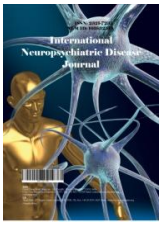

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Diseases of *Burnout* during the Pandemic of the New Corona Virus in Intensive Care Physicians and Its Impact on Serving the Population: A Descriptive Bibliographic Review

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Authors' contributions

This work was carried out in collaboration among all authors. Authors ABN and BMR were the major authors of this manuscript, as they carried out the research and mostly wrote. Author ABN, was the correspondent of the magazine, while the authors DSDS and RMDS revised the references, translated the manuscript into English and adapted the manuscript according to the magazine's rules. Author ENQ reviewed and guided this work. All authors read and approved the final manuscript.

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ABSTRACT

The mental health issue during the COVID-19 pandemic must consider different populations: doctors / health professionals; general population and patients with mental disorders. When analyzing the stress-generating environment, such as intensive care units and emergencies, one

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must keep in mind the great demand for work and overload of professionals who are in this current pandemic scenario. Thus, this study aims to review the literature on the problems arising from the *Burnout* Syndrome in intensive care physicians during the COVID-19 pandemic. This study constitutes a descriptive bibliographic review on information about the main mental health complications of intensive care physicians directly involved in coping with the COVID-19 pandemic. The searches were performed in bibliographic databases Medline, Embase, Pubmed and Central, after the re-reading of each article, the data of interest were extracted and analyzed in a descriptive way for the composition of this work. Among the factors that modify the working environment of intensive care physicians working in the front line to combat COVID-19, are: limited hospital resources, threat of exposure to the virus as an additional occupational risk, longer shifts, disturbed sleep patterns, subsequent high dilemmas regarding duties with the patient versus fear of exposure to family members, increased workload, increased physical and mental fatigue, stress, anxiety and physical exhaustion. That said, measures must be taken to support intensive care groups in this phase of global public health. The measures include psychological counseling, organization of the workday, provision of personal protective equipment and training on safety measures. The present review showed evidence of how accentuated the cases of burnout and other emotional manifestations related to work stress worsened with the pandemic of COVID-19. Such emotional conditions have a negative impact on the care of patients undergoing intensive care units, as work stress causes illness, low motivation, unproductiveness and less self-confidence in their own work skills.

Keywords: Burnout syndrome; COVID-19; Intensive care unit; mental health.

1. INTRODUCTION

Health institutions are dealing with a new scenario of health and safety actions aimed at the various professionals involved in the care of the population [1]. These are facing the pandemic caused by the worldwide outbreak of the disease caused by the new Coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), called COVID-19 [2,3].

First reported in Wuhan province, China, in December 2019, infectious disease COVID-19 is a new disease, unlike others caused by Coronavirus, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS-CoV) infection [3]. It is a disease with rapid transmissibility among individuals who may be symptomatic or not, whose outbreaks can grow rapidly and exponentially, with a higher lethality than that of seasonal flu [4].

The COVID-19 pandemic has produced significant numbers of infected people and deaths worldwide. According to the report by the World Health Organization, as of December 7, 2020, 66,243,918 confirmed cases and 1,528,984 deaths from the new Coronavirus were reported in the world, mainly affecting the Americas and Europe [5].

SARS-CoV-2 has specific characteristics (genetic structure and pathogenic mechanisms) that pose great challenges for the prevention and treatment of infection, which can directly impact the mental health of professionals who care for infected people [6]. In its form of severe manifestation, COVID-19 is associated with severe acute respiratory syndrome. Patients who develop this form can quickly evolve to death [2].

In the absence of vaccines and proven effective treatment, social distancing strategies have been identified as the most important intervention for the control of COVID-19 [7]. However, for health care teams, especially those professionals who are in direct care of patients with suspected or confirmed diagnosis of COVID-19 in primary care services, emergency care units and hospitals, the recommendation to remain at home does not apply [8].

The problems that public health has faced, when confronting the multiple challenges triggered by the outbreak of COVID-19, are unparalleled in history [9]. With regard also to mental health care in times of crisis, health professionals are among the groups most vulnerable to the emotional and psychological consequences of the pandemic.

Such a scenario can cause burnout (work-related stress), depression, anxiety, among others, harming even more the coping with the disease [10], requiring even more dynamism in the face

of changes, which shows the vulnerability of health resources in the world based on this “new occupational normality” [4]. Nevertheless, there is the unhealthiness and challenges of different hospital units, which perform both emergency and elective care, for example, the operating room and the Intensive Care Units (ICU), which together have increased and expanded the offer of intensive care [11,12].

As COVID-19 spread globally, saturating health systems and causing them to collapse, the number of patients admitted to intensive care has grown, adding to challenges related to working conditions that, in a way, negatively impacted health mental health of professionals in intensive care units with symptoms such as stress, anxiety, insomnia and depressive symptoms [13,14]. Considering that ICUs represent exhausting and tense environments, intensivists are more exposed to physical and emotional stress and, consequently, to psychological disorders [15].

The mental health issue in the COVID-19 Pandemic must consider different populations: doctors / health professionals; general population; patients with mental disorders, among others [16]. A considerable proportion of health professionals experienced symptoms of depression, anxiety, insomnia, stress, especially women, and those on the front line, directly involved in diagnosing, treating or providing care to patients with suspected or confirmed diagnosis of COVID-19 [17]. These findings suggest that professionals at the front line are at high risk of developing mental health problems and need supportive interventions [18].

As for intensivists, they daily face unstable working conditions, in an environment marked by lack of security, inadequate infrastructure (in some cases) and inherent risks. This influences high levels of professional exhaustion, physical and psychological illness, poor quality of life and health care 19]. Such situations are more common to professionals working on the front line to combat COVID-19, due to long working hours, concern about the patients' health status and the shortage of personal protective equipment (PPE), especially in countries with limited resources [20].

When analyzing the stress-generating environment, such as the Intensive Care Unit and emergencies, one must keep in mind the great demand for work and overload of health professionals who are in this current pandemic scenario. Therefore, this work aims to review the literature on *Burnout* Syndrome in intensive care physicians during the COVID-19 pandemic.For this, it was necessary to identify the factors that impact on the mental health of intensivists in coping with COVID-19; correlate the psychological damage of intensivists and their impact on health services and investigate mental health interventions for intensivists who are at the forefront of the new Coronavirus pandemic.

1.1 *Burnout* Syndrome and COVID-19

In view of the sudden appearance of this new form of acute respiratory syndrome caused by the new Coronavirus, the challenge faced by health professionals in maintaining their own physical and mental health became evident [19]. Countries such as China, Germany and the United States have disclosed their experiences in coping with the mental health of health professionals, offering an overview related to the psychological suffering of those on the front line of care [17,21,22].

It is inevitable that health professionals, especially doctors, working tirelessly on the front line, are more vulnerable to emotional issues, as they also deal with their feelings of helplessness, failure, stress due to conditions and work overload, uncertainties about the disease and treatment, fear of contracting and transmitting the virus, and / or difficulty dealing with the loss of their patients [23].

Mental illnesses such as depression, anxiety, stress and BO, were responsible for countless absences from work. In recent years, BO has become a significant psychosocial problem, caused by chronic stress administered unsuccessfully in the workplace [24]. It is a psychic disorder of a depressive character, preceded by intense physical and mental exhaustion caused by excessive and prolonged levels of stress (tension) at work, interfering with mental health and reduced professional effectiveness [25]. It is considered as a social problem of great relevance, being investigated in several countries [7].

Depression, anxiety, stress and BO, were responsible for numerous absences from work. In recent years, BO has become a significant psychosocial problem, caused by chronic stress administered unsuccessfully in the workplace [24]. It is a syndrome resulting from chronic stress in the workplace that has not been

successfully managed, preceded by intense physical and mental exhaustion caused by excessive and prolonged levels of stress (tension) at work, interfering with mental health and reduced professional effectiveness [25, 26]. It is considered a social problem of great relevance, being investigated in several countries [7].

BO is currently included in the International Classification of Diseases ICD-11 under the code QD85 (formerly Z73 by the ICD-10 system) [27]. BS involves three interdependent factors: emotional exhaustion, depersonalization and low professional achievement or inefficiency [10]. Emotional exhaustion represents the individual component, with feelings of being demanded beyond your resources. Depersonalization refers to the interpersonal component and, at high levels, can give an initial impression of defense and protection, but with a risk of chronification of distance. Ineffectiveness is the self-assessment component, usually accompanied by feelings of incompetence and low productivity [28].

In view of the current public health scenario, health professionals are the most exposed to the risks of infection and consequently are the most likely to develop some psychological syndrome [5]. The dangers include greater exposure to the pathogen, long working hours, emotional stress, fatigue, physical and mental exhaustion syndrome inherent to work (BO), stigma and physical and psychological violence [29].

Given the highly contagious nature of SARS-CoV-2 and the rapid spread of the COVID-19 pandemic, there was a lack of preparedness and insufficient training for the challenge posed on health systems, as well as the limited supplies of PPE for ICU teams, including anesthesiologists, intensivists, pulmonologists, nurses, respiratory therapists and other frontline providers in most affected areas [30].

Among the aspects that changed the work environment and that can directly interfere in the mental health of intensive care physicians working in the front line of the fight against COVID-19, are the lack of PPE; the restricted number of beds and mechanical fans; lack of knowledge and training to serve this specific population; level of complexity and severity of patients, in addition to the lack of specific and effective treatment for the disease; wear and tear generated by the inability to meet the demand of patients seeking care; need to deal with the increase in the volume of deaths, including family members and co-workers [31].

Recalling that the work of the professional working in the ICU is exhaustive, requiring in addition to qualified technical knowledge, special skills; attention; quick thinking; ability to balance emotionally to deal with the adversities that arise in their daily work [32].

The biggest challenges experienced by doctors and intensivists in the face of the pandemic include not only the increased workload created by such an outbreak, but also the fear of contagion for them and their families, as well as working with new protocols and lack of PPE [25].

Considering the importance of intensivists for the care of critically ill people, and that the repercussions of BO can lead to incapacity for work and compromise patient care, the early identification of the syndrome's development stage can support interventions, individual and / or organizational, to prevent these situations [33].

1.2 Impacts and Interventions

BO is associated with an increase in cases of medical suicide, as well as substance abuse, which can contribute to the instability of the health infrastructure, promoting an increase in staff turnover, early retirement and a percentage reduction in professional effort. These consequences are certainly undesirable in the context of a pandemic that requires greater resources and health reserves [35, 35].

Some studies have identified factors associated with mental health outcomes in intensive care physicians. These are: (1) limited hospital resources, (2) threat of exposure to the virus as an additional occupational risk, (3) extended shifts, (4) disturbed sleep patterns, (5) work life balance, (6) subsequent high dilemmas regarding patient duties versus fear of exposure to family members (7) increased workload, (8) increased physical and mental fatigue, (9) stress and anxiety and (10) physical exhaustion. All of these factors were identified as the main factors that contribute to the increase in physical and mental fatigue, anxiety, stress and exhaustion [36,25,37,38,39,17,40,41,42]. These authors also emphasize that the worker falls ill due to issues more linked to the work context than individual characteristics.

These consequences are of sufficient importance that immediate efforts focused on prevention and direct intervention are necessary to address the impact of the outbreak on mental health, not only individual (in the case of intensive care physicians), but also population, since the literature assumes that care mental health care for these professionals should start immediately [43, 29].

Previous epidemiological studies have verified the psychological impacts caused by the outbreak of the Serious Acute Respiratory Syndrome, caused a significant increase in cases related to mental disorders during and after the epidemic among health professionals [44,45]. In parallel to this, the COVID-19 pandemic added new factors to the development of BO in intensive care physicians.

In this regard, several measures must be taken to support this group of doctors in this phase of global public health. Such measures include psychological counseling, organization of the workday, salary adjustment, provision of PPE and training on safety measures [25].

Although each individual has several psychological baselines, providing subsidies for mental health as a preventive action is important for everyone [46], since mental health education, along with subsequent prevention and mitigation, is critical at times like this [47].

One form of intervention would be for hospitals to promote policies aimed at minimizing the risk of negative psychological effects experienced during the pandemic [41]. The provision of psychological support through, for example, Cognitive-Behavioral Therapy (CBT) focused on trauma is a means of intervention that covers specific and non-specific methods (with respect to mental disorders) that, based on proven specific knowledge about the different disorders and psychological knowledge regarding the way human beings modify their thoughts, emotions and behaviors, aim to systematically improve the problems treated. This measure proved to be useful in previous periods after epidemics and natural disasters [41].

There is also prevention by psychoeducation, based on psychoemotional self-care activities. In times of pandemic, it is necessary to think about how to treat stress and trauma and to develop psychological tools with the objective of protecting against traumatic stress and BO [33].

Stress management and prevention in professionals is necessary, regardless of the epidemiological state installed. Understanding the needs of the workforce is crucial for the development of recruitment and retention strategies, as healthcare organizations must control costs and increase productivity by providing healthy work environments [48].

2. METHODOLOGY

2.1 Methods and Approach

This study constitutes a descriptive bibliographic review on information about the main mental health complications of intensive care units' physicians directly involved in coping with the covid-19 pandemic.

Searches were conducted in Medline, Embase, Pubmed and Central bibliographic databases, using the following descriptors: "Coronavirus", "Sars-CoV-2", "Covid-19", "Burnout syndrome", "Intensive care doctors", "Burnout syndrome, Physicians", "Intensive care unit".

After selecting the articles, exploratory reading were performed; selective reading and choice of material appropriate to the objectives and theme of this study; analytical reading and analysis of the texts, ending with the performance of interpretative reading and writing of the manuscript. then, the body of the study were constituted, grouping the most discussed themes in the following categories: Covid-19, mental health, burnout syndrome, occupational risks. from this stage, the entire theoretical framework in line with the study theme were analyzed and discussed.

2.2 Data Collection and Sampling

Data collection for this review was carried out from October 2020 to December 2020, through the selection of articles available in full in Portuguese and English. For this, an online search was carried out in journals in the area of concentration of Health Sciences, targeting the electronic bibliographic databases: MEDLINE (Medical Literature Analysis and Retrieval System Online / PubMed), EMBASE (Elsevier) and CENTRAL (The Cochrane Central Register of Controlled Trials The Cochrane Library), in order to concisely organize and synthesize information. Subsequently, there was an analysis of the selected material, in order to respond to the objectives of the study.

2.3 Data Analysis

After rereading each article, the data of interest were extracted and analyzed in a descriptive manner for the composition of this work. As recommended by the guidelines for the development of literature reviews, the main results of the listed studies were summarized.

3. RESULTS AND DISCUSSION

The emergence of the COVID-19 pandemic demonstrated several weaknesses in the affected countries with regard also to the mental health care of health professionals, especially intensive care doctors, in times of crisis. However, it was possible to observe strategies to promote mental health care for this group in question (Table 1). These strategies and interventions can be adopted in the face of this pandemic scenario.

These observations can be used to form organizational strategies that aim to reduce the effect of BO in intensive care physicians during the current public health scenario. Additional organizational strategies serve to combat the physical exhaustion of doctors and other health professionals within ICUs, which can improve working relationships and reduce conflicts, improve self-control and flexibility [49, 50].

Different approaches aimed at minimizing occupational stress experienced by intensive care physicians during the COVID-19 pandemic were analyzed. Among the strategies capable of alleviating stress in a pandemic situation are those related to the environment and the workday, such as the creation of systems capable of managing the stress of professionals, flexible working hours and support for health professionals in the face of the pandemic. [9].

It should be noted that BS is frequent among intensive care physicians. It is characterized by cumulative involvement of emotional exhaustion, depersonalization and non-professional fulfillment, as well as being associated with anxiety, depression, post-traumatic stress disorder [35, 51]. Regarding the current pandemic caused by the new Corona virus, several factors may have exceeded occupational fatigue and BO in doctors in intensive care units [30].

The literature reports that during the pandemic the possibility of developing BO increased. While the male gender was a predictor of depersonalization (PD), the female gender showed a significant association with greater emotional exhaustion (EE). This same study also evaluated emotional exhaustion due to infection or death by COVID-19 among colleagues or family members [25]. Previous studies have already pointed out that about 50% of intensive care physicians had different BO or some psychological dysfunction [52].

Table 1. Strategies and Interventions to prevent BO, acute stress disorder and post-traumatic stress disorder, in intensive care physicians related to the COVID-19 pandemic. Adapted from Sousa Júnior and collaborators (2020) and Restauri and collaborators (2020)

Strategies / Interventions	Potential benefits
Promote educational actions on Burnout Syndrome and other psychological disorders via expert panel discussions.	Increases awareness and early intervention.
Psychological monitoring	Early intervention.
Counseling services	Increases awareness and early intervention.
Accommodations during working hours	It eases work stress.
Flexibility of working hours	It eases work stress.
Planning educational actions aimed at self-help and metal health	Increases the feeling of security and stability
Training and guidance for intensive care professionals in the fight against Coronavirus	Decreases exposure and mitigates concerns about contracting the virus
Organizational functioning and proper working conditions	Promotes flexibility and eases job stress.
Promote support and good relationship between team and management through dialogue	Strengthens interpersonal relationships and improves teamwork.

In the face of the COVID-19 crisis, there is great pressure in relation to the resources of the ICUs worldwide, increasing the risk of physical and mental exhaustion of the professionals of this unit, as well as the lack of inputs to carry out the work safely. The prevalence of BO among Dutch intensivists was low, and as a result of the new Coronavirus pandemic this prevalence has only increased [31]. The same author reports that the rate of BO in intensivists corresponds to 8%, followed by a high involvement in work 38.9%. The same study found that BO was negatively associated with both the engagement of these professionals at work and the ability to deal with their own problems and overcome difficult moments such as the COVID-19 pandemic.

With regard to psychosocial and mental health effects, since the World Health Organization declared the outbreak of the new Coronavirus as a Public Health Emergency of international importance, several factors associated with the mental health of health professionals who are in line with in the face of the COVID-19 combat, it came to the fore. Exposure to these traumatic and stressful events can lead to the development of acute stress disorder and, ultimately, trigger post-traumatic stress disorder. Likewise, BO is driven by increased exposure to stressors in the workplace that results in emotional exhaustion, depersonalization and a decreased sense of personal fulfillment, and negative social behaviors that can imply the effectiveness of your workday [53, 54, 34].

Stress and anxiety experienced at work can have a major negative impact on the health system and patient safety. In this sense, the COVID-19 pandemic represents a perfect scenario to cause chronic stress in the work environment, resulting in high rates of physical and mental exhaustion that can trigger symptoms of acute traumatic stress imposed by the pandemic [41]. Symptoms related to post-traumatic stress disorder fall into three categories, which include reliving the event, feeling of emotional numbness or depersonalization and symptoms of increased arousal (difficulty sleeping, easily irritated or angry, difficulty concentrating) [41.43]. Exploring the intersection of these phenomena is necessary to inform interventions.

Large-scale disasters are associated with significant increases in mental health disorders, both in the immediate and post-trauma period, leading to increased rates of post-traumatic stress disorder, depression and mental disorders caused by substance abuse [43]. Likewise, BO is associated with higher rates of substance abuse, depression and suicide [55].

People respond to emergencies and disasters in various ways, in Table 2 we can observe the psychosocial and mental health responses resulting from events that cause some psychological effect, whether in the short, medium or long term [56].

Concerns have already arisen about the negative psychological effects of the pandemic, such as fatigue, anxiety, depression, post-traumatic stress disorder [13].

Table 2. Individual reactions to the disaster, Adapted from Williams et al. [56]

Psychosocial and mental health effects
1. IMMEDIATE AND SHORT TERM:
• suffering;
• acute stress reactions;
• neuropsychological changes in response to acute stress.
2. MEDIUM AND LONG TERM:
• sadness;
• depression;
• impact on personality;
• anxiety disorders;
• mental disorders, mental disorder;
• post-traumatic stress disorder;
• persistent suffering maintained by secondary stressors;
3. SHORT TO MEDIUM TERM
•Anguish.

The pandemic is also likely to cause changes in other factors that affect well-being, such as organization structure, team roles, autonomy and availability [57]. Also, according to the same author, there was a significant increase in BO cases during the COVID-19 pandemic, which causes the physical and psychological exhaustion of the entire multidisciplinary intensive care team and which directly implies the well-being and quality of work in the ICUs.

Other additional characteristics associated with BO extracted from the literature include: age, female gender, conflicts in interprofessional relationships, sleep disorders and inexperience [58,49,59]. Those related to the COVID-19 pandemic are: high workload, inefficiency and lack of resources, lack of meaning at work, lack of control and flexibility, loss of social support at work and lack of work-life integration, leading to clinical exhaustion in the intensive care setting [57].

The high demand in health services during the COVID-19 pandemic was characterized as one of the main factors of emotional distress among health professionals, since this finding corroborates the relationship between BO and increased workload among intensive care physicians [60, 61,64]. The same author reports that doctors in intensive care units have higher rates of BO compared to doctors in other specialties.

Each subspecialty inherent in the groups that make up ICUs (for example, anesthesiology, intensive care medicine, respiratory physiotherapy, nursing and others) follows the guidelines provided by their respective professional societies for different procedures. However, holistic efforts to align these guidelines are absent in most cases, resulting in teamwork problems, confusion and frustration, which can be a major work stress [30].

With the pandemic, several gaps in the health system were exposed, including the need for proactive investment to increase preparedness for epidemics and pandemics [30]. Thus, longitudinal studies should be designed to assess the long-term impact of the COVID-19 pandemic on the physical and mental well-being of intensive care physicians, as well as health professionals who are at the forefront of combating the new Corona virus.

4. CONCLUSION

Based on publications that address the impacts of stress in hospital environments, especially in intensive care units where psychological and emotional pressure is prevalent, the present review showed evidence of how severe the cases of BO and other emotional manifestations of work stress worsened with the COVID-19 pandemic. For this, it was necessary to identify the factors that impact on the mental health of intensivists in coping with COVID-19; correlate the psychological damage of intensivists and their impact on health services and investigate mental health interventions for intensivists who are at the forefront of the new Coronavirus pandemic. Such emotional conditions have a negative impact on the care of patients undergoing treatment in the ICUs, according to what was exposed throughout this review.

Considering the importance of intensivists for the care of seriously ill people, and that the repercussions of BS can lead to incapacity for work, the early identification of the stage of development of this syndrome can support individual and organizational interventions to prevent these situations. That said, strategies to promote and protect the health of these workers must be discussed and implemented in hospitals.

CONSENT

It is not applicable.

ETHICAL APPROVAL

All ethical principles related to the process of constructing a literature review were observed, and the studies reviewed and incorporated into the manuscript were cited and referenced. The present work assures the ethical aspects, guaranteeing the authorship of the researched articles, using for citations and references of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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