

Original Article

# Prevalence of burnout syndrome among newly hired healthcare workers before and during the COVID-19 pandemic in Italy: A comparative cross-sectional study

Prevalenza della sindrome del burnout negli operatori sanitari in Italia prima e durante la pandemia da COVID-19 in Italia: uno studio trasversale di confronto

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## Abstract

**Introduction:** Aim of this study is to analyze the impact of COVID-19 pandemic on burnout levels of newly hired healthcare workers (HCWs) employed in Italy during the COVID-19 emergency.

**Methods:** A comparative cross-sectional study was conducted on two different convenience samples of newly hired HCWs employed with different positions (physicians, nurses, other categories) at a public hospital in Lodi, Lombardy. Data was collected before the COVID-19 pandemic and after the onset of the pandemic (from February to October 2020). Burnout levels were measured with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS). Burnout syndrome was considered as the sum of high Emotional Exhaustion (EE) and Depersonalization (DP) and low Personal Accomplishment (PA). Chi square and ANOVA test were carried out for comparisons. P value was set at 0.05.

**Results:** Prevalence of BOS in newly hired HCWs was higher in the "COVID-19" group than in the "before COVID-19" group (n = 34, 30.3% vs n = 3, 2.5%). Differences in BOS frequency and all single sub-dimensions (high EE, high DP, low PA) of BOS between two groups were statistically significant.

**Discussion:** Newly hired HCWs employed during the COVID-19 emergency in Italy are at high risk of BOS, confirming the risk of mental distress, BOS alongside other mental disorders already described in the literature, in frontline HCWs employed during this emergency. Occupational health surveillance and workplace health promotions with teams of psychologists may promote higher levels of mental well-being in frontline newly hired HCWs during the COVID-19 emergency.

## Riassunto

**Introduzione:** L'obiettivo di questo studio è di analizzare l'impatto della pandemia da COVID-19 sui livelli di burnout sugli operatori sanitari (OS) neoassunti occupati in Italia durante l'emergenza COVID-19.

**Metodi:** È stato condotto uno studio trasversale di confronto su due diversi campioni di OS neoassunti occupati in diverse posizioni (medici, infermieri, altre categorie) nell'ospedale pubblico di Lodi, in Lombardia. I dati sono stati raccolti prima della pandemia da COVID-19 e dopo l'esordio della pandemia (da febbraio ad ottobre 2020). I livelli di burnout sono stati misurati con il Maslach Burnout Inventory-Human Services Survey (MBI-HSS). La sindrome da burnout è stata considerata come la somma dell'alto Esaurimento Emotivo (EE) e della Depersonalizzazione (DP) e della bassa Realizzazione Personale (RP). Per i confronti, sono stati eseguiti i test del Chi-quadrato e dell'ANOVA. Il valore di significatività statistica "p" è stato impostato a 0.05.

**Risultati:** La prevalenza della sindrome da burnout negli OS neoassunti è stata più alta nel gruppo "COVID-19" rispetto al gruppo "prima del COVID-19" (n = 34, 30.3% vs n = 3, 2.5%). Le differenze nella frequenza del burnout e in tutte le singole sottodimensioni (alto EE, alta DP, bassa RP) della sindrome tra i due gruppi sono risultate statisticamente significative.

**Discussione:** Gli OS neoassunti occupati durante l'emergenza COVID-19 in Italia sono ad alto rischio di burnout, confermando il rischio di burnout, insieme ad altri disturbi mentali già descritti in letteratura, negli OS neoassunti occupati in prima linea durante questa emergenza. La sorveglianza sanitaria e le attività di promozione della salute sul posto di lavoro con team di psicologi potrebbero promuovere livelli più alti di benessere mentale negli OS neoassunti in prima linea durante l'emergenza COVID-19.

**Parole chiave:** COVID-19; sindrome da burnout; operatori sanitari; neoassunti; psicologia della salute occupazionale; SARS-CoV-2. **Key words:** COVID-19; burnout syndrome; healthcare workers; newly hired; occupational health psychology; SARS-CoV-2.

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## INTRODUCTION

Since December 2019, when the first cases of human infections from the new coronavirus (SARS-CoV-2) appeared [1], the emergent new disease termed as Coronavirus Disease 19 (COVID-19) rapidly spread all over the world [2]. In March 2020, the COVID-19 infection has been declared pandemic, due to the invasive epidemic spreading uncontrollably [2], which caused an unprecedented public health emergency in modern history. This pandemic has caused severe psychological disorders in some categories of the population like children, adolescents and older, as well as in infected people and some categories of workers like healthcare workers (HCWs). Many reviews showed high levels of anxiety, depression, stress, fear, sleep disorders, frustration, post-traumatic stress disorders (PTSD) and burnout syndrome (BOS), especially in front-line healthcare workers [3–6].

COVID-19 infection has been recognized in Italy as an occupational injury in HCWs and other front-line workers [7]. Indeed, HCWs are constantly exposed to long shift working, high demands of

care and workloads, as well as severe emotional burden [8–10]. At the beginning of the pandemic, in Italy and other countries, hospitals faced shortages of personal protective equipments (PPEs), and lack of established procedures and guidance [7, 11, 12]. Therefore, many HCWs felt confused and unprepared to treat properly patients infected with the new virus [13]. This situation of uncertainty, characterized by lack of support, alienation, fear of contagion, guilty, isolation and difficulty in managing the “unknown”, in combination with high workload, made health professionals more vulnerable and prone to loneliness and perceived stigma. This resulted in severe psychological and emotional consequences among HCWs, such as anxiety, depression, sleep disorders, post-traumatic stress disorders (PTSD) [14, 15] and burnout [6, 16].

Burnout syndrome is a state of physical, emotional and mental exhaustion, due to the exposure to stressful factors and emotionally demanding situations [17–19], which was explained by Maslach [20] in helping professions, as a reaction to the emotional distress determined by the constant and direct contact with other human beings, especially if they are suffering. BOS may have many adverse effects on workers, such as low job satisfaction and depression, as well as poor outcomes for the organizations, such as high turnover, sick leave, high injuries and accidents rates, low productivity, interpersonal conflicts, and has been associated with other psychosocial risk factors at work including workplace violence [21].

In general, HCWs are at high-risk of developing BOS due to emotional contact with their patients, aggressions by clients, long and solitary shifts and highly stressing work environments [22]. Nurses and physicians are at higher risk [23–26] compared to the rest of the hospital staff, due to their working conditions, highly challenging demands and responsibility that are entrusted to these professions [27]. Some studies showed intensive care units and emergency departments as highly stressful workplaces that may promote the onset of BOS [28–30].

As a consequence of BOS, HCWs may develop symptoms such as anxiety, irritability, moodiness, insomnia, depression, PTSD, suicidal thoughts and feelings of failure [31–33]. BOS consequences can include psychosomatic disorders, such as headache, high blood pressure, cardiopulmonary diseases, musculoskeletal and gastric disorders, stomach ulcers, insomnia and fatigue [18, 34]. Finally, BOS may lead to low performance at work, intention to leave, and poor care for the patient. BOS among physicians and nurses is much prevalent in both high-income [23–26, 35] and middle and low-income countries [36].

During pandemic or other critical situations, protective factors can help HCWs to face the emergency. The most functional coping strategies are clear guidelines, supervisor’s support, proper training, precautionary measures, social, familiar, spiritual, and religious support [37–41]. It was found that even personality traits may affect how HCWs cope with stressors [42]. BOS has been studied in young HCWs [43,44], and most studies on BOS have been conducted during the COVID-19 emergency, showing a positive association between COVID-19 related stress, the onset of BOS [45–47] and the protective role of resilience and organizational interventions, which may mitigate harmful BOS-related psychological effects [48, 49]. During the previous SARS emergency, optimism, resilience and altruism reduced psychological distress among HCWs [50, 51]. A previous study [49] from an Italian hospital, in Lombardy, which was the most hit Italian region during the first wave of COVID-19 in Italy [52], showed that resilience is a protective factor against burnout in HCWs, especially in new hires.

With these premises, the present study aimed to study the role of the COVID-19 pandemic in newly hires HCWs, by comparing their BOS levels before and during the first wave of the COVID-19 pandemic in Italy.

## **METHODS**

### *Study design and setting*

This comparative, cross-sectional, study was carried out in a local hospital of Lodi, a city near to Milano, Lombardy, Italy. Data was collected from April 2019 (before the onset of the pandemic) to October 2020 (during the first COVID-19 wave and the subsequent generalized lockdown in Italy).

### *Study participants*

All healthcare professionals (physicians, nurses, paramedics) newly recruited from our hospital were subject to a psychological evaluation for the fitness to job, according to the occupational health surveillance program developed by the Occupational Health and Clinical Psychology Units of the Lodi ASST local hospital. Participants were evaluated 30-40 days after starting their job. They constituted two groups, those employed and evaluated during the 2019 year, from January to December, and those employed and surveyed after the onset of the COVID-19 pandemic (from April 9<sup>th</sup>, 2020, to October 30<sup>th</sup>, 2020). In Italy, the first wave occurred during February-April 2020, while the second wave began in October 2020 [53].

The "before COVID-19" group comprised 85 HCWs, while 112 diverse HCWs constituted the "COVID-19" group. Participants of the first group were visited by psychological instruments that were administered during clinical interviews by trained psychologists. Participants of the second group were surveyed by psychologists through online interviews, in compliance with safety regulations on COVID-19.

### *Study instruments*

#### *Socio-demographic characteristics*

A self-report questionnaire was administered to collect the main socio-demographic characteristics, including gender, age, type of work and work department.

#### *Maslach Burnout Inventory*

The Italian version of the Maslach Burnout Inventory-Human Services Survey (MBI HSS) [20, 54] was used for evaluating BOS levels. Formulated in accordance with the WHO and ICD-11 definitions of BOS, the original questionnaire includes three sub-dimensions consisting of 22 items: the 9-items emotional exhaustion (EE) (feelings of emotional overextension by one's work), the 5-items depersonalization (DP) (unfeeling and impersonal response towards patients), and the 8-items personal accomplishment (PA) (feelings of competence and successful achievement in one's work). The three sub-scales demonstrate strong sample-specific reliability based on the 84 published studies thus far, and further validated for human service occupations, including medical professionals [20, 55]. According to Maslach definition, BOS is characterized by high EE and DP and low PA [56, 57]. In this study, prevalence of BOS was measured as a sum of high EE, high DP, and low PA [58]. Sub-dimensions levels were classified as "low/medium/high" as follows: EE ( $\leq 14$ ; 15-23;  $\geq 24$ ), DP ( $\leq 3$ ; 4-9;  $\geq 9$ ), PA ( $\geq 37$ ; 30-36;  $\leq 29$ ). Cronbach's alpha of the subscales at baseline for the "before COVID-19" group was  $\alpha = .90$  for EE,  $\alpha = .79$  for DP, and  $\alpha = .71$  for PA, indicating acceptable to good internal consistency. Cronbach's alpha at baseline for the "COVID-19" group was  $\alpha = .92$  for EE,  $\alpha = .76$  for DP, and  $\alpha = .72$  for PA, indicating acceptable to good internal consistency.

**Data analysis**

All data was analyzed using SPSS version 26 (IBM, 2017). Descriptive statistics were computed to report the demographics in the groups. Differences between before and after COVID-19 groups were evaluated with  $\chi^2$  test (for categorical variables) and ANOVA test (for continuous variables). Significant values were set up at  $p < 0.05$ .

**Ethical aspects**

This study was conducted in accordance with ethical principles of the Declaration of Helsinki and Good Clinical Practice guidelines. Our research received approval from the authorized institutional review board. All participants (or legally authorized representatives) provided informed consent.

**RESULTS**

**Descriptive statistics**

In the “before-19” group, the percentage of female participants was 70.6% (n = 60) and the mean age of all participants was 35 ± 8.9 years (range: 24-61 years). In the “COVID-19” group of HCWs, the percentage of female participants was similar (70.2%, n = 73), as well as the mean age of participants (34 ± 10.1 years, range: 22-61 years). The most represented categories were the nurses (n= 40; 47.1%) and the HCWs employed at the medical department (n= 20, 23.5%) in the “before COVID-19” group, as well as the nurses (n = 65, 58%) and HCWs employed at the medical department (n = 33, 29,5%) in the “COVID-19” group. Prevalence of BOS in new hires HCWs of the “COVID-19” group was higher than in new hires HCWs employed in the “before COVID-19” group (n = 34, 30.3% vs n = 3, 2.5%). Descriptive statistics of the participants and prevalence of BOS are presented in Table 1.

**Table 1.** Prevalence of BOS by type of work and department in the two groups (n = 197).

	“Before” COVID-19 group (n = 85)	COVID-19 group (n = 112)	“Before” COVID-19 group (n = 85)	COVID-19 group (n = 112)
	Frequency n; %	Frequency n; %	BOS prevalence	BOS prevalence
<b>Type of work</b>				
Physicians	28 (32.9%)	9 (7.1%)	2 (66.7%)	3 (8.8%)
Psychologist	5 (5.9%)	-	-	-
Physiotherapist	3 (3.5%)	2 (1.8%)	-	-
Podiatrist	1 (1.2%)	-	-	1 (2.9%)
Speech therapist	1 (1.2%)	-	-	-
Sociomedical operator	5 (5.9%)	32 (25%)	-	12 (35.3%)
Nurse	40 (47.1%)	68 (68%)	1 (33.3%)	18 (52.9%)
Midwife	2 (2.4%)	-	-	-
Rehabilitation technician	-	1 (0.9%)	-	-
<b>Total</b>	85	112	3	34
<b>Type of department</b>				
Surgical department	11 (12.9%)	22 (19.6%)	-	4 (11.8%)
Low intensity department	12 (14.1%)	16 (14.3%)	1 (33.3%)	6 (17.6%)

Radiology department	1 (1.2%)	8 (7.1%)	-	1 (2.9%)
Emergency department	17 (20%)	10 (8.9%)	1 (33.3%)	4 (11.8%)
Department of Maternal, newborn and child health	10 (11.8%)	4 (3.6%)	-	2 (5.9%)
Department of Medicine	20 (23.5%)	33 (39.5%)	1 (33.3%)	13 (38.2%)
Mental health department	6 (7.1%)	11 (9.8%)	-	2 (5.9%)
Department of Oncology	4 (4.7%)	3 (2.7%)	-	2 (5.9%)
Health department	1 (1.2%)	3 (2.7%)	-	-
Operating theatre medical	3 (3.5%)	2 (1.8%)	-	-
<b>Total</b>	<b>85</b>	<b>112</b>	<b>3 (2.5%)</b>	<b>34* (30.3%)</b>

Notes: \* $p < 0.05$

### *Differences between “before” and “COVID-19” group*

The chi square test revealed a significant difference in BOS levels, as well as in BOS sub-dimensions (high EE and DP and low PA) between the “before COVID-19 group” and the “COVID-19 group”, where the latter showed higher BOS percentages among HCWs. However, there were no significant differences in mean values of EE, DP and PA between two groups. The “before COVID” group (n = 85) scored  $12.36 \pm 6.77$  on EE subscale (low level of emotional exhaustion),  $7.39 \pm 4.21$  on DP sub-scale (medium level of depersonalization), and  $33.69 \pm 5.5$  on PA (medium level of personal accomplishment). The 112 subjects from the “COVID-19” groups reported  $7.89 \pm 7.57$  on EE sub-scale (low level of emotional exhaustion),  $3.05 \pm 3.74$  on DP sub-scale (low level of depersonalization), and  $36.05 \pm 7.49$  on PA subscale (medium level of personal accomplishment).

## **DISCUSSION**

HCWs are susceptible to job burnout, with the highest levels of job burnout reported among HCWs working in the emergency and Intensive Care Unit environment where they are exposed to an overwhelming amount of job-related stress [59]. Hospitals are facing staffing shortages made worse by the COVID-19 pandemic. Indeed, many HCWs are burned out and are deciding to retire or quit. For this reason, hospitals are spending money to hire and retain healthcare workers during this emergency [60]. Combatting the shortages of HCWs could decrease work-related stress, especially in times of pandemic [61]. In this study, we carried out a cross-sectional, comparative analysis between two unpaired samples of newly hired HCWs, respectively before the onset of COVID-19 and during the first wave of COVID-19 infections in Italy, with the aim to understand the role of the emotional impact due to COVID-19 emergency on BOS levels among newly hired HCWs. In 2020, the city of Lodi, where severe lockdown measures were put in action, was the first “red zone” in Italy. For this reason, we expected higher levels of BOS during the COVID-19 pandemic in HCWs working in this territory. Our findings confirmed this hypothesis, showing a higher prevalence of HCWs affected by BOS during the COVID-19 pandemic, as well as significant differences in BOS levels and single sub-dimensions of BOS (high EE, high DP and low PA), which were higher in the “COVID-19” group in comparison with the “before COVID-19” group. On the contrary, the mean scores of all BOS subdimensions showed similar scores in both samples (low levels of EE and DP and medium

levels of PA), showing no statistically difference between the two groups. Our findings seem to confirm the presence of a higher risk, during the COVID-19 pandemic, that frontline HCWs are facing, as they are exposed to many stressful working conditions, such as increased workload and reduced resting schedule, which predispose them to high levels of emotional stress [62, 63]. As shown by some systematic reviews, BOS is inevitable among frontline HCWs, especially nurses who are closer to patients than doctors because they work on the ward where patients are managed, and they relate directly with caregivers or family members of patients [5, 6]. In the systematic review by Danet & Danet [64], all HCWs reported high (32%) and medium (36%) levels of emotional exhaustion and depersonalization, with higher burnout levels among frontline personnel who were younger and with greater workload.

With regard to age, previous research found a significant negative correlation between age and both emotional exhaustion and depersonalization as measured by the Maslach Burnout Inventory [65], even though evidence from the literature on this topic is inconsistent, suggesting a lack of association between age and burnout [66–70].

Our findings are in agreement with work by Mazzella, Ebstein and colleagues [71] showing low levels of BOS in newly hired HCWs. In another study before the pandemic (2018) carried out in China on 171 newly hired nurses from 58 hospitals, nurses' emotional exhaustion was positively related so surface acting, whereas deep acting was negatively related to emotional exhaustion [72]. However, to the best of our knowledge this is one of the first studies examining the impact of BOS among newly hired HCWs employed in hospital during the COVID-19 pandemic.

Our study is not without limitations. The small convenience sample and the cross-sectional nature of our study limit to infer on the causal relationship between BOS and being newly hired in hospital in the context of the pandemic, as there are many potential factors that may confound this association. Furthermore, this study has been carried out in the context of an occupational health program, which is needed for protecting the physical and mental health of HCWs and requested according to Italia health and safety programs [73].

Our study, therefore, suggests the importance of occupational health programs for protecting the mental health of HCWs, preventing them from the onset of BOS and other psychological disorders [74]. This is important to provide higher quality of care to the patients, especially in times of pandemic. Furthermore, workplace promotion activities based on meditation, spiritual resources, training to cope with high stressful events may promote higher resilience levels in this category of workers and prevent the onset of BOS and other mental disorders. Workers with more intrinsic and extrinsic motivations showed lower levels of job burnout. Employee motivation is shown through energy directed towards work attitudes to achieve the goal of organization. The sense of responsibility and high self-esteem may increase the resilience and prevent from the onset of BOS [75].

According to the literature [75–78] resilience may play a protective role, but several factors, such as coping strategies, personality, personal motivation, work engagement levels, spiritual and emotional resources could contribute to this result and should be investigated in future studies [79–81].

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**Conflicts of Interest:** None

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