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Review article

Resilience of health professionals in times of COVID-19: integrative review

Resiliência dos profissionais de saúde em tempos da COVID-19: revisão integrativa

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ABSTRACT: Objective: To identify scores or levels of resilience among health professionals during the COVID-19 pandemic and their relationship with other variables in the scientific literature. **Methods:** This study presents an integrative literature review using the Virtual Health Library (VHL), Scientific Electronic Library Online (SciELO), Medline via PubMed and Google Scholar databases. The descriptors used were "Psychological Resilience" and "Health Personnel" with the Boolean operator "AND". The review included articles published between January 2020 and February 2023 that analyzed data during the pandemic period. **Results:** The bibliographic search resulted in 410 articles, from which 16 publications were selected. Half of the studies indicated moderate resilience among health professionals. Low scores or levels of resilience correlated with negative feelings such as burnout, work-related exhaustion, depression, anxiety, stress, and secondary traumatic stress. High scores, on the other hand, correlated with positive feelings, such as satisfaction with compassion, well-being, quality of life, professional achievement and coping with adverse situations. **Conclusion:** The study was able to identify levels of resilience. Health professionals have moderately adapted to the adverse situations imposed by the pandemic. High scores are positively associated with good living and health conditions, professional achievement and coping with adverse situations.

DESCRIPTORS: Psychological resilience. Health personnel. Review. Occupational health. Covid-19.

RESUMO: Objetivo: Identificar os escores ou níveis de resiliência entre profissionais de saúde durante a pandemia de COVID-19 e sua relação com outras variáveis na literatura científica. **Métodos:** Este estudo apresenta uma revisão integrativa da literatura utilizando as bases de dados Biblioteca Virtual em Saúde (BVS), Scientific Electronic Library Online (SciELO), Medline via PubMed e Google Acadêmico. Os descritores utilizados foram "Resiliência Psicológica" e "Pessoal de Saúde" com o operador booleano "AND". A revisão incluiu artigos publicados entre janeiro de 2020 e fevereiro de 2023, que analisaram dados durante o período da pandemia. **Resultados:** A busca bibliográfica resultou em 410 artigos, dos quais foram selecionadas 16 publicações. Metade dos estudos indicou resiliência moderada entre os profissionais de saúde. Pontuações ou níveis baixos de resiliência correlacionaram-se com sentimentos negativos, como exaustão, exaustão relacionada ao trabalho, depressão, ansiedade, estresse e estresse traumático secundário. Escores altos, por outro lado, correlacionaram-se com sentimentos positivos, como satisfação com compaixão, bem-estar, qualidade de vida, realização profissional e enfrentamento de situações adversas. **Conclusão:** O estudo foi capaz de identificar níveis de resiliência. Os profissionais de saúde adaptaram-se de forma moderada às situações adversas impostas pela pandemia. Escores altos estão positivamente associados a boas condições de vida e saúde, realização profissional e enfrentamento de situações adversas.

DESCRITORES: Resiliência psicológica. Pessoal de saúde. Revisão. Saúde ocupacional. Covid-19.

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INTRODUCTION

Health professionals are workers engaged in actions whose primary intention is to improve health. This category includes physicians, nursing team, physiotherapists, nutritionists and health service providers, among others. Changes in the health area, such as the expansion of diagnostic and therapeutic resources, have changed the profile of the patients that need hospitalization and, consequently, the work of these professionals, who have started to work with high workloads, scarcity of supplies and lack of infrastructure, factors that directly affect physical and psycho-emotional health[1].

The COVID-19 pandemic forced health professionals to face difficulties at work that were added to the preexisting ones, which coincided with an increase in psychological illness in workers from different categories in the health area, especially in front-line ones who maintained direct contact with patients, due to unusual situations and lack of information, high physical and psychological demand, lack of adequate training on new protocols and restricted contact with friends and family members. A study points out that one of the most affected categories was Nursing, with high rates of depression, anguish, susceptibility to post-traumatic stress disorder and anxiety[2].

In this context, measures to face increasingly challenging situations are extremely important for health professionals. Resilience becomes a high-value tool as a protective factor against adverse events and a mediator in coping with COVID-19, as the stressors to which these professionals are exposed were enhanced by the pandemic state[3].

The concept of resilience was popularized in the 1970s in the United States in the field of Developmental Psychology, with the observation of how certain children and adolescents managed to overcome adversity and thrive in adult life. It is a construct conceptualized in several areas, with consequent controversies regarding its delimitation. In occupational health, it is understood as a series of individual, organizational or cultural strategies to survive, and even transcend difficulties imposed by the life context. Several factors such as extroversion, building good relationships with colleagues, spirituality and meaning in life and work, enable individuals to overcome professional adversities[4,5].

A study carried out with nurses responsible for the front line of care for patients with COVID-19 showed increased resilience and better conditions for coping with the pandemic after a series of interventions such as interviews, individual counseling and psychological support for professionals and their families. This result demonstrates that resilience can be built and improved, a fact of extreme importance for health professionals who have gone through a pandemic and continue to deal with the sequelae imposed by the disease[6].

A review carried out prior to the COVID-19 pandemic analyzed scientific productions on resilience at the time and showed the scarcity of studies on the topic[7]. This study is justified based on the need to produce knowledge about resilience levels or scores among health professionals in times of crisis, as the period brought about peculiar and unusual situations for everyone. The objective is to identify the resilience scores or levels among health professionals during the COVID-19 pandemic and their relationship with other variables in the scientific literature. The result of this publication may be useful to assess whether there was any impact on resilience and psycho-emotional health when compared to the period prior to COVID-19.

METHOD

This is an integrative literature review on health professionals' resilience during the COVID-19 pandemic. It was organized in six stages: formulation of the research question, bibliographic search, data extraction, critical evaluation, analysis and summary of studies, and knowledge synthesis[8].

The guiding question was formulated with support of the PICO strategy (acronym for P: Population, I: Intervention/Area of Interest, C: Comparison, and O: Outcome)[9]. The population corresponded to health professionals; the area of interest was designated as patient care in COVID-19 times; the comparison was obtained by establishing the relationship with other variables in the articles that had this objective; and the outcomes of interest were resilience levels or scores. In this way, the following guiding question was defined: "What evidence is available in the scientific literature on the resilience levels/scores among health professionals in COVID-19 times and what is their relationship with other variables?".

The search for studies took place in March 2023 in the databases that make up the Virtual Health Library (*Biblioteca Virtual em Saúde*, BVS), in the Scientific Electronic Library Online (SciELO), in Medline via PUBMED, and in Google Scholar. The search for data in Medline via BVS versus PUBMED presented divergent results. For this reason, it was decided to analyze the results of both search engines. Choice of the databases considered the scope and affinity with the topic.

Aiming at a broad search in the literature, the strategies combined the "Psychological Resilience" and "Health Personnel" controlled descriptors, as well as their derivatives included in the latest version of the Descriptors in Health Sciences (*Descritores em Ciências da Saúde*, DeCS) in Portuguese, English and Spanish, combined by through the AND Boolean operator. It should be noted that this version has an interface with the Medical Subject Headings (MeSH). The studies were searched using as search terms the titles and abstracts of the publications in

the databases that allowed this selection.

The materials included were original articles, from cross-sectional or mixed-methods studies, in English/Spanish/Portuguese, published from January 2020 to February 2023, whose data collection was carried out during the pandemic period and that dealt with the research topic, considering individual, team or work resilience. Studies with samples comprised by different professional categories or studies in specific professions were considered.

The materials excluded were publications presented in thesis or dissertation format, editorials, review articles, manuals, protocols, book chapters, reflections, opinions or comments by specialists, case reports, preprints, files in media format, studies with interventions, as well as duplicate publications in the databases, which did not refer to the research topic or population or which did not answer the guiding question.

There were three exclusion moments: first, duplicate publications by evaluating the titles; in a second stage, by reading titles and abstracts; and, finally, after reading the full texts. For mapping purposes, the publications were exported to the Excel® software and organized and summarized in a form prepared by the authors. The data summary was presented in a flowchart prepared with the support of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)[10] protocol and the results of the articles were reported in tables with descriptive analysis.

The ethical aspects were respected, with reliable citation of the authors' sources and definitions.

RESULTS

A total of 410 publications were identified in the databases: 61 in Medline via PUBMED, 42 in Google Scholar, 37 in SciELO and 270 in the BVS databases (196 in Medline, 61 in LILACS, 9 in Índice *Bibliográfico Español en Ciencias de la Salud* [IBECS] and 4 in *Base de Dados em Enfermagem* [BDENF]). At the first exclusion moment, 55 duplicate publications were removed; at the second moment, after reviewing titles and abstracts, 300 articles that did not answer the research question were excluded. Finally, after reading the fill-text articles, 39 publications were excluded: 15 for not being available in full and the others for not meeting the inclusion criteria. The flowchart corresponding to selection of the articles is shown in Figure 1.

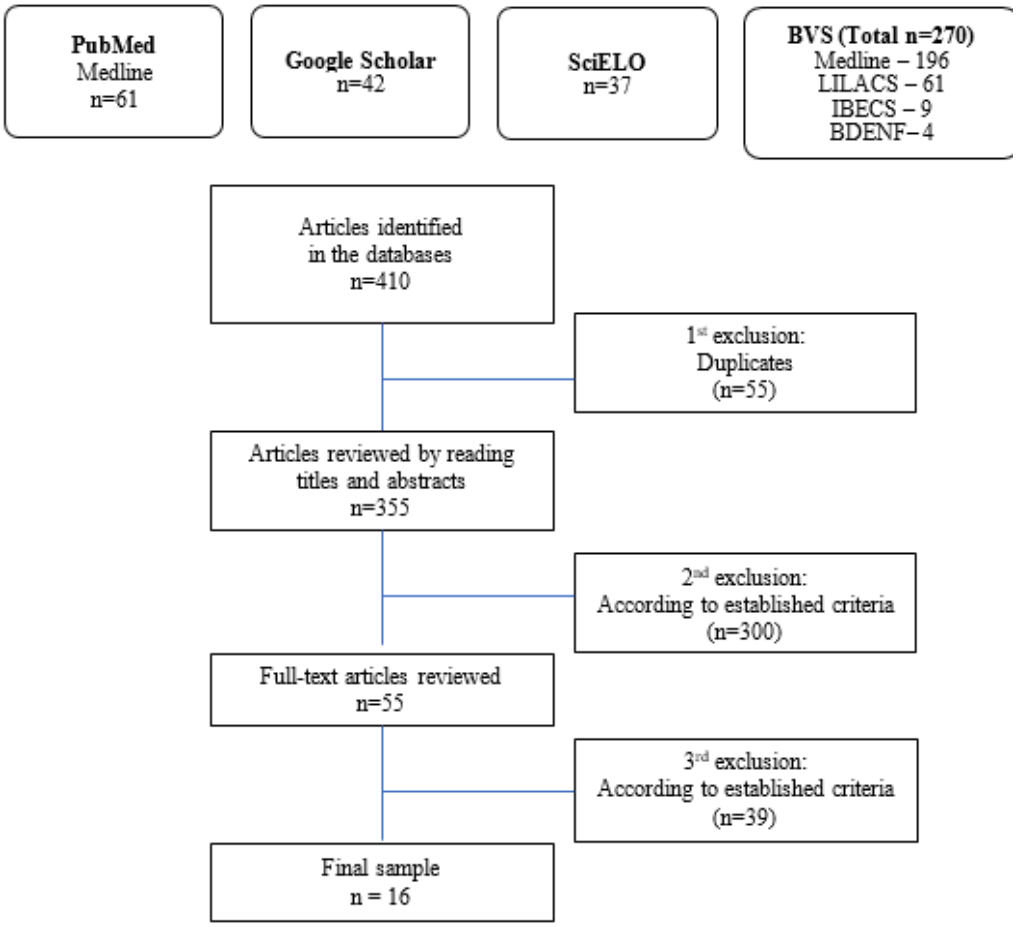

Figure 1 - Flowchart corresponding to selection of the studies.

The sample consisted of 16 articles published between 2020 and 2022: 7 in 2022, 5 in 2021 and 4 in 2020, most of them in English (15). As for the populations, 10 were carried out with HPs in general, 5 with Nursing teams and one with social workers. Other characteristics of the studies are shown in Table 1.

Table 1 - Characterization of the studies according to authorship, year of publication, journal, language, sample and study locus.

No.	Authorship/ Year of publication	Journal and language	Study sample and locus
01	Chen Y et al.[11] 2022	Frontiers in Psychiatry English	876 HPs from 31 hospitals in the province of Sichuan, China
02	Ratzon A et al.[12] 2022	Int. J. Environ. Res. Public Health English	332 social workers from Israel
03	Hendrikx I et al.[13] 2022	Int. J. Environ. Res. Public Health English	129 emergency HPs in a teaching hospital from the Netherlands
04	Rogers et al.[14] 2022	J Nurs Manag English	734 mid-level HPs from the United Kingdom
05	Li et al.[15] 2022	Psychol Health Med English	309 HPs from China
06	Swavely D et al.[16] 2022	J Nurs Adm English	22 nurses from the Pennsylvania Acute Care Teaching Hospital.
07	Vieira et al.[17] 2022	Rev. Latinoam. Enferm. (Online) Portuguese	153 Intensive Care Nursing professionals from Brazil
08	Peñacoba et al.[18] 2021	Nurs Crit Care English	448 intensive care HPs from Spain
09	Croghan et al.[19] 2021	J Prim Care Community Health English	302 HPs from the United States
10	Afshari et al.[20] 2021	Work English	387 nurses from Iran
11	Rivas N et al.[(21)] 2021	Int. J. Environ. Res. Public Health English	101 nurses from COVID-19 or non-COVID-19 units, from a hospital in Spain
12	Marcolongo F et al.[22] 2021	Med Lav English	334 HPs of the San Raffaele hospital in Rome, Italy
13	Sinu J, Dhandapani M, Cyriac M[23] 2020	Indian Journal of Critical Care Medicine English	120 emergency nurses in a hospital from India
14	Huang L et al.[24] 2020	Med Sci Monit English	587 HPs working at Radiology departments in 32 public hospitals from the province of Sichuan, China
15	Lin et al.[25] 2020	BMC Psychiatry English	114 HPs from Wuhan, China
16	Luceño-Moreno et al.[26] 2020	Int. J. Environ. Res. Public Health English	1,422 HPs from Spain

Source: Research data, 2023

The most commonly used scales to assess resilience were the 25-item CD RISC (5 studies) and the 10-item CD RISC-10 (4 studies). Table 2 presents the objectives, instruments and results of the evaluations.

In the analysis of the individual resilience scores and levels, the authors considered the result as average/moderate in 8 studies, and as moderately high or high in three. Team resilience was also considered moderate. Resilience at work was evaluated in two studies and there is a score for this construct in only one, where it was considered an average level.

There is a negative relationship with professional exhaustion and wear out, depression, anxiety, secondary traumatic stress and stress. On the other hand, the resilience scores are positively related to compassionate satisfaction, well-being, quality of life, professional fulfillment and coping with adverse situations.

Table 2 – Description of the objectives, assessment instrument and results of the studies included in the sample.

N	Objective	Assessment instrument and Results
01[11]	To estimate negative emotions, exhaustion at work and psychological resilience in the health team during COVID-19.	CD RISC-10 (0-40); The mean level was 37 points (high); men, older professionals and those with higher education were more resilient. Physicians obtained higher levels than nurses. Resilience exerted an impact on professional exhaustion, depression and anxiety.
02[12]	To assess the levels of job resilience, burnout, secondary trauma and compassionate satisfaction among social workers in Israel during the COVID-19 pandemic.	RAW (20 items) categorized as low, medium and high; The overall RAW level among the social workers was 71.0±8.9 (mean); There was no difference between the genders. Resilience was positively correlated with compassionate satisfaction and negatively correlated with secondary traumatic stress.
03[13]	To investigate which conditions increase individual and team resilience, referring to the ability to "recover" from stressful situations.	Adapted Team Resilience Scale (15-75 total points) and Brief Resilience Scale (6-30 points); The mean resilience level of the team was 3.739±0.445 and the individual one was 3.767±0.630, both moderate; There was a positive correlation between individual and team resilience. Individual resilience accounted for 12.4% of the variance in team resilience. Variables such as transformational leadership, self-efficacy, team familiarity, optimism, support from family members and friends and demographic variables account for 37.7% of team resilience.
04[14]	To investigate emotional and spiritual well-being and resilience among mid-level professionals in the United Kingdom.	CD RISC-10 (0-40 points); The mean level was 27.9±5.2 points; Higher resilience levels are related to greater well-being. Spirituality was the only significant predictor of resilience, accounting for 31% of the variance.
05[15]	To evaluate the influence of resilience, coping mechanisms and stress generated by the COVID-19 pandemic on HPs' quality of life.	CD RISC-25 (0-100 points); The mean resilience score was 60.8±15.7: moderate; Resilience was positively correlated with quality of life. Resilience and active coping were negatively correlated with COVID-19 stress.
06[16]	Understanding the traumatic stress and resilience of nurses who cared for patients with COVID-19.	CD RISC-10 (0-40 points); The mean score was 31.5: moderate; Despite the moderate resilience scores, many nurses in this study experienced traumatic stress.
07[17]	To analyze the relationship between the Burnout dimensions and resilience in the work of ICU Nursing professionals during the COVID-19 pandemic.	RAW 20 items; Did not present general resilience level; Resilience at work presented an inverse correlation with emotional wear out and depersonalization and a direct correlation with professional fulfillment. It was related to the perception about the impact of the pandemic on mental health, the employment contract, sleep quality and work shift, and proved to be a protective factor against minor psychological disorders and emotional wear out Positive correlation with professional fulfillment.
08[18]	To explore the prevalence of symptoms associated with anxiety and the relationship between anxiety and resilience skills among ICU professionals during the COVID-19 pandemic.	Resilience scale (7-98 points); The total resilience score was 77.82±15.35; The multiple regression analysis showed that resilience skills contributed with 14.4% of the variance of anxiety symptoms. The only skill that had a significant and negative predictive effect was "I tend to take things at my pace"
09[19]	To estimate self-reported stress, resilience and coping mechanisms by health professionals during the COVID-19 pandemic, and to determine interprofessional differences.	Resilience Scale (7-98 points); Mean score 3.6; Younger individuals presented higher stress levels and more resilience.
10[20]	To determine resilience and its predictive demographic factors among nurses working in hospitals involved with COVID-19.	CD RISC-25 (0-100 points); The mean resilience score was 61.18±14.8: moderate; Age, work experience and schooling level were positively correlated with nurses' resilience during the COVID-19 pandemic.

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continuation

N	Objective	Assessment instrument and Results
11[21]	To assess burnout syndrome and nurses' resilience during the COVID-19 pandemic.	CD-RISC-10 (0-40 points); The mean level was 27.94±5.84: moderate; No difference between sectors devoted or not to COVID-19 and individual characteristics. Burnout was not related to resilience, but there was a negative relationship with "emotional exhaustion" and a positive correlation with "personal fulfillment".
12[22]	To assess the psychological condition of health professionals (HPs) in the Rehabilitation field during the COVID-19 pandemic.	Resilience Scale (7-98 points); The mean was 73.13: moderate to high resilience; Women had higher values, nurses were more resilient than other professionals. Relationship between high resilience levels and low anxiety, depression and fear levels; the group with higher depression levels had lower resilience levels.
13[23]	To identify exhaustion and resilience and their associated factors among nurses who provide direct care to patients in the emergency service of a tertiary-level care center in India.	CD RISC-25 (0-100 points); Moderate to high general level (77.77±12.41), with 47.5% of the participants having high resilience levels. Emotional exhaustion and personal inefficacy were negatively correlated with resilience.
14[24]	To assess the resilience level of medical teams in Radiology departments during the COVID-19 outbreak.	CD RISC-25 (0-100 points); The total score was 65.76±17.26: moderate; There was a significant and negative correlation between perceived stress and resilience.
15[25]	To investigate the resilience of non-local health workers deployed to Wuhan, China, during the COVID-19 pandemic.	CD RISC-25 (0-100 points); The mean score was 60.8±15.7; The score was higher for physicians, followed by support staff including health aides, technicians and nurses was the lowest. There was a negative correlation with anxiety and depression and a positive correlation with active coping styles and training/support provided by the hospital.
16[26]	To analyze post-traumatic stress, anxiety and depression during the COVID-19 pandemic.	Resilience Scale (7-98 points); The mean resilience score was 3.02±0.39: low; There was a negative correlation with post-traumatic stress, anxiety and depression.

CD RISC-10: 10-item Connor-Davidson Resilience Scale; CD RISC-25: 25-item Connor-Davidson Resilience Scale; RAW: Resilience At Work scale

DISCUSSION

COVID-19 occurred suddenly and seriously, with consequences for health professionals' health, such as stress in the workplace or the need to work longer hours, facts that led to tiredness, insecurity, fear of the new, difficulty maintaining care quality, and less time for personal health and development[13]. The need to continue assisting in a pandemic with no set end date drove workers, teams and institutions to seek support to maintain physical and psycho-emotional health.

In this sense, this study investigated the behavior of resilience, a mechanism considered a protective factor against illness. The diverse evidence surveyed in this study suggests that, in the face of adversity, threats or other important stressful events, resilience is more conducive to adaptation and individual growth.

There were different perspectives to approach resilience, with new constructs such as team and work resilience, in addition to individual resilience, already studied a few years ago. Team resilience is seen as the ability of a team to withstand and overcome stressors in a way that allows joint and sustained performance, being influenced by individual resilience[13].

In turn, resilience at work involves aspects such as creativity and innovation, hope, authenticity, high self-esteem for problem-solving, critical thinking, autonomy, ability to interact with the environment, be proactive, deal with unpredictability, manage stress and support of family members and friends. Resilience at work is the ability to manage daily work stress in order to stay healthy and learn and recover from unexpected setbacks, proactively preparing for future challenges[27].

The instruments most used to assess individual resilience were CD RISC-25 and CD RISC-10, both by the same author. Interpretation of the tool is from the observed scores of the general population, from which these tools were originally developed. Thus, people with

greater vulnerability are in the first quartile of scores (Q1), while in the second (Q2) and the third (Q3) quartiles we find the intermediate resilience scores and, finally, the values associated with the most resilient people among the population are in the fourth quartile (Q4)[28].

Some articles selected for this integrative review assessed resilience scores, whereas others did so with levels, a fact that made it difficult to summarize the data due to non-standardization. In general, in most of the publications, the researchers identified moderate levels of individual resilience, which means that there is a need to improve internal reserves to deal with stress. It is known that high values and/or individuals classified as having high resilience levels predispose to a greater range of protective factors and better psychological conditions to face obstacles. On the other hand, low scores or levels denote poor support[17].

In 2020, during the first peak of the COVID-19 pandemic, a study carried out at 32 hospitals in China identified low resilience scores when compared to studies during a non-pandemic period. The authors relate this result to the lack of clarity about COVID-19, the fact that health professionals were not mentally prepared, the high number of deaths, lack of precision about when the high-intensity and high-risk work conditions would change, and because they are a risk group[24].

In another study carried out during the same period in Israel, the authors also expected low resilience levels in social workers, but identified moderate values. The researchers relate this result to the fact that social work, as well as other health categories, are helping professions and that, during the pandemic period, the world experienced moments marked by solidarity and collaboration. They also mention that health professionals are used to experiencing continuous stressors at work, having developed resilience throughout their profession[12].

Psychological resilience has been identified as a protective factor for the mental health of workers, as it mobilizes internal protective factors to resist an unfavorable external environment[11]. A number of studies reveal the relationship between resilience and other constructs for psycho-emotional assessments, which denotes the importance of not analyzing it individually. Work-related factors such as longer professional experience and high schooling levels[20] and professional fulfillment[21] showed a positive association with high resilience levels among professionals.

On the other hand, disorders such as anxiety, depression, professional exhaustion/wear out[11,18,21], stress[23,24] and Burnout syndrome[17,23] were associated with lower resilience levels, reasserting its relevance in preserving workers' health, especially in the COVID-19 pandemic context.

It is important to consider that the individual resilience scores may vary in the same individual, throughout life, and based on their experiences, contexts and emotional conditions. In this sense, psychological interventions are identified as a tool to improve resilience, reduce stress and improve the quality of life and mental health of health professionals. In addition to this, reinforcement of social support, increasing qualifications, adequate access to relevant information can also contribute to raising the resilience levels[11,15].

The main work factors that positively interfere with resilience levels are related to longer working time and experience, which denotes the development of specific skills and knowledge, facilitating their interaction with the environment. Thus, it becomes necessary to develop competencies to deal with the adversities inherent to the professional practice, focusing on increasing attributes such as self-confidence, self-control, empathy, optimism, tolerance, flexibility and teamwork, among others[17].

In this way, developing research studies with mixed methods and more robust designs would allow for a deeper understanding of this phenomenon. Given the complexity of the pandemic scenario, a series of factors may have influenced the professionals' health in different contexts; these aspects are not captured in quantitative approaches, suggesting the need for concomitant qualitative assessments.

It is understood that this study presented some limitations; listing them may serve as a reference for future research. A number of research studies were identified that would have great potential to comprise the sample of this integrative review; however, they were not open-access. This limitation reduces the acquisition of new knowledge and the dissemination of important results. It should be noted that the details of the methodologies used were not always complete or clear, which led to the absence of some data in this IR.

CONCLUSION

The current study achieved its objective by identifying resilience scores or levels among health professionals in COVID-19 times in the scientific literature and their relationship with other variables, as well as it revealed moderate resilience levels in most studies.

It was verified that low resilience scores are related to increased harms. This is a worrying result, as countless health professionals were subjected to exhausting work at this time of coping with the pandemic and many of them suffered from professional exhaustion, depression and stress, with the possibility of sequelae such as secondary traumatic stress. As a result, it is imperative that health professionals have social and psychological support.

Identifying resilience levels and scores and establishing their relationship with other variables will enable the implementation of strategies and interventions to improve individual, team and work resilience.

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