

Burnout at the hospital: Healthcare workers coping with COVID-19 stress

Burnout no hospital: enfrentamento do estresse da COVID-19 por trabalhadores da saúde

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Abstract

Objective

The first wave of COVID-19 was challenging for healthcare workers. This study analyzed the ways of coping with stress at a university hospital.

Method

A Sociodemographic Characterization, Risk and Exposure Assessment, Burnout Assessment Tool (BAT-23), and COVID-19 Coping Scale were responded online by 181 professionals.

Results

The sample was composed mainly of women, white, married, physicians, with one job. Over 80% of the sample were at high exposure and risk for infection, with 17.1% having tested positive. The most reported stressors were risks of transmitting the disease, being hospitalized, and being separated from loved ones; 11% presented the risk of/probable burnout, with exhaustion and emotional impairment. They presented adaptive coping strategies, such as problem-solving and information-seeking, with a negative correlation between adaptive coping and burnout. Being a physician with maladaptive coping, in psychiatric care, and having religious beliefs were predictors of burnout.

Conclusion

Promoting adaptive coping may improve the mental health of these workers.

Keywords: Adaptation, psychological; Burnout, psychological; COVID-19; Health professionals.

Resumo

Objetivo

A primeira onda da COVID-19 foi desafiadora para os profissionais de saúde. Este estudo analisou o enfrentamento do estresse em um hospital universitário.

Método

De forma online, 181 profissionais responderam: Caracterização Sociodemográfica, Avaliação do Risco e Exposição, Burnout Assessment Tool (BAT-23) e Escala de Coping da COVID-19.

Resultados

A amostra foi composta principalmente por mulheres, caucasianos, casados, médicos, com um emprego. Tiveram alta exposição e risco à infecção mais de 80% da amostra, com 17,1% positivos. Os estressores mais relatados foram: riscos de transmitir a doença, ser hospitalizado e separado de pessoas queridas; 11% apresentaram risco/provável de burnout, com exaustão e prejuízo emocional. Apresentaram estratégias mais adaptativas, como Resolução de Problemas e Busca de Informações, havendo uma correlação negativa entre coping adaptativo e burnout. Ser médico, com coping mal adaptativo, em atendimento psiquiátrico e ter crença religiosa foram preditores de burnout.

Conclusão

Promover um coping adaptativo poderá melhorar a saúde mental desses trabalhadores.

Palavras-chave: Adaptação psicológica; Esgotamento psicológico; COVID-19; Profissionais de saúde.

The Coronavirus Disease 2019 (COVID-19) pandemic has Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) as its etiologic agent, a respiratory virus of high infectivity, transmitted mainly by droplets and interpersonal contact. The rapid dissemination of this new disease and the mass illness of the population have impacted health services. There were shortages of physical resources, such as beds and oxygen, a lack of material resources like medicines, and a scarcity of human resources. In this pre-vaccine scenario, social isolation was one of the main measures to try to contain viral dissemination. Healthcare Workers (HCWs) continued working and were often diverted from their duties to cope with the demand of inpatients, were overburdened, and got infected more frequently than the general population (Amorim et al., 2021; Cai et al., 2020; Silva et al., 2022).

This overload within the hospital environment presents itself with numerous stress-generating aspects in these HCWs, such as the feeling of vulnerability towards a disease without treatment, fear of transmitting the virus to family members and losing their network of support due to social isolation. In addition, the HCWs had their working hours extended with overtime, had to deal with a work environment with pressure and, at times, abusive hierarchical relationships, besides human suffering (fear, pain, sequelae, deaths, for example) (Orfão et al., 2020; Schmidt et al., 2020; Sun et al., 2021). The relationship with death itself gained new meanings, as it affected many close colleagues and was seen as unnatural (Messias et al., 2022).

In this context, psychological impacts on these HCWs were soon identified - there was a high incidence of anxiety (37%), depression (36%), and insomnia (32%) in HCWs on the front lines of the pandemic, especially among women (Sun et al., 2021). Burnout Syndrome is another result of the imbalance between working conditions and resources (Ribeiro et al., 2018) also reported in the pandemic context (Yildirim & Solmaz, 2020). It is already known that working conditions and

their repercussions on workers' mental health impact the quality of life and risks of illness (Schaufeli, 2017; Vazquez et al., 2019). The Job Demands-Resources model defines burnout as "a state of work-related exhaustion that occurs among employees and is characterized by extreme fatigue, reduced ability to regulate cognitive and emotional processes, and mental distancing" (Schaufeli et al., 2020, p. 4). In addition to these four main dimensions are depressed moods, psychological, and nonspecific psychological disorders, including psychosomatic complaints. Based on the analysis of the relationship between the demands (physical, psychological, social, and/or institutional demands) of any type of "work" (understood from a psychological and not only labor perspective), and the respective resources for its execution, it is possible to identify decisive factors and consequential results on performance and engagement in an objective manner (Schaufeli et al., 2020; Sinval et al., 2022). The dynamics between demands and resources have two distinct psychological processes – in a positive relationship, increased motivation and engagement are observed; and the imbalance between them can cause tension, distress, exhaustion, and, in chronic cases, burnout (Moura et al., 2020; Schaufeli, 2017; Vazquez et al., 2019).

The mean percentage of burnout in HCWs working during the pandemic was 28% (26% to 31%) in the systematic review by Serrano-Ripoll et al. (2020), with 117 studies and a sample of 119,189 participants. Being younger, being a woman, having a lack of social support, being stigmatized, working in a high-risk environment, in specific occupational roles, and having lower levels of specialized training and work experience are factors associated with burnout, depression, and anxiety in this sample. A similar profile was found in the review by Pablo et al. (2020), with 115 studies and a sample of 60,458 HCWs, with a mean age of 36.1 years ($SD = 7.1$), the majority of whom were women (77.1%). They identified 34.4% burnout, among other psychological symptoms.

Although studies show a high prevalence of stress in HCWs, the most recent systematic review by Meira-Silva et al. (2022) showed, in 538 studies, a large range of burnout cases – from 76.0% to 14.1% –, and controversial results about the positive association between working in the frontline and a higher prevalence of burnout (nine studies confirmed it and four others did not), given the diversity of measures. In studies from 19 countries, Brazil showed the lowest prevalence of burnout. Emotional exhaustion, depersonalization, and mental distancing were frequent. Highlighting the Brazilian study (Civantos et al., 2020), with a national sample of 163 head and neck surgeons, symptoms of anxiety (45.5%), distress (26.3%), burnout (14.7%), and depression (16%) were observed in May 2020. Multivariate analysis showed that women physicians were more prone to burnout compared to men; participants younger than 45 years had anxiety symptoms; and those with a self-reported psychiatric history were more likely to have distress symptoms. Given the high prevalence of symptoms of burnout, anxiety, distress, and depression in physicians, the authors recommend that institutions monitor these symptoms throughout the pandemic.

Borderline situations such as the pandemic can threaten or challenge the universal basic psychological needs of Relatedness (feeling accepted, belonging to a group), Competence (control and efficiency to meet goals and objectives), and Autonomy (performing actions according to one's values, assuming their consequences) as per the Self-Determination Theory (SDT) (Ryan & Deci, 2017), being perceived as stressful events (Skinner & Wellborn, 1994).

In response, coping is triggered as a regulatory action of behavior, emotion, cognition, motivation, and physiology to deal with the threat or challenge to the basic psychological needs (Skinner et al., 2003). According to the Motivational Theory of Coping (MTC), the perception of the stressor as a challenge can have an adaptive mid- to long-term outcome through families of coping (high order categories) such as Support-seeking and Self-confidence/Self-comforting (challenges to

the Relatedness BPN), Problem-solving and Information-seeking (challenges to the Competence), Accommodation and Negotiation (challenges to the Autonomy). However, perceiving stressors as a threat can lead to maladaptive physical and mental health outcomes through six families of coping with Social Isolation and Delegation (threats to the Relatedness), Escape and Helplessness (threats to the Competence), and Submission and Opposition (threats to the Autonomy) (Skinner & Wellborn, 1994; Skinner et al., 2003).

A review of the international and national literature on the coping of HCWs (Dullius et al., 2021) showed there are three basic contexts for adaptive coping, also indicated by Enumo et al. (2020) and Silva et al. (2022). Specifically, social support, of a psychological nature, from family members, colleagues, institutions, and patients; being allowed to communicate with colleagues, family members, and professionals (e.g., psychologists); risk exposure reduction, such as the availability of continuing education and Personal Protective Equipment; and personal practices, such as spirituality, having time for hobbies, and controlling the workload, for example.

In a study on coping during COVID-19, with a sample of 442 Turkish physicians, Elbay et al. (2020) observed that avoiding thinking about the pandemic or feeling insecure about one's ways of coping was associated with higher rates of stress and depression. This study also identified 41.2% of its sample with stress, and variables related to such a condition, like being a woman, young and single, having less professional experience, and working on the frontline were associated with higher scores. These HCWs' depression (64.7%) was associated with increased weekly work hours and the number of COVID-19 patients treated, lower levels of support from colleagues and supervisors, lower logistical support, and a lower sense of competence when performing COVID-19-related tasks. The authors of both cited studies, as well as Dullius et al. (2021), stressed the importance of interventions to alter these psychological consequences in the population. These may include education on coping strategies for the public in addition to physicians, according to Elbay et al. (2020).

With this theoretical approach, the present study intended to analyze the relationship between stress in the hospital work setting (burnout) and strategies for coping with it by frontline healthcare workers of COVID-19 at the beginning of the pandemic in a university hospital.

Method

Participants

This study has a cross-sectional design, with a convenience sample of 181 HCWs who worked in the frontline of COVID-19 in a high-complexity university hospital reference for COVID-19 in the metropolitan region of Campinas, state of São Paulo, during the initial phase of the pandemic (May and June 2020). The hospital had 325 beds distributed among the Brazilian Unified Health System care ($n = 196$), Adult Intensive Care Unit (ICU) ($n = 13$), Coronary ICU ($n = 4$), Pediatric ICU ($n = 5$), and Neonatal ICU ($n = 16$).

These HCWs worked in the infirmaries and ICU sectors (included COVID-ICU = 70; COVID-Infirmary = 19), attending patients diagnosed with COVID-19, as well as those for other diseases. The main work schedule was organized into 6 to 12 hours shifts.

Instruments

Four instruments were used, as follows:

Characterization Form, with sociodemographic data – sex, age, marital status, ethnicity, level of education, religious belief/religion, and profession.

Risk Assessment and Management of Exposure of Healthcare Workers in the Context of COVID-19 (World Health Organization [WHO], 2020; translated into Brazilian Portuguese by this research team). It contains 27 items for frontline HCWs of COVID-19, aiming to map the extent of exposure to the virus and adherence to individual protection measures. It includes data such as profession, ward to which the worker was assigned, length of service, number of jobs, date of first exposure to patients with COVID-19, and frequency of use of adequate Personal Protective Equipment to identify the degree of risk and exposure. The HCWs who did not answer “always” to questions 5A1-5G; from question 6A to 6E; and/or who answered “yes” to question 7A were considered at “high risk” for COVID-19 infection; all other professionals were considered at “low risk” for infection.

Burnout Assessment Tool (BAT-23) (Schaufeli et al., 2019, Brazilian version adapted by Sinval et al., 2022, authorized by the authors, with this study being part of the national validation of the scale) – a more recent self-report measure used to ascertain the primary symptoms of burnout: exhaustion, mental distancing, and emotional and cognitive dysregulation. According to Schaufeli (2017), the BAT-23 is a scale based on a well-developed theory, the SDT. The authors propose 23 questions answered on a Likert scale (1-“never” to 5-“always”), and a second-order construct with four first-order factors: (a) Exhaustion: severe loss of energy that results in feelings of both physical (tiredness, feeling weak) and mental (feeling drained and worn-out) exhaustion (eight items, e.g., “Everything I do at work takes a lot of effort”); (b) Mental distance: a strong reluctance or aversion to work; one withdraws mentally – and sometimes even physically – from work and avoids contact with others like customers, clients, and colleagues; indifferent and a cynical attitude; little or no enthusiasm and interest for the work; one functions largely on autopilot (five items, e.g., “I struggle to find any enthusiasm for my work”); (c) Cognitive Impairment: memory problems, attention and concentration deficits, and poor cognitive performance (five items, e.g., “I make mistakes at work because my mind is elsewhere”); and (d) Emotional Impairment: intense emotional reactions and feeling overwhelmed by one’s emotions (five items, e.g., “During work, I get irritated when things are not how I want them to be”) (Schaufeli et al., 2019; Sinval et al., 2022).

The scale has two cut-off points: (a) scores starting at 2.59, indicative of burnout risk, and (b) scores above 3.02 for positive burnout diagnoses. The national average is 2.32 ($SD = 0.69$). Cronbach’s alpha value is 0.83 for the national sample (Schaufeli et al., 2019) and for the present sample.

COVID-19 Coping Scale (Enumo & Amaral, 2020, with permission of the authors) – was adapted from the Motivational Theory of Coping Scale-12 (MTC-12) (Lees, 2007) and the study of Silva et al. (2022). It is an instrument based on the MTC and SDT and is organized into two parts. The first contains a list of 12 stressors related to the pandemic context, scoring from 1 (“never”) to 4 (“very much”) for how stressful that item is. In this study, a high reliability coefficient was obtained ($\alpha = 0.90$). The second part has a list of 12 families’ coping strategies in the context of the COVID-19 pandemic, answered on a Likert scale (1-“never” to 5-“always”). Two scores are generated: (a) Adaptive Coping (mean of the responses given for the Self-Comforting, Support-Seeking, Problem-Solving, Information-Seeking, Accommodation, and Negotiation), with $\alpha = 0.67$ in this sample; and (b) Maladaptive Coping (Delegation, Social Isolation, Helplessness, Escape, Submission, and Opposition), with $\alpha = 0.68$ (in some social sciences research settings, $\alpha = 0.60$ is considered acceptable as long as the results are interpreted with caution, according to DeVellis, 1991).

Procedure

The HCWs were invited through posters in the hospital and by institutional phone and e-mail messages to participate in the study to perform serological (IgM/IgG) and molecular (RT-PCR) tests to identify the early infected positive and asymptomatic cases. After consenting to participate and collection of these tests, HCWs were instructed to respond to the questionnaires either printed ($n = 70$) or via a link to the Survey Monkey® platform ($n = 111$). Data collection occurred between May 13 and June 23, 2020, during the first wave of the pandemic in Brazil.

Data Analysis

Descriptive analyses of socio-demographic and labor variables were performed, and linear regression models were built for each outcome and the selection of the most relevant predictors, using the stepwise procedure. Network analysis was performed with a subsample of 89 participants, in conditions of higher risk of contamination (COVID-ICU = 70; COVID-Infirmarium = 19) to illustrate the complexity of the relationships among the variables.

A regularized partial correlations network analysis was conducted using the least absolute shrinkage and selection operator (LASSO) method (Epskamp & Fried, 2018). The method consists of estimating the partial correlations by the inverse of the bivariate correlation matrix, with very small values being set to zero (0) to generate a sparse graph (i.e., with few associations) consisting of nodes (variables) and edges (partial correlations). The purpose is to create a predictive model in which the effects of the other covariates are controlled. The edges can vary in color between red (negative correlations) and blue (positive correlations) and in size, indicating the effect size. The regularized partial correlations can be interpreted as standardized coefficients (betas) of linear regression, according to the following scale: less than 0.1 = negligible, from 0.1 to 0.3 = small effect, from 0.3 to 0.5 = moderate effect, and > 0.55 = large effect.

The study was approved by the National Research Ethics Committee and the university's Research Ethics Committee (CAAE: 31042120.4.0000.5481, opinion report nº 4.069.090) and was conducted in accordance with the Declaration of Helsinki and Brazilian Resolutions CNS 466/12 and CNS 510/16. All participants signed the Informed Consent Form for Research Participation and received a link to access a booklet on stress management during the pandemic (Araújo et al., 2020; Silva et al., 2022) and an invitation to an online brief psychotherapeutic intervention.

Results

The sample of 181 frontline HCWs had a mean age of 37 years (range = 22 to 66 years) and were mostly women (71.8%), white (76.8%), married (45.9%), and professed some religious belief (90.1%). They worked as physicians (39.8%), nursing technicians (28.7%), nurses (15.5%), physical therapists (6.6%), hygiene assistants (2.8%), pharmacists ($n = 1$; 0.6%), others (5.5%), or did not answer ($n = 1$). The predominant level of education was complete higher education (12.7%), with specialization (31.5%), but 28.7% did not answer. Almost half of the sample had only one job (49.2%), and the rest had two (27.6%) and three or more jobs (22.1%). Only 8.8% of the sample were in psychotherapy (8.8%), and 2.2% were in psychiatric treatment at the time of data collection.

In hospital work, 86.2% of the sample were in direct contact with a patient diagnosed with COVID-19, and 85.6% were within one meter of the patient. In addition, 80.1% were in an environment where positively diagnosed patients were cared for and 61.3% of the HCWs were

present in aerosol-generating procedures (considered to be greater transmitters of the virus). All these data reveal a high degree of exposure and high risk of infection of HCWs by the SARS-CoV-2 (WHO, 2020).

This risk can also be assessed by the results of the rapid immunochromatographic tests for IgG and IgM in blood to detect SARS-CoV-2 antibodies. These tests showed that 29.8% of the HCWs were IgG positive. For the RT-PCR molecular test, collected through nasal secretion, 17.1% of the samples were positive for COVID-19, even though they were asymptomatic, and were therefore taken out from work.

Despite the risks, most of these HCWs did not present work-related distress (89%), but 4.4% were referred for being at “risk of burnout”, and 6.6% with “probable burnout”, totaling 11.0% of the sample with indications of imbalance between demands and resources at work. Exhaustion and emotional impairment were the main symptoms presented. The mean of this sample was lower than the national mean in all dimensions, but within the *SD*, being compatible with the Brazilian sample (Table 1).

Table 1
Burnout in frontline healthcare workers of COVID-19 (N = 181)

BAT-23 Dimensions ^(a)	N (%)	National mean ^(b)	M (SD)	Min	P ₂₅	Mdn	P ₇₅	Max
Exhaustion	181	2.87 (0.8)	2.53 (0.8)	1.0	1.88	2.5	3.0	5.0
Mental distance	181	1.93 (0.8)	1.60 (0.6)	1.0	1.0	1.4	2.0	4.0
Emotional Impairment	181	1.97 (0.8)	1.76 (0.6)	1.0	1.2	1.8	2.0	3.6
Cognitive Impairment	181	2.19 (0.8)	1.69 (0.61)	1.0	1.2	1.6	2.0	5.0
Overall score	-	2.32 (0.7)	1.9 (0.55)	1.0	1.5	1.8	2.25	3.8
Classification ^(c)								
No distress	161 (89.0)							
Risk of Burnout	12 (6.6)							
Probable Burnout	8 (4.4)							
Total	181 (100)							

Note: ^(a) BAT-23 Dimensions (Schaufeli et al., 2019): Exhaustion: severe loss of energy that results in feelings of both physical (tiredness, feeling weak) and mental (feeling drained and worn-out) exhaustion; e.g.: lack of energy to start new work, feeling completely used-up after a whole day of working, feeling tired quickly even after spending minimal effort at work, and inability to relax after work; Mental distance: strong reluctance or aversion to work; one withdraws mentally – and sometimes even physically – from work and avoids contact with others as customers, clients, and colleagues. Indifferent and cynical attitude; little or no enthusiasm and interest for the work; one functions largely on autopilot; *Emotional impairment*: intense emotional reactions and feeling overwhelmed by one’s emotions; e.g.: feeling frustrated and angry at work, irritability, overreacting, feeling upset or sad without knowing why, and feeling unable to control one’s emotions at work; *Cognitive impairment*: memory problems, attention and concentration deficits and poor cognitive performance; e.g.: difficulties to think clearly and learn new things at work, being forgetful and absent-minded, indecision, poor memory, attention and concentration deficits, and trouble staying focused at work; ^(b) Percentile calculated in relation to the mean of the studied sample; P₂₅ = very high, P₇₅ = high, P₂₅ = medium, P₂₅ = lower (Sinval et al., 2022); ^(c) BAT-23 Classification - No distress: < 2.59 points; Risk of burnout: ≥ 2.59 and < 3.02; Probable Burnout: ≥ 3.02. All means are below the national mean, but within the *SD* (Sinval et al., 2022).

Most of the sample (59.4%) assessed the 12 events as “stressful” and “very stressful.” These HCWs presented a mean stress score of 2.9 points (*SD* = 0.5), a value close to the “stressful” classification. Family and illness-related stressors stood out in relation to work-related stressful events. In descending order, they indicated as main stressors the risks of transmitting the virus to family members and friends due to exposure at work, being separated from loved ones due to quarantine, and being hospitalized. In the work context, the stressors that stood out were the “risk of making a mistake while performing a procedure” (59.8% of the answers “almost always” and “always”) and having a “higher workload” (53.0%). Many of the HCWs (47.6%) perceived themselves as having some control over the situation, but a quarter of the sample felt they had no or little control (Table 2).

Table 2*Stress in frontline COVID-19 healthcare workers (N = 181)*

Stressors from the COVID-19 Coping Scale	N	1 - Not stressful	2 - Somewhat stressful	3 - Stressful	4 - Very stressful	M (SD)
		n (%)	n (%)	n (%)	n (%)	
Disease						
a. Risk of getting sick	179	11(6.1)	55 (30.7)	74 (41.3)	39 (21.8)	2.79 (0.85)
b. Risk of hospitalization	179	15(8.4)	37 (20.7)	51 (28.5)	76 (42.5)	3.05 (0.98)
c. Risk of transmitting COVID-19 to friends and family due to my exposure at work	179	6(3.4)	20 (11.2)	45 (25.1)	108 (60.3)	3.42 (0.82)
d. Conflicting news and information about the disease, its treatment, and isolation	130	8(6.2)	47 (36.2)	46 (35.4)	29 (22.3)	2.74 (0.88)
Mean - disease (mean % of 4 items = 24.4)	-	10(6.0)	39.7 (22.2)	54 (32.6)	63 (36.7)	-
Family						
e. Risk of worsening my financial situation during this pandemic period	180	20(11.1)	62 (34.4)	50 (27.8)	48 (26.7)	2.7 (0.9)
f. Not being able to maintain my routine	179	20(11.2)	53 (29.6)	59 (33.0)	47 (26.3)	2.7 (0.9)
g. Risk of being separated from the people I love due to quarantines	177	7(4.0)	36 (20.3)	46 (26.0)	88 (49.7)	3.2 (0.9)
Mean - family (mean % of 3 items = 24.9)	-	76(8.7)	26.1 (28.1)	28.2 (28.9)	38.1 (34.2)	-
Work						
h. Lack of structure and adequate safety equipment	180	38(21.1)	56 (31.1)	40 (22.2)	46 (25.6)	2.52 (1.09)
i. Increased workload	179	30(16.8)	54 (30.2)	57 (31.8)	38 (21.2)	2.58 (1.00)
j. Risk of making a mistake while performing a procedure	179	20(11.2)	52 (29.1)	60 (33.5)	47 (26.3)	2.75 (0.97)
k. Lack of adequate and accessible emotional support	180	45(25.0)	66 (36.7)	43 (23.9)	26 (14.4)	2.28 (1.00)
l. Lack of understanding and discrimination from the public about my work	178	37(20.8)	58 (32.6)	43 (24.2)	40 (22.5)	2.48 (1.06)
Mean - work (mean % of 5 items = 24.9)	-	34.0(18.9)	57.2 (31.9)	48.6 (27.1)	39.4 (22.0)	-
Total = 2,023 (%)	-	257(12.7)	596 (29.4)	538 (26.6)	632 (31.2)	2.77 (0.66)
Perceived Control of the Situation	166	None 8(4.8)	A Little Bit 33 (19.9)	Some 79 (47.6)	A lot 46 (27.7)	2.98(0.82)

Note: Data collected in May-June 2020, at the beginning of the 1st wave of COVID-19.

To deal with these stressors related to COVID-19, HCWs reported “always” using these coping strategies: (a) Information-seeking (43.4%) and Problem-Solving (38.6%), both strategies related to the perception of a challenge to the Competence BPN; (b) Negotiation (23.0%) and Accommodation (14.9%), both related to the perception of a challenge to Autonomy (Table 3). The data show a greater perception of threat to the Autonomy, reacting with anger and submission, in addition to feeling threatened in their Competence and wanting to escape from the situation (Table 3).

The main predictors of burnout were being a physician ($p < 0.001$), having maladaptive coping ($p < 0.001$), being in psychiatric care ($p = 0.01$), and having a religious belief ($p = 0.05$). HCWs with more than one job showed lower scores for burnout ($p = 0.06$) and adaptive coping, demonstrating an inverse correlation to the syndrome ($p = 0.07$). Therefore, the variables “having more than one job” and “adaptive coping” were identified as protective factors against burnout (Table 4).

The main predictors of COVID-19-related stress were having maladaptive coping ($p < 0.001$), being a woman ($p = 0.01$), having high-risk exposure (WHO score) ($p = 0.04$), and not having a specialization course or higher education degree ($p = 0.07$) (Table 4).

Table 3*Coping with COVID-19 by frontline healthcare workers (N = 181)*

BPN/ Coping with COVID-19 stress	N	1 - Never n (%)	2 - Sometimes n (%)	3 - Most of the times n (%)	4 - Almost always n (%)	5 - Always n (%)	M (SD)
Perception of Challenge							
Relatedness							
1. Do you think you can handle this stressful situation by yourself, by regulating your behavior and emotions? (Self-comforting)	176	1(0.6)	35 (19.9)	53 (30.1)	50 (28.4)	37(21.0)	3.49(1.05)
2. Do you seek any kind of instrumental or emotional support to deal with this situation? (Support-seeking)	176	70(39.8)	65 (36.9)	16 (9.1)	12 (6.8)	13(7.4)	2.05(1.2)
Competency							
5. Do you strive to solve the problems that arise during the pandemic, make plans, get organized? (Problem-solving)	176	3(1.7)	16 (9.1)	47 (26.7)	42 (23.9)	68 (38.6)	3.89 (1.08)
6. Have you been seeking information, reading, asking questions about the disease, about treatment, about self-care during the COVID-19 pandemic? (Information-seeking)	174	4(2.3)	19 (10.9)	31 (17.8)	27 (15.5)	93 (53.4)	4.07 (1.17)
Autonomy							
9. Do you handle this situation well, try to distract yourself or interpret what happens differently? (Accommodation)	175	11(6.3)	55 (31.4)	48 (27.4)	35 (20)	26 (14.9)	3.06 (1.17)
10. Do you try to negotiate your ideas with colleagues and management when dealing with problems? (Negotiation)	174	15(8.6)	43 (24.7)	42 (24.1)	34 (19.5)	40 (23.0)	3.24 (1.29)
Total adaptive WC = 1,051(%)	-	104 (9.9)	233 (22.1)	237 (22.5)	200 (19.0)	277 (26.3)	3.62 (0.72)
Perception of threat							
Relatedness							
3. To deal with the stress of the COVID-19 pandemic, would you rather let others decide or do something for you? (Delegation)	176	124(70.5)	47 (26.7)	3 (1.7)	1 (0.6)	1 (0.6)	1.34 (0.6)
4. Have you been emotionally distancing yourself from other people, avoiding them or becoming insensitive or paralyzed in those moments? (Social Isolation)	177	81(45.8)	75 (42.4)	5 (2.8)	9 (5.1)	7 (4.0)	1.79 (1.0)
Competency							
7. Do you believe there's nothing you can do, feel confused and exhausted, lacking the energy to deal with the COVID-19 pandemic? (Helplessness)	176	67(38.1)	80 (45.5)	14 (8.0)	11 (6.2)	4(2.3)	1.89(0.95)
8. Are there times when you feel like physically or mentally escaping from this situation, or even denying that it is so serious, thinking that soon everything will be solved? (Escape)	174	52(29.9)	78 (44.8)	19 (10.9)	17 (9.8)	8 (4.6)	2.14 (1.09)
Autonomy							
11. During this period, do you constantly think about and remember the bad aspects of the situation? (Submission)	174	27(15.5)	92 (52.9)	26 (14.9)	14 (8)	15 (8.6)	2.41(1.11)
12. Do you feel angry about the situation? (Opposition)	128	30(23.4)	55 (43.0)	16 (12.5)	13 (10.2)	14 (10.9)	2.42 (1.26)
Total maladaptive WC = 977(%)	-	381 (39.0)	427 (43.7)	83 (8.5)	37 (3.8)	49 (5.0)	2.0(0.64)

Note: Data collected in April-May 2020, at the beginning of the 1st wave of COVID-19.

BPN: Basic Psychological Need; WC: Ways of Coping.

Table 4*Predictors of stress and burnout in frontline healthcare workers of COVID-19 (N = 181)*

Predictors	Coefficient	Standard error	p-value
Predictors kept after stepwise selection for Burnout			
Intercept	0.67	0.33	0.05
Has a religious belief	0.22	0.11	0.05
Has more than one job	-0.15	0.08	0.06
Nurse/Technician	0.30	0.12	0.02
Physiotherapist	0.31	0.17	0.07
Physician	0.62	0.14	0.00
In psychiatric care	0.54	0.22	0.01
COVID-19 Stress Score	0.17	0.06	0.00
Adaptive Coping	-0.10	0.05	0.07
Maladaptive Coping	0.29	0.06	0.00
Predictors kept after stepwise selection for COVID-19 stress			
Intercept	1.53	0.19	0.00
Male	-0.24	0.09	0.01
Education: Undergraduate/ Graduate	-0.16	0.09	0.07
Number of risk contexts	0.06	0.03	0.04
Burnout Score	0.32	0.09	0.00
Maladaptive Coping	0.30	0.07	0.00

Note: Data collected in May-June 2020, at the beginning of the 1st wave of COVID-19.

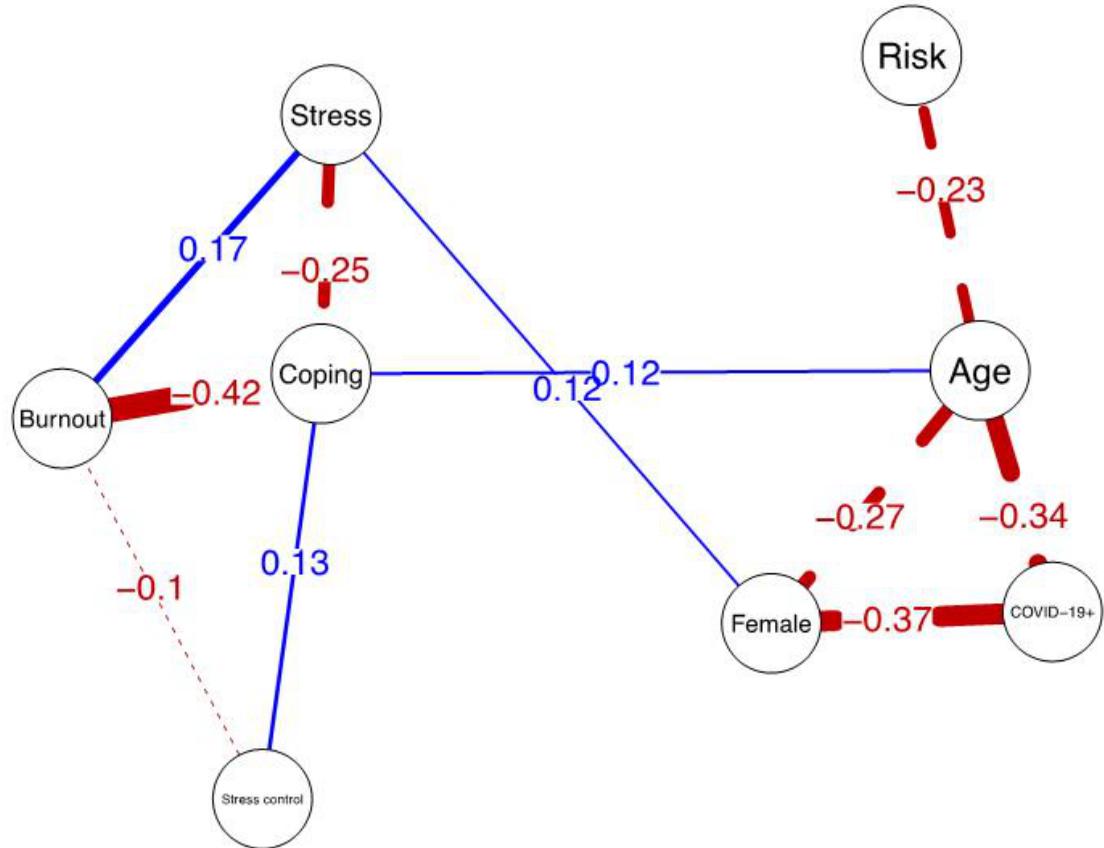
Analyzing 89 HCWs at higher risk of exposure (COVID-ICU; COVID-Ward), it was possible to identify conditional associations between psychological variables and Sars-CoV-2 diagnostic categories (Figure 1). The results of the network analysis suggest that the diagnosis of COVID-19 was more common in young men when controlling for other variables. Young men took more risks. They also show coping as a moderator. In this case, it decreases the strength of the association between stress and burnout. Furthermore, coping is more a predictor of burnout than of stress. Another variable of note is the perception of control, which correlated negatively with burnout and positively with coping. Positive correlations were observed between age and coping and between being a woman and stress (Figure 1).

Discussion

The present study analyzed the stressful conditions and the ways of coping of 181 frontline HCWs in a hospital during the first wave of the COVID-19 pandemic. It was possible to identify the main stressors and describe the ways of coping presented by these HCWs in dealing with them at work. Some of the characteristics of this sample – women, married, white, mean age of 37 years, trained in Medicine and with a Specialization degree, working only one job, and professing a religion – are common to the HCWs identified in reviews on the topic (Pablo et al., 2020; Serrano-Ripoll et al., 2020). The women predominance, also observed in other studies with HCWs (Civantos et al., 2020; Elbay et al., 2020; Pablo et al., 2020; Serrano-Ripoll et al., 2020; Sun et al., 2021), points to the need to cater to this population, as women are also more vulnerable to developing stress, anxiety, and depression (Shreffler et al., 2020).

Figure 1

Relationship between psychological variables in healthcare workers at the frontline of COVID-19 (N = 89)



Note: Nodes represent variables while edges represent negative (red) or positive (blue) partial correlations. Regularized (penalized) partial correlation network, the values correspond to linear regression betas. COVID-19: positive diagnosis for COVID-19.

Despite having more social skills to cope with stress when compared to men, women are still the majority in requesting time off work, which can be caused by their work schedules, but also by the need to care for the home and family, and in some cases, suffer social stigmas and violence (Cai et al., 2020; Pinheiro et al., 2020).

Care and concern for the family, reported within the studies, point out that the risk of transmitting the virus to family members, friends, and people on the work team was one of the factors most endorsed as stressful (Shechter et al., 2020; Silva et al., 2022; Sun et al., 2021). The same goes for the present research, which also identified the fear of getting infected and being hospitalized (Table 3). In addition, the review by Spoorthy et al. (2020) indicates that the greatest concern was related to illness and death of elderly contacts. The sample in the present study had a mean age of 37 years, confirming transmission as a stressful factor for this age group.

A recommended way to deal with the stressors in this context is psychotherapy, as it promotes the maintenance of well-being and quality of life during the pandemic, both for HCWs and for the general population. However, in this sample, only 8.8% reported undergoing this type of mental health care. Psychological care could lessen the negative psychological impact of this

context by offering support and guidance for managing different challenges (Schmidt et al., 2020; Shechter et al., 2020).

This individual care for mental health seems important when considering the prevalence of burnout in the sample of this study, which was 11% (Table 2), considered high and worrisome because it compromises the quality of health care (Ferreira & Lucca, 2015). This percentage is close to that obtained by Civantos et al. (2020) with a sample of Brazilian physicians (14.7%) collected in the same period.

In the balance between personal and work demands and resources, to cope with these stressors, the HCWs reported the use of more adaptive coping, such as problem-solving and information-seeking, indicative of the perception of stressors as a challenge to the Competence, and negotiation with colleagues and superiors, related to the perception of a challenge to the Autonomy (Skinner et al., 2003; Skinner & Wellborn, 1994; Silva et al., 2022). Perceiving oneself as having some control of the situation, as close to half of the sample reported, helps in the management of stressful situations. In this attempt of gaining control, seeking support and information about the disease were the WC most reported by the HCWs, as also pointed out by Dullius et al. (2021) and Silva et al. (2022). In other words, in this first moment of the pandemic, the HCWs tried to improve their competence to deal with the challenges of the disease and the changes in family, personal, and work routines. However, these HCWs also perceived the situation as a threat to their Autonomy, reacting with anger and submission, which can be counterproductive in the work environment and in terms of mental health outcomes in the medium and long term (Skinner et al., 2003).

In the present research, professing a religious belief was pointed out as a risk factor for burnout (Table 4). It is possible that, in this context of a pandemic and deaths, the HCWs presented a negative religious/spiritual coping, which includes questioning the existence, love, and acts of God, feeling dissatisfied with God or the religious institution, or having interpersonal conflicts with members of the religious group (Stauner et al., 2016). Doubting God's powers to interfere in the stressful situation, delegating to God the resolution of problems, or even believing in a punitive God (Foch et al., 2017) are ways of coping that can occur in the hospital setting and in the face of the health crisis and political scenario of that time, without vaccines. This is another area of intervention, as religious/spiritual practice is part of a set of coping, such as having a healthy lifestyle and engaging in leisure activities, as a way to avoid negative thoughts linked to the pandemic (Spoorthy et al., 2020).

Adaptive coping stood out in the present study, which showed coping as a moderator of the relationship between stress and burnout (Figure 1) so that the more and better coping the HCW presents, the less stress and burnout responses he/she has, highlighting that coping is a better predictor of burnout than stress itself. This shows the importance of identifying and strengthening the repertoire of adaptive and reducing maladaptive coping. The latter, in general, relates to negative affect (fear, anger, and sadness) and a perceived threat to their Relatedness, Competence, and Autonomy. Also important in this relationship is the fact that it shows the importance of identifying and intervening in stress responses earlier to prevent the occurrence of burnout.

Another relevant data is the negative correlation between the perception of control and burnout and the positive correlation with coping (Figure 1). These data suggest that promoting the perception that the HCW can handle the situation favors more adaptive coping, reducing the probability of burnout.

Given the positive correlation between age and coping, added to the fact that younger people are being more contaminated and are more exposed to the risk of contamination, it is

important to have, as well, younger HCWs as a target population of intervention, as opposed to targeting only those in the risk range. Finally, special attention should be given to women because of their positive correlation with stress (Figure 1). The need to follow WHO recommendations to avoid contamination, especially among younger HCWs, should then be emphasized.

The present study has some limitations. The convenience sampling and the data collected refer to self-reports from HCWs during the first wave of COVID-19 in Brazil, in a pre-vaccine moment when the behavior of the disease was still poorly known. The fact that the data collection occurred right after the first COVID-19 tests performed by the HCWs may have contributed to aggravating the perception of stress. Added to this, the first phase of the disease provided an intense feeling of heroism from the HCWs, which dissipated throughout the long months as the number of cases did not decrease, associated with insecurity related to the conduct of the pandemic in the country. It should be considered that in the study by Messias et al. (2022), 63.1% considered it stressful to have conflicting news and information about the disease, its treatment, and isolation.

Conclusion

Was possible to conclude that, for 11% of this sample of 181 frontline HCWs, the high work demands in the hospital during the initial months of the COVID-19 pandemic generated burnout. Stress relates especially to events such as fear of contagion and separation from family members. Dealing with these stressors more adaptively, trying to problem-solving, information-seeking, social support, and negotiating can reduce burnout responses, increasing the perception of control of the situation and the sense of competence and autonomy. Thus, the importance of promoting adaptive coping for the reduction and prevention of contamination and burnout syndrome is highlighted.

References

- Amorim, M., Souza, W., Barros, A., Toledo-Teixeira, D., Santos, K., Simeoni, C., Parise, P., Vieira, A., Forato, J., Claro, I., Mofatto, L., Barbosa, P., Brunetti, N., França, E., Pedroso, G., Carvalho, B., Zaccariotto, T., Krywacz, K., Vieira, A., ... Proenca-Modena, J. (2021). Respiratory viral shedding in healthcare workers reinfecting with SARS-CoV-2, Brazil, 2020. *Emerging Infectious Diseases*, 27(6), 737-1740. <https://doi.org/10.3201/eid2706.210558>
- Araújo, M. F., Pinzón, J. H., Silva, A. M. B., Amaral, J. D. H. F., Lins, C. A., Enumo, A. M. F., Laloni, D. T., Laloni, I. T., Vicentini, E. C. C., Dellazzana-Zanon, L. L., Freitas, M. F. M. B., Mendes, E. D. T., Weide, J. N., Machado, W. L., & Enumo, S. R. F. (2020). *Cartilha de enfrentamento do estresse da COVID-19 para trabalhadores da saúde*. PUC-Campinas; PUCRS. https://www.puc-campinas.edu.br/wp-content/uploads/2020/06/PsiCOVIDa_enfrentamento-estresse-trabalhadores-saude.pdf
- Cai, H., Tu, B., Ma, J., Chen, L., Fu, L., Jiang, Y., & Zhuang, Q. (2020). Psychological impacts and coping strategies of front-line medical staff during COVID-19 outbreak in Hunan, China. *Medical Science Monitor*, 26, e924171. <https://doi.org/10.12659/msm.924171>
- Civantos, A. M., Bertelli, A., Gonçalves, A., Getzen, E., Chang, C., Long, Q., & Rajasekaran, K. (2020). Mental health among head and neck surgeons in Brazil during the COVID-19 pandemic: a national study. *American Journal of Otolaryngology*, 41(6), 102694. <https://doi.org/10.1016/j.amjoto.2020.102694>
- DeVellis, R. F. (1991). *Scale development: theory and applications* (Applied Social Research Methods Series, Vol. 26). Sage Publications.
- Dullius, W. R., Scortegagna, S. A., & McCleary, L. (2021). Coping strategies in health professionals facing Covid-19: systematic review. *Psicologia: Teoria e Prática*, 23(1), 1-20. <https://dx.doi.org/10.5935/1980-6906/ePTPC1913976>

- Elbay, R. Y., Kurtulmuş, A., Arpacioğlu, S., & Karadere, E. (2020). Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Research*, 290, 113130. <https://doi.org/10.1016/j.psychres.2020.113598>
- Enumo, S. R. F., & Amaral, J. D. H. F. (2020). *Escala de Enfrentamento do Estresse da COVID-19: Trabalhadores de Saúde* [Unpublished work]. PUC-Campinas.
- Enumo, S. R. F., Weide, J. N., Vicentini, E. C. C., Araújo, M. F., & Machado, W. L. (2020). Enfrentando o estresse em tempos de pandemia: proposição de uma Cartilha. *Estudos de Psicologia* (Campinas), 37, e200065. <http://dx.doi.org/10.1590/1982-0275202037e200065>
- Epskamp, S., & Fried, E. I. (2018). A tutorial on regularized partial correlation networks. *Psychological Methods*, 23(4), 617-634. <https://doi.org/10.1037/met0000167>
- Ferreira, N., & Lucca, S. (2015). Síndrome de burnout em técnicos de enfermagem de um hospital público do Estado de São Paulo. *Revista Brasileira de Epidemiologia*, 18(1), 68-79. <https://doi.org/10.1590/1980-5497201500010006>
- Foch, G., Silva, A. M. B., & Enumo, S. R. F. (2017). Enfrentamento religioso/espiritual: uma revisão sistemática da literatura (2003-2013). *Arquivos Brasileiros de Psicologia*, 69(2), 53-71. http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1809-52672017000200005&lng=pt&lng=pt
- Lees, D. C. (2007). *An empirical investigation of the motivational theory of coping in middle to late childhood* [Unpublished doctoral thesis]. Griffith University.
- Meira-Silva, V. S. T., Freire, A. C. T. N., Zinezzi, D. P., Ribeiro, F. C. R., Coutinho, G. D., Lima, I. M. B., Crispi, I. C., Porto, J. D., Silva, L. G. P., Miranda, L. H. A., Zurita, M. G. F., Belerique, V. H. R., & Bandoli, Y. T. (2022). Burnout syndrome in healthcare workers during the COVID-19 pandemic: a systematic review. *Revista Brasileira de Medicina do Trabalho*, 20(1), 122-131. <http://dx.doi.org/10.47626/1679-4435-2022-849>
- Messias, J. C. C., Rocha, M. O., Barbi, K. B. S., & Fontoura Junior, E. E. (2022). Death and resistance: Professionals on the front line against COVID-19. *Paideia*, 32, e3209. <https://doi.org/10.1590/1982-4327e3209>
- Moura, E., Furtado, L., & Sobral, F. (2020). The burnout epidemic during the COVID-19 pandemic: the role of LMX in alleviating physicians' burnout. *Revista de Administração de Empresas*, 60(6), 426-436. <https://doi.org/10.1590/s0034-759020200606>
- Orfão, N. H., Ferreira, M. R. L., Souza, G. A. S. C., Martins, L. M., & Feitosa, V. G. (2020). COVID-19: estratégias de enfrentamento e comportamentos adaptativos pelos profissionais de saúde durante a pandemia. *Revista de Epidemiologia e Controle de Infecção*, 10(4), 1-22. <https://doi.org/10.17058/reci.v10i4.15462>
- Pablo, G. S., Vaquerizo-Serrano, J., Catalan, A., Arango, C., Moreno, C., Ferre, F., Shin, J., Sullivan, S., Brondino, N., Solmi, M., & Fusar-Poli, P. (2020). Impact of coronavirus syndromes on physical and mental health of health care workers: systematic review and meta-analysis. *Journal of Affective Disorders*, 275, 48-57. <https://doi.org/10.1016/j.jad.2020.06.022>
- Pinheiro, G., Luna, G., Santos, R., Pimentel, S., & Varão, A. (2020). Estresse percebido durante período de distanciamento social: diferenças entre sexo. *Brazilian Journal of Health Review*, 3(4), 10470-10486. <https://doi.org/10.34119/bjhrv3n4-264>
- Ribeiro, R., Marziale, M., Martins, J., Galdino, M., & Ribeiro, P. (2018). Estresse ocupacional entre trabalhadores de saúde de um hospital universitário. *Revista Gaúcha de Enfermagem*, 39, e65127. <https://doi.org/10.1590/1983-1447.2018.65127>
- Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: basic psychological needs in motivation, development and wellness*. The Guilford Press.
- Schaufeli, W. B. (2017). Applying the Job Demands-Resources model: a "how to" guide to measuring and tackling work engagement and burnout. *Science Direct*, 46, 120-132. <https://doi.org/10.1016/j.orgdyn.2017.04.008>
- Schaufeli, W. B., De Witte, H., & Desart, S. (2019). *Burnout Assessment Tool (BAT) - Test Manual* [Unpublished report]. Belgium.
- Schaufeli, W. B., Desart, S., & De Witte, H. (2020). Burnout Assessment Tool (BAT) - Development, validity, and reliability. *International Journal of Environmental Research and Public Health*, 17(24), 9495. <https://doi.org/10.3390/ijerph17249495>
- Schmidt, B., Crepaldi, M., Bolze, S., Neiva-Silva, L., & Demenech, L. (2020). Saúde mental e intervenções psicológicas diante da pandemia do novo coronavírus (COVID-19). *Estudos de Psicologia* (Campinas), 37, e200063 <https://doi.org/10.1590/1982-0275202037e200063>

- Serrano-Ripoll, M. J., Meneses-Echavez, J. F., Ricci-Cabello, I., Fraile-Navarro, D., Fiol-de-Roque, M. A., Pastor-Moreno, G., Castro, A., Ruiz-Pérez, I., Zamanillo-Campos, R., & Gonçalves-Bradley, D. C. (2020). Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis. *Journal of Affective Disorders*, 277, 347-357. <https://doi.org/10.1016/j.jad.2020.08.034>
- Shechter, A., Diaz, F., Moise, N., Anstey, D. E., Ye, S., Agarwal, S., Birk, J. L., Brodie, D., Cannone, D. E., Chang, B., Claassen, J., Cornelius, T., Derby, L., Dong, M., Givens, R. C., Hochman, B., Homma, S., Kronish, I. M., Lee, S., ... Abdalla, M. (2020). Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *General Hospital Psychiatry*, 66, 1-8. <https://doi.org/10.1016/j.genhosppsych.2020.06.007>
- Shreffler, J., Huecker, M., & Petrey, J. (2020). The impact of COVID-19 on healthcare worker wellness: a scoping review. *Western Journal of Emergency Medicine*, 21(5), 1059-1066. <https://doi.org/10.5811/westjem.2020.7.48684>
- Silva, A. M. B., Araújo, M. F., Pinzón, J. H., Amaral, J. D. H. F., Dellazzana-Zanon, L. L., Lins, C. A., Freitas, M. F. M. B., Mendes, E. D. T., Vicentini, E. C. C., & Enumo, S. R. F. (2022). Coping for healthcare workers in times of pandemic: Elaboration of a booklet. *Psicologia: Teoria e Prática*, 24(3), ePTPCP14211. <https://doi.org/10.5935/1980-6906/ePTPCP14211.en>
- Sinval, J., Vazquez, A., Hutz, C., Schaufeli, W., & Silva, S. (2022). Burnout Assessment Tool (BAT): validity evidence from Brazil and Portugal. *International Journal of Environmental Research and Public Health*, 19(3), 1344. <https://doi.org/10.3390/ijerph19031344>
- Skinner, E. A., & Wellborn, J. G. (1994). Coping during childhood and adolescence: a motivational perspective. In D. L. Featherman, R. M. Lerner, & M. Perlmutter (Eds.), *Life-Span development and behavior* (Vol. 12, pp. 91-133). Lawrence Erlbaum Associates.
- Skinner, E., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, 129(2), 216-269. <https://doi.org/10.1037/0033-2909.129.2.216>
- Spoorthy, M. S., Pratapa, S. K., & Mahant, S. (2020). Mental health problems faced by healthcare workers due to the COVID-19 pandemic: a review. *Asian Journal of Psychiatry*, 51, 102119. <https://doi.org/10.1016/j.ajp.2020.102119>
- Stauner, N., Exline, J. J., & Pargament, K. I. (2016). Religious and spiritual struggles as concerns for health and well-being. *Horizonte*, 14, 50-77. <https://doi.org/10.5752/P.2175-5841.2016v14n41p48>
- Sun, P., Wang, M., Song, T., Wu, Y., Luo, J., Chen, L., & Yan, L. (2021). The psychological impact of COVID-19 pandemic on health care workers: a systematic review and meta-analysis. *Frontiers in Psychology*, 12, e626547. <https://doi.org/10.3389/fpsyg.2021.626547>
- Vazquez, A., Santos, A., Costa, P., Freitas, C., Witte, H., & Schaufeli, W. (2019). Trabalho e bem-estar: evidências da relação entre burnout e satisfação de vida. *Revista Avaliação Psicológica*, 18(04), 372-381. <https://doi.org/10.15689/ap.2019.1804.18917.05>
- World Health Organization. (2020). *Risk assessment and management of exposure of health care workers in the context of COVID-19*. <https://apps.who.int/iris/handle/10665/331496>
- Yıldırım, M., & Solmaz, F. (2020). COVID-19 burnout, COVID-19 stress and resilience: Initial psychometric properties of COVID-19 burnout scale. *Death Studies*, 46(3), 524-532. <https://doi.org/10.1080/07481187.2020.1818885>

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