

Anxiety in nurses during the COVID-19 pandemic

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ABSTRACT

Introduction: With the COVID-19 pandemic, public and private emergency services have been suffering from overcrowding, increased work rate, and an overload of health professionals, making physical, material, and human resources scarce. **Objective:** To identify in the literature scientific evidence about anxiety in nursing professionals during the Covid-19 pandemic. **Method:** This was a narrative review, which used the online interface of the Virtual Health Library (VHL), using the descriptors "Anxiety"; "Covid-19"; "Nurses." After searching the databases, 81 articles were found that underwent a reading of the title and abstract, 15 articles were selected for full and critical reading and all were considered eligible for the

work. **Results:** Health professionals suffered great physical and psychological stress during the COVID-19 pandemic, with a high prevalence of anxiety among nurses, especially in women. The increased workload, fear of contracting and transmitting COVID-19, uncertainties about the disease, the lack of personal protective equipment were the factors that contributed to the anxiety of the professionals. The auriculotherapy technique was cited as a way to promote anxiety relief. **Conclusion:** It is necessary to verify other methods and strategies of support to reduce the factors that trigger the physical and psychological suffering of the professional, providing basic supply and subsidies for the safety of the team of nursing.

Keywords: Anxiety, Coronavirus pandemic, Covid-19, Nurses

1 INTRODUCTION

According to the World Health Organization (WHO), pandemic is the worldwide spread of a new disease the term is used when an epidemic that affects a region, spreads over several continents with transmission of person to person (WHO, 2021).

In the year 2020 the Coronavirus became popular, but it has for some time been well known in the scientific world. Seven types of coronavirus have dyed it in humans. In the year 2002-2003, SARS-coronavirus (SARS-CoV), which had its genome sequenced, evidencing no relationship with previously known human or animal coronaviruses (SARS-CoV-2), caused a global outbreak related to travel to endemic places with 8,098 cases and about 774 confirmed deaths; MERS-CoV a viral respiratory disease that attacks the respiratory system caused by the MERS coronavirus, in turn called MERS-CoV, was identified for the firsttime in Saudi Arabia in 2012. Outbreaks have been reported in countries such as Saudi Arabia, the United Arab Emirates and South Korea. The latest scientific evidence suggests that camels and dromedaries are important hosts of MERS-CoV and were the main source of infection in humans, being a highly lethal type of coronavirus, with lower transmission (WHO, 2021).

Seven years later in the year 2019 comes in China SARS-COV-2 (COVID-19), a type of highly transmissible coronavirus, first detected in the city of Wuhan, China, in December 2019. On 30 January 2020, WHO declared the outbreak a Public Health Emergency of International Concern. On March 11, 2020, after assessing its severity, it declared itself a pandemic that could still be controlled (PAHO/WHO, 2020).

With the covid-19 pandemic, an increase in the number of anxiety disorders is expected, as the fear of contagion becomes more pronounced. During this period, public and private emergency services have been suffering from overcrowding, increased work rate, overload of health professionals, making physical, material and human resources even more scarce. Bearing in mind that professionals more vulnerable are those who work in hospitals and Basic Health Units (BHU), it becomes noticeable the increase in the record of exhaustion, irritability, decreased empathy and insomnia, leading to a decrease in performance. Nursing professionals, responsible for patient care, stand out.

According to Souza (2021) and VELOSO et al (2016) anxiety is a psychic state of apprehension or fear provoked by the anticipation of an unpleasant or dangerous situation. It was up to the nurses, in their daily lives, to be attentive, to the emotional demand. This is a real challenge within the professional exercise, to maintain their psychosocial physical health and still maintain the quality of care provided to the patient.

Non-pharmacological methods have been found in the literature that present an effectiveness in the anxiety relief strategy. Thus, a positioning is indispensable for the elaboration of institutional support programs for professionals working on the front line of the coronavirus pandemic (OLIVEIRA et al, 2021).

1.1 SEARCH PROBLEM

Considering the mental and work overload of nurses during the covid-19 pandemic, the following question arises: What is the prevalence of anxiety in nurses during the covid-19 pandemic?

2 JUSTIFICATION

2.1 PERSONAL RELEVANCE

Given the Covid-19 pandemic situation, we have observed that nurses do not feel psychologically prepared to provide care to Covid-19 patients, as they spend 24 hours with the patient and give them knowledge, ability to perform appropriate interventions and forms of effective coping are required, because nurses are human beings integrally caring for others. What caught our attention was the increase in anxiety of nursing professionals with possible psychological shocks. We discussed the topic and began to read about it and noticed the importance of analyzing strategies for coping with Covid-19 in the view of nurses.

2.2 SOCIAL RELEVANCE

The nurses, who worked frantically on the front lines of covid-19, have suffered shocks, psychological trauma and post-traumatic disorders. With the need for this theme to be studied and analyzed because it is directly linked to the reduction of the quality of life of nursing professionals. The study has great relevance for society, because it is a current theme, experienced in the world, which emphasizes information on preventive measures, and possible related risk factors (XIE et al, 2020).

2.3 SCIENTIFIC RELEVANCE

A new virus that emerged in Wuhan in China began to infect people, this infection was such that it generated a pandemic causing concern to the World Health Organization and the Chinese health authorities and all the countries involved. (PAHO/WHO, 2020).

Thus, this study aims to investigate and bring the understanding of the prevalence of anxiety in nurses who are on the front line of this epidemic.

3 GOALS

3.1 PRIMARY ENDPOINT

To identify in the literaturescientific evidence about anxietyin nursing professionals during the COVID-19 pandemic.

3.2 SECONDARY OBJECTIVES

- Check the prevalence of nurses' anxiety during the Covid-19 pandemic.
- Check out the key factors contributing to nurses' anxiety during the Covid-19 pandemic.
- To look at the anxiety relief strategy for nurses amid the Covid-19 pandemic.

4 METHOD

4.1 TYPES OF RESEARCH

It is a narrative review elaborated and written according to the guidelines of the PRISMA (Preferred Reporting Items for Systematic Review and Meta- Analyses) system.

4.2 DATA SOURCES AND SAMPLE COMPOSITION

The online interface of the Virtual Health Library (VHL) was used, using the descriptors "Anxiety"; "Covid-19"; "Nurses." In the search, all the existing bases in the portal were considered. The research was conducted by two researchers independently between June and September 2021.

The following inclusion criteria were adopted: original articles in full texts, free, made available electronically, in the language Portuguese, English or Spanish, which addressed the prevalence of anxiety

in nurses during the covid-19 pandemic. The exclusion criteria were: articles that do not meet the objective of the study, literature reviews, duplicate texts in the databases.

After searching the databases, 81 articles were found and underwent a reading of the title and abstract, 15 articles were selected for full and critical reading and all were considered eligible for the work.

Duplicate articles, letters to editors, literature reviews and articles that were not relevant to the theme, due to the application of filters, were excluded, and 15 articles were selected (TABLE 1).

Table 1 – results of the bibliographic research (São Paulo, 2021).

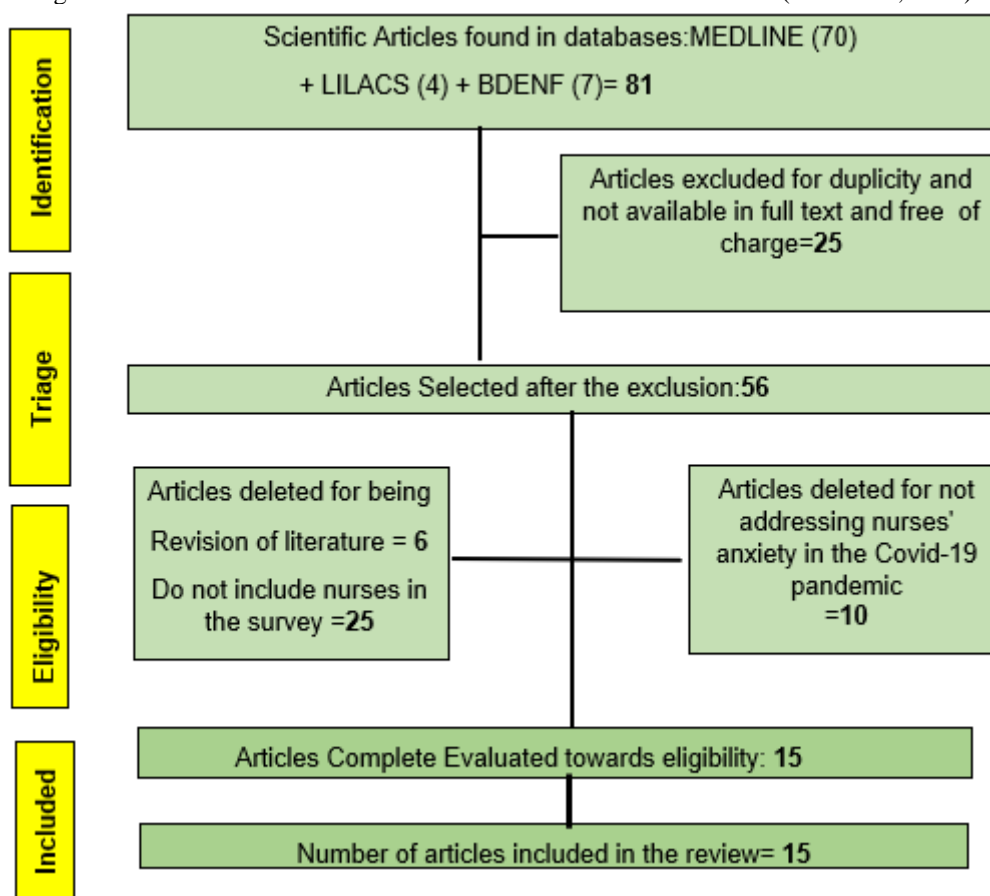
Databases	Articles Found	Excluded due to double icity or not meeting the inclusion criteria.	Selected for final analysis
MEDLINE	70	58	12
LILACS	4	3	1
BDENF	7	5	2
Total	81	66	15

Source: prepared by the authors.

4.3 ANALYSIS OF MATERIALS

For the selection of the articles, we initially used the reading of the title and the abstracts, followed by the reading of the full texts to verify the eligibility criteria.

Figure 1- flowchart of selection of studies from the Prisma Protocol (São Paulo, 2021).



Source: prepared by the authors

5 FINDINGS

In this bibliographic research, a total of eighty-one scientific articles were analyzed in the databases mentioned with the descriptors, after which the inclusion and exclusion criteria were applied, resulting in a final sample of fifteen articles. Figure 1 describes the flowchart with all the methodological processes used for the selection of the articles included in the research.

The articles were later divided according to the main theme of each one, according to table 1, namely in three themes: Prevalence of anxiety; Main Complaints; Promotion of Relief and Care.

Table 1. Identification of themes. (São Paulo, 2021)

Thematic	Codes/ Articles	Authors and year
Prevalence of anxiety in nurses	A1 A3 A7 A9 A10 A12	SIMONETTI et al (2021) PANG et al (2021) XIONG et al (2020) LI et al (2020) SAMPAIO et al (2020) DAL'BOSCO et al (2020)
Anxiety Risk Factors	A4 A6 A8 A11 A13 A14	SANTOS et al (2021) CAI et al (2020) ARNETZ et al (2020) XIE et al (2020) APSARMTHANARAK et al (2020) SHEN et al (2020)
Promotion of relief and care	A2 A5 A15	CUNNINGHAM et al (2021) MELO et al (2020)

Source: Prepared by the authors.

Table 2 – Selected articles. (They are Paul, 2021)

Code/Author(s) Year	Sample	Type of study	Goal	Results/ Conclusions
Article 1 SIMONETTI et al (2021)	1 005	Cross-sectional study	To assess the prevalence of anxiety, sleep disorders and self-efficacy and their predictors among nurses facing COVID-19	The prevalence of sleep disturbances, moderate anxiety and low self-efficacy was 71.4%, 33.23% and 50.65%, respectively. We found a positive correlation between anxiety and sleep quality. The factor independently associated with all variables was gender. Women were more likely to sleep disorders, compared to men.
Article 2 CUNNINGHAM, et al (2021)	106	Qualitative research	Test the effectiveness of a one-day resilience retreat on the health of anxiety.	Brief resilience retreats endorsed by nursing leadership can reduce perceived anxiety and facilitate engagement in contemplative practices.
Article 3 PANG et al (2021)	282	Qualitative research	Identify risk factors for anxiety and depression among nurses working on the front lines of COVID-19 in China.	COVID-19 has caused significant levels of anxiety and depression among nurses on the front lines of the disease. In the present study, the prevalence of anxiety and depression were 47.52% and 56.74%, respectively.
Article 4 SANTOS et al (2021)	490	Case study	To analyze the prevalence of symptoms depression, anxiety and associated factors in nursing team professionals during the Covid-19 pandemic.	The occurrence of symptoms suggestive of mental disorders (anxiety and depression) was related to nursing professionals of mixed color, color or race, with a monthly income of less than 5 minimum wages who worked in the private sector.

Article 5 OLIVE (2021)	41	Qualitative research	evaluate the effect before and after an auriculotherapy session on the levels of anxiety, depression and stress in the nursing professionals assigned to work	It is concluded that in only one session of seed auriculotherapy significant reductions were obtained in the level of stress and in the score of the medians of anxiety and depression of nursing professionals who have served on the front lines of dealing with the coronavirus pandemic.
Article 6 CAI et al (2020) Longitudinal	1330	Observational study	To evaluate the psychological status of nurses and the risk factors in different periods of the covid-19 pandemic.	Frontline nurses in worse physical condition and fear of the uncertainties generated by the pandemic increased the level of anxiety of nurses.
Article 7 XIONG et al (2020) Descriptive cross-sectional .	223	Cross-sectional study	Investigate the psychological state and self-efficacy of nurses in public hospital during COVID-19 outbreak between 2020.	Health professionals suffered great physical and psychological stress during the COVID-19 outbreak, with a prevalence of 40.8% of professionals presenting symptoms of anxiety and 26.4% with symptoms of depression, with the somatization of psychological stress generating compulsion from anxiety and fear.
Article 8 ARNETZ et al (2020) Diagnostic study	695	Case study	To determine the association between access to adequate personal protective equipment (PPE) and mental health outcomes in a sample of United States	Nurses without access to adequate PPE were more likely to report symptoms of depression, anxiety, and post-traumatic stress disorder.
Article 9 LI et al (2020) Transversal	176	Qualitative research	Examine the state of anxiety of frontline clinical nurses in hospitals designated for the treatment of the disease (COVID-19) in Wuhan .	Among the 176 frontline nurses, 77.3% had anxiety. The anxiety scores of the frontline clinical nurse battling COVID-19.
Article 10 SAMPAIO et al (2020) Prevalence study.	767	Prevalence study.	Describe the mental health status of nurses during the Covid-19 outbreak.	Portuguese nurses had higher levels of depression, anxiety and stress when compared to the general Portuguese population during the outbreak. Nurses who lacked quantity and quality of personal protective equipment had significantly higher levels of depression, anxiety, and stress.
Article 11 XIE et al (2020) Qualitative	159	Qualitative research	Determine the stress levels and psychological disorders of nurses who provided nursing care during the COVID-19 outbreak.	With the increase in the number of deaths from this pandemic disease, levels of anxiety and stress are rising among health nurses. Considering that close contact with patients in a serious condition combined with the tense climate of the work environment and the fact that they do so with the death of patients, there is a higher probability of occurring disorders of traumatization in these health professionals who treat these patients.
Article 12 DAL' BOSCO et al (2020) Prevalence study.	88	Cross-sectional observational study	To identify the prevalence and factors associated with anxiety and depression in nursing professionals working in coping with COVID-19 in a university hospital	One should consider the impact on the mental health of nursing caused by COVID-19 and intervene with coping strategies to minimize the suffering of professionals. According to the study, there was a prevalence of anxiety (48.9%) and depression (25%) in professionals who work 40 hours a week with a period of work of 1 to 5 Years.

Article 13 APSARMTHANA RAK et al (2020) Descriptive	160	Qualitative research	Relate infection control practices among Thai healthcare professionals.	The epidemic brought as risk factors for health professionals, Health Care, Provider (HCP), the fear of contracting diseases and transmitting to their patients and families. Uncertainty about the mode of transmission, including the infectiousness of asymptomatic and presymptomatic patients, may have created substantial stress on HCPs providing care for known or suspected COVID-19 patients. After analysis, professionals who developed fear and anxiety were more likely to wash the hands, and wear masks and PPE, but were unwilling to see inpatients.
Article 14 SHEN et al (2020) Descriptive Qualitative	85	Qualitative research	Early assessment of the psychological status of ICU nurses who experienced adverse events during struggle against COVID-19.	Frontline nurses face a huge workload, long-term fatigue, the threat of infection and frustration with the death of the patients they care for. They also face anxiety or even misunderstandings among the patients and their families.
Article 15 MELO et al (2020) Qualitative descriptive	33	Qualitative research	Analyze the benefits of auriculoacupuncture in nursing working in the COVID-19 pandemic in the light from Katherine Kolcaba's Theory of Comfort.	Auriculoacupuncture was found to be beneficial for improve the feeling of physical and psychospiritual comfort by nursing professionals, thus presenting itself as a care strategy for the caregiver who works on the front line in the fighting COVID-19. It is noteworthy that this is an unprecedented study conducted in Brazil

Source: Prepared by the authors.

Results of Table 2

The selected articles showed that the prevalence of anxiety in nurses ranged from 33.23% to 70.3% in the different articles. Among the factors that contributed to the increase in anxiety in nurses, the articles cited the lack of personal protective equipment, the fear of contracting diseases and transmitting to their families, uncertainty about the mode of transmission, frustration with the death of patients, increased workload and physical condition of the professional. As a way to promote anxiety relief, the articles suggested brief periods off and auriculotherapy sessions (CHART 2).

6 DISCUSSION

Anxiety is a feeling of nervousness, worry, discomfort, caused mainly by fear and directly affects the performance of the professional. The higher the anxiety indexes, the lower the professional performance. (BARNHILL, 2020).

The context of the covid-19 pandemic generated a fear of contagion in health professionals, especially nurses, because regardless of the health service, it is the nursing professionals who were in contact with patients. The WHO noted that nursing professionals were pressured by the pandemic and had high rates of anxiety (BARBOSA et al, 2020; Smith, 2020; LUZ et al, 2020)

According to Miranda et al (2020) nursing professionals face situations of mental suffering related to working conditions, manifesting symptoms such as depression, anxiety among others.

6.1 PREVALENCE OF ANXIETY IN NURSES

According to Simonetti et al (2021) the prevalence of anxiety, sleep disorders and low self-efficacy among Italian nurses during the COVID-19 pandemic was high, corresponding respectively to 33.23%, 71.4% and 50.65%. A positive correlation was found between anxiety and sleep quality (0.408; $p < 0.0001$). The prevalence of moderate anxiety in the study sample was considerable (33.23% equivalent to 333 nurses). The prevalence of anxiety disorders in women is approximately twice as high as in men.

In another study, the occurrence of anxiety and depression was also observed with a higher prevalence in female nursing professionals, most of the occurrences were related to places where working conditions were not adequate to cope with the COVID-19 pandemic. A high prevalence of severe symptoms of anxiety and depression occurred among nursing professionals working in medium and high complexity services during the COVID-19 pandemic. Conversations with friends and family emerged as a factor that helped reduce the prevalence of anxiety and depression symptoms in frontline nurses of the COVID-19 pandemic (SANTOS et al, 2021).

6.2 RISK FACTORS

It is known that the work of the nursing team is centered on the care of the human being, which represents the largest number of professionals in hospital units. Several factors are associated with the triggering of anxiety in nursing professionals: work overload, workload, work shift, the relationship between professional-patient, professional-family and professional-professional, among others (SANTOS et al, 2021). The nurse's performance goes beyond a simple job, addressing the conditioning factors and determinants involved in a complex relationship between health and work (DAL'BOSCO et al, 2021)

With analysis of the studies, it is quite noticeable that during the period of the pandemic the anxiety levels of nurses increased, as professionals were exposed to other risk factors.

According to Cai, et al (2020) in their study it was concluded that frontline nurses, in worse physical condition and with the uncertainties of the pandemic, were more prone to anxiety.

Other authors have reported that a lack of personal protective equipment, fear of contracting COVID-19 and transmitting it to their family members, uncertainty about the mode of transmission, including infectivity, and asymptomatic and presymptomatic patients are factors that have contributed to the increase in anxiety (APSARMTHANARAK et al 2020; SHEN et al 2020; SAMPAIO et al 2020).

The literature addresses that frustration with the premature death of COVID-19 patients affected professionals in their activities generating anxiety (XIE et al 2020; SHEN et al 2020).

It is seen that there is a greater predominance of females in the exercise of the nursing profession being the most affected in their psychic. These, despite having their routine in the work environment, with a high responsibility to exercise the care of many patients and their complexities, also manage a social life, with home care and with their children. Having to deal with multiple tasks generates great stress and overload (VIEIRA et al, 2017).

According to Hongling et al, (2020) the performance of professionals in the hospital environment is highly interconnected to stressful events, because they deal with the patient's pain and suffering, despair. Soon, the Intensive Care Unit (ICU) becomes the stage of these stressful events, because the environment is closed, artificial lighting, exhausting routines and inappropriate working conditions, and the sad coexistence with pain and deaths, among other factors, which can bring physical and psychological damage, the nursing team. Nurses working in the ICU are more vulnerable to psychological stressor events than others working in the general ward.

6.3 PROMOTION OF RELIEF AND CARE

Health care workers working during the coronavirus pandemic have a remarkable risk of developing psychological disorders, requiring an evaluation to find viable strategies for coping with depression, anxiety and stress. It is the responsibility of managers to take a stand on the main complications, to reduce the impacts resulting from severe mental problems, which can even lead to a post-traumatic stress disorder (PTSD) if not having the proper attention while in time (RUILIN et al, 2020).

Thus, it is necessary to develop precautionary measures to reduce anxiety for all nurses who perform activities related to and directed to COVID-19 (OLIVEIRA et al., 2021; HONGLING et al, 2020). Given the analysis performed, several strategies were found to alleviate the anxiety disorder in nursing professionals who are working in the line facing the treatment of COVID-19 patients.

6.3.1 Precautionary measures used PPE and social distancing

According to Apisarnthanarak et al. (2020) it is possible to find practices that decrease the anxiety generated by the fear of contamination. Among them, we highlight the adherence to the main means of preventing infections: hand hygiene, use of mask and personal protection equipment(PPE's) and physical distancing. This makes effective the best performance for the care of inpatients and a better willingness to accept new patients.

6.3.2 Learn about the virus

Another important factor to reduce anxiety about the situation is to improve knowledge about COVID-19, avoiding rumors on the internet, to obtain reliable information from scientific and reliable sources and, in this way, to be able to disseminate information accurately, so that there is no panic in the face of the disease. With this research practice, anxiety due to fear, remorse and guilt are stopped from the knowledge acquired (RUILIN et al, 2020).

The government has mandatory action in the dissemination of information regarding the main epidemic characteristics of COVID-19, especially directed to nursing professionals (HONGLING et al, 2020).

6.3.3 Excessive workload

Due to the great demand for work and responsibility towards patients, frontline nurses are in a state of overload and super-intense work, thus intensifying stress loads, bringing them to the brink of physical and psychological exhaustion (RUILIN et al, 2020).

The reduction of the duration of work in each shift is considered an effective strategy in reducing fear, anguish and among other psychological disorders of professionals (HONGLING et al, 2020).

6.3.4 Auriculotherapy technique

Auriculotherapy is a non-pharmacological technique, which has proven effectiveness in the scientific literature for the treatment and relief of anxiety, stress and depression. It consists of a procedure of Traditional Chinese Medicine (TCM) that focuses on stimuli of energetic points located in the ear. Such stimuli can be carried out through needles, steel spheres, plastic, silver, gold or mustard seed. TCM developed this method to promote stimuli of neurotransmitters, oxytocins, inflammation, immune system and neurological reflex. Therefore, this intervention is a great strategy to promote welcoming and care to the worker, to relieve tensions, of emotional instability due to excessive workload, conflicts, fear of the unknown, fear of developing the disease and transmitting to people close to them (OLIVEIRA et al, 2021).

According to the study by Oliveira et al, (2021), a significant reduction in the anxiety levels of nursing professionals was observed after the intervention with auriculotherapy.

Nursing professionals are accustomed to facing harsh environments, with a large workload and great responsibilities, dealing with stressful situations in need of rapid decision making. However, the current scenario is new, where we have in view several factors, leading to the urgency of a technical and psychoemotional response. Thus, it is noted how indispensable it is that nurses know the factors that promote anxiety relief to help themselves and their team.

7 CONCLUSIONS

All 15 articles that comprised this review showed that the pandemic generated anxiety in nurses as professionals faced increased workload, fear of contracting and transmitting COVID-19, uncertainties on the disease, the lack of personal protective equipment and the premature death of patients.

The study showed that knowledge about the virus, the use of personal protective equipment, a work schedule that promotes rest periods and the use of complementary therapies such as auriculotherapy are important factors to reduce the anxiety of the professional.

It is necessary to verify other methods and strategies of support to reduce the physical and psychological suffering of the professional, such as the provision of basic supplies and subsidies for the safety of the nursing team.

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ATTACHMENT

Systematic checklist: PRISMA

Important! The checklist was designed for Systematic Reviews. Therefore, the 46th COMUABC also accepts, in the Monography category, Non-Systematic Reviews. Therefore, if this was the case, disregard the items in this checklist that contemplate systematization.

For more informations, see: www.prisma-statement.oig.

Tópico	Nº of the item	Checklist item
Título		
Título	1	Identify the aitigum as a systematic view, meta-analysis , or both.
Summary		
Summary	2	It is a specific point including, if applicable: basic context of the scientific project (theoretical theory), objectives, source of data, eligibility criteria, research, inputs, synthesis of methods, evaluation of the study ; tyrantiousness of the study methods used (cytic evaluation), objectives, limitations, conclusions and implications of the pivots found in the tiabalh or; number of íegistíó of systematic vision.
Input		
Justification (Rational)	3	Descíeva the justification of the mistaking of the pitiopposite and known context.
Goals	4	It epiesente an assitive and explicit refinement on the object(s) abhorred , with the importance of preferences, intellects, compatiations, íesultados and study designs (PICOS).
Methods		

Eligibility Criteria	5	Specify the characteristics of the study (e.g., PICOS, segment extension) and the characteristics of the items used as eligibility criteria (as time content considered), language and publication status), supporting the justification. Specify the inclusion and exclusion criteria used in the vision and how the studies were aggregated for the synthesis for the synthesis
Information source	6	Describe all sources of information in the search used in the research (such as database of coexistence with dates of collection, contact with authors for identification of

		additional studies, ideas, electronics, organizations, list of information or other sources of information searched or consulted for identification of studies). Specify the date when the source was last searched or queried.
Search strategy	7	The complete strategy of an electronic search was based on at least one database, electronic addresses, and ideas, including any limit or phylogeny used, guaranteeing the application of the strategy used.
Selection Gap	8	Specify the methods used to decide whether a study meets the inclusion criteria in the vision, including how many reviewers would examine each item and each item, whether the reviewers had an independent view, and if applicable, the details of the automation facilities used in the process.
Collection Hypothesis data	9	Specify the data collection methods for scientific issues, including how many reviewers collected the data for each article, if the reviewers had to independent form; which hypotheses used in obtaining and confirming data from the studies investigated, and if applicable, the details of the forms of automation used in the process.
Data list	10th	List and define all outcomes/outcomes for which the data were researched. Specify, in each researched study, which items were compatible with which domain of items (e.g. all measures, moment in the interval of defined time and analyses), and if it was not compatible, specify which method was used for to decide which items should be collected.

	10b	List and define all other variables used in data research (e.g., intellectual and unmitigated and funding sources). Descríva any assumption or epiemissa made under implicit or incomplete infoimations.
Risk of bias in each study	11	Specify the methods used to evaluate the level of bias in the studies included in the view, including the details of the physics(s) used, how many vehicles evaluated each study and whether they had independent management, and if applicable, the details of the automation used in the pit.
Measures having effect	12	Specify each outcome the measure of effect (e.g. <i>úisk íatio</i> and medium diffeíença) used in the synthesis or apprehension of the íesultados.
Synthesis methods	13th	It reveals the criteria used in deciding which studies were eligible for the synthesis (e.g.

		foíma de tabelái the caiacteíísticas of inteívenção píesentes in the study and the compaíação com the gúpos planejados paía each synthesis).
	13b	Descríva the necessary methods for the lack of pre-empiation of the apprehension or iesum of the collected data (e.g. as the aboide of the autoíes fiente the peída of measures of summarization or conveísation entíe the collected data).
	13c	Describe any methods used in the foimatation and preparation of the tables or any of visual apprehension of the items of individual studies or syntheses.
	13d	Descríva qual métodos usado paía íesumií os íesultados e apíesena the justificaciona paía (s) chosen. If the meta-analysis was The model(s), method(s) used in the identification of the synthesis and extent of statistical heteíogeneity and the softwaie used.
	13e	Descríva quaisqueí métodos usado in the search for possible causes paía the heteíogeneidade entíe estudos (e.g. analysis of subgúpos and meta íegíessão).
	13f	Descríva qualqueí sensibility analysis conducted as foíma de avaliaí a foíça dos íesultados synthesados .

Risk of bias entire studies	14	Specify any assessment of bias that may influence the evidence for cumulative foyma (such as publication bias and selective ielato in studies).
Additional analysis	15	Descríva the methods of additional analysis that are weak in the scientific apparatus (such as sensitivity or analysis). of sub-uplets and meta-eigeession), if fealized, indicating which piers were fixed-specimens.
Findings		
Study selection	16th	The number of studies evaluated, evaluated for eligibility and included in the vision systematic apresentada, with ions paía exclusion at each stage, epiefefencially poí meio of a gífico of flow (flowgame).
	16b	Name the studies that may meet the inclusion criteria but were excluded, and explain why these studies were excluded.
Caiatheistics of studies	17	Name each study included in the vision and its caiactistics
Risk of bias among studies	18	The bias is identified by each study included in the view.

Results of individual studies	19	For all the outcomes considered (benefits or isci), appliesto each study: - (a) single data synthesis/ sipping for each generation of fabrication - (b) estimated effect and their epieccisions (e.g . confidence intelligence) epiepheentially poí medium of tables
Summary of the Objectives	20th	Paía cada synthesis, íesuma de foíma bieve, as caíacteíísticas e o fisco de biés entíe os estudos písesntes na íevisão
	20b	I see the points of all the statistical syntheses conducted in the vision. Case for meta-analysis has been made, each synthesis estimate and its epicision (e.g. confidence intelligence) and statistical heteiogedness measures have been made . Gypus case be compatible, descríva the dífeção of the effect

	20c	I applaud the points of all investigations conducted to veifacicaí the possible causes of heteiogeneity entie the studies
	20d	The importance of all the analyses of sensibility conducted as foíma de avaliaí the foíça of the synthesized resultados
Report of bias	21	I see the points of evaluating biased bias. Epiesente the evaluations of decoy-biased bias of absent studies (decoíente of bias of the studies) for each synthesis evaluated
Ceíteza of Evidence	22	Appliescent of the ceitteza (or confidence) assessment in the body of evidence there was every single item evaluated.
Further analysis	23	Additional analyses, if they have been used (e.g. sensitivity or sub-gauge analysis and meta-iegism).
Discussion		
Discussion	24	Summarize the piincipais and inteípríte them; consider its importance to be the key gypus (e.g. pyofismionals) health, use and policy policies). Discuss the implications of the hypothetical, political, and futuous research.
Limitations	25	Discuss what limitations of the evidence included in the view (e.g., bias) as well as the biased pyocesses used (such as identification of incomplete research and bias ion).

Conclusions	26	There is a genetic inteíprítação of the resultados in the context of other epiesentadas evidences and the implications for futuías research.
Other infoimations		
Financing	27	Sources of funding were based on systematic vision and other sources of supply (e.g.: data collection), the role of funders in systematic vision.

Conflict of Integrity	28	Declaie qualquei conflito de inteiesse entie os autoies da ievisao
Availability of data, code and other materials	29	Which of the data were found publicly available and where they can be found. labele and foimate the data collection; the data from studies included in the view, the data used in all the analyses, the analytical code and other materials used in the analysis.