


# BMJ Open Burnout syndrome in intensive care physicians in time of the COVID-19: a cross-sectional study

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## ABSTRACT

**Objectives** To assess the prevalence of burnout syndrome among intensive care physicians working in a tertiary private hospital as well as their perceived impact of the COVID-19 pandemic on their life.

**Design** A cross-sectional study.

**Setting** Intensive care units dedicated to the care of COVID-19 in Hospital Sírio-Libanês, Sao Paulo, Southeastern part of Brazil.

**Participants** Intensive care physicians.

**Interventions** Each participant received an envelope with a questionnaire composed of demographic and occupational variables, information related to their personal and professional experiences facing the COVID-19 pandemic and the Maslach Burnout Inventory questionnaire.

**Primary and secondary outcomes measures** The primary outcome was to assess the prevalence of burnout syndrome among physicians working in an intensive care unit dedicated to the care of COVID-19.

**Results** A total of 51 from the universe of 63 (82%) intensive care physicians participated in the study. Nineteen (37.2%) met the criteria for burnout syndrome. In the three domains that characterise burnout syndrome, we found a low level of personal achievement in 96.1% of physicians interviewed, a high level of depersonalisation in 51.0% and 51.0% with a high level of emotional exhaustion. Decision-making conflicts between the intensive care unit team and other attending physicians were frequent (50% of all conflicts). A third of the participants had been diagnosed with COVID-19, 22 (43.1%) reported having a family member infected and 8 (15.7%) lost someone close to the COVID-19 pandemic. Participants felt that fear of infecting their loved ones was the aspect of their lives that changed most as compared with the prepandemic period.

**Conclusions** Burnout syndrome was frequent among intensive care unit physicians treating patients with COVID-19 in a large tertiary private hospital. Future studies should expand our results to other private and public hospitals and test strategies to promote intensive care unit physicians' mental health.

## INTRODUCTION

The COVID-19 pandemic has emerged as an unprecedented health crisis. As of March

## Strengths and limitations of this study

- We addressed burnout syndrome in its three different dimensions using a well-validated questionnaire.
- The prevalence of burnout syndrome among other categories of health professionals was not addressed.
- Our study was descriptive and performed in a single centre with a small number of participants, what limits its external generalisability.

2021, there have been 90 million patients diagnosed with COVID-19 and 1.93 million deaths worldwide. In Brazil alone, >8 million cases have been confirmed, and deaths amount to over 200 000.<sup>1 2</sup> The psychological impact of the pandemic on healthcare workers and, especially, those working in intensive care units (ICUs) was well-publicised worldwide. Most healthcare professionals are working under extreme pressure, despite various degrees of burden in different geographic regions.<sup>3-5</sup>

Under normal circumstances, professionals working in the ICU environment are at risk of suffering from burnout syndrome, with a high prevalence of conflicts, work overload and night shifts. Recent studies report a high prevalence that may exceed 50% of the team, varying between professional categories.<sup>6-8</sup> In our hospital, the prevalence of burnout syndrome among ICU physicians before the COVID-19 pandemic was 18%.<sup>6</sup>

In the face of the pandemic, the burden on intensive care physicians has increased considerably. Burnout syndrome is widely described in its tridimensionality: (1) emotional exhaustion, (2) depersonalisation and (3) personal accomplishment.<sup>2-4</sup> High levels of burnout syndrome have been found among healthcare professionals in ICUs, with prevalence rates ranging from 0% to 70%.<sup>9</sup> Burnout syndrome is a process

that starts with an imbalance between organisational demands and personal resources, which causes emotional exhaustion in the worker, then experiencing depersonalisation (coping that protects the worker from disillusionment and burnout), ending with low self-fulfilment at work because of ineffectiveness in coping with different work stressors. Several factors could contribute to the increased incidence of burnout syndrome in the current scenario. With an unprecedented flow of patients with acute respiratory distress syndrome, in many places, there is a shortage of ICU beds. Physicians often need to choose which patients they will admit to the ICU and which they will leave behind. In addition, intensivists have to cope with their fear of infecting themselves or their loved ones with the virus. These new circumstances likely amplified the sources of emotional distress and have increased the prevalence of burnout in these professionals.<sup>2–5</sup> A high prevalence of burnout syndrome has also been reported among frontline nurses, healthcare workers in wards and emergency departments.<sup>4 10–14</sup> There are few studies, however, assessing burnout syndrome in physicians working in ICUs dedicated to the care of patients with COVID-19 in Brazil.<sup>15 16</sup>

### Objective

The aim of this study was to assess the prevalence of burnout syndrome among intensive care physicians working in a tertiary private hospital as well as their perceived impact of the COVID-19 pandemic on their life.

### Method

As part of this cross-sectional study, in December 2020, intensive care physicians working in ICUs dedicated to the care of COVID-19 in Hospital Sirio Libanes, Sao Paulo, Southeastern part of Brazil, were invited to participate in the study. Originally, a 30-bed mixed surgical-medical ICU with daily multidisciplinary rounds, established protocols for patient care and adequate professional-bed relationship, this ICU expanded its capacity to 63 beds to attend exclusively the care of patients with COVID-19. All ICU physicians working for >6 months in the unit were invited in person by the principal investigator (RRLF) to participate.

To ensure optimal data quality, the same investigator (RRLF), a psychologist with experience in ICU interviews, recruited all participants and collected all study data. No incentives were offered. After answering, each participant returned the sealed envelope, without their names, preserving their anonymity. Each participant received an envelope with a questionnaire composed of demographic variables, occupational variables, information on the impact of the COVID-19 pandemic on their day-to-day life (insomnia, lack of appetite, irritability, decreased libido, fear of being infected, fear of infecting loved ones, overspending) and the Maslach Burnout Inventory (MBI) questionnaire,<sup>17 18</sup> translated and transculturally validated for Portuguese in Brazil, which has

acceptable psychometric properties when compared with its original version in English.<sup>6 19</sup> The full questionnaire (translated to English) can be found in the online supplemental material. Questions about the day-to-day impact were ordinal and varied from zero (no impact) to four (large impact). The MBI consists of 22 questions, comprising the three components of burnout: emotional exhaustion (9 items), depersonalisation (5 items) and personal achievement (8 items).

From the MBI questionnaire, the cut-off scores were defined for each dimension, and the following internationally established definition of burnout was adopted, according to the MBI manual: high levels of emotional exhaustion (score  $\geq 27$  points) and depersonalisation (score  $\geq 10$  points) combined with low personal achievement (score  $\leq 33$  points).<sup>17 18</sup>

### Patient and public involvement

Patients were not involved in this research.

### Statistical analysis

Data are presented as means and SD, medians and IQRs and absolute and relative frequencies when appropriate. Burnout syndrome domains were represented in a Venn diagram to convey the message of how often each domain was abnormal. The perceived impact on different aspects of day-to-day life were shown on a radar chart. All analyses were performed in R (R Core Team 2020) and RStudio (RStudio, Boston, Massachusetts, USA).

## RESULTS

In the period from 10 to 23 December 2020, 51 out of a total of 62 intensive care physicians participated in the study (response rate of 82%). Among those who did not answer the questionnaire, 10 were unavailable including 2 on vacation and 2 on sick leave. One participant returned the questionnaire with no answers on the burnout questionnaire and was therefore excluded. The characteristics of the participating physicians are in [table 1](#).

The median age of physicians was 37.00 (IQR=33–43) years. Most physicians were male (60.8%) and married (76.0%).

### Burnout syndrome

Nineteen (37.2%) of ICU physicians met the criteria for burnout. In the three domains that characterise burnout syndrome, we found a low level of personal achievement in 96.1% of physicians interviewed, a high level of depersonalisation in 51.0% and 51.0% with a high level of emotional exhaustion.

Personal achievement was the most affected of the burnout syndrome dimensions ([figure 1](#)).

### Day-to-day life impact of the pandemic

A total of 17 physicians (33.3%) had been diagnosed with COVID-19; 22 physicians (43.1%) reported having an infected family member and 8 (15.7%) lost someone close to the COVID-19 pandemic. Of those three

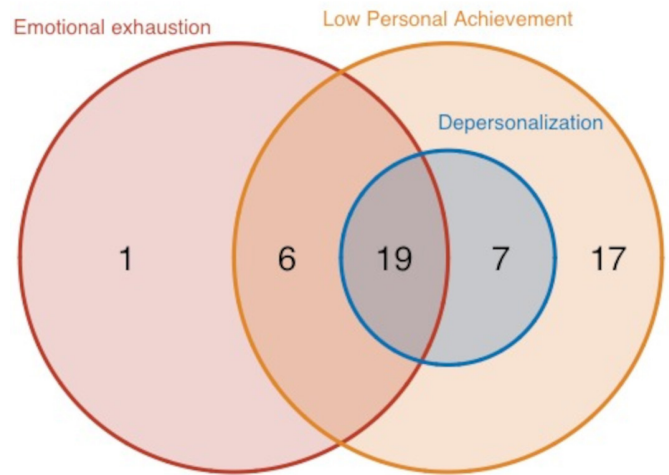
**Table 1** Characteristics of participating intensivivist physicians (n=51)

Do you have a good structure and/or family life, n (%)	46 (90.20)
How long do you work in the ICU (years), median (IQR)	8.00 (6.00–14.00)
How many hours/week do you work in the ICU, median (IQR)	52.00 (40.00–60.00)
How many patients do you care for during the shift, median (IQR)	10.00 (10.00–10.00)
How many night shifts did you work in the last week, n (%)	40 (78.40)
Do you also work in another hospital, n (%)	32 (64.00)
Do you work solely in the private sector, n (%)	41 (80.40)
How often do you participate in the decision-making process to limit invasive measures, median (IQR)	1.00 (0.00–1.00)
How many patients you cared for died in the last week, median (IQR)	0.00 (0.00–1.00)
How many work absences in the last month	
None	46 (90.20)
1–3 days	4 (7.80)
5–10 days	1 (2.00)
How many conflicts in the last week, n (%)	16 (31.40)
Attending physician	8 (50.00)
Nurse	3 (18.8)
Patient and/or family	9 (56.25)
Have you considered quitting your job for demotivation in the last week	21 (41.20)
How is your relationship with the multidisciplinary team	
Bad	2 (4.00)
Regular/Good	20 (39.20)
Great	29 (56.80)

ICU, intensive care unit.

participants who smoked (6.9%), two (66.7%) increased the consumption of tobacco after the pandemic. A total of 40 (78.4%) participants reported drinking of alcohol; of these, 18 (45.0%) increased the consumption after the pandemic. Regular physical activity was reported by 24 (47.1%) physicians, most of whom (23/24, 96%) maintained their level of activity. Only four (16.7%) participants exercised more during the pandemic. Fears about COVID-19 contamination, especially fear of infecting their loved ones, had the largest impact on the day-to-day life of physicians (figure 2).

The majority of physicians (27/51, 52.9%) reported that they had never done psychotherapeutic or psychiatric treatment; 20 (39.2%) had some treatment previously and 4 (7.8%) started treatment after the pandemic. Of the 46 respondents, 4 physicians (8.7%) experienced suicidal ideation. Five participants (9.8%) did not respond to the question about suicidal thoughts.

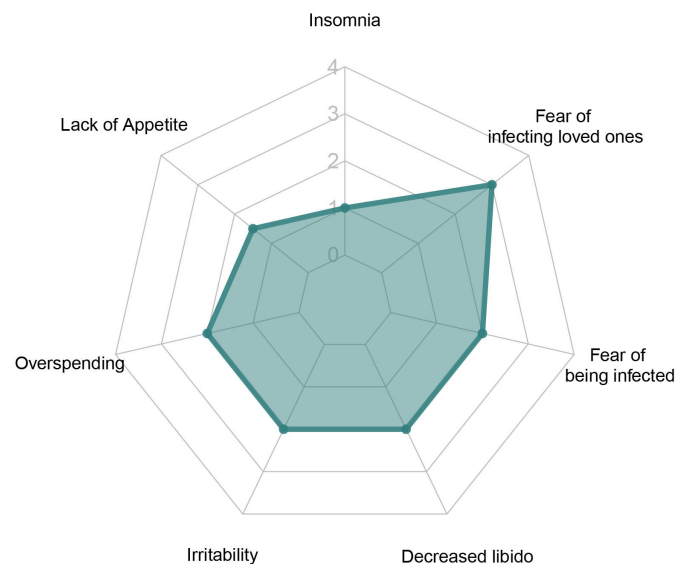


**Figure 1** Venn diagram of burnout dimensions.

**DISCUSSION**

The SARS-CoV-2 pandemic resulted in a general increase in new cases of anxiety, depression and burnout syndrome in critical care health professionals. In the present study, we found a high prevalence of burnout syndrome among intensive care physicians caring for patients with COVID-19, with half of participants demonstrating emotional exhaustion and depersonalisation. Additionally, nearly all of them showed low personal achievement. With approximately a third of the medical staff having had COVID-19, many reported fear of contamination or of transmitting the disease to their loved ones. Furthermore, in this scenario, we observed a significant rate of conflicts, a known risk factor for burnout syndrome.<sup>20</sup>

Burnout syndrome was present in nearly two-fifths of the participants. This prevalence is twice as large as that previously reported by our group in 2017, in which the prevalence of burnout syndrome among physicians working in the same ICUs was 18.2%. This finding is



**Figure 2** Spider chart of the impact on the day-to-day life of physicians.



suggestive of a strong impact of the pandemic on the emotional health of the team. The prevalence of burnout syndrome during the pandemic is also in agreement with that found by other authors. For example, in the survey conducted among intensive care physicians from the European Society of Intensive Care Medicine, over half the members interviewed had burnout syndrome.<sup>4</sup> We found that nearly the entire team showed low personal achievement, the burnout syndrome dimension with the highest increase compared with the pre-COVID-19 period, when it was present in 36.3% of physicians.<sup>6</sup>

We found that 60.8% of the respondents believed that their profession placed them at increased risk during the pandemic. Mostly, they were afraid of getting infected with COVID-19 or of transmitting the disease to their loved ones imposing on them an additional emotional burden. Other authors had similar results. For example, in a study with physicians from various regions in Saudi Arabia during the pandemic, the most common feelings reported were worry (67.5%), isolation (56.9%) and fear (49.7%).<sup>5</sup>

Most physicians reported a good relationship with the multidisciplinary team. This productive interaction is paramount for good patient care,<sup>21</sup> compatible with our low ICU mortality rate of 16.2% among patients who required invasive mechanical ventilation.<sup>2</sup> These two factors combined can also be protective for burnout syndrome.<sup>21</sup> In less favourable scenarios, the prevalence of burnout syndrome among ICU physicians could be even higher. In Brazil, we have large differences in resources available in private and public healthcare. Mortality in the public healthcare system is significantly higher compared with private hospitals.<sup>22</sup> This lack of resources is likely associated with moral distress and burnout syndrome.<sup>6</sup>

Conversely, many ICUs in private hospitals in Brazil, including ours, adopt the open ICU format. In this model, there can be many more conflicts between primary admitting physicians and ICU physicians about clinical decision making, including but not limited to end-of-life decisions. For example, decisions about withdrawal of futile treatments commonly lead to disagreement. This situation is conducive for moral distress, a factor strongly associated with burnout syndrome and well discussed in previous studies during the pandemic.<sup>6 23</sup>

Another relevant and worrisome finding was the occurrence of suicidal thinking among ICU physicians even if rarely or sometimes. Moreover, the question about suicide was the only left unanswered: the silence of 10% of the participants was disturbing. According to a previous study,<sup>24</sup> suicidal thinking cannot be overlooked because it is a strong risk factor for committing suicide and therefore deserves to be considered with great care. Additionally, we found that other emotional disorders were frequent, such as loss of libido, irritability, increased alcohol consumption and excessive spending. These findings emphasise the importance of psychological support for ICU physicians, especially those on the frontline treating patients with COVID-19.

Although symptoms of anxiety and depression were not the scope of this study, it is known that many hours of work in close contact with patients with COVID-19 has been associated with higher levels of depression, anxiety and burnout syndrome compared with those who spend fewer hours working in close contact with patients with COVID-19.

There are several limitations in the present study. First, it was a descriptive study performed in a single centre and with a small number of participants. As such, it can be considered a first step towards increased awareness of the prevalence of mental health disorders among ICU physicians. Future studies should be performed in a larger scale to help plan public health interventions targeting promotion of mental health. Second, we did not study the impact of COVID-19 among other health professional categories. Third, we chose to use a score according to the MBI manual (high levels of emotional exhaustion and depersonalisation combined with low scores on personal achievement), a method used by other researchers and in our previous study.<sup>6 25-27</sup> This choice limits the comparison of our results to those of other studies that have used the definition of Poncet (MBI score >-9).<sup>20</sup>

## CONCLUSION

Burnout syndrome was frequent among ICU physicians treating patients with COVID-19 in a large tertiary private hospital. The prevalence was twice as high that found in our historical controls from a previous publication. Awareness is the first step to change. Future studies should focus on upscaling our results to other private and public hospitals and on developing strategies to promote ICU physicians' mental health.

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**Contributors** Study concept and design: RRLF, SVCDC, LPJ; acquisition of data: RRLF and SVCDC; analysis and interpretation of data: ELVC and RRLF; drafting the work: RRLF, ELVC, SVCDC, LCPA, LPJ; statistical expertise: ELVC; study supervision: LPJ. Final approval of the version to be published: RRLF, ELVC, SVCDC, LCPA, LPJ. All authors have participated sufficiently in the work to take public responsibility for appropriate portions of the content. All authors read and approved the final manuscript. Guarantor: RRLF.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study was approved by Comitê de Ética em Pesquisa da Sociedade Beneficente de Senhoras do Hospital Sírio-Libanês, HSL protocol number 1710. A waiver of written informed consent was obtained to help preserve anonymity. This waiver was endorsed by the Head of Department and each participant was asked to give verbal, informed consent prior to the completion of the questionnaire. The consent to participate was also implied with the completion of the questionnaire.

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**Data availability statement** Data are available on reasonable request. The data can be obtained under reasonable request from the corresponding author, renata.rffumis@hsl.org.br.

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#### REFERENCES

- 1 WHO coronavirus disease (COVID-19) dashboard. Available: <https://covid19.who.int/>
- 2 Socolovitch RL, Fumis RRL, Tomazini BM, *et al.* Epidemiology, outcomes, and the use of intensive care unit resources of critically ill patients diagnosed with COVID-19 in Sao Paulo, Brazil: a cohort study. *PLoS One* 2020;15:e0243269.
- 3 Caillet A, Coste C, Sanchez R, *et al.* Psychological impact of COVID-19 on ICU caregivers. *Anaesth Crit Care Pain Med* 2020;39:717–22.
- 4 Azoulay E, De Waele J, Ferrer R, *et al.* Symptoms of burnout in intensive care unit specialists facing the COVID-19 outbreak. *Ann Intensive Care* 2020;10:110.
- 5 Al Sulais E, Mosli M, AlAmeel T. The psychological impact of COVID-19 pandemic on physicians in Saudi Arabia: a cross-sectional study. *Saudi J Gastroenterol* 2020;26:249–55.
- 6 Fumis RRL, Junqueira Amarante GA, de Fátima Nascimento A, *et al.* Moral distress and its contribution to the development of burnout syndrome among critical care providers. *Ann Intensive Care* 2017;7:71.
- 7 Embriaco N, Papazian L, Kentish-Barnes N, *et al.* Burnout syndrome among critical care healthcare workers. *Curr Opin Crit Care* 2007;13:482–8.
- 8 Voultsov P, Koungali M, Psaroulis K, *et al.* Burnout syndrome and its association with anxiety and fear of medical errors among intensive care unit physicians: a cross-sectional study. *Anaesth Intensive Care* 2020;48:134–42.
- 9 van Mol MMC, Kompanje EJO, Benoit DD, *et al.* The prevalence of compassion fatigue and burnout among healthcare professionals in intensive care units: a systematic review. *PLoS One* 2015;10:e0136955.
- 10 Murat M, Köse S, Savaşer S. Determination of stress, depression and burnout levels of front-line nurses during the COVID-19 pandemic. *Int J Ment Health Nurs* 2021;30:533–43.
- 11 Wu Y, Wang J, Luo C, *et al.* A comparison of burnout frequency among oncology physicians and nurses working on the frontline and usual wards during the COVID-19 epidemic in Wuhan, China. *J Pain Symptom Manage* 2020;60:e60–5.
- 12 Firew T, Sano ED, Lee JW, *et al.* Protecting the front line: a cross-sectional survey analysis of the occupational factors contributing to healthcare workers' infection and psychological distress during the COVID-19 pandemic in the USA. *BMJ Open* 2020;10:e042752.
- 13 Stocchetti N, Segre G, Zanier ER, *et al.* Burnout in intensive care unit workers during the second wave of the COVID-19 pandemic: a single center cross-sectional Italian study. *Int J Environ Res Public Health* 2021;18:6102.
- 14 Gualano MR, Sinigaglia T, Lo Moro G, *et al.* The burden of burnout among healthcare professionals of intensive care units and emergency departments during the COVID-19 pandemic: a systematic review. *Int J Environ Res Public Health* 2021;18:8172.
- 15 Faria ARQdeP, Coelho HFC, Silva AB, *et al.* Impact of the COVID-19 pandemic on the development of burnout syndrome in frontline physicians: prevalence and associated factors. *Rev Assoc Med Bras* 2021;67:942–9.
- 16 Lobo SM, Creutzfeldt CJ, Maia IS, *et al.* Perceptions of critical care shortages, resource use, and provider well-being during the COVID-19 pandemic: a survey of 1,985 health care providers in Brazil. *Chest* 2022;S0012-3692:00230–6.
- 17 Maslach C, Jackson SE, Leiter MP. *MBI: Maslach burnout inventory manual*. 3rd edn. Palo Alto: Consulting Psychologists Press, 1996.
- 18 Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol* 2001;52:397–422.
- 19 Pereira SdeS, Fornés-Vives J, Unda-Rojas SG, *et al.* Confirmatory factorial analysis of the Maslach Burnout Inventory - Human Services Survey in health professionals in emergency services. *Rev Lat Am Enfermagem* 2021;29:e3386.
- 20 Poncet MC, Toullic P, Papazian L, *et al.* Burnout syndrome in critical care nursing staff. *Am J Respir Crit Care Med* 2007;175:698–704.
- 21 Hellyar M, Madani C, Yeaman S, *et al.* Case study investigation decreases burnout while improving interprofessional teamwork, nurse satisfaction, and patient safety. *Crit Care Nurs Q* 2019;42:96–105.
- 22 Fumis RRL, Ferraz AB, de Castro I, *et al.* Mental health and quality of life outcomes in family members of patients with chronic critical illness admitted to the intensive care units of two Brazilian hospitals serving the extremes of the socioeconomic spectrum. *PLoS One* 2019;14:e0221218.
- 23 Robert R, Kentish-Barnes N, Boyer A, *et al.* Ethical dilemmas due to the Covid-19 pandemic. *Ann Intensive Care* 2020;10:84.
- 24 El-Hage W, Hingray C, Lemogne C. Les professionnels de santé face la pandémie de la maladie coronavirus (COVID-19) : quels risques pour leur santé mentale? [Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic: What are the mental health risks?]. *Encephale* 2020;46:S73–80.
- 25 Garrouste-Orgeas M, Perrin M, Soufir L, *et al.* The latroref study: medical errors are associated with symptoms of depression in ICU staff but not burnout or safety culture. *Intensive Care Med* 2015;41:273–84.
- 26 Cubero DIG, Fumis RRL, de Sá TH, Burnout in Medical Oncology Fellows. A prospective multicenter cohort study in Brazilian institutions. *J Cancer Educ* 2016;31:582–7.
- 27 Zhang X-C, Huang D-S, Guan P, *et al.* Job burnout among critical care nurses from 14 adult intensive care units in northeastern China: a cross-sectional survey. *BMJ Open* 2014;4:e004813.