience or restlessness, shaking hands, frowning, worried face, sighing or rapid breathing, facial paleness, swallowing saliva, belching, tics: absent 113 (55.9%), mild intensity 59 (29.2%), moderate intensity 21 (10.4%), severe intensity 8 (4%), totally disabled 1 (0.5%)

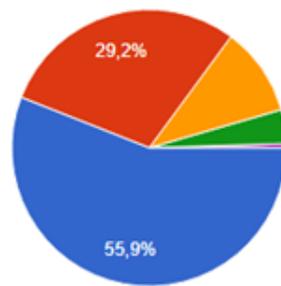


Figure 14 Behavior during the test

**TOTAL RESULTS**

It was possible to show that they did not present anxiety 54 (26.73%), mild anxiety 74 (36.63%), moderate anxiety 70 (34.65%), severe anxiety 4 (1.98%)

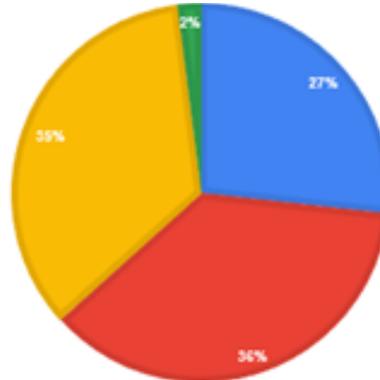


Figure 15 total results

**DISCUSSION**

In the history of humanity there is very little documentation about pandemic outbreaks of a significant proportion such as the one we are currently experiencing. The epidemic caused by the influenza virus in 1918 and the so-called "Spanish flu" that began in the United States caused high mortality worldwide.

The WHO created the International Health Regulations (IHR) in 1851 and its latest version is from 2005. This is an instrument of international law whose objectives are to help countries prevent the spread of diseases. Since 2007, the WHO has declared six PHEICs: H1N1 influenza pandemic (2009), setback in polio eradication (2014), Ebola epidemic in West Africa (2014), Zika virus outbreak (2016), epidemic of Ebola Kivu-Congo (2018-2019) and in 2019-2020 the COVID-19 pandemic.

In the present study, it was carried out during the social distancing phase, with the presence of an overflow of the attention capacity of the national health system, it was observed that the highest percentage was moderate anxiety with 34.65%, which were accompanied by work stress and fear among the professionals who participated, which is documented in this COVID-19 epidemic and in others. Xiao pointed out that COVID-19 carries a high rate of morbidity and mortality from the viral infection, as well as psychological and mental effects. Hawryluck et al, break down the psychological effects of quarantines in times of epidemics.

Pandemics that usually set in suddenly and spread rapidly, generating different adverse impacts, especially social ones. In the study, it was found that 34.65% of health personnel stated that they felt discriminated against for working in the front line, which was more frequently reported by those who worked in the public sphere.

Adequate, fast and clear information from public health officials on the epidemic and government or health measures contribute to reducing the presence of discrimination towards health professionals.

More than 80% of those evaluated expressed fear of suffering from COVID-19, being a source of contagion for their families, being asymptomatic carriers and even dying. Symptoms of anxiety, work stress and psychosomatic manifestations were identified in the same proportion. The magnitude of the presence of somatizations is observed in several of the items of the scales used.

Somatization is an unconscious defense mechanism, through which an emotional discomfort becomes a physical symptom, diverting attention from the psychological conflict that generates anxiety. Somatization is a complex cognitive, affective and behavioral process in which the individual in a stressful life situation experiences physical symptoms and attributes them to a biological disease. Somatization is involved with social cognition, a neurobiological process that allows us to properly interpret Stress, anxiety and fear are emotions or symptomatic expressions that are normal in the initial phases in the face of aggressive stimuli that can be moderated with individual patterns of coping or somatization, and can also spill over, leading to hysteria or panic. All of this is present in epidemic conditions. The presence and confluence of the symptoms of stress, anxiety and fear can be explained by the modifications that take place in the neurotransmitters. A link is established between the decrease in some neurotransmitters and emotions. Reductions in serotonin, dopamine, endorphins, acetylcholine, adrenaline, and y-aminobutyric acid (GABA) are associated with anxiety, obsession, depression, difficulty controlling anger, sadness, and negative emotions.

Fear constitutes a survival mechanism for living beings,

especially humans. The brain amygdala has nuclei that receive sensory information and that, through serotonin, dopamine, and norepinephrine, regulate fear conditioning. The same receptors and neurotransmitters are those that participate in the three symptomatic events explored in the study, the magnitude of the presence of fear symptoms was similar for anxiety and stress, being possible an association between them.

A high risk of infection, in addition to the use of inadequate personal protective equipment, lack of security conditions or unfavorable hiring working conditions, lack of biosanitary or therapeutic supplies, isolation, exhaustion, long hours and lack of family contact are others. factors that contribute to a greater presence of symptoms of stress or anxiety, feelings of panic, depression and anguish in doctors who work in the midst of epidemics. Although some of these factors were not expressly questioned in the study presented, they are all part of the events inherent to epidemics and have been addressed from the psychosocial sphere.

The results obtained confirm that physicians are not immune to mental health problems, the emotional or psychological affection they experience can have a detrimental effect on the ability to make decisions and general well-being. Incessant, severe or chronic stress will generate a depressive tendency, interpersonal social isolation, sleep disturbances, a feeling of frustration or impotence, Burnout Syndrome and difficulty in adequately adapting to events related to the future of the epidemic. Cruz-Valdez et al., In a cross-sectional study in health professionals during the H1N1 epidemic, reported a prevalence of Burnout Syndrome of 24% (emotional fatigue, depersonalization and low personal fulfillment. In the same study, resident physicians, due to work overload, strenuous shifts, and exit restrictions, presented greater emotional fatigue, irritability, insomnia, a feeling of physical overexertion, and especially anxiety.

The strength of this study is to be one of the first to address aspects of mental and occupational health of health personnel on the front line in times of epidemic. It was carried out with an easy-to-fill virtual questionnaire and with GAD-7, a short tool that is well known and validated in different settings. He had adequate reliability with the participants. Its limitations are those of longitudinal studies: it establishes statistical associations and not causalities; the virtual and massive way To avoid abandonment in the middle of the application of the form, it was established as a strategy that the time consumed by the participant was little, a complex condition to establish and that can become another limitation.

Health and government officials are advised to bear in mind that epidemics are changing situations and with different phases. The adoption of mandatory preventive isolation, the implementation of social distancing and hygiene measures, as well as the demands of citizen compliance that seek to reduce the spread of the disease should be prudently enforced. The occupational health authorities and the occupational risk companies to which the doctors who carry out their professional work are affiliated must constantly explore the mental health of these workers, since in the studied group important figures of symptoms of anxiety and work stress were found . Routine clinical assessment will make it possible to identify cases with high levels of anxiety and stress in order to apply therapeutic actions, without neglecting occupational programs that include preventive measures for stress and job anxiety.

**CONCLUSION**

Eight out of ten people who work in clinics or hospitals treating Covid 19 presented symptoms of anxiety or work stress, while six presented symptoms of fear of COVID-19. Moderate anxiety was more frequent among public workers. However, working in these territorial entities was not

associated with a greater presence of any of the three conditions studied. Social distancing and inadequately demanded confinement, as well as citizen non-compliance and the lack of hygiene measures, can become factors that generate fear, anxiety and stress with greater deterioration in the mental health of the community in general and of professionals Of the health.

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