

## COVID-19: coping strategies and adaptive behaviors adopted by health professionals during the pandemic

*COVID-19: estratégias de enfrentamento e comportamentos adaptativos adotados pelos profissionais de saúde durante a pandemia*

*COVID-19: estrategias de afrontamiento y comportamientos adaptativos de los profesionales de la salud durante la pandemia*

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### ABSTRACT

**Justification and Objectives:** the number of confirmed cases and deaths by COVID-19 has increased, also among health professionals, whose impact reflects on practices, social and family life. In this sense, this study sought to identify and describe coping strategies and adaptive behaviors among health professionals during the COVID-19 pandemic according to national and international scientific literature. **Content:** this is an integrative review carried out based on the following guiding question: what are the coping strategies and adaptive behaviors adopted by health professionals during the COVID-19 pandemic in the national and international scenarios? The search took place in June 2020 from the bibliographic survey in the databases of LILACS, PubMed, CINAHL, Scopus and Embase using the expression Boolean operators AND and OR for the combination of indexed descriptors and their respective synonyms. 212 publications were found in the databases. From the previously established criteria, 32 studies were eligible for full reading. Finally, 30 were selected to be analyzed and discussed. **Conclusion:** coping strategies are related to the knowledge acquired, growth in the use of new health technologies through applications, adaptations to changes in protocols, in addition to adaptive behaviors related to practices, expression of negative feelings and values. Although less frequently, positive attitudes and good practices were identified that contribute to increased resilience and psychological well-being among health professionals.

**Descriptors:** Occupational Health. Health Personnel. Adaptation, Psychological. Coronavirus Infections.

### RESUMO

**Justificativa e Objetivos:** O número de casos confirmados e óbitos por COVID-19 tem aumentado, também, entre os profissionais de saúde, impactando suas práticas e seu convívio social e familiar. Neste sentido, este estudo

buscou identificar e descrever as estratégias de enfrentamento e comportamentos adaptativos entre os profissionais de saúde durante a pandemia de COVID-19, segundo a literatura científica nacional e internacional. **Conteúdo:** Trata-se de uma revisão integrativa realizada a partir da seguinte questão norteadora: "Quais as estratégias de enfrentamento e comportamentos adaptativos adotados pelos profissionais de saúde durante a pandemia de COVID-19 nos cenários nacional e internacional?". A busca ocorreu em junho de 2020, a partir do levantamento bibliográfico nas bases de dados da LILACS, PubMed, CINAHL, Scopus e Embase utilizando na expressão os operadores booleanos AND e OR para a combinação dos descritores indexados e seus respectivos sinônimos. Foram encontrados nas bases de dados 212 publicações. A partir de critérios previamente estabelecidos, 32 estudos foram considerados elegíveis para a leitura na íntegra e, por fim, 30 foram selecionados para serem analisados e discutidos. **Conclusão:** As estratégias de enfrentamento estão relacionadas aos conhecimentos adquiridos, crescimento da utilização de novas tecnologias em saúde por meio de aplicativos, adaptações às mudanças nos protocolos, além de comportamentos adaptativos relacionados às práticas, expressão de sentimentos e valores negativos. Embora em menor frequência, identificaram-se atitudes positivas e boas práticas, que contribuem para o aumento da resiliência e bem-estar psicológico entre os profissionais de saúde.

**Descritores:** Saúde do trabalhador. Pessoal de saúde. Adaptação psicológica. Infecções por coronavírus

## RESUMEN

**Justificación y Objetivos:** El número de casos confirmados y de muertes por el Covid-19 se ha aumentado también entre los profesionales de la salud, lo que impacta sus prácticas y su convivencia social y familiar. Este estudio buscó identificar y describir las estrategias de afrontamiento y los comportamientos adaptativos entre los profesionales de la salud durante la pandemia de Covid-19 de acuerdo a la literatura científica nacional e internacional. **Contenido:** Se trata de una revisión integrativa realizada a partir de la siguiente pregunta orientadora: "¿Cuáles son las estrategias de afrontamiento y los comportamientos adaptativos de los profesionales de la salud durante la pandemia de Covid-19 en el ámbito nacional e internacional?". La búsqueda ocurrió en junio de 2020 mediante un levantamiento bibliográfico en las bases de datos de LILACS, PubMed, CINAHL, Scopus y Embase utilizando en la expresión los operadores booleanos AND y OR para la combinación de descriptores indexados y sus respectivos sinónimos. Se encontró 212 publicaciones en las bases de datos. A partir de criterios previos establecidos, se eligió 32 estudios para la lectura en su totalidad, de los cuales se seleccionó 30 para el análisis y discusión. **Conclusión:** Las estrategias de afrontamiento están relacionadas a los conocimientos adquiridos, al aumento del uso de nuevas tecnologías en salud por medio de aplicaciones, a adaptaciones a los cambios en los protocolos, además de los comportamientos adaptativos en cuanto a las prácticas, expresión de sentimientos y valores negativos. En menor frecuencia, se identificaron actitudes positivas y buenas prácticas que contribuyen al aumento de la resiliencia y al bienestar psicológico entre los profesionales de la salud.

**Palabras clave:** Salud Laboral. Personal de Salud. Adaptación Psicológica. Infecciones por Coronavirus.

## INTRODUCTION

Epidemics are characterized as involuntary transitory events of civilization.<sup>1</sup> The first human beings, whose characteristics of social organization are distinct from today's society, faced illnesses in the same way that today occurs. However, due to the fact that they are more inmates in their "tribes", isolated from other groups, the diseases did not have the ability to spread. However, this changed with the advent of the Agricultural Revolution and the consequent sedentarization of man.<sup>1</sup>

Currently, humanity faces the coronavirus disease (COVID-19), which has SARS-CoV-2 as the etiologic agent according to the International Virus Taxonomy Committee classification. This virus belongs to the genus *β-coronaviruses*, as well as SARS-CoV and MERS-CoV, which caused an epidemic in China in 2003 and similar respiratory conditions in 2012 in the Middle East, respectively. The first reported cases referring to SARS-CoV-2 occurred in Wuhan, Hubei province, China, dated December 2019,<sup>2</sup> resulting in the declaration of a pandemic by the World Health Organization (WHO) in March 2020.

Worldwide, COVID-19 has a high incidence and mortality, especially in the Americas region, in which Brazil stands out.<sup>3</sup> The data in the country are tabulated using an epidemiological database, *e-SUS NOTIFICA*, to record cases of Influenza Syndrome (IS) suspected of COVID-19 in the population and among health professionals, including technicians and/or nursing assistants. are configured as the category that most falls ill by COVID-19.<sup>4</sup>

Studies show that the pandemic has caused negative consequences on workers' health, such as fear of contamination, impact on lifestyle, sleep, changes in behavior (approaches), search for public information,<sup>5,6</sup> in addition to increase in mental problems, such as anxiety, depression and stress, due to overwork, frustration, discrimination, isolation, lack of contact with family members, pressure and exhaustion.<sup>7,8</sup>

Such aspects are intensified, among other factors, by ineffective strategies of social isolation, the lack of human resources and the precariousness in the offer of collective and Individual Protection Equipment (PPE). In

this sense, it is necessary to understand how these professionals are adapting to these changes that impacted practices, social and family life.

This study aimed to identify and describe coping strategies and adaptive behaviors adopted by health professionals during the COVID-19 pandemic according to national and international scientific literature.

## METHODS

This is an integrative review carried out through the following steps: identification of the guiding research question, search in databases, identification of eligible publications, selection of publications, data extraction, analysis and synthesis of evidence.

To develop the guiding question of the research, descriptors were identified that derived from the guiding question: what are the coping strategies and adaptive behaviors adopted by health professionals during the COVID-19 pandemic in the national and international scenarios? PICO strategy was used, in which P (population) corresponded to health professionals; I (intervention/interest), coping strategies and adaptive behaviors; Co (context), the COVID-19 pandemic.

Literature search took place in June 2020 and was carried out by two researchers independently, with the possibility of a third researcher if there was disagreement in the selection of articles. The search expressions were prepared using Boolean operators AND and OR for the combination of the descriptors indexed in the Health Sciences Descriptors (DeCS), Medical Subject Headings (MESH) and Emtree (Embase Subject Headings), with their respective synonyms in English and Spanish (Chart 1).

Bibliographic survey was carried out in the Latin American & Caribbean Literature in Health Sciences (LILACS), International Literature in Health Sciences (PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus and Embase databases. Subsequently, the materials were exported to the online systematic review application Rayyan QCRI of the Qatar Computing Research Institute<sup>9</sup>, as well as duplicate publications and others submitted to title and abstract reading by two independent researchers were excluded.

We chose to include quantitative and qualitative studies, complete, in Portuguese, English, and Spanish, published in 2020. It was also considered as exclusion criteria, literature reviews, letters, notes, editorials, comments and other types of publications other than scientific articles.

For article selection, the study should answer the guiding question of the review, making them eligible for full reading, later submitted to a qualitative and descriptive synthesis by means of a file containing authors, country and publication period, objective, study design and quantity of professionals studied.

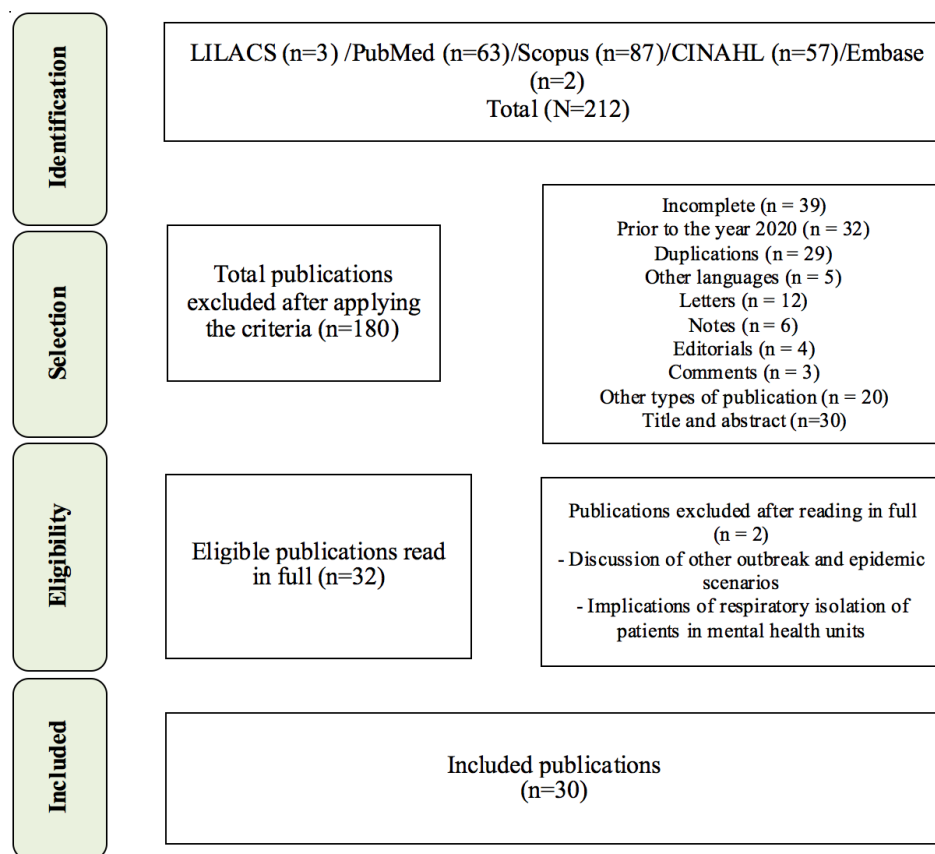
Expressions (E)	Free/controlled vocabulary
E1	<p><b>Pessoal de Saúde</b> OR Prestadores de Cuidados de Saúde OR Profissionais da Saúde OR Profissionais de Saúde OR Profissional da Saúde OR Profissional de Saúde OR Trabalhador da Saúde OR Trabalhador de Saúde OR Trabalhadores da Saúde OR Trabalhadores de Saúde (Portuguese)</p> <p><b>Health Personnel</b> OR Health Care Provider OR Health Care Providers OR Healthcare Provider OR Healthcare Providers OR Healthcare Worker OR Healthcare Workers OR Personnel, Health OR Provider, Health Care OR Provider, Healthcare OR Providers, Health Care OR Providers, Healthcare OR Health Care Personnel (English)</p> <p><b>Personal de Salud</b> OR Proveedores de Atención de Salud OR Trabajadores de la Salud (Spanish)</p>
E2	<p><b>Adaptação Psicológica</b> OR Comportamento Adaptativo OR Enfrentamento OR Estratégia de Adaptação OR Estratégias de Enfrentamento OR Habilidades de Enfrentamento (Portuguese)</p> <p><b>Adaptation, Psychological</b> OR Adaptation, Psychologic OR Adaptive Behavior OR Coping Behavior OR Coping Skill OR Psychologic Adaptation OR Psychological Adaptation OR Attitude (English)</p> <p><b>Adaptación Psicológica</b> OR Afrontamiento OR Ajuste Psicológico OR Conducta Adaptativa OR Conducta de Enfrentamiento OR Estrategias de Afrontamiento OR Estrategias de Enfrentamiento OR Habilidades de Afrontamiento (Spanish)</p>
E3	<p><b>Infecções por Coronavírus</b> OR Infecção pelo Coronavírus OR COVID-19 OR Novo Coronavírus OR Coronavírus de Wuhan OR 2019-nCoV (Portuguese)</p> <p><b>Coronavirus Infections</b> OR Infection, Coronavirus OR COVID-19 OR Novel Coronavirus OR New Coronavirus OR Wuhan Coronavirus OR 2019-nCoV OR Coronavirus Pandemic OR Coronavirus Disease (English)</p> <p><b>Infecciones por Coronavirus</b> OR Infección por el Coronavirus OR COVID-19 OR Nuevo Coronavirus OR Coronavirus de Wuhan OR 2019-nCoV OR Pandemia por el Nuevo Coronavirus (Spanish)</p>

\*The expressions in the three listed languages were connected using the Boolean AND. Source: created by the authors, 2020.

**Chart 1.** Search expressions and controlled/free vocabulary in Portuguese, English, and Spanish, used in the search process for publications for this integrative review, 2020.

## RESULTS AND DISCUSSION

Thus, 212 publications were found in the databases, of which, in order to meet the previously established inclusion criteria, 29 were excluded for being duplicates, 39 publications for being incomplete, five for being in other languages, 32 for having been published before 2020, 12 because they are letters, six because they are notes, four editorials, three comments and 20 because they fit into



Source: adapted from Moher et al (2009).<sup>10</sup>

**Figure 1.** Flowchart of the steps for selecting the studies in this review, 2020.

other types of publication other than scientific articles.

After reading all titles and abstracts, 30 publications were excluded for not meeting the guiding question of the research because they worked with norms and recommendations for researchers, mental health professionals, higher education and long-term care institutions in the COVID-19 pandemic context, techniques for diagnosing the disease, changes in the sleep status of health teams and patient safety with COVID-19. Thus, 32 eligible studies were selected to be read in full. Two were excluded for discussing other outbreak and epidemic scenarios, without mention of COVID-19, and implications of respiratory isolation for patients in mental health units; in the end, this made it possible to include 30 articles to be analyzed and discussed (Figure 1).

The articles included were published, mostly, in English (96.7%), in international journals, of which the International Journal of Environmental Research and Public Health (23.3%), JMIR Public Health and Surveillance (13.3%), and Journal of Hospital Infection (13.3%) stand out. Most of them were carried out on the international stage, especially in countries that since the beginning of the pandemic have already been considered its epicenter, such as China (16.7%), Italy (20%), the United States (6.7%) and India (6.7%) (Table 1).

Regarding the study design, predominantly cross-sectional

research (73.3%) and quantitative approach were identified (50%). The study population was composed of health professionals who work in the front line to combat the pandemic, such as nurses, physicians, physiotherapists, nutritionists, dentists, pharmacists, in addition to medical residents, interns and other professionals from the health support sectors who contribute to health control actions in different institutions and health settings, public or private (Table 1).

It was verified as for the methods used in the studies, mainly the accomplishment of online surveys with application of questionnaires to the study population (83.3%) - validated, elaborated or adapted through Google Forms, SurveyMonkey, Kwiksveys, shared through media social and email. Some questionnaires, in addition to the collection of sociodemographic data and related to the behaviors, practices and attitudes of health professionals during the COVID-19 pandemic, also assessed other variables through Generalized Anxiety Disorder-7 (GAD-7) tests, PMT constructs, Connor-Davidson Resilience Scale and China Perceived Stress Scale.

Regarding coping strategies for the management of COVID-19 and for professional practice, studies have shown, in general, that health professionals have a good knowledge of transmission, diagnosis, prevention, management and control measures of the disease. Additionally,



**Table 1.** Summary of articles included in this review according to authors, country and publication period, objective, study design and number of professionals studied, 2020.

Authors	Country and publication journal	Objective	Study design	Number of professionals studied
Ahmed et al., 2020 <sup>11</sup>	Saudi Arabia/International Journal of Environmental Research and Public Health	To assess anxiety and fear of becoming infected among dentists while working during the current outbreak of new diseases by COVID-19, as well as knowledge about various practical modifications to combat COVID-19.	Cross-sectional study, using an online, quantitative survey	650 dentists from 30 countries
Barati et al., 2020 <sup>12</sup>	Iran/Journal of Hospital Infection	To predict the preventive behaviors of health professionals in relation to COVID-19, based on Protection Motivation Theory (PMT).	Cross-sectional and analytical study	761 health professionals
Bhagavathula et al., 2020 <sup>13</sup>	Saudi Arabia/JMIR Public Health and Surveillance	To investigate the knowledge and perceptions of health professionals about COVID-19.	Cross-sectional, quantitative study	529 health professionals
Blake et al., 2020 <sup>14</sup>	United Kingdom/International Journal of Environmental Research and Public Health	To synthesize evidence-based information to develop and evaluate a digital learning package to support the psychological well-being of all healthcare professionals.	Not mentioned	Not mentioned
Cagetti et al., 2020 <sup>15</sup>	Italy/International Journal of Environmental Research and Public Health	To assess the signs/symptoms, protection measures, awareness and levels of perception regarding COVID-19 among dentists in Lombardy, Italy.	Descriptive, quantitative study	3,599 dentists
Consolo et al., 2020 <sup>16</sup>	Italy/International Journal of Environmental Research and Public Health	To investigate the behavior of dentists and analyze their reactions to the restrictive measures to the SARS-CoV-2 pandemic introduced by the Italian national administrative order of March 10, 2020 (DM-10M20).	Cross-sectional, descriptive, quantitative study	356 dentists
Delgado et al., 2020 <sup>17</sup>	Not mentioned/International Journal of Environmental Research and Public Health	To assess the reality and perceptions of personal safety among health professionals in Latin America.	Cross-sectional study	936 health professionals
De Stefani et al., 2020 <sup>18</sup>	Italy/International Journal of Environmental Research and Public Health	To assess Italian dentists' knowledge about COVID-19 and their perception of the risks associated with the disease, their attitude in resuming their activities and how they judge institutional intervention in terms of health and economics.	Cross-sectional, descriptive, quantitative study	1,500 dentists
Dost et al., 2020 <sup>19</sup>	Turkey/Surgical Infections	To assess the knowledge about COVID-19, the attitudes towards the strategies and methods of application to be used for a suspected/confirmed case that needs to be operated or monitored in an Intensive Care Unit.	Descriptive, quantitative study	346 anesthesiology specialists and residents
Huang et al., 2020 <sup>20</sup>	China/Medical Science Monitor	To assess the level of resilience of medical staff in radiology departments during the COVID-19 outbreak and explore factors related to it to provide a basis for more effective risk assessment and psychological intervention.	Cross-sectional, quantitative study	587 health professionals in the radiology department
Jin et al., 2020 <sup>21</sup>	China/Military Medical Research	To explore the perceived routes of infection, influencing factors, psychosocial changes and management procedures for health professionals infected with COVID-19.	Cross-sectional study	103 health workers infected with COVID-19 in a hospital
Khader et al., 2020 <sup>22</sup>	Jordan/JMIR Public Health Surveillance	To assess awareness, perception and attitudes towards COVID-19 disease and infection control in Jordanian dentists.	Cross-sectional, descriptive, quantitative study	368 dentists
Khan et al., 2020 <sup>23</sup>	Pakistan/Journal of Medical Virology	To assess education and health professionals' basic knowledge about COVID-19, its control and prevention.	Cross-sectional, quantitative study	303 students, teachers and health professionals
Kumar et al., 2020 <sup>24</sup>	Pakistan/Cureus	Investigate the knowledge, attitudes and practices of health professionals in wearing a surgical mask to limit the spread of COVID-19.	Not mentioned	392 participants
Lai et al., 2020 <sup>25</sup>	China/Antimicrobial resistance and infection control	To measure the level of infection prevention and control (IPC) behaviors self-reported by health professionals at risk of COVID-19.	Cross-sectional study	1,386 participants
Lima et al., 2020 <sup>26</sup>	Brazil/J. Health Biol. Sci. (Online)	To guide medical assistance to cases of non-traumatic surgical emergency during the COVID-19 pandemic.	Bibliographical research	Not mentioned
Moro et al., 2020 <sup>27</sup>	Italy/Acta Biomedica	To assess concern, general and specific knowledge and health-related knowledge.	Cross-sectional, quantitative study	2,027 employees of a university hospital in northern Italy
Olum et al., 2020 <sup>28</sup>	Uganda/Frontiers in Public Health	To determine health professionals' knowledge, attitudes, and practices regarding COVID-19 at the University Hospitals of Makerere University, Uganda.	Cross-sectional and descriptive study online	136 health professionals
Parikh et al., 2020 <sup>29</sup>	India/Cureus	To assess general knowledge and perceptions about COVID-19 and identify reliable sources of information for the general public and health personnel.	Cross-sectional, descriptive, quantitative study	1,246 respondents
Prescott et al., 2020 <sup>30</sup>	England/Journal of Hospital Infection	To assess the confidence and perceived level of preparation of health professionals for COVID-19.	Cross-sectional study online	158 health professionals
Ramaci et al., 2020 <sup>31</sup>	Italy/Sustainability (Switzerland)	To identify the direct and indirect relationships between stigma, job demand and quality of professional life, including satisfaction of compassion, burnout and compassion fatigue, in a group of health professionals working in a large hospital in southern Italy with a ward for COVID-19.	Cross-sectional study	273 health professionals from a university hospital (physicians and nurses)
Ros et al., 2020 <sup>32</sup>	United States/Nurse Education Today	To assess the interest, use and potential of the FPV COVID-19 tutorial for health professionals/responders during a pandemic as a technological tool of global educational reach in public health.	Not mentioned	12,516 users
Saqlain et al., 2020 <sup>33</sup>	Pakistan/Journal of Hospital Infection	To identify the current status of knowledge, attitude and practice regarding COVID-19 among health professionals in Pakistan.	Cross-sectional study	414 physicians, nurses and pharmacists
Schinköthe et al., 2020 <sup>34</sup>	Argentina, Germany, Iran, Italy, Portugal, Switzerland and the United States/JMIR Public Health Surveillance	COVID-19 Caregiver Cockpit (C19CC) aims to implement a free web-based and application-based tool for patient assessment, in order to assist healthcare professionals, improve care and safety for people infected with COVID-19.	Qualitative multicenter study of application development	Not mentioned
Shacham et al., 2020 <sup>35</sup>	Israel/International Journal of Environmental Research and Public Health	To assess the association of COVID-19 factors and psychological factors with psychological distress among the dental team during the COVID-19 pandemic outbreak.	Cross-sectional, quantitative study	338 dentists and dental hygienists
Singh; Sharma, 2020 <sup>36</sup>	India/Indian Journal of Public Health	To assess health institutions' preparedness involved in the management of COVID-19 and identify and highlight the concerns of frontline health professionals working during the pandemic.	Cross-sectional, quantitative study	405 health professionals

Sun et al., 2020 <sup>37</sup>	China/Epidemiology and Infection	To assess the impact of the 2019-nCoV outbreak on the psychological state of Chinese healthcare professionals and explore the influencing factors.	Cross-sectional study	442 health professionals
Taghrir; Borazjani; Shiraly, 2020 <sup>38</sup>	Iran/Archives of Iranian Medicine United States/JMIR Public Health and Surveillance	To assess knowledge related to COVID-19, self-reported preventive behaviors and risk perception among Iranian medical students in the first week after the outbreak in Iran began.	Cross-sectional, descriptive, quantitative study	240 medical students (interns and interns)
Wahbeh et al., 2020 <sup>39</sup>	Health and Surveillance	To identify topics, opinions and recommendations about the COVID-19 pandemic discussed by medical professionals on Twitter's social media platform.	Mixed method study (social media analysis and qualitative analysis)	119 physicians
Zhang et al., 2020 <sup>40</sup>	China/Journal of Hospital Infection	To analyze health professionals' knowledge, practices and attitudes in relation to COVID-19.	Cross-sectional study	1,357 health professionals

the growth in using new health technologies through an application was identified; conducting courses and training for COVID-19 at the health institution itself or over the internet; adaptations to changes in service protocols and office environment, even with the weaknesses in the availability of effective protection measures at individual and collective levels by health systems.

As for health professionals' adaptive behaviors during the pandemic, studies have identified negative consequences for mental health related to increased work overload, insecurity and stress regarding handling COVID-19 cases, risk of disease transmission to their families, as well as financial concern and with future professional<sup>11,15,19,21,23,27,35,36,37,40</sup>. On the other hand, self-confidence behaviors, fear control, resilience and seeking help were identified<sup>12,20,28,30</sup> as good practices acquired.

In the light of the scientific literature, it was identified that the COVID-19 pandemic impacted, in general, the lives of thousands of health professionals around the world, which resulted in the modification and implementation of strategies to face the pandemic individually and collectively,<sup>11,12,15,16,18,19,22,23,25,26,28,29,32,34,38</sup> as well as adapting practices, behaviors and experiencing new feelings and values.<sup>11-16,18-21,24,27-31,33-38,40</sup>

Acquisition of knowledge related to COVID-19 was presented as a factor for the modification and implementation of new practices and specific measures for infection control with regard to the forms of transmission, clinical and epidemiological criteria for case diagnosis and management.<sup>11,15,21,22,26,27,33,38,40</sup> Such knowledge is considered vital to reduce the chain of transmission of the virus among the population and among health professionals themselves.<sup>28,30</sup>

As for disease prevention strategies, studies show the need to incorporate good practices into individual and collective daily lives in relation to the proper use of PPE, correct hand hygiene, distance practices and social isolation,<sup>12,18,19,23,28,30,33</sup> including those related to environmental measures.<sup>11,15,16,21,22,26</sup> On the other hand, it is identified that there is much to be done to promote effective protection measures,<sup>27</sup> considering the challenges to obtain, availability and use of PPE.<sup>17,21,36</sup>

Moreover, some studies have presented incorrect knowledge, decisions and practices related to COVID-19, either due to professional inexperience, lack of habit, or preparation or lack of understanding the importance of health safety principles.<sup>12,13,19,23,24,29</sup> This highlights the need for continuing professional education as a strate-

gy to identify existing needs, gaps and bottlenecks, in order to improve health professionals' knowledge about COVID-19, promoting better and appropriate therapeutic and prevention practices.<sup>12,25,27,28,30,36</sup>

Access and provision of theoretical and practical training related to COVID-19 were also pointed out by literature.<sup>13,18,19,22,23,28,29,31,33,38,39,40</sup> Topics to be addressed were identified, such as actions and recommendations for pandemic control, combating misinformation, information and knowledge about the virus, organization and flow of patient demand, symptoms, immunity, testing and transmission, in order to ensure patient safety and minimize knowledge deficiencies.<sup>19,39</sup>

The change and implementation of new institutional treatment and management protocols for COVID-19 control were evidenced in the studies as factors capable of promoting better decision-making, reducing stress among health teams and internal conflicts regarding disparate knowledge.<sup>11,17,19, 20,36</sup>

On the other hand, literature addresses the search for updates by health professionals regarding COVID-19 management, independently, over the internet, on institutional and governmental sites,<sup>13,23,28,29,30</sup> for scientific articles<sup>29,38</sup>, and most of them through social media,<sup>13,23,30,33</sup> like Twitter.<sup>39</sup>

The regular search for knowledge through unofficial websites and media demonstrates the potential fragility of the information sources chosen by professionals. There is a need for journals to offer open access to publications related to the topic<sup>38</sup> and for official government agencies to invest resources in digital platforms and social media, in order to guarantee the dissemination of reliable news,<sup>19,29</sup> including for the involvement and awareness of the general public,<sup>18,22,24,27</sup> since this is a recent issue, with increasing discoveries and the need for evidence-based updates.

COVID-19 brings with it several challenges, but also opportunities for digital healthcare. In this sense, health innovation technologies, with emphasis on electronic technologies (eHealth), have been proposed as tools to assist the provision of care from the perspective of social distance, such as the free C19CC application. The application was deployed in outpatient care settings in different countries for remote tracking of patients with comorbidities and discharge management, in addition to assisting in telehealth care by infected doctors in quarantine.<sup>34</sup>

Another proposal capable of contributing to the digital support for health education of health professionals was the creation of educational video content in the

United States through the Revinax® App mobile app. The app was responsible for the remote training of users for the procedures during handling of COVID-19, capable of offering skills acquisition, new skills and review of infection-related content.<sup>32</sup>

In times of pandemic, some weaknesses in health services interfere with the implementation of coping strategies, such as the limited support of public health authorities for human, material, financial resources and inefficiency in protecting physical integrity in the workplace;<sup>17,21,40</sup> this contributes to the increased risk of occupational exposure experienced by health professionals,<sup>21,26</sup> in addition to insecurity with the professional and economic future.<sup>16,18</sup>

Considering that health professionals are the main players in the front line in the fight against COVID-19 in the different scenarios of health services, literature shows the growth of new adaptive behaviors that interfere with physical and psychological changes<sup>18</sup> either due to the lack of preparation to deal with cases, ignorance of the disease, or due to work overload.<sup>19,27,30,34</sup>

The authors point out some feelings that could be listed through the questionnaires applied in the studies to professionals, such as concern and anguish about the disease, fear of contamination,<sup>11,12,14-16,18,19,21,27-29,31,35,36,40</sup> high anxiety, intense feelings of anger and sadness, which, even if observed in a few cases, can directly impact the quality of care provided to patients.<sup>16,31</sup>

Furthermore, feelings of concern, fear and fear of contaminating family members and/or close friends were also mentioned by the authors.<sup>11,19,20,36</sup> This highlights the importance of the availability of alternative locations or temporary accommodation for health professionals to remain after activities that involve risk of contamination, in order to minimize the chain of COVID-19 transmission<sup>36</sup> and reduce associated psychological impacts.

On the other hand, it is emphasized that there were, to a lesser extent, good practices in relation to the COVID-19 pandemic; they were motivated by governmental measures that guaranteed reliability in response actions to fight the disease, as well as by the experience of professionals who collaborated for a more optimistic considering the moment experienced,<sup>13,20,24,28,30,33,37</sup> less stress and anxiety,<sup>38</sup> in addition to controlling fear.<sup>12</sup>

The availability and correct use of PPE are described in the literature not only as important means of COVID-19 prevention and control, but also as factors that contribute to the emotional and psychological security of health professionals.<sup>20,38</sup> However, when unavailable or used incorrectly, they can cause insecure behaviors,<sup>24,30</sup> often driven by distrust and uncertainty in their protective capacity.<sup>18,19,40</sup>

To assist in the development of a culture of resilience within the work environment, a study carried out in the United Kingdom, using digital learning services through evidence-based guidance and support related to health professionals' psychological well-being, allowed, after its use, normalization of psychological responses during a crisis, encouragement to self-care and help behaviors.<sup>14</sup>

This highlights the importance and need for interventions aimed at improving health professionals' resilience and mental health that involve: communication with family and friends;<sup>21</sup> strengthening protection measures; development of standards, workshops and health education that integrate control behaviors; setting goals and making decisions to alleviate the stressful experience of experiencing a pandemic; avoiding complicated and more serious psychological problems in the long run.<sup>11,20,35</sup>

## CONCLUSION

This review made it possible to identify coping strategies related to the knowledge acquired, growth in the use of new health technologies through applications, adaptations to changes in protocols, in addition to adaptive behaviors associated with practices, expression of feelings and negative values. Although less frequently, good practices have been identified that contribute to increased resilience and psychological well-being among health professionals.

As a limitation of this study, it is noteworthy to include only original articles to the detriment of other types of publication, which may have caused the exclusion of materials that addressed and contributed to the theme. It presents the importance of understanding and knowing coping strategies and adaptive behaviors to foster discussions of disease prevention and control practices in different health service settings, as well as interventions aimed at the self-care of frontline combat health professionals from COVID-19.

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