



# BURNOUT SYNDROME IN ANESTHESIOLOGISTS WORKING WITH MECHANICALLY VENTILATED COVID PATIENTS AT THE UNIVERSITY HOSPITAL CENTER OSIJEK

Lucija Brdar<sup>1</sup>, Ivan Radoš<sup>2,3</sup>, Dijana Hnatešen<sup>2,3,4</sup>

<sup>1</sup>Health Center Nova Gradiška, 35400 Nova Gradiška, Croatia

<sup>2</sup>Faculty of Medicine, Josip Juraj Strossmayer University of Osijek, 31000 Osijek, Croatia

<sup>3</sup>Clinical Department of Pain Management, University Hospital Center Osijek, 31000 Osijek, Croatia

<sup>4</sup>Nursing Institute "Professor Radivoje Radić," Faculty of Dental Medicine and Health Osijek, Josip Juraj Strossmayer University of Osijek, 31000 Osijek, Croatia

**SUMMARY** – This study aimed to examine the incidence and intensity of burnout syndrome among the anesthesiologists who worked with COVID patients in the COVID intensive care unit (Respiratory Centre) and among anesthesiologists and clinicians who did not work in a respiratory ICU during the pandemic in order to compare the difference in the incidence of burnout syndrome and to examine whether there is a difference in burnout syndrome regarding gender, age and level of medical education. Therefore, a cross-sectional study was conducted. The study included 60 participants; 30 of whom were physicians who worked in the respiratory ICU and 30 who did not work in the respiratory ICU during the COVID-19 pandemic. The results were obtained using a questionnaire to classify participants as being without burnout symptoms, in the initial phase of burnout, or having a high degree of burnout. Based on the results, we found that 53% of all physicians presented with burnout syndrome, and the majority of them were anesthesiologists (30%). Furthermore, 37% of anesthesiologists were in the group with an initial phase of burnout and 20% in the group with a high burnout. Among female anesthesiologists, the syndrome was observed in 58% of all cases. In the group of anesthesiologists older than 35 years, 59% of the cases of burnout syndrome were present, where as burnout syndrome was present in 54% of younger anesthesiologists (younger than 35 years old). There was a higher proportion of burnout syndrome among the participants than in previous studies. The anesthesiologists who worked with seriously ill COVID patients during the pandemic were predominant among the physicians with a higher proportion of burnout syndrome. Symptoms were more common among women, physicians older than 35 and specialists.

**Key words:** *burnout syndrome; COVID-19; pandemic; respiratory ICU*

## Introduction

Burnout syndrome occurs as a result of long-term exposure to stress in the workplace. Despite the presence of various sources of stress, most people develop

behavioral defense mechanisms that enable them to overcome the stressful situations in which they find themselves. When the demands placed before the individual are disproportionate and when, in the absence of social support, defense mechanisms can no longer resist stress, psychological disturbances manifest and can develop into physical ones<sup>1</sup>. Burnout syndrome occurs more often among the so-called service professions that focus on working with people, such as police officers, firefighters, judges, teachers, journalists, soldiers and health workers<sup>2</sup>. Three primary symptoms characterize the burnout syndrome: emotional exhaus-

Correspondence to:

*Assoc. Prof. Ivan Radoš, MD, PhD*

Department of Anaesthesiology, Reanimatology and Intensive Care  
University Hospital Center Osijek, Croatia

Josip Juraj Strossmayer University Osijek, Faculty of Medicine  
Department of Anaesthesiology, Reanimatology and Intensive Care,  
31000 Osijek, Croatia

Email: irados11@gmail.com

tion, depersonalization and reduced personal achievement. All of them are mediated by the exhaustion of the person at the workplace, present as a loss of energy or fatigue and can lead to reduced productivity, poorer patient care, reduced patient satisfaction, a higher risk of medical errors, more frequent access to addictive substances and a higher risk of depression and suicide. Considering their high level of responsibility towards human life, the risk of burnout among anesthesiologists is particularly high, as they most often deal with the treatment of seriously ill patients, those who are in intensive care units and the dying, as well as their family members, during the patient's illness, their death and in its aftermath.

Older physicians are more susceptible to burnout syndrome. In the modern era of medicine, the number of women in the profession is also increasing. According to previous research, women are more sensitive than men and are more susceptible to the development of stress and burnout syndrome<sup>3</sup>. In the period of the COVID-19 pandemic, anesthesiologists around the world were exposed to more significant work pressure than before. The number of patients who need help was increasing, there was a constant need to worry about procedures to prevent infection and long-term wearing of protective equipment could lead to dehydration, heat and fatigue, which made clinicians more prone to developing burnout syndrome and finding themselves in a situation where they were not in opportunities to provide help, but instead needed help themselves<sup>4</sup>. To maintain healthcare quality, efforts should be made to prevent stress and burnout among clinicians. In addition to personal work on individual quality of life, including healthy diet and exercise, meditation and a regular sleep schedule and spending quality time with family, friends, or pets, appropriate professional teams must be made available in order to make it easier for physicians to deal with the problems they encounter, provide them social support and help them accept responsibility<sup>5</sup>.

This study aimed to examine the incidence and intensity of burnout syndrome among the anesthesiologists who worked with COVID patients on mechanical ventilation in the respiratory ICU and the anesthesiologists and physicians who did not work in a respiratory ICU during the pandemic in order to compare the incidence of burnout syndrome and to examine whether there was a difference in burnout syndrome regarding gender, age and level of medical education.

## Methods

### *Participants and data collection procedures*

The study was conducted in February 2021. The sample consisted of 60 participants, comprising 30 physicians worked in a respiratory center during the COVID-19 pandemic and 30 physicians who did not work in a respiratory center during the same period. Physicians of both genders and all age groups from the Clinic for Anesthesiology, Reanimatology and Intensive Care who worked with COVID patients on mechanical ventilation in the respiratory center of the University Hospital Centre Osijek during the COVID-19 pandemic were included in the respiratory center group in the study. The second group of participants consisted of clinicians from the Clinical Institute for Clinical Cytology, the Clinic for Psychiatry and the Clinic for Ophthalmology of University Hospital Centre Osijek, who were not directly involved in the treatment of COVID patients on mechanical ventilation in the respiratory center during the pandemic. The Ethics Committee of the Faculty of Medicine Osijek approved the study. All relevant data were collected voluntarily and anonymously with the help of a standardized and validated questionnaire that assesses the intensity of burnout at work, proposed by the Croatian psychologist Ajduković D, and created as part of the activity of the Society for Psychological Assistance<sup>6</sup>. In the questionnaire, there were 18 items describing different symptoms of burnout syndrome at work. Each of these items was assessed on a scale from 1 to 3, and the sum of all answers was used to evaluate the intensity of the burnout syndrome. The minimum score ranged from 18 to 54. According to this score, the participants were classified into one of 3 groups:

- From 18 to 25 – participants without symptoms of burnout (isolated signs of stress present)
  - From 26 to 33 – participants with initial burnout (see warning sign; severe or permanent exposure to stress)
  - From 34 to 54 – participants with a high level of burnout syndrome (assistance needed)
- In addition to the questionnaire, demographic characteristics were also collected (age, gender and level of medical education). Participants were divided into two groups based on whether they did or did not work in a respiratory center during the pandemic.

Furthermore, they were divided according to the clinic where they were employed, the level of medical education, gender and age. Based on age, participants

were divided into the group aged  $\leq 34$  years and the group aged  $\geq 35$  years. Sixty participants filled out the questionnaire. MedCalc software version 19.7 (MedCalc Software bvba, Ostend, Belgium; <http://www.medcalc.org>; 2021) was used for statistical analysis. Differences in categorical variables were tested with the  $\chi^2$ -test and with Fisher's exact test.

## Results

### General data

A study on burnout syndrome in the workplace was conducted on a sample of 60 physicians at University Hospital Centre Osijek. The classification of participants by gender showed that 20 male participants (33%) and 40 female participants (67%) were included in the study ( $\chi^2$ -test,  $P=0.01$ ). The participants were divided into two groups According to age: the group aged  $\leq 34$  years included 19 physicians (32%), and the

group of physicians aged  $\geq 35$  years, which comprised 41 physicians (68%) ( $\chi^2$ -test,  $P<0.001$ ). Physicians were selected according to the clinics where they were employed. The sample included 30 anesthesiologists (50%), 9 psychiatrists (15%), four cytologists (7%), and 17 ophthalmologists (28%) ( $\chi^2$ -test,  $P<0.001$ ). Participants were asked about their level of medical education. According to education level, the sample was divided into the group of residents, comprising 12 physicians (20%), and the group of specialists, with 48 physicians (80%) (Table 1).

Among the 30 anesthesiologists, there was a higher proportion of women (63%). According to age, physicians over 35 were predominant (57%). In the anesthesiologists, there were eight residents (27%) and 22 specialists (73%) ( $\chi^2$ -test,  $P=0.01$ ). Taken together, they formed the group of physicians who worked in the respiratory center during the pandemic ( $\chi^2$ -test,  $P<0.001$ ) (Table 2).

Table 1. General characteristics of the participants

		N (%)	P*
Gender	Male	20 (33)	0.01
	Female	40 (67)	
Age	26-34	19 (32)	<0.001
	35-61	41 (68)	
Clinic	Anesthesiology	30 (50)	<0.001
	Psychiatry	9 (15)	
	Cytology	4 (7)	
	Ophthalmology	17 (28)	
Level of medical education	Residents	12 (20)	<0.001
	Specialists	48 (80)	
Work in a respiratory center	Yes	30 (50)	>0.99
	No	30 (50)	

\* $\chi^2$ -test

Table 2. General characteristics of anesthesiologists

		N (%)	P*
Gender	Male	11 (37)	0.14
	Female	19 (63)	
Age	26-34	13 (43)	0.47
	35-61	17 (57)	
Level of medical education	Residents	8 (27)	0.01
	Specialists	22 (73)	
Work in a respiratory center	Yes	30 (100)	<0.001
	No	0 (0)	

\* $\chi^2$ -test

**Burnout assessment**

A questionnaire on the intensity of burnout syndrome in the workplace was used for this study. In a sample of 60 participants, the results showed that burnout syndrome was present among 32 physicians (53%). Most of them were anesthesiologists, i.e., 17 of them (28%), while 15 of the other physicians who did not work in the respiratory center were in the same

burnout level category (25%). A smaller share of physicians was classified in the no burnout category, where physicians who did not work in a respiratory center predominated (Table 4).

The sum of all averaged answers recorded among anesthesiologists was 18 to 45. Those who had a sum of 26 or more were classified among the 17 anesthesiologists (57%) in the burnout syndrome category

Table 3. Incidence of symptoms of burnout syndrome among anesthesiologists

	N (%)	P*
Burnout syndrome	17 (57)	0.46
Without burnout	13 (43)	

\* $\chi^2$ -test

Table 4. Difference in incidence of burnout syndrome between anesthesiologists and physicians who did not work in the respiratory center

	Total N (%)	Anesthesiologists N (%)	Physicians who did not work in the respiratory center N (%)	P*
Burnout syndrome	32 (53)	17 (28)	15 (25)	0.80
Without burnout	28 (47)	13 (22)	15 (25)	

\*Fisher's exact test

Table 5. Intensity of symptoms of burnout syndrome among anesthesiologists

	N (%)	P*
High level of burnout	6 (20)	0.27
Initial burnout	11 (37)	
Without burnout	13 (43)	

\* $\chi^2$ -test

Table 6. Difference in incidence of burnout syndrome among anesthesiologists with regard to gender, age, and level of medical education

		Burnout syndrome N (%)	Without burnout N (%)	Total	P*
Gender	Male	6 (55)	5 (45)	11	>0.99
	Female	11 (58)	8 (42)	19	
Age	26-34	7 (54)	6 (46)	13	>0.99
	35-61	10 (59)	7 (41)	17	
Level of medical education	Residents	2 (25)	6 (75)	8	0.04
	Specialists	15 (68)	7 (32)	22	
Total		17	13		

\*Fisher's exact test

(Table 3). Of the 17 physicians from that group, 11 of them (37%) had a total in the range of 26 to 33, which placed them in the initial burnout category. In comparison, the other 6 physicians (20%) had a total of more than 33, based on which they were classified in the high degree of burnout category (Table 5).

The burnout results among anesthesiologists differed with regard to age, gender, and level of medical education. Burnout syndrome was more often recorded among women. Among the 19 female physicians in the sample, 11 (58%) had burn out in the workplace, while 8 (42%) did not have symptoms of burnout. Regarding age, burnout syndrome was more often present among physicians older than 35 years, where 10 (59%) of them showed signs of burnout syndrome, while among the rest 7 (41%) showed no signs of burnout. Finally, in the group of 8 residents, 2 (25%) had burnout symptoms, and 6 (75%) were without symptoms of burnout. However, among the specialists, 15 (68%) belonged to the group affected by burnout. Furthermore, the other seven specialists (32%) belonged to the group without burnout (Fisher's exact test,  $P=0.04$ ) (Table 6).

## Discussion

The results of this study show that 53% of the participants included in the study showed signs of burnout symptoms, some of the participants being the leading anesthesiologists who worked in the respiratory center during the pandemic. The study conducted in 2016 at the intensive care unit at the University Hospital Center Zagreb showed that at that time, 51% of participants had burnout syndrome, while according to a study conducted 12 years ago in Croatia by Mazzi and Ferlin, 49% of primary health care workers experienced burnout. Over the years, this indicates increasing burnout among healthcare workers<sup>7,8</sup>. This figure has increased due to the workload of health workers with administrative tasks, the introduction of new technologies and the need for lifelong education due to the increasing knowledge in medicine. However, considering the state of the pandemic in Croatia and the rest of the world, it is not surprising that the results obtained by this study among anesthesiologists and other physicians at University Hospital Center Osijek were worse than those observed in previous years. Data from an Italian study on burnout syndrome during the COVID-19 pandemic showed that the level of emotional exhaustion in their country was significantly higher than the values measured among

Italian healthcare workers before the outbreak of the pandemic<sup>9</sup>. A Romanian study showed that during the pandemic, physicians of the emergency department, intensive care unit, radiology but also surgical professions such as gynecology and obstetrics, orthopedics and neurosurgery bore the greatest burden<sup>10</sup>. The data obtained from this study showed that among the 53% of physicians who experienced burnout, 28% were anesthesiologists, i.e., physicians who worked with COVID patients on mechanical ventilation. Even though they are used to working with the seriously ill in the course of their regular work, during the pandemic they were directly exposed to the SARS-CoV-2 virus. This affected their fear of personal infection and the infection of their loved ones. The prevalence of other physicians with burnout syndrome was also high (25%). This can be explained by the fact that, in contrast to the emergency branches of medicine, other professions were less familiar with work organizations in crises. Namely, the existence of clear protocols in crises, training of employees on occupational safety, adequate application of protective equipment and all other measures enabled a reasonable level of control of disease and fear of infection, which was often absent in places where work with infected persons was not foreseen<sup>10</sup>. Based on the burnout syndrome intensity questionnaire, it is evident that anesthesiologists scored the highest number of points in responses to items about the impossibility of an individual influencing making changes at work, i.e., that there was no influence on their work. A study conducted in Zagreb in 1996 explained that such behavior is most often the result of the inflexibility of the organization where the participants work, management, superiors or the law itself. Therefore, employees do not lack motivation, but the individual cannot influence changes in their workplace<sup>2</sup>. Examining the connection between gender and burnout syndrome, the results of this study show that women experience burnout syndrome more often. Other studies have also shown that women are more prone to burnout and are more often dissatisfied with their work. Because of their greater emotionality, they have a more challenging time enduring failure. They are also more prone to depression<sup>11</sup>. For this reason, it is necessary to focus on preventing professional stress among women, considering that, in addition to the existing tendency, their representation in medicine has been increasing over the years. Older physicians were more likely to burn out than younger ones, based

on the age limit of 35 years. Although younger participants lack experience and often experience a gap between goals and results, they are expected to adapt better to changing conditions. Stress increases with age, but given that experience with previous stressful situations has a favorable protective effect on stress, some older people experience it less than younger people. However, pandemic conditions that recur on average every 100 years can easily be perceived as stressful despite the rich experience of older physicians. In such situations, they are also as unexperienced as their younger colleagues, but it is more difficult for them to adapt to changes. The data on burnout regarding the level of medical education follows the previously presented result. Namely, the present study showed that specialists experienced burnout three times more often than residents. In contrast, a study conducted in Romania two months after the start of the pandemic showed that symptoms of burnout syndrome were present in as many as 76% of the residents they examined, which showed a higher frequency than studies conducted before the pandemic<sup>10</sup>.

Burnout syndrome is a cumulative process resulting from long-term exposure to stressors in a professional environment. An extended period may pass before symptoms manifest. Thus, the consequences of this pandemic may become more intense after a certain period, as shown by research conducted in China in 2009 after the SARS epidemic. In the three years since the epidemic, as many as 10% of health workers developed post-traumatic stress disorder and burnout syndrome. This epidemic was much smaller in scale with regard to the number of human victims, of which there were 774<sup>12,13</sup>. This is precisely the reason that the results of this study encourage the development of a program that will provide physicians and other health professionals with adequate social and professional assistance. In this way, burnout syndrome in everyday work would be reduced and prevented, especially in emergencies requiring additional engagement from essential workers as well as work under special conditions. For this reason, team leaders and superiors should clearly define goals and appropriate supervision over employees. They would thus provide employees with the appropriate equipment, necessary rest and access to the latest information and education. Additionally, it is important to facilitate the communication of direct instructions, provide emotional support and prepare employees for the scope of the tasks

that awaits them<sup>14</sup>. If necessary, additional staff should be hired and existing staff redistributed from related branches and directed to critical positions, relieving them of unnecessary or less important administrative work and non-clinical duties, and providing workers with greater control over the organization of working hours<sup>15,16</sup>. Such conditions could prevent more severe consequences in the future.

This study was conducted among physicians in February 2021, at the end of the "second wave" of COVID. During this time, the number of citizens infected with the coronavirus decreased in Croatia. Although 43% of anesthesiologists were classified in the category without burnout according to the questionnaire results, replicating the study at another time could yield different results. After the study was conducted in Croatia, there was an increase in the number of patients and deaths.

## Conclusion

Based on the study results, we can draw the following conclusions:

- Burnout syndrome was mostly present in anesthesiologists who worked with COVID patients on mechanical ventilation at the University Hospital Center Osijek during the COVID-19 pandemic.
- Among the examined anesthesiologists, burnout syndrome was more common among women.
- Symptoms of burnout syndrome were more common among physicians older than 35.
- With regard to the level of medical education, burnout syndrome was more common among specialists.

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#### Sažetak

### SINDROM IZGARANJA KOD ANESTEZIOLOGA U RADU S COVID BOLESNICIMA NA MEHANIČKOJ VENTILACIJI U KLINIČKOM BOLNIČKOM CENTRU OSIJEK

L. Brdar, I. Radoš i D. Hnatešen

Cilj ovog istraživanja bio je ispitati pojavnost i intenzitet sindroma izgaranja među anesteziolozima koji su radili u covid jedinici intenzivnog liječenja (respiracijski centar), usporediti razliku pojavnosti sindroma izgaranja između njih i liječnika koji u vrijeme pandemije nisu radili u covid jedinici intenzivnog liječenja, te ispitati postoji li razlika pojavnosti sindroma izgaranja među anesteziolozima s obzirom na spol, dob i specijalističko usavršavanje. U tu svrhu provedena je presječna studija. Istraživanje je provedeno na 60 liječnika od kojih je 30 liječnika koji su u vrijeme pandemije bolesti COVID-19 radili u respiracijskom centru te 30 liječnika koji u istom razdoblju nisu radili u respiracijskom centru. Rezultati su prezentirani uz pomoć upitnika čiji zbroj ispitanike svrstava u skupinu bez izgaranja, početnog izgaranja ili visokog stupnja izgaranja. Na temelju istraživanja utvrđeno je da se 53% liječnika prezentira sindromom izgaranja, a većinu među njima čine anesteziolozi. Među njima je 37% anesteziologa koji imaju početno izgaranje i 20% njih koji pripadaju skupini visokog izgaranja. U žena je sindrom prepoznat među 58% ispitanica. U skupini starijih od 35 godina prisutno je 59% slučajeva sindroma izgaranja, dok je ta brojka među specijalistima 75%. U ukupnom uzorku utvrđen je veći udio sindroma izgaranja nego što su to pokazala prethodna istraživanja. Među njima prevladavaju liječnici Klinike za anesteziologiju koju su u vrijeme pandemije radili s teško bolesnim COVID pacijentima. U skupini ispitanih anesteziologa simptomi su bili češći među ženama, među liječnicima starijim od 35 godina te među specijalistima.

Ključne riječi: *COVID-19; pandemija; respiracijski centar; sindrom izgaranja*