

Occupational stress in the context of COVID-19: analysis based on Neuman's theory

estresse ocupacional no contexto da COVID-19: análise fundamentada na teoria de Neuman
Estrés laboral en el contexto de la COVID-19: análisis fundamentado en la teoría de Neuman

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Keywords

COVID-19; Coronavirus infections;; Disease prevention; Nursing theory; Occupational stress; Pandemics

Descritores

COVID-19; Infecções por coronavírus; Pandemias; Estresse ocupacional; Prevenção de doenças; Teoria de enfermagem

Descriptores

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Abstract

Objective: To identify occupational stressors in healthcare professionals and interventions focused on prevention in the context of COVID-19, based on Betty Neuman's systems model.

Method: A literature review was conducted with the scoping review method, according to Joanna Briggs Institute in the databases The Cochrane Library, Scopus, Web of Science, National Library of Medicine (MEDLINE/PubMed), The Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Latin American and Caribbean Literature on Health Sciences (LILACS). Studies related to stressors and interventions aimed at prevention in the face of occupational stress in healthcare professionals in the context of COVID-19, published in any language and available, in full, free of charge were included. Data were analyzed in the light of Betty Neuman's Theory.

Results: The final sample consisted of 27 articles. The stressors identified were categorized into intrapersonal: fear of contagion and restricted knowledge of the disease; interpersonal: change in social relationships and fear of transmission to family members, experiencing the illness of colleagues and family members and loss of loved ones; inadequate health system and work overload. Interventions focused on prevention were indexed according to the level of primary, secondary and tertiary healthcare.

Conclusion: Most studies have emphasized primary prevention measures. The use of the theoretical framework will allow nurses and health managers to make decisions and develop future interventions for the management of occupational stress of professionals who deal daily with COVID-19.

Resumo

Objetivo: Identificar os estressores ocupacionais em profissionais de saúde e as intervenções voltadas para a prevenção no contexto da COVID-19, fundamentado no Modelo de Sistemas de Betty Neuman.

Método: Realizou-se uma revisão da literatura com o método *scoping review*, conforme Joanna Briggs Institute nas bases de dados The Cochrane Library, Scopus, Web of Science, National Library of Medicine (MEDLINE/PubMed), The Cumulative Index to Nursing and Allied Health Literature (CINAHL) e Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS). Incluíram-se os estudos relacionados aos fatores estressores e as intervenções voltadas para a prevenção diante do estresse ocupacional em profissionais de saúde no contexto da COVID-19, publicados em qualquer idioma e disponíveis, na íntegra, gratuitamente. Os dados foram analisados à luz da Teoria de Betty Neuman.

Resultados: A amostra final foi composta por 27 artigos. Os estressores identificados foram categorizados em intrapessoais: medo de contágio e conhecimento restrito da doença; interpessoais: mudança nos relacionamentos sociais e receio de transmissão aos familiares, vivenciar o adoecimento de colegas e

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familiares e perda de entes queridos; e extrapessoais: sistema de saúde inadequado e sobrecarga de trabalho. As intervenções focadas na prevenção foram elencadas segundo o nível de atenção à saúde primário, secundário e terciário.

Conclusão: A maioria dos estudos enfatizaram medidas de prevenção primária. A utilização do referencial teórico permitirá ao enfermeiro e gestores de saúde a tomada de decisão e elaboração de futuras intervenções para o manejo do estresse ocupacional dos profissionais que lidam diariamente com a COVID-19.

Resumen

Objetivo: Identificar los estresores laborales en profesionales de la salud y las intervenciones dirigidas a la prevención en el contexto de la COVID-19, con fundamentación en el modelo de sistemas de Betty Neuman.

Método: Se realizó una revisión de la literatura con el método *scoping review*, de acuerdo con el *Joanna Briggs Institute* en las bases de datos The Cochrane Library, Scopus, Web of Science, National Library of Medicine (MEDLINE/PubMed), The Cumulative Index to Nursing and Allied Health Literature (CINAHL) y Literatura Latinoamericana y del Caribe en Ciencias de la Salud (LILACS). Se incluyeron estudios relacionados con los factores estresores y las intervenciones dirigidas a la prevención ante el estrés laboral en profesionales de la salud en el contexto de la COVID-19, publicados en cualquier idioma y con texto completo disponible gratuitamente. Los datos fueron analizados de acuerdo con la teoría de Betty Neuman.

Resultados: La muestra final estuvo compuesta por 27 artículos. Los estresores identificados fueron categorizados en intrapersonales: miedo al contagio y conocimiento limitado de la enfermedad; interpersonales: cambios en las relaciones sociales y temor de transmisión a familiares, ver a compañeros y familiares enfermarse y pérdida de seres queridos; y extrapersonales: sistema de salud inadecuado y sobrecarga de trabajo. Las intervenciones centradas en la prevención fueron enumeradas según el nivel de atención en salud primaria, secundaria y terciaria.

Conclusión: La mayoría de los estudios enfatizan medidas de prevención primaria. La utilización del marco referencial teórico permitirá que los enfermeros y administradores de la salud puedan tomar decisiones y elaborar futuras intervenciones para el manejo del estrés laboral de los profesionales que lidian a diario con la COVID-19.

Introduction

First identified in China in December 2019, the disease of the new coronavirus (COVID-19) caused by the SARS-COV-2 virus has spread worldwide, causing a global impact and leading health organizations to consider this pandemic an emergency health situation of international interest.⁽¹⁾

The COVID-19 pandemic, in addition to evidencing the high mortality rate of viral infection, revealed high demand for mental health for the rest of the world due to the psychological consequences caused by the new coronavirus. The uncertainty and unpredictability of the pandemic outbreak have a considerably high potential for the emergence of psychological stress among healthcare professionals who are exposed and in direct contact with suspected and/or confirmed cases.⁽²⁾

Health workers, in their daily practice, provide direct care to patients and are exposed to risks correlated to work activity, consequently, can be affected by several health problems, among them, occupational stress. Incessant stress can trigger psychological problems of anxiety, fear, panic attacks, post-traumatic symptoms, psychological distress, stigma, depressive tendencies, sleep disturbances, helplessness, social isolation as well as concern about exposure and contagion to friends and relatives.⁽²⁾

Occupational stress can be defined as the result of workers' inability to meet work expectations, reflected in harmful physical and psychological responses.⁽³⁾ It is emphasized that new situations, such as the context of COVID-19, demand greater adaptive capacity of workers, which can hinder the management of such situations and favor their implementation.

In the context of workers' health, nursing theorist Betty Neuman brought great contributions, as the individual is characterized as a system open to interactions with the environment in which they are inserted and that constantly seeks physical and mental stability.⁽⁴⁾ Thus, the present study is based on this theory to understand the issues underlying the stress related to coping with the COVID-19 pandemic, justifying the realization of this article.

Considering the impact of occupational stress on workers' health in the context of the COVID-19 pandemic, it is necessary to identify occupational stressors and stress coping strategies, constituting a subsidy for the elaboration of institutional protocols for workers' healthcare, health promotion and disease prevention actions, justifying the realization of this study.⁽²⁾

Furthermore, considering the scarcity of Brazilian researches that address this issue, the topicality of the subject, it is believed that the evidenced data will contribute to the promotion of

the Brazilian literature on healthcare professionals' mental health in coping with COVID-19, as well as the intensification of preventive practices and treatment of psychological manifestations such as anxiety and depression, focusing on the promotion of mental health in an occupational environment, demonstrating the relevance of this investigation.

Identify occupational stressors in healthcare professionals and interventions aimed at preventing occupational stress in the context of COVID-19, based on Betty Neuman's Systems Model.

Methods

This is a Scoping Review, according to Joanna Briggs Institute (JBI)⁶. For the elaboration of the research question, the PCC strategy was used (P: Population, C: Concept and C: Context. P- healthcare professionals were defined; C- stressors and interventions aimed at preventing occupational stress and C – COVID-19 pandemic. Based on these definitions, the guiding question was established: "What are the stressors and interventions aimed at preventing occupational stress in healthcare professionals facing the COVID-19 pandemic?".

Primary studies related to stressors and/or interventions focused on the prevention of occupational stress in healthcare professionals facing the COVID-19 pandemic, published in any language and available, in full, free of charge, were included. Editorials, articles available only in summary, repeated and that did not make a significant approach to the proposed theme were excluded.

A bibliographic survey was carried out in April 2021 and there was no time limitation. The Descriptors in Health Sciences (DeCS)/Medical Subject Headings (MeSH) and Boolean "OR" and "AND" with the following descriptors were used: Occupational stress [MeSH terms], Burnout [MeSH terms], Health personnel [MeSH terms], Nurses [MeSH terms], Dentistry [MeSH terms], Physiotherapists [MeSH terms], Occupational Therapists [MeSH terms], Physicians [MeSH terms], Speech Therapy [MeSH terms], Pandemic [MeSH terms], Epidemics [MeSH terms],

Coronavirus infections [MeSH terms], COVID-19 [MeSH terms], Community-Acquired Infections [MeSH terms].

The Cochrane Library, Scopus, Web of Science, National Library of Medicine (MEDLINE/PubMed), The Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin American and Caribbean Literature on Health Sciences (LILACS) databases were used.

In the first stage, the search strategy was carried out using search expressions in each database. In The Cochrane Library, "Title, abstract, keyword" was selected and used (Occupational stress OR Burnout) AND (Health personnel OR Nurses OR Dentistry OR Physiotherapists OR Occupational Therapists OR Physicians OR Speech Therapy) AND (Pandemic OR Epidemics OR Coronavirus infections OR COVID-19 OR Community-Acquired Infections). In Scopus, the field was chosen "Search within" - TITLE -ABS- KEY ("Occupational stress" OR "Burnout") AND ("Health personnel" OR "Nurses" OR "Dentistry" OR "Physiotherapists" OR "Occupational Therapists" OR "Physicians" OR "Speech Therapy") AND ("Pandemic" OR "Epidemics" OR "Coronavirus infections" OR "COVID-19" OR "Community-Acquired Infections").

In turn, in the Web of Sciences the field "You searched for: TOPIC: ("Occupational stress" OR "Burnout") AND ("Health personnel" OR "Nurses" OR "Dentistry" OR "Physiotherapists" OR "Occupational Therapists" OR "Physicians" OR "Speech Therapy") AND ("Pandemic" OR "Epidemics" OR "Coronavirus infections" OR "COVID-19" OR "Community-Acquired Infections"). In the MEDLINE/PubMed and CINAHL databases, in the "Search" field, the following crossover was used (Occupational stress OR Burnout) AND (Health personnel OR Nurses OR Dentistry OR Physiotherapists OR Occupational Therapists OR Physicians OR Speech Therapy) AND (Pandemic OR Epidemics OR Coronavirus infections OR COVID-19 OR Community-Acquired Infections). Finally, in LILACS, in the "title, abstract, subject" field, the crossing was used (Occupational stress OR Burnout) AND

(Health personnel OR Nurses OR Dentistry OR Physiotherapists OR Occupational Therapists OR Physicians OR Speech Therapy) AND (Pandemic OR Epidemics OR Coronavirus infections OR COVID-19 OR Community-Acquired Infections).

The second stage of the search corresponded to the non-selection of publications that met the exclusion criteria. In Scopus, the “all open access and article” filters were used, while in CINAHL, PubMed and LILACS, the “free full text” filter was selected. It should be noted that in PubMed, the following fields were also listed “clinical trial, meta-analysis, randomized controlled trial, review, systematic review). In turn, the third stage was configured in analysis of titles and abstracts and the third stage, in the reading of the full 44 articles, which were present in the following databases: 01 Cochrane, 07 articles in Scopus, 04 articles in CINAHL and 32 on PubMed. The next step delimited the final sample, which corresponded to 27 articles, which were distributed in the following databases: 04 Scopus, 03 CINAHL and 20 PubMed.

The search and selection of studies was performed by two independent researchers and possible disagreements were resolved by consensus or by a third researcher with the aim of confirming the eligibility of a given publication. The selected studies were exported to the EndNote® reference manager software in order to identify duplicates and gather all publications.

The study search process is presented in the flowchart below (Figure 1), according to JBI recommendations, according to the checklist adapted from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The methodological quality of the studies was not evaluated because it is a scoping review.⁽⁶⁾

For the categorization of the findings, Betty Neuman's theoretical framework was used;⁽⁵⁾ thus, the data were classified according to the type of stressors (intrapersonal, interpersonal and extrapersonal) and the type of prevention interventions (primary, secondary or tertiary).

In Betty Neuman's Systems Model, the theorist considered that the individual is subject to stressors arising from their relationship with other people

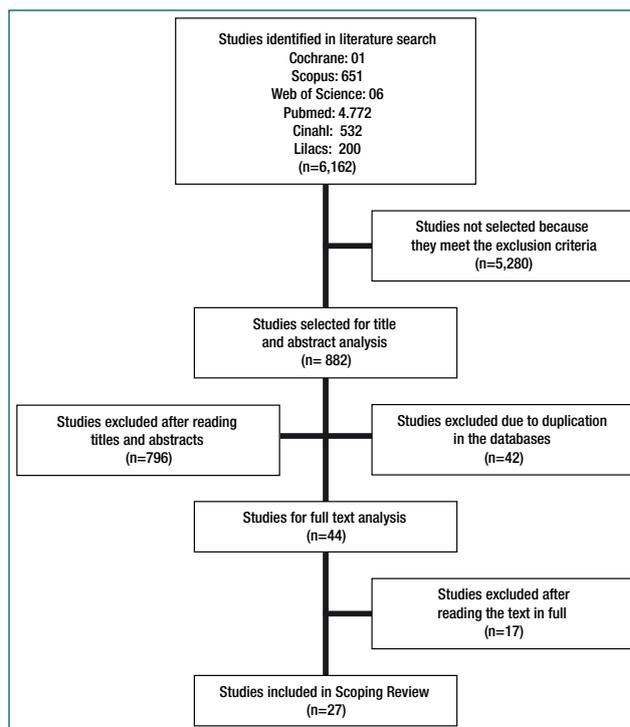


Figure 1. Flowchart of the search process for studies adapted from PRISMA

and environment and that they can develop reactions to stress. These are defined as follows: intrapersonal (related to the client's individual/internal issues); interpersonal (related to the interaction that takes place between the client and the proximal environment); extrapersonal (external forces of environmental interaction that occur outside the client's boundary).⁽⁵⁾

In turn, interventions focused on prevention are conceptualized as follows: 1) primary are aimed at promoting the individual's well-being through the prevention of risk factors (stressors); 2) secondary are implemented when a reaction to stress has already occurred by individuals and aim at early detection and treatment based on the strengthening of individuals' response to coping with the situation; 3) tertiary are those implemented to reconstitute the client's well-being after individuals' recovery from stress reactions and aim at maintaining health and re-educating individuals to prevent a new condition.⁽⁵⁾

In the systems model proposed by Betty Neuman, there is a central core, represented by a circle with a continuous line, which represents all

the variables (biological, psychological, sociocultural, developmental, and spiritual) understood as common survival factors. Around this basic structure are dotted lines, characterized by resistance that protect the individual from the interference of a stressor that has not been limited by the normal line of defense, which is continuous, external and developed throughout individuals' lives. When it is ineffective in the face of a stressor, it causes a reaction in the client's system. Both in the lines of resistance and in the defense, there are elements that can contribute to the individual/group's response to

stressors, such as coping patterns, lifestyle factors, developmental, sociocultural aspects and the client's belief system. The outer dotted line represents the flexible line of defense, which will act as a system buffer.⁽⁵⁾

Results

Regarding the findings of the scoping review, the final sample corresponded to 27 articles, presented in Chart 1.

Chart 1. Distribution of selected articles, according to title/database, country, study objective, stressors and prevention interventions

Article title/database	Study country	Objective	Stressors	Prevention interventions
Psychological distress among health care professionals of the three COVID-19 most affected Regions in Cameroon: prevalence and associated factors ² (Scopus)	Cameroon	Evaluate the prevalence of anxiety and depression symptoms among healthcare professionals in the three most affected regions in Cameroon.	Extrapersonal	Primary and tertiary
Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19 ⁷ (PubMed)	China	Investigate the mental health of first-line clinical medical personnel in the COVID-19 epidemic and provide a theoretical basis for psychological intervention.	Intrapersonal, interpersonal and extrapersonal	Primary
Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control ⁸ (PubMed)	China	Evaluate traumas in the general public, members and non-members of medical teams that assist in COVID-19 control.	Interpersonal and Extrapersonal	Primary
Perceptions of Occupational Risk and Changes in Clinical Practice of United States Vitreoretinal Surgery Fellows during the COVID-19 Pandemic ⁹ (PubMed)	United States	Evaluate occupational risk perceptions and changes in the clinical practice of ophthalmology trainees in the United States during the COVID-19 pandemic.	Intrapersonal, interpersonal and extrapersonal	Primary
Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic ¹⁰ (CINAHL)	China	Investigate work stress among Chinese nurses who are supporting Wuhan in the fight against coronavirus 2019 infection (COVID-19) and explore relevant influence factors.	Intrapersonal and Interpersonal	Primary
Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals ¹¹ (PubMed)	Italy	Analyze the impact of the COVID-19 outbreak on healthcare professionals and detect some risk factors and protection of their levels of distress, with regard to sociodemographic variables, direct exposure to COVID-19 and coping strategies used to deal with stress.	Interpersonal	Primary and tertiary
Impact of Coronavirus disease (COVID-19) pandemic on health professionals ¹² (PubMed)	Pakistan	Explore the impact of the pandemic by COVID-19 on healthcare professionals personally and professionally, along with the associated challenges.	Intrapersonal, interpersonal and extrapersonal	Primary and tertiary
Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019 ¹³ (PubMed)	China	Assess the magnitude of mental health outcomes and associated factors among healthcare professionals treating patients exposed to COVID-19 in China.	Intrapersonal, interpersonal and extrapersonal	Primary and tertiary
Mental health circumstances among health care workers and general public under the pandemic situation of COVID-19 (HOME-COVID-19) ¹⁴ (PubMed)	Thailand	Describe the short- and long-term consequences of the COVID-19 pandemic on mental health and psychosocial problems among healthcare professionals and the general population in Thailand.	Interpersonal and extrapersonal	Primary and tertiary
Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study ¹⁵ (PubMed)	China	Explore the mental health status of the medical and nursing staff and the efficacy, or lack thereof, of critically connecting psychological needs to receiving psychological care.	Extrapersonal	Primary and tertiary
Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study ¹⁶ (PubMed)	China	Assess the psychological state in the medical workforce.	Intrapersonal, interpersonal and extrapersonal	Primary and tertiary
Psychological status of healthcare workers during the civil war and COVID-19 pandemic: A cross-sectional study ¹⁷ (CINAHL)	Libya	Assess the psychological status of health workers during the COVID-19 outbreak.	Intrapersonal, interpersonal and extrapersonal	Primary and tertiary
A cross-sectional study on mental health among health care workers during the outbreak of Corona Virus Disease 2019 ¹⁸ (PubMed)	China	Investigate the psychological abnormality in healthcare professionals who fight the COVID-19 epidemic and explore the associations between social support, resilience and mental health.	Interpersonal and extrapersonal	Primary and tertiary
Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic ¹⁹ (PubMed)	United States	Characterize distress, coping and preferences for support among healthcare professionals in New York during the COVID-19 pandemic.	Interpersonal and extrapersonal	Secondary
A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak ²⁰ (PubMed)	Singapore and India	Investigate the association between psychological outcomes and physical symptoms among healthcare professionals.	Interpersonal and extrapersonal	Secondary

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Continuation.

Article title/database	Study country	Objective	Stressors	Prevention interventions
Social support and mental health among health care workers during Coronavirus Disease 2019 outbreak: A moderated mediation model ²¹ (Scopus)	China	Examine the effect of social support on mental healthcare professionals and its underlying mechanisms in relation to the mediating role of resilience and the moderating role of age during the epidemic.	Intrapersonal, interpersonal and extrapersonal	Primary and tertiary
Public perceptions, anxiety and the perceived efficacy of health-protective behaviours to mitigate the spread of the SARS-Cov-2/ COVID-19 pandemic ²² (Scopus)	United Arab Emirates	Assess the associations between the public's perceptions in relation to COVID-19, anxiety levels and their adhering to health protection behaviors.	Intrapersonal, interpersonal and extrapersonal	Primary
Insomnia and stress of physicians during COVID-19 outbreak ²³ (Scopus)	Iraq	Measure the severity of difficulty sleeping and its correlation with the duration of treatment with suspected/confirmed cases of new coronavirus (COVID-19) in physicians.	Intrapersonal, interpersonal and extrapersonal	Primary
The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in january and february 2020 in China ²⁴ (Scopus)	China	Identify levels of anxiety, self-efficacy, stress, sleep quality and social support from the medical team that treated patients with COVID-19 as well as determine the effects of social support on sleep quality.	Intrapersonal	Primary
Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China ²⁵ (PubMed)	China	Investigate whether healthcare professionals presented more psychosocial problems than non-medical workers during the COVID-19 outbreak.	Interpersonal and extrapersonal	Primary
Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China ²⁶ (PubMed)	China	Investigate the prevalence of psychological problems in different healthcare professionals (physicians, medical residents, nurses, technicians and public healthcare professionals) during the COVID-19 pandemic in China and explore factors that are associated with the appearance of psychological problems in this population during the public health crisis.	Interpersonal and extrapersonal	Primary
Mental health status of medical staff in emergency departments during the Coronavirus disease 2019 epidemic in China ²⁷ (PubMed)	China	Assess the mental health of emergency department medical staff during the epidemic in China.	Interpersonal and extrapersonal	Primary
Experiences and psychosocial problems of nurses caring for patients diagnosed with COVID-19 in Turkey: A qualitative study ²⁸ (PubMed)	Turkey	Determine the experiences and psychosocial problems of nurses who care for patients diagnosed with COVID-19 in Turkey.	Interpersonal and extrapersonal	Primary
Differences in Distress and Coping with the COVID-19 Stressor in Nurses and Physicians ²⁹ (PubMed)	Croatia	Identify ways to deal with the stress caused by coronavirus and psychological outcomes between doctors and nurses.	Interpersonal and extrapersonal	Primary
A cross-sectional study of mental health status and self-psychological adjustment in nurses who supported Wuhan for fighting against the COVID-19 ³⁰ (PubMed)	China	Assess the mental health status, stressors and self-adjustment of nurses in isolation wards at different periods in Wuhan, China.	Interpersonal and extrapersonal	Primary
COVID-19 in Africa: care and protection for frontline healthcare workers 31 (PubMed)	South Africa	Examine the challenges and propose interventions to protect the health and mental well-being of healthcare professionals in the context of COVID-19.	Intrapersonal	Primary
Nurses' stressors and psychological distress during the COVID-19 pandemic: The mediating role of coping and resilience 32 (Scopus)	Spain	To analyze the effect of stress during the peak of the COVID-19 pandemic on nurses' psychological distress, focusing on the mediating role of coping strategies, both focused on the problem and focused on emotion and resilience.	Intrapersonal and extrapersonal	Primary

Regarding the place of origin of the publications, most 13 (48%) were developed in China, in research centers in the areas of medicine and nursing. As for the year of publication, 26 (96%) were published in 2020. Regarding the types of publication in terms of method and research techniques used, it was found that 24 (88%) were quantitative and 3 (12%) qualitative, 23 (85%) developed cross-sectional studies and 4 (15%) of the references performed descriptive and exploratory studies. Analyzing the essence of the content of studies, it was found that the references addressed intrapersonal, interpersonal, extrapersonal stressors, in addition to dealing with primary, secondary and tertiary prevention strategies in the face of COVID-19.

Intrapersonal, interpersonal, extrapersonal stressors and interventions aimed at primary, secondary and tertiary prevention in the face of

COVID-19, based on Betty Neuman's Model,⁽⁵⁾ are represented in Figure 2.

Discussion

According to Neuman, stressors can have a negative or positive effect on the individual or group, related to the client's perception and ability to deal with their effects. The first contributes to the emergence of stress,⁽⁵⁾ which, when associated with the work environment, is understood as having an occupational origin.

Concerning factors related to occupational stress in healthcare professionals in the context of the COVID-19 pandemic, the fear of contagion and limited knowledge of the disease were identified as intrapersonal; interpersonal: change in so-

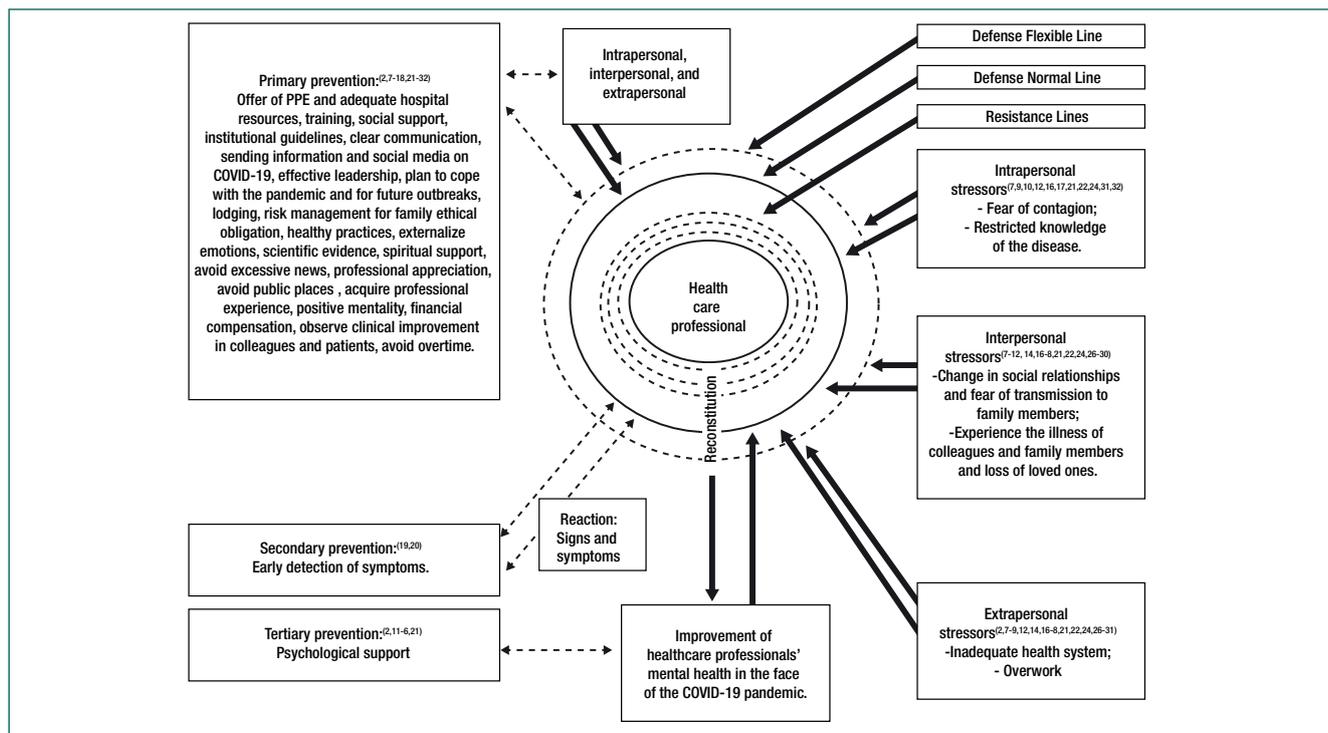


Figure 2. Diagram of stressors and coping strategies in the context of COVID-19 based on Betty's Neuman Model

cial relationships and fear of transmission to family members, experiencing the illness of colleagues and family members and loss of loved ones; and extrapersonal: inadequate health system and work overload.

The limited knowledge about the disease, the high mortality, the absence of an effective drug for the treatment of the new coronavirus, contributes to professionals' fear of acquiring the disease and exposing their families. It is observed that the moment of undressing of PPE and constant surveillance for the appearance of symptoms suggestive of infection by the new coronavirus can contribute to occupational stress.^(7,9,12,17,21,22,24,31-2)

Although recent outbreaks have required extraordinary public health responses, the current pandemic is unique in terms of the speed of transmission, overload of health facilities and the large number of professionals who have been infected. Regardless of efforts to develop adequate treatment, knowledge is still limited, especially about the modes of transmission of infectious agents; however, there is a trend of improvement as research is developed and published, new protocols are instituted and the cure rate of the disease increases.^(10,16,21)

After defining the mode of transmission by contact and droplets, people's behavior and habits changed to the point where they avoided direct interpersonal relationships, in addition to adopting social isolation measures to minimize social interactions, including in work environments.^(7-10,12,14,16,17,21,22,24)

As a result of the new context, it is possible that professionals working in the health area will experience social stigmatization, as they start to be avoided by society, in addition to social isolation and restricting contact with friends and/or family, to prevent the transmission of the disease, a fact that can trigger an increase in occupational stress. Changes in the relationship between patients and healthcare professionals were also verified, considering that, in some cases, there is a conflict between them when patients are asked if there are symptoms suggestive of the infection.^(7-10,12,14,16,17,21,22,24)

Furthermore, healthcare professionals experience the course inherent to the infection, not only restricted to those who enter the health service, but also to the illness of professional colleagues, family and friends, and this can contribute to the occupational stress of these professionals.^(7,9-12,14,16,18,24)

Lack of inputs, absence of a screening system and hospital beds for isolation and treatment, lack of professional training, unavailability of PPE, inadequate infrastructure and failure to implement institutional prevention measures are causes of occupational stress.^(2,7-9,12,14,18,21)

Moreover, the stress resulting from work overload has been reported in research carried out with professionals who worked during periods of epidemics, as the contamination of part of the team generates absenteeism beyond what was expected, reflecting on those who continue in work activity.^(2,12,16,17,21,22,24,32)

When considering a pandemic context, it is indisputable the fact that active healthcare professionals run considerable risks of contracting the disease, while they are inserted in health services.⁽²⁾ This factor is shown to be an important stressor. That said, it is necessary to develop practices and/or strategies to prevent occupational stress aimed at those so that the consequences arising from such action are mitigated.

It is essential for the health team to provide PPE and the existence of adequate hospital resources, however, it is essential that professionals acquire and develop the confidence and ability to use them. It is also worth emphasizing the need to strengthen the availability of adequate hospital resources to treat the disease, with a view to verifying positive prognoses.^(7-10,12,15-17,21-24,31)

The development and implementation of a specific intervention plan aimed at professionals should include the provision of institutional capacity building and training,^(2,10-12,18,21,22) as well as the encouragement to search for studies with better scientific evidence available about the infection^(9,14) as a way to provide greater confidence in the work of professionals, in addition to the fact that they are an investment in the development of healthcare professionals

The work process dynamics, as well as the uncertainties about the end of the pandemic, behave as modifiers of the psychological pattern of those involved in care; however, there is a lack of positive aspects and, among them, the peculiar look directed at professionals, as there is greater recognition of the importance of their function. Additionally, it is also

biased that professionals themselves start to value even more their own health condition.^(10,15)

Furthermore, peer support (institution, managers and professional colleagues) is a fundamental strategy for healthcare professionals to remain encouraged and active. The solidary attitude of managers and managers is something very positive for the aforementioned, as well as the feeling of support and support from the management, collaboration/exchange of knowledge between different areas of knowledge (professions) and support from guidance from more experienced professional colleagues. In addition to the above, the ideal is for institutions to provide support and assistance to employees in handling feelings and stressful work situations.^(13,15-17,21)

Inherent in reducing the risk of infection arising from professionals working in health institutions, the development, by the management, of clear institutional guidelines regarding measures to prevent respiratory infection is relevant; for this, it is necessary that there is clear and objective communication between professionals, in order to ensure that the information is understood and followed correctly.^(7-9,12,14-16,22)

Communication made possible by digital media, associated with the use of digital platforms that are updated daily, provide information about the outbreak experienced, subsidize more measures to control transmission in the work environment and are shown to be positive for the exchange of emotional experiences between professionals who face the same adverse conditions. Furthermore, the dissemination of epidemiological bulletins on internal channels allows for better control of transmission in the workplace and, consequently, better guide actions to fight the pandemic.^(7,12,16,17,21,22,24)

In addition to the above, the innate professional ethical obligation as a coping strategy was vehemently highlighted. Despite the occurrence of emotional turmoil, what most drives professionals to continue working is the ethical and professional obligation linked to the emergence of the sense of serving their country, as well as the community, with the professional nurses being the ones who receive the most attention, given that they make significant contributions to both the infection prevention and control.^(9,10,17,21) Expectations regarding financial compensa-

tion and social recognition were also verified as being clear and palpable motivations to alleviate the stress resulting from exposure to risk situations.^(9,10,15,21)

The possible risk of transmitting the disease to family members is of great concern to healthcare professionals, which gives them a feeling of loneliness and guilt. In this sense, some institutional partnerships with inns and/or hotels to offer accommodation can help to deal with occupational stress.^(7,10) In these contexts, it should not be excluded that the support of family and friends, as well as keeping them safe, managing their risks, is extremely relevant to coping with occupational stress.^(8-10,14,15,21)

In a context like the current one, it is natural that journalism stands out in the media to report the latest events and the epidemiological scenario of the disease, however, caution is needed on the part of healthcare professionals who are in the process of coping, since following certain types of news can trigger stress and anxiety at considerable levels.^(9,10)

It is important to emphasize the aspect of the adoption of certain measures by professionals, with a view to maintaining their conditions of homeostasis, such as seeking to avoid public places to block additional exposure, in addition to avoiding direct contact with people who are symptomatic in relation to colds and others respiratory disorders.^(9,10)

Maintaining positive attitudes/thoughts, recognizing professionalism, taking pride in skills and giving up one's fears to assist people in need, adhering to healthy and relaxing practices, external emotions, as well as spiritual support, are effective strategies.^(9,10,12-15,17,21,32)

Scientific evidence highlighted that chronic stress is lower in workers with long-term health work experience and in those who felt effectively trained and supported within their workplace; thus, having professional experience allows a more effective adaptation of professionals to the high level of stress framework.^(13,17)

In line with the work routine, avoiding working overtime minimizes the possibility of work overload and, in parallel, observing the clinical improvement of patients, professional colleagues and family members, constitute important strategies for reducing occupational stress.⁽⁹⁾

Furthermore, early detection of symptoms of psychological distress is important for better management of occupational stress or mental disorders, in order to avoid complications; therefore, mapping the mental changes of healthcare professionals is important to guide the best intervention strategies.^(19,20)

Finally, psychological support, as well as counseling and psychotherapy, in person or online, based on the model of adaptation to stress, with regard to the development or strengthening of psychosocial coping techniques, is of great value, and these should not only occur during the course of the pandemic, but also in the post-outbreak.^(2,11-16,21)

In this sense, studies show that the use of Betty Neuman's theoretical framework enables the identification of stressors and the implementation of interventions aimed at a healthy interaction between the individual/group (workers) with the environment (work environment), a fact that enables the prevention of injuries and diseases and a better quality of life for workers.^(33,34)

It is also highlighted the importance of the applicability of this Theory in healthcare workers during the implementation of the Nursing Process. This can be used from the survey of nursing history through a data collection instrument that is based on Betty Neuman's Systems Model through a holistic view towards the identification of intra, inter and extra-personal stressors; the variables/reactions (biological, psychological, sociocultural, developmental and spiritual) of individuals and their assessment, involving the various contexts/environments in which they are inserted (family, group and community). In this sense, based on the identification of individuals' reactions to stressors, the nurse, when using a nursing classification system, will be able to list the nursing diagnoses and interventions, based on the levels of primary, secondary and tertiary prevention.⁽⁵⁾

Furthermore, the use of this theory in the care of healthcare professionals makes it possible to provide a more qualified and humanized care, as the identification of different stressors allows its control, through the planning of actions and implementation of nursing interventions focused on the different levels of prevention of diseases and injuries to workers.⁽³⁴⁾

A study that applied the Neuman systems model in patients with COVID-19 identified intrapersonal, interpersonal and extrapersonal stressors of physiological, psychological, developmental, sociocultural and spiritual origin. Moreover, it allowed to plan and carry out nursing interventions, considering all three levels of care prevention (primary, secondary and tertiary), revealing its effectiveness in controlling the effect of all stressors on investigated clients.⁽³⁵⁾

Neuman, therefore, reinforces, in her Theory, the need to understand the stressors and the client's reactions so that interventions can occur that enable their well-being and disease prevention. Therefore, it is understood that the applicability of its theory must go beyond the care practice, but also align with the practice of teaching, research and management.⁽⁵⁾

Finally, in the context of worker health that involves the subject and collective environments, interventions should include the participation of workers and managers.⁽³⁴⁾ Thus, as this is a pandemic in which everyone is learning every day, it is essential that there be nursing interventions aimed at teaching/education and research on new coronavirus infection, stressors and occupational stress prevention strategies in healthcare professionals.

Conclusion

The study allowed the identification of intrapersonal stressors (fear of contagion and knowledge restricted to the disease), interpersonal (change in relationships and fear of transmission to family members and experiencing the illness of colleagues and family members and the loss of loved ones) and extrapersonal (health system inadequate and work overload). Furthermore, it allowed the identification of occupational stress prevention strategies at the primary (promoting workers' health, mainly focused on the collective), secondary (early detection of symptoms of occupational stress) and tertiary levels (rehabilitation of professionals with occupational stress). Furthermore, the use of the theoretical framework enables nurses to develop interventions for the management of occupational stress for professionals who

deal with COVID-19 on a daily basis as well as to systematize their care in the work environment.

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