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Effects of the COVID-19 pandemic on health professionals: a systematic review protocol

Efeitos da pandemia da Covid-19 sob os profissionais de saúde: protocolo de revisão sistemática

Efectos de la pandemia de Covid-19 en los profesionales de la salud: protocolo de revisión sistemática

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ABSTRACT
Objective: to analyze the prevalence of common mental disorders and physical signs and symptoms in health professionals who provided direct care to patients infected with SARS-CoV-2 in the health services between 2019 and 2021. **Method**: a systematic literature review which will include observational studies that address common mental disorders and physical signs and symptoms in health professionals who provided direct care to patients infected with SARS-CoV-2 from 2019 to 2021. The searches will be carried out in comprehensive databases, with no language restrictions. All the methodological steps recommended for systematic reviews will be followed. **Results**: it is expected to identify studies that point out the prevalence of common mental disorders and physical mental signs and symptoms presented by health professionals who provided direct care to patients infected with SARS-CoV-2. **Conclusion**: this study is ongoing and the protocol is approved by PROSPERO under number CRD42020213686.
DESCRIPTORS: Systematic Review; Health Personnel; Coronavirus Infections; Anxiety; Depression.

RESUMO
Objetivo: analisar a prevalência de transtornos mentais comuns e sinais e sintomas físicos ocasionados aos profissionais de saúde que prestaram assistência direta a pacientes infectados pelo SARS-CoV-2 entre os anos de 2019 a 2021 nos serviços de saúde. **Método**: revisão sistemática da literatura onde serão incluídos estudos observacionais que abordem os transtornos mentais comuns e sinais e sintomas físicos ocasionados aos profissionais de saúde que prestaram assistência direta à pacientes infectados pelo SARS-CoV-2 nos anos de 2019 a 2021. As buscas serão realizadas em bases de dados abrangentes, sem restrição de idiomas. Serão seguidos todos os passos metodológicos preconizados para as revisões sistemáticas. **Resultados**: espera-se identificar estudos que apontem a prevalência de transtornos mentais comuns e sinais e sintomas mentais físicos apresentados por profissionais de saúde que prestaram assistência direta à pacientes infectados SARS-CoV-2. **Conclusão**: este estudo encontra-se em andamento e o protocolo está aprovado na PROSPERO sob o número CRD42020213686.
DESCRITORES: Revisão Sistemática; Pessoal de Saúde; Infecções por Coronavírus; Ansiedade; Depressão.

RESUMEN
Objetivo: analizar la prevalencia de trastornos mentales comunes y signos y síntomas físicos padecidos por los profesionales de la salud que brindaron atención directa a pacientes infectados por SARS-CoV-2 entre 2019 y 2021 en los servicios de salud. **Método:** revisión sistemática de la literatura que incluirá estudios observacionales que aborden los trastornos mentales comunes y los signos y síntomas físicos padecidos por los profesionales de la salud que brindaron atención directa a los pacientes infectados por SARS-CoV-2 entre 2019 y 2021. La búsqueda se realizará en bases de datos completas, sin restricciones de idioma. Se seguirán todos los pasos metodológicos recomendados para las revisiones sistemáticas. **Resultados:** se espera identificar estudios que apunten a la prevalencia de trastornos mentales comunes y signos y síntomas físicos mentales presentados por profesionales de la salud que brindaron atención directa a pacientes infectados con SARS-CoV-2. **Conclusión:** este estudio está en curso y el protocolo está aprobado en PROSPERO con el número CRD42020213686.
DESCRIPTORES: Revisión Sistemática; Personal de la Salud; Infecciones por Coronavirus; Ansiedad; Depresión.

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INTRODUCTION

Currently, the COVID-19 pandemic has affected not only the health of the world population, but also the countries' economy and social organization. The disease designated as COVID-19 by the World Health Organization (WHO) first appeared in December 2019 in Wuhan, province of Hubei, China. The causative agent was identified as a new coronavirus, later called SARS-CoV-2, in January 2020. In March 2020, COVID-19 had already affected several countries and was characterized by the WHO as a pandemic[1-2].

Health professionals have been working on the front line in direct assistance to patients infected with SARS-CoV-2, in public and private health services. On many occasions, they are exposed to unfavorable work environments, with long hours, work overload and limited resources to act and control spread of the virus. This situation, in addition to the fear of contagion, has caused mental and physical distress to health professionals[3-4].

Among the mental ailments, common mental disorders (CMDs) stand out, which affect thousands of people around the world. CMDs refer to two main diagnostic categories: depressive disorders and anxiety disorders. Depressive disorders are characterized by low self-esteem, sadness, insomnia, tiredness and loss of interest in daily activities or work. These signs and symptoms can be recurrent or last for a longer period of time and, in more severe cases, depression can result in suicide[5].

In anxiety disorders, the individuals may show signs and symptoms such as excessive fear in the face of common situations, phobias, feelings of anxiety or generalized anxiety disorder (GAD), panic disorder, obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). As with depression, the symptoms can range from mild to severe. It is estimated that 4.4% of the world population suffer from depressive disorder, and 3.6% from anxiety disorder[5].

A number of studies show that, in addition to the mental signs and symptoms, the health professionals who provide direct care to patients infected with SARS-CoV-2 developed physical symptoms such as fever, headaches, muscle pain and fatigue, reflecting on their productivity, increased use of health services and absence from work, generating impacts on the health workers' personal and professional life[6-8]. In this sense, a preliminary research study was carried out on the PROSPERO® systematic review protocol registration platform and in the Pubmed®, **Google Scholar** and PsycINFO® databases, in addition to the Cochrane Database of Systematic Reviews and the Joanna Briggs Institute (JBI®) Database of Systematic Assessments and Implementation Reports, in order to list systematic reviews that address outcomes related to the health professionals' mental, psychological and physical health.

Two systematic reviews with meta-analysis by Chinese researchers, published in English, were identified. The first study addressed the incidence of psychological problems during the COVID-19 pandemic, such as anxiety, depression, occupational stress, post-traumatic stress disorder (PTSD) and insomnia, in health professionals and non-health professionals, for articles published until May 2nd, 2020[9]. The second systematic review with meta-analysis

discussed the psychological impact of COVID-19 among health professionals compared with the general population and with patients at higher risk of COVID-19 for publications up to May 25th, 2020[10].

Researchers from Spain also conducted a systematic review that addresses the impact of the coronavirus syndromes on the physical and mental health of health professionals exposed to or infected with SARS/MERS/COVID-19 and studies were included up to April 2020, in English only[11].

There are two review title records in the JBI. The first, registered in July 2020, is a review of evidence by researchers from the Xiangya Center for Evidence-Based Nursing Practice and Innovation in Health, China, which will address the psychological impact on front-line health professionals (physicians, nurses and health personnel) affected by the COVID-19 outbreak[12]. The second title record belongs to researchers from the Kalinga Institute of Medical Sciences in India, which will describe prevalent psychological reactions among health professionals and other vulnerable populations during the COVID-19 pandemic phase[13].

There is also a record of a systematic review protocol in PROSPERO[14] by Brazilian researchers, which aims at investigating the prevalence of mental symptoms in health professionals who deal directly with the COVID-19 pandemic. In the Cochrane Database of Systematic Reviews, no systematic review or protocol record was found on the theme of the mental, psychological and physical effects caused to professionals by the COVID-19 pandemic.

This systematic review will include studies updated up to 2021, in comprehensive databases and without language restrictions, and will address research studies that, in addition to the mental aspects, also present as outcome the physical signs and symptoms, about the health professionals who provided direct care to patients infected with SARS-CoV-2. We will verify if there are associations between mental and physical signs and symptoms and if all these effects together caused greater impacts on the health professionals.

This review aims at answering the following question: Which is the prevalence of common mental disorders and physical signs and symptoms in health professionals who provided direct care to patients infected with SARS-CoV-2 in public and/or private health services?

METHOD

Eligibility

The inclusion and exclusion criteria are based on the **CoCoPop** (Condition, Context e Population) mnemonic used for systematic reviews that assess prevalence and incidence data, as recommended by the JBI®[15].

Thus, this review will include observational studies, published from 2019, without language restriction, which have as a context (**Co**) public and/or private primary-, secondary- and tertiary-level health care services, such as: hospitals, clinics, basic health units, field hospitals and home care services, among others, which received patients infected with SARS-CoV-2. The condition (**Co**) will involve studies that address the CMDs and physical signs and symptoms in health professionals at

any time, during or after providing direct care to patients infected with coronavirus such as: anxiety, depression, sadness, insomnia, fear, PTSD, panic disorder, phobic disorders, obsessive-compulsive disorder (OCD), loss of appetite, fatigue, fever, myalgia, injuries, skin lesions from the use of personal protective equipment (PPE) and professional exhaustion. The population of this systematic review (**Po**) will consist in articles that contain as study target population health professionals such as: physicians, nurses, physiotherapists, nutritionists, nursing technicians, nursing assistants and other professionals who worked on the front line, that is, who provided direct assistance to patients infected with SARS-CoV-2 for at least 12 hours of work.

The following will be excluded: 1) studies in which the target population are not health professionals with complete technical or higher education for the specific area of performance, such as residents and students; 2) studies in which the outcomes presented by the professionals include pre-existing mental and physical health conditions before providing care to patients infected with SARS-CoV-2; 3) full articles not available; 4) articles with incomplete data (if doubts remain regarding the methodology or results and it is not possible to contact the authors after three consecutive attempts; and 5) assessments, letters, personal opinions, conference summaries and case reports.

Search strategy

The search strategies of this review aim at finding observational epidemiological studies eligible for the research, in all languages, published during the 2019-2021 period in the following electronic databases: Pubmed®, **Excerpta Medica dataBASE** (EMBASE®), Latin American and Caribbean Literature on Health Sciences (*Literatura Latino-Americana e do Caribe em Ciências da Saúde*, LILACS), Web of Science, Scopus®, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO® and LIVIVO®. The search for gray literature will take place in **OpenGrey** and in the **ProQuest Open** database. A search will also be conducted in **Google Scholar** and the first 100 studies found will be read, in addition to consulting the subject matter **experts** of this review.

A search strategy with the terms that will be used for the Pubmed® database will be adapted for each specific database according to the recommended descriptors for the searches. Among the terms that will be used are the following: "Health Professionals", "COVID-19" and their synonyms, in addition to terms related to the physical and mental symptoms, such as: "Fever", "Myalgia", "Tiredness", "Anxiety" and "Depression" among others, combined with the Boolean operators "AND" and "OR".

Selection of the studies

Selection of studies will take place in two stages. In the first, two independent reviewers will read all titles and abstracts identified in the electronic databases. In the second stage, the full-text studies will be independently read and evaluated by the two reviewers to confirm eligibility. Any disagreement at any stage will be resolved by the assessment of a third reviewer.

After inclusion of the eligible full studies, a manual search will be conducted in the reference lists of the articles included in the review. If necessary, the corresponding author of the studies will be contacted via email to send information about the studies.

For the organization of the selected studies, the **Endnote Web®** reference management software will be used to gather, store and structure the references and remove duplicate studies.

Data extraction

The data will be extracted by two independent reviewers, using a form prepared by the authors with the Excel® software. Detailed information about the studies will be extracted from the selected articles, such as: study title, authors, country, location, name of the journal and year of publication; methodological quality, objectives, study design and sample size; characteristics of the participants including gender, age, race, ethnicity, schooling, profession, workplace and pre-existing health conditions; outcome data such as types of effects, characteristics, intensity, duration; and other data as deemed necessary. Disagreements regarding the data extracted will be resolved by consensus and a third reviewer will be consulted if disagreement persists. The study authors may be contacted to provide additional information in case of missing data or when these data are unclear.

Methodological quality assessment

The studies selected for this review will have their methodological quality assessed by two independent reviewers, using the JBI® Checklist for Cross-sectional Analytical Studies standardized instrument[16]. Any disagreements that arise will be resolved through a third reviewer.

Data synthesis

For the narrative synthesis, a description of the included studies will be made, based on the recommendations precepts of the PRISMA checklist and the JBI® manuals for incidence and prevalence systematic reviews[15, 17-18].

The main results of each study will be described, presenting them in a comparative way, highlighting what is common among them through tables, graphs and other diagrams that are necessary for data presentation. If possible, the presentation of the quantitative results reported will also be included, with point estimates (a value that represents or best estimates the effects) and interval estimates (generally presented as 95% confidence intervals) for the effects[15, 17-18].

If there is homogeneity of results from at least two studies, a quantitative analysis will be performed through meta-analysis. To summarize the results, the Jamovi and/or **Comprehensive Meta-Analysis** software programs will be used. The effect model to be used will be random. The results will be reported with 95% CI and statistical significance when $p<0.05$. Heterogeneity will be statistically assessed using standard tests such as chi-square (X^2), Tau^2 and I^2 and prediction range, graphically represented by a forest plot. If necessary, sensitivity will be analyzed by repeating the analysis under different assumptions to examine the impact of these assumptions on the results[15, 17-18].

Subgroup or subset analysis

In case it is necessary to investigate the causes of heterogeneity in the meta-analysis, the analysis by meta-regression or subgroup analysis will be performed, with at least ten studies, by professional category included in this study, as a way to answer questions or specific characteristics of each group[15, 17-18].

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