

Common mental disorder and related factors to the work of physiotherapists in the COVID-19 pandemic

Transtorno mental comum e fatores relacionados ao trabalho de fisioterapeutas na pandemia de COVID-19

Gabriel Araújo de Souza Monteiro 
Washington José dos Santos ^{*}
Albanita Gomes da Costa de Ceballos 
Juliana Fernandes de Souza Barbosa 
Etiene Oliveira da Silva Fittipaldi 

Universidade Federal de Pernambuco (UFPE), Recife, PE, Brazil

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***Correspondence:** washingtonfisio@gmail.com

Abstract

Introduction: The physiotherapists were one of the health professional categories on the Coronavirus (COVID-19) pandemic front line, however little is known how the pandemic has affected the mental health of these professionals. **Objective:** To analyze the relationship between the presence of common mental disorder (CMD) and elements related to the work of physiotherapists who have been assisting patients with COVID-19. **Methods:** This is a cross-sectional survey study composed by physiotherapists from four states of Brazil: Alagoas, Paraíba, Pernambuco and Rio Grande do Norte. Working conditions evaluated were type of contract, weekly worked hours, time working, job satisfaction, and psychosocial aspects related to work. The CMD assessment was performed using the Self-Reporting Questionnaire-20 (SRQ-20). **Results:** A total of 288 physiotherapists answered the electronic form, out of which 76.2% had CMD. Fear of reinfection (OR 2.75, 95%CI: 1.35-5.63) and previous infection by COVID-19 (OR: 2.03, 95%CI: 1.09-3.78) were factors related to a higher chance of risk of CMD. However, those who reported being satisfied with the work (OR: 0.28, 95%CI 0.11-0.72) and being more than 30 years old (OR: 0.46, 95%CI 0.24-0.88) had a lower chance of CMD risk. **Conclusion:** Physiotherapists showed a higher prevalence of CMD. Fear of reinfection and previous infection by COVID-19 were risk factors to CMD, while satisfaction with the work and being more than 30 years old were protective factors to CMD.

Keywords: COVID-19. Health professionals. Mental health.

Resumo

Introdução: Os fisioterapeutas foram uma das categorias profissionais da linha de frente do combate à pandemia do coronavírus (COVID-19), todavia, pouco se sabe como esta pandemia afetou a saúde mental destes profissionais. **Objetivo:** Analisar a relação entre a presença de transtorno mental comum (TMC) e elementos relacionados ao trabalho de fisioterapeutas que assistiram pacientes com COVID-19. **Métodos:** Trata-se de um estudo transversal composto por fisioterapeutas de quatro estados do Brasil: Alagoas, Paraíba, Pernambuco e Rio Grande do Norte. As condições de trabalho avaliadas foram tipo de contrato, jornada semanal, tempo de trabalho, satisfação e aspectos psicossociais relacionados ao trabalho. A avaliação do TMC foi realizada por meio do Self-Reporting Questionnaire-20 (SRQ-20). **Resultados:** Um total de 288 fisioterapeutas responderam ao formulário eletrônico, dos quais 76,2% tinham TMC. Medo de reinfecção (OR 2,75, IC 95%: 1,35-5,63) e infecção anterior por COVID-19 (OR: 2,03, IC 95%: 1,09-3,78) foram fatores relacionados a uma maior chance de risco de TMC. No entanto aqueles que relataram estarem satisfeitos com o trabalho (OR: 0,28, IC 95% 0,11-0,72) e os que tinham até 30 anos (OR: 0,46, IC 95% 0,24-0,88) tiveram menor chance de risco de TMC. **Conclusão:** Os fisioterapeutas apresentaram maior prevalência de TMC. Medo de reinfecção e infecção prévia por COVID-19 foram considerados fatores de risco para TMC, enquanto a satisfação com o trabalho e ter mais que 30 anos foram fatores protetores ao TMC.

Palavras-chave: COVID-19. Profissionais de saúde. Saúde mental.

Introduction

Treating patients with COVID-19 presented a challenge to health workers at both the beginning of the pandemic, when the pathology's mechanisms were still being understood, and nowadays with health professionals seeking to deal with acute and chronic outcomes of this new condition.¹⁻³ Health professionals represent a vulnerable group during pandemics because they experience several dilemmas, such as the risk of death to high risk of infection, fear of contagion and dissemination to family members, and lack of personal protective equipment. These factors together

can increase stressors, work overload and psychological pressure, which in turn lead to high levels of anxiety, stress and depressive symptoms, as well as more subtle symptoms such as insomnia.^{4,5} These less severe mental disorders, also called common mental disorders (CMD), may be comprised of signs and symptoms such as insomnia, fatigue, forgetfulness and irritability, and have been increasingly investigated among health professionals during the recent COVID-19 pandemic context.⁶⁻⁸

Among the health professionals involved in providing care for these patients, the pandemic revealed the importance of physiotherapists in the front line of coping with COVID-19. Physiotherapists had intensive care units (ICUs) as their main scenarios of action,⁹ and presented important roles in advanced respiratory care.¹⁰ In addition, the importance of these professionals is highlighted since they also work in hospitals, primary healthcare and/or in homes with the objective of returning patients' full functionality.^{11,12}

Thus, better understanding of the impact of the workplace on mental health in physiotherapists is needed to analyze the factors which favor or determine CMD. Therefore, this study sought to describe the mental health profile of physiotherapists working during the COVID-19 pandemic and to analyze the possible relationship between the presence of CMD and elements related to the work of physiotherapists who have been assisting patients with COVID-19.

Methods

The study implemented a cross-sectional, observational, analytical research design. The population studied was composed by physiotherapists from four states in the northeast region of Brazil: Alagoas, Paraíba, Pernambuco and Rio Grande do Norte. The study had the following eligibility criteria: to be a physiotherapist and to be in effective professional practice in the assistance area for COVID-19 for at least three months before data collection started (data was collected between April 26, 2021 and June 25, 2021), without distinction of gender or age, to be registered in Regional Council of Physiotherapy and Occupational Therapy of the 1st Region (CREFITO-1) and to accept to participate in the study by signing an informed consent form.

Considering a prevalence of CMD in health professionals of 23.2%,¹³ a precision of 5% and a confidence interval of 95% for a finite population of 37,346 physiotherapists in the northeast region,¹⁴ a minimum sample of 271 individuals was reached. The sample selection was by convenience through social networks and direct mailing through CREFITO-1.

The participants answered a semi-structured questionnaire prepared by the researchers, consisting of questions related to sociodemographic characteristics (age, gender, marital status, and education level) and working conditions for data collection. Working conditions were evaluated through information about the type of contract (temporary and permanent), weekly worked hours (in hours), and time working (years). Participants were also asked about job satisfaction (yes or no) and psychosocial aspects related to work: support for the prevention of health problems, coronavirus infection of professionals and fear of (re)infection, all of them with yes or no answers.

The CMD assessment was performed using the Self-Reporting Questionnaire-20 (SRQ-20), an instrument developed by the World Health Organization to measure levels of suspected CMD. It was tested and validated for Brazilian population, for which it had sensitivity of 68% and specificity of 70.7%, and showed a predictive capacity of 73.9% and a cut-off value for best performance between 6/7.¹⁵ The SRQ-20 is composed of 20 questions for tracking non-psychotic disorders involving the following groups of symptoms: depressive/anxious mood, somatic symptoms, decreased vital energy and depressive thoughts. The sum of each positive answer was used to identify mental suffering. The cut-off used for the presence of CMD was values greater than seven points.^{15,16}

Data collection was performed on the Google® Forms platform and disseminated via WhatsApp, e-mail, Facebook and Instagram. The project was submitted to the Ethics and Research Committee of the Health Sciences Center of Universidade Federal de Pernambuco, and approved under No. 42898920.5.0000.5208. All collected data were transferred to the SPSS version 22.0 software program. Occupational data and psychosocial aspects related to work were analyzed using the Chi-squared statistical test. Finally, a multiple logistic regression model was performed based on the relationship between CMD and occupational data and psychosocial aspects. Variables included on the multiple logistic regression was those that presented p-value

< 0.20 in the bivariate analysis. Data were considered significant when $p < 0.05$.

Results

A total of 288 physiotherapists answered the electronic form, however, five questionnaires had to be excluded as the professionals who responded had less than three months of providing care for COVID-19. The profile of the studied sample consisted of 283 physiotherapists working in the states of Alagoas (8.5%), Paraíba (17.4%), Pernambuco (52.8%) and Rio Grande do Norte (21.3%), with age between 23 and 56 years, and a mean of 32.35 (± 6.79) years. This study demonstrates that there was a predominance of female professionals (72.7%), single (58.9%), aged over 31 years (54.2%), and with specializations (69.5%), as described in Table 1.

Regarding the occupational characteristics of the sample, 66.3% worked in ICUs, 13.8% in outpatient clinics and/or in rehabilitation centers, 7.8% in wards, 6.4% in primary care, 4.3% in households, 0.7% in urgency and emergency care, and 0.7% referred to other workplaces.

Table 1 - General characteristics according to common mental disorder (CMD)

Variables	Total	CMD		p-value
		Yes	No	
Gender				
Female	206	161	45	0.236
Male	77	55	22	
Age				
≤ 30 years	125	106	19	0.005
≥ 31 years	148	104	44	
Marital status				
Single	167	129	38	0.446
Married	93	68	25	
Divorced	10	7	3	
Stable union	13	12	1	
Educational level				
Graduated	42	31	11	0.474
Specialization	196	151	45	
Master's degree	39	28	11	
Doctorate degree	6	6	0	

Note: Values in bold indicate statistical significance.

Table 2 indicates that most physiotherapists had a permanent employment contract, weekly working hours of up to 30 hours, total working time with COVID-19 patients of up to 12 months and reported being satisfied with their work. Furthermore, the majority reported not receiving support for the prevention of health problems at work, having been infected or reinfected by the coronavirus and being afraid of reinfection.

The SRQ-20 results regarding mental suffering indicated that 76.2% of physiotherapists had CMD. Bivariate analyzes between occupational data, psychosocial aspects related to work and CMD showed that working time during COVID-19, type of employment relationship and weekly working hours did not seem to influence the mental health of physiotherapists. However, job satisfaction, the support received at the

workplace for preventing health problems, having been infected by the coronavirus and being afraid of (re)infection seem to influence the presence of CMD in the studied physiotherapists (Table 2).

After conducting the bivariate analyzes, factors such as support for preventing health problems, fear of (re)infection, previous infection by COVID-19, job satisfaction and age were included in the regression model. Fear of reinfection (OR 2.75, 95%CI: 1.35-5.63) and previous infection by COVID-19 (OR: 2.03, 95%CI: 1.09-3.78) were factors related to a higher chance of risk of CMD. However, the odds of CMD in those physiotherapists who reported being satisfied with the work were 72% less than those who were not satisfied (OR: 0.28, 95%CI 0.11-0.72). The older physiotherapists (> 30 years old) had 54% less odds of CMD (OR: 0.46, 95%CI 0.24-0.88) (Table 3).

Table 2 - Bivariate analyzes between occupational data, psychosocial aspects related to work and common mental disorder

Variables	n (%)	Common mental disorder		
		Yes	No	p-value
Working time with COVID-19 patients				
Up to 12 months	186 (66.7)	137	48	0.295
Over 12 months	93 (33.3)	75	18	
Type of contract				
Temporary	114 (41.8)	82	31	0.266
Permanent	159 (58.2)	125	34	
Weekly worked hours				
Up to 30 hours	170 (60.9)	128	42	0.736
Over 30 hours	109 (39.1)	83	25	
Job satisfaction				
Yes	202 (71.4)	142	60	0.001*
No	81 (28.6)	74	7	
Support for the prevention of health problems				
Yes	120 (42.7)	82	38	0.005*
No	161 (57.3)	133	28	
Infected by COVID-19				
Yes	164 (58.4)	134	30	0.015*
No	117 (41.6)	81	36	
Fear of (re)infection				
Yes	234 (83.3)	189	45	0.001*
No	47 (16.7)	26	21	

Note: *Chi-square test.

Table 3 - Multiple logistic regression between the presence of common mental disorder (CMD), occupational data, and psychosocial aspects related to work

Variables	OR	CMD	
		95% CI*	p-value
Support for the prevention of health problems			
Yes	0.538	0.287 - 1.007	0.053
No	Reference	-	-
Fear of (re)infection			
Yes	2.758	1.350 - 5.632	0.005
No	Reference	-	-
Infected by COVID-19			
Yes	2.034	1.092 - 3.786	0.025
No	Reference	-	-
Job satisfaction			
Yes	0.286	0.114 - 0.721	0.008
No	Reference	-	-
Age			
≥ 31 years	0.466	0.246 - 0.883	0.019
≤ 30 years	Reference	-	-

Note: OR = odds ratio. *Confidence interval: lower and upper limit. Values in bold indicate statistical significance.

Discussion

The present study demonstrated a high prevalence of CMD in physiotherapists who worked at the front lines of COVID-19, in addition to factors such as previous infection and fear of reinfection by COVID-19, job satisfaction and age being factors associated with CMD. Our results pointed out that 76.2% of physiotherapists had CMD symptoms, constituting a high percentage when compared to similar studies conducted with the population of other categories of health professionals like medical doctors (49.79%)⁶ and nurses (40%).¹⁷

As evidenced in recent studies, the impact of COVID-19 on the psychological health of health workers is indicated by a significant prevalence of anxiety, depression, post-traumatic stress disorder, sleep disorders and suicidal thoughts.^{7,18} Brooks et al.¹⁹ showed that some factors such as limited resources, deterioration in the work performance of professionals, emotional exhaustion and social distancing have a considerable impact on the mental health of workers.

Bivariate analyzes between occupational data, psychosocial aspects related to work and CMD showed that working time during COVID-19, type of employment relationship and weekly working hours do not seem to influence the mental health of physiotherapists. Considering the multivariate analysis, only factors such as having been contaminated by COVID-19, fear of reinfection, age over 30 and job satisfaction were factors related to CMD in the studied physiotherapists.

Danet⁷ showed that the presence of psychological support in the work environment, being infected and being afraid of reinfection by the coronavirus were determining factors in the occurrence of CMD, which is in line with our results. Similarly, Danet⁷ and Sousa et al.²⁰ showed that dissatisfaction with work was significantly associated with the presence of CMD. The literature reports the relationship between dissatisfaction with work and adverse effects on mental health of health workers. There is evidence between the organization and conditions of work and mental illness and CMD.²¹

Regarding the predominance of the female gender and age of the sample, our findings corroborate the results of similar studies in Italy, Spain and Wuhan, where there was a predominance of women with CMD and with a mean age in the range of 30 to 40 years.²²⁻²⁴ The predominance of physiotherapists with a degree of specialist training in our study also shows similarities to the findings of Carvalho and Kundsinn²⁵ in a study carried out with physiotherapists exclusively caring for COVID-19 patients in a hospital in the Amazon from a sample of 30, in which 63.4% declared to have a specialist title.

The older physiotherapists had less odds of CMDs when compared to the younger. This finding is supported by previous studies.²⁶⁻²⁸ Most physiotherapists worked in the ICU. The role of the intensive care physiotherapist in the context of COVID-19 brought greater recognition by society and by health management, as well as evidenced that this work environment presents greater physical and emotional strain due to the presence of patients with severe respiratory impairment and constant risk of contagion from health workers.¹⁰ Besides, it is possible that experience acquired over the career course may help to increase resilience and professional skills protecting against mental health problems. Yet, it is possible that those physiotherapists who were exposed to poor working conditions had already mental illness and have already leave their jobs.^{27,29}

As most physiotherapists work in ICUs, there may be some relationship with the high prevalence of physiotherapists with CMD. According to the literature comparing health professionals from the front line with the rest of the professionals, Western studies showed that the greatest psychological impact occurred in cases of direct contact with infected patients.^{7,30} In addition to a long workday, the concentration and permanent vigilance required when working in the emergency care, ICUs and pulmonology services in situations of pandemic respiratory diseases and contact with suffering and death, aggravated the psychological state of professionals.^{19,31,32}

More than half of the physiotherapists in this study were contaminated by coronavirus; this result was higher than that found in the study by Carvalho and Kundsinn,²⁵ which had a positive result in 33.3% of physiotherapists at a public hospital in Rondônia, Brazil. Physiotherapists' fear of reinfection may be related to high risk of contamination by COVID-19, since they play an important role in all treatment phases of these patients from managing spontaneous, invasive and non-invasive ventilation to the provision of supplemental oxygen, as well as acting in the process before and after orotracheal intubation in the extubating phase.³³

This study has some limitations. For instance, due to the cross-sectional design, exposition and outcome were analyzed at the same time; consequently, we cannot exclude a possible reverse causality. It is also possible a healthy worker bias, since the participants were physiotherapist that were in full exercise of their activities; those who were absent from work due health problems were not included. Despite online surveys being helpful, low cost, and quick, some challenges should be cited such as the response rate and non-respondent characteristics.³⁴ Finally, since this study was only carried out in four Brazilian states, it cannot be extrapolated to other populations of physiotherapists in Brazil or worldwide. Therefore, further studies should be carried out with physiotherapists from different countries.

Conclusion

The physiotherapists showed a higher prevalence of CMD. Factors such as fear of reinfection, previous infection by COVID-19 where risk factors to CMD, while being satisfied with the work and being more than 30 years old were protective factors in the studied sample.

The COVID-19 pandemic has exacerbated the presence of CMDs in physiotherapists assisting patients infected with the coronavirus. These findings seem to be directly related to the age of the professionals, as well as satisfaction with the professional activity performed and the support received at their workplace. In view of these facts, there is an urgent need to create interdisciplinary actions and guarantee effective public policies aimed at these professionals at work and outside it in order to minimize the risks inherent to work and its consequent impact on the mental health of health workers.

Authors' contributions

GASM, WJS, JFSB and EOSF were responsible for the study conception and design and, along with AGCC, for data analysis and interpretation. GASM, JFSB and EOSF wrote the manuscript, and WJS, AGCC, JFSB and EOSF reviewed it. All authors approved the final version.

References

1. Silva RMV da, Sousa AVC. Chronic phase of COVID-19: challenges for physical therapists in the face of musculoskeletal disorders. *Fisioter Mov.* 2020;33:e0033002. DOI
2. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet.* 2020;395(10223):470-3. DOI
3. Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS, et al. Post-acute COVID-19 syndrome. *Nat Med.* 2021;27(4):601-15. DOI
4. Barroso BIL, Souza MBCA, Bregalda MM, Lancman S, Costa VBB. Worker health in COVID-19 times: reflections on health, safety, and occupational therapy. *Cad Bras Ter Ocup.* 2020;28(3):1093-102. DOI
5. Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry.* 2020;7(3):228-9. DOI
6. Pimentel D, Figueiredo DL, Mattos RMPR, Barreto IDC. Mental health of Brazilian physicians during the COVID-19 pandemic. *Res Soc Dev.* 2020;9(10):e5129108758. DOI

7. Danet AD. Impacto psicológico del COVID-19 en profesionales sanitarios de primera línea en el ámbito occidental. Una revisión sistemática. *Med Clin (Barc)*. 2021;156(9):449-58. [DOI](#)
8. Palacios-Ceña D, Fernández-de-Las-Peñas C, Florencio LL, de-la-Llave-Rincón AI, Palacios-Ceña M. Emotional experience and feelings during first COVID-19 outbreak perceived by physical therapists: a qualitative study in Madrid, Spain. *Int J Environ Res Public Health*. 2020;18(1):127. [DOI](#)
9. Karsten M, Matte DL, Andrade FMD. The COVID-19 pandemic brought challenges and new possibilities for Physiotherapy in Brazil: are we ready? *J Physiother Res*. 2020;10(2):142-5. [DOI](#)
10. Guimarães F. Approach of the physiotherapist in intensive care units in the context of the COVID-19 pandemic. *Fisioter Mov*. 2020;33:e0033001. [DOI](#)
11. National Institutes of Health. What's New | COVID-19 Treatment Guidelines. 2021. [Full text link](#)
12. Paz LES, Bezerra BJDS, Pereira TMM, Silva WE. COVID-19: the importance of physical therapy in the recovery of workers' health. *Rev Bras Med Trab*. 2021;19(1):94-106. [DOI](#)
13. Souza e Souza L, Barbosa B, Oliveira e Silva C, Souza A, Ferreira T, Siqueira L. Prevalência de transtornos mentais comuns em adultos no contexto da atenção primária à saúde. *Rev Port Enferm Saude Mental*. 2017;18:59-66. [DOI](#)
14. Matsumura ESS, Sousa Jr AS, Guedes JA, Teixeira RC, Kietzer KS, Castro LSF. Geographical distribution of physiotherapists in Brazil. *Fisioter Pesqui*. 2018;25(3):309-14. [DOI](#)
15. Santos KOB, Araújo TM, Pinho PS, Silva ACC. Avaliação de um instrumento de mensuração de morbidade psíquica: estudo de validação do self-reporting questionnaire (SRQ-20). *Rev Baiana Saude Publica*. 2010;34(3):544-60. [Full text link](#)
16. Guirado GMP, Pereira NMP. Uso do Self-Reporting Questionnaire (SRQ-20) para determinação dos sintomas físicos e psicoemocionais em funcionários de uma indústria metalúrgica do Vale do Paraíba/SP. *Cad Saude Colet*. 2016; 24(1):92-8. [DOI](#)
17. Horta RL, Camargo EG, Barbosa MLL, Lantin PJS, Sette TG, Lucini TCG, et al. O estresse e a saúde mental de profissionais da linha de frente da COVID-19 em hospital geral. *J Bras Psiquiatr*. 2021;70(1):30-8. [DOI](#)
18. Phiri P, Ramakrishnan R, Rathod S, Elliot K, Thayanandan T, Sandle N, et al. An evaluation of the mental health impact of SARS-CoV-2 on patients, general public and healthcare professionals: A systematic review and meta-analysis. *EClinical Medicine*. 2021;34:100806. [DOI](#)
19. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395(10227):912-20. [DOI](#)
20. Sousa CC, Araújo TM, Lua I, Gomes MR, Freitas KS. Insatisfação com o trabalho, aspectos psicossociais, satisfação pessoal e saúde mental de trabalhadores e trabalhadoras da saúde. *Cad Saude Publica*. 2021;37(7):e00246320. [DOI](#)
21. Tarcan M, Hikmet N, Schooley B, Top M, Tarcan GY. An analysis of the relationship between burnout, socio-demographic and workplace factors and job satisfaction among emergency department health professionals. *Appl Nurs Res*. 2017;34:40-7. [DOI](#)
22. Rossi R, Socci V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, et al. Mental health outcomes among frontline and second-line health care workers during the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy. *JAMA Netw Open*. 2020;3(5):e2010185. [DOI](#)
23. Santamaría MD, Ozamiz-Etxebarria N, Rodríguez IR, Albondiga-Mayor JJ, Gorrochategi MP. Psychological impact of COVID-19 on a sample of Spanish health professionals. *Rev Psiquiatr Salud Ment (Engl Ed)*. 2021;14(2):106-12. [DOI](#)
24. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. *Brain Behav Immun*. 2020;87:11-7. [DOI](#)
25. Carvalho ES, Kundsín A. Atuação do fisioterapeuta mediante a pandemia da COVID-19 em um hospital de referência no interior da Amazônia Legal. *Rev Eletr Acervo Saude*. 2021; 13(2):e6435. [DOI](#)
26. Yitayih Y, Mekonen S, Zeynudin A, Mengistie E, Ambelu A. Mental health of healthcare professionals during the early stage of the COVID-19 pandemic in Ethiopia. *BJPsych Open*. 2020;7(1):e1. [DOI](#)

27. Almeida ILGI, Duarte ACM, Simões ML, Azevedo DSS, Alcantara MA. Risk factors for common mental disorders in health care workers in the city of Diamantina, state of Minas Gerais. *Rev Bras Med Trab.* 2021;18(3):293-301. [DOI](#)
28. Serrano-Ripoll MJ, Meneses-Echavez JF, Ricci-Cabello I, Fraile-Navarro D, Fiol-deRoque MA, Pastor-Moreno G, et al. Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis. *J Affect Disord.* 2020;277:347-57. [DOI](#)
29. Sousa VFS, Araujo TCCF. Estresse ocupacional e resiliência entre profissionais de saúde. *Psicol Cienc Prof.* 2015;35(3):900-15. [DOI](#)
30. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open.* 2020;3(3):e203976. [DOI](#)
31. Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study. *Psychiatry Res.* 2020;288:112936. [DOI](#)
32. Liu CY, Yang YZ, Zhang XM, Xu X, Dou QL, Zhang WW, et al. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. *Epidemiol Infect.* 2020;148:e98. [DOI](#)
33. Musumeci MM, Martinez BP, Nogueira IC, Alcanfor T. Recursos fisioterapêuticos utilizados em unidades de terapia intensiva para avaliação e tratamento das disfunções respiratórias de pacientes com COVID-19. *ASSOBRAFIR.* 2020;11(Supl 1):73-86. [DOI](#)
34. Nayak MSDP, Narayan KA. Strengths and weakness of online surveys. *IOSR Journal of Humanities and Social Sciences IOSR J Hum Soc Sci.* 2019;24(5):31-8. [Full text link](#)