



## ARAŞTIRMA / RESEARCH

# Burnout among healthcare workers at the first wave of the COVID-19: meta analysis

COVID-19 pandemisinin ilk dalgasında sağlık çalışanlarının tükenmişliği: meta analiz

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*Cukurova Medical Journal 2022;47(3):1227-1238*

### Abstract

**Purpose:** Increased workload and inadequate working conditions during the COVID-19 pandemic, threaten the lives and physical well-being of healthcare workers (HCWs), and also their mental health, such as burnout, etc. which is often neglected. The aim of this review is to analyze published studies on the proportion of burnout among HCWs during the first wave of the COVID-19.

**Materials and Methods:** We conducted a systematic review of studies that reported burnout (measured by Maslach Burnout Inventory) among HCWs during the COVID-19 pandemic and searched PubMed, PsycINFO, and WOS of relevant articles up to Feb 25th, 2021. Out of 145 non-duplicate studies, 10 were included in the meta-analysis.

**Results:** The overall estimated pooled proportion for emotional exhaustion (EE) was 31% (95% CI: 24%-40%), for depersonalization (DP) was 28% (95% CI: 23%-38%) and 22% (95% CI: 13%-34%) for personal accomplishment (PA). The results show that in countries where the number of cases is high and the number of beds and doctors is low, the level of EE appears to be slightly lower and PA is slightly higher. However, there were no significant differences according to subgroup analyses.

**Conclusion:** Evidence from early studies highlight the fact that a significant proportion of HCWs suffers from burnout during this pandemic. It will be necessary to pay close attention to HCWs' mental health and identify ways to reduce risks and prepare a rehabilitation program for the HCWs during and after the pandemic.

**Keywords:** Coronavirus, COVID-19, healthcare workers, burnout, systematic review-meta analysis

### Öz

**Amaç:** COVID-19 pandemisinde artan iş yükü ve çalışma koşulları, sağlık çalışanlarının yaşamlarını, fiziksel iyiliklerini ve mental sağlıklarını (tükenmişlik gibi) tehdit etmektedir. Bu çalışmada, COVID-19 pandemisinin ilk dalgasında sağlık çalışanlarının tükenmişlik oranını inceleyen çalışma bulgularının meta-analiz yöntemi kullanılarak analizi amaçlanmıştır.

**Gereç ve Yöntem:** PubMed, PsycINFO ve WOS kullanılarak COVID-19 pandemisinin sağlık çalışanları arasındaki tükenmişliğini (Maslach Tükenmişlik Ölçeği ile) 25 Şubat 2021'e kadar inceleyen çalışmalar tarandı ve 145 çalışmadan 10'u meta-analize dahil edildi.

**Bulgular:** Sağlık çalışanlarında duygusal tükenme oranı %31 (%95 GA: %24-%40), duyarsızlaşma oranı %28 (%95 GA: %23-%38) ve kişisel başarısızlık oranı %22 (%95 GA: %13-%34) olarak elde edilmiştir. Vaka sayısının yüksek, yatak ve doktor sayısının düşük olduğu ülkelerde, duygusal tükenme düzeyinin daha düşük, kişisel başarısızlığın daha yüksek olduğu saptanmıştır. Alt grup analizlerinde ise anlamlı bir farklılık bulunmamıştır.

**Sonuç:** Erken dönem çalışmalarından elde edilen kanıtlar, COVID-19 pandemisi sırasında sağlık çalışanlarının önemli bir bölümünde tükenmişliğin olduğunu göstermiştir. Sağlık çalışanlarının mental sağlığına dikkat etmenin, olası riskleri azaltmanın yollarını belirlemenin ve salgın sırası ile sonrasında sağlık çalışanları için rehabilitasyon programı hazırlamanın gerekli olduğu sonucuna ulaşılmıştır.

**Anahtar kelimeler:** Koronavirüs, COVID-19, sağlık çalışanları, tükenmişlik, sistematik derleme-meta analiz

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Geliş tarihi/Received: 20.06.2022 Kabul tarihi/Accepted: 08.08.2022

## INTRODUCTION

Coronavirus Disease 2019 (COVID-19) started to appear in China and especially in Europe at early onset, declared a pandemic by the World Health Organization. The COVID-19 pandemic has deeply affected health, education, and the economy all over the world. Almost all countries implemented precautions such as restrictions and lockdowns in an irregular and unplanned manner to control the pandemic. This confusion increased the spread of the epidemic unexpectedly. In addition, there were periods when the health care system was blocked in both developed and undeveloped countries. Regardless of whether the healthcare service was public or private, patients faced difficulties in accessing diagnosis and treatment. Besides, for nearly two years, HCWs have worked in conditions such as heavy workloads, excessive shifts, working at high risk of contamination, witnessing dramatic prognosis of their patient's symptoms and deaths. In many cases, because of the gap between treatment capacity and the number of patients to be treated they had to make difficult decisions.

Burnout is defined as a decrease in individual quality of life and productivity due to a heavy workload that reveals emotional states such as excessive fatigue, disappointment, anger, inadequacy, and failure<sup>1</sup>. First conceptualized in the mid-seventies, burnout is still a controversial phenomenon.

In the literature, there are opinions that the difference between burnout and depression is unclear or that burnout symptoms are similar to depressive symptoms<sup>2</sup>. However, there are also opinions in the literature that considering the burnout phenomenon as a form of depression will hinder etiological research and treatment development<sup>3</sup>. Koutsimani et al. revealed that the concepts of burnout-depression and of burnout-anxiety are statistically related, but there is no one-to-one overlap between them, that is, they have different conceptual structures<sup>4</sup>.

In addition, the risk of burnout has been emphasized to increase the risk of depression<sup>5</sup>. Although burnout is not defined as a separate medical illness in the 11<sup>th</sup> version of the World Health Organization's International Classification of Diseases (WHO, ICD-11), it is included as a concept under the title of the effect of work life or unemployment on mental health. Burnout has three dimensions: (i) feelings of energy depletion and exhaustion, (ii) increased mental distance from one's work or developing negative

feelings and cynicism about work, (iii) feelings of ineffectiveness and inadequacy. WHO states that burnout is a concept that should only be used for business life and that the symptoms should not be explained by another mental illness, especially depression. Burnout is considered in a multi-factor structure: individual-based factors, working conditions-based factors, and workplace-based factors. The risk of burnout increases due to the working conditions of HCWs. West et al. emphasized that the concept of burnout can be reduced among HCWs with individual, structural or organizational strategies. While the length of the working hours increases the risk of burnout, the duration of the resting hours reduces this risk. Burnout reduces HCWs' quality of life and job satisfaction. At the same time, it increases the risk of medical error in HCWs and dissatisfaction in patients. Frontline HCWs have a higher risk of burnout compared to other branches. Additional payments to the HCWs also reduce the risk of burnout and job dissatisfaction<sup>6,7</sup>.

Moreover, the health systems and policies of the countries, health care facilities (such as the number of beds/doctors/nurses per case), high prevalence of COVID-19, and duration of exposure (time period) that indirectly affect the prevalence of burnout should consider. There are limited studies conducted to reveal the proportion of burnout among HCWs and the related factors during the COVID-19 pandemic. Since there is no systematic review on this subject so far, gathering these studies will be important in terms of highlighting burnout in HCWs which is often neglected. The main objective of this study is to synthesize and analyze existing evidence on the proportion of burnout among HCWs at the onset of the COVID-19 outbreak and also evaluate the effect of factors related with health care facilities.

## MATERIALS AND METHODS

The systematic review - meta-analysis was conducted in comply with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement.

### Search strategy

Studies were identified by searching the PubMed, Web of Science and PsycINFO databases on February 25, 2021 by two authors (SPY and NT) independently. To specify the studies all the potential

combinations of following search terms were used: 'coronavirus', 'covid-19', '2019-ncov', 'sars-cov-2', 'healthcare worker', 'medical resident', 'healthcare professional', 'healthcare provider', 'health professional', 'healthcare specialist', 'burnout'. Boolean operators (AND, OR, NOT) are used to narrow or expand detailed search results. Only the studies that measured burnout by Maslach Burnout Inventory (MBI) with all components were included. All studies that met the criteria mentioned below were excluded: (1) Full text not available, (2) Non-English language studies, (3) Duplicated sources, (4) Unrelated research works, (5) Systematic reviews and/or meta-analysis.

### Data extraction

Publication month, HCWs type, study population, region, cut-off values of MBI components, and burnout proportions were extracted from each article independently by two authors.

### Quality assessment

The methodological quality of the studies included in the systematic review was independently assessed by 2 authors using Joanna Briggs Institute (JBI) Study Quality checklist. Possible disagreements were resolved by a third author. A study with a quality score of 3 or less indicated low methodological quality<sup>8</sup>.

### Maslach's Burnout Inventory

In the literature, the most widely used inventory to assess burnout is the MBI. The MBI was specifically designed to assess three dimensions of the burnout experience based on previous relevant studies: Emotional Exhaustion (9 items), Depersonalization (5 items), and Personal Accomplishment (8 items).

- ✓ EE, is defined as having the individual's feeling of fatigue, loss of energy, debilitation, depletion and emotional wear.
- ✓ DP, is defined as having indifferent, loss of idealism, cold, harsh or even negative attitudes towards people encountered at work.
- ✓ PA, is defined as having individual considers oneself as inadequate, decreasing productivity, poor morale, inability to cope with stressors and unsuccessful.

The combination of high EE and DP with low PA indicates high burnout<sup>9</sup>.

### Statistical analysis

Meta-analysis was performed using Rstudio statistical software (version 1.0.143) and meta, metafor packages were used<sup>10,11</sup>. I<sup>2</sup> and Cochran's Q statistic were used to assess heterogeneity.

I<sup>2</sup> statistic values of 25%, 50% and 75% indicates low, moderate and high heterogeneity, respectively. A p value of less than 0.05 for Cochran's Q statistic indicates heterogeneity. The random effect model was used because of the high heterogeneity. Burnout proportions and its 95% confidence intervals (CIs) were calculated as main outcome. Publication bias was assessed by the funnel plots and Egger's test. The power of the meta-analysis was evaluated<sup>12</sup>.

In addition, factors that related with health care facilities (case related risk factors) were evaluated in four subgroup analyses:

1. Time period (days) (TP); Time between the date of the first COVID-19 case occurred to the date of study publication for each study country,
2. Number of cases per population (NCPo); Ratio of the number of cases per 100.000 population of the study country in the time period,
3. Number of cases per 10.000 physician (NCP); Ratio of the number of cases to the total number of physicians in study country in the time period.
4. Number of cases per 10.000 bed (NCB); Ratio of the number of cases to the total number of hospital beds in study country in the time period.

These numbers were accessed from the WHO website and the parameters categorized according to their medians; categories defined as below median and above median (Table 1).

### RESULTS

Using the aforementioned search strategies, a total of 173 potentially related studies were identified and 145 studies remained after deletion of duplicate studies. Afterwards, 86 studies were eliminated based on the titles and abstracts, and 48 studies were excluded due to a variety of reasons.

JBI scores for the remaining 11 of 173 studies are given in Table 2. At this stage, 1 of the remaining 11 studies that was considered methodologically low quality according to the JBI score was eliminated<sup>13</sup>. Finally 10 studies reached from European countries at the final stage<sup>14-23</sup>: Italy (n=6), France (n=2) and Spain (n=2). These studies were conducted during

the onset of COVID-19 and their populations ranged from 102 to 1961. A PRISMA flowchart detailing the study selection process is shown in Figure 1. Details of included studies are also summarized in Table 2

**Table 1. Additional characteristics of included studies.**

| Studies               | Cases(a) | Country Population(b) | Hospital Beds per 10.000 Population(c) | Physicians per 10.000 population(d) | (b/a)*10.000 | (a/c)  | (a/d)  |
|-----------------------|----------|-----------------------|--|-------------------------------------|--------------|--------|--------|
| Luceño-moreno et al.  | 213.435  | 46.940.000            | 29.7                                   | 38.7                                | 45.5         | 7186.4 | 5515.1 |
| Martínez-López et al. | 198.527  | 46.940.000            | 29.7                                   | 38.7                                | 42.3         | 6689.4 | 5129.9 |
| Varani et al.         | 233.197  | 60.360.000            | 31.4                                   | 39.7                                | 38.6         | 7193.8 | 5689.8 |
| Lasalvia et al.       | 214.457  | 60.360.000            | 31.4                                   | 39.7                                | 35.5         | 7426.6 | 5874.0 |
| Monte et al.          | 225.886  | 60.360.000            | 31.4                                   | 39.7                                | 37.4         | 6829.8 | 5401.9 |
| Barello et al./2020b  | 199.414  | 60.360.000            | 31.4                                   | 39.7                                | 33.0         | 6350.8 | 5023.0 |
| Barello et al./2020a  | 197.675  | 60.360.000            | 31.4                                   | 39.7                                | 32.7         | 6295.4 | 4979.2 |
| Naldi et al.          | 199.414  | 60.360.000            | 31.4                                   | 39.7                                | 33.0         | 6350.8 | 5023.0 |
| Lange et al.          | 131.476  | 67.060.000            | 59.1                                   | 32.7                                | 19.6         | 2224.6 | 4020.7 |
| Treluyer et al.       | 167.650  | 67.060.000            | 59.1                                   | 32.7                                | 25.0         | 2836.7 | 5126.9 |
| Median                |          |                       |  |                                     | 34           | 6520   | 5130   |

Data of cases, hospital beds per 10.000 population and physicians per 10.000 population were drawn from the World Health Organization.

**Table 2. Demographic and burnout characteristics of the included studies**

| Author                | Publication Region/month/year | Healthcare workers                         | Study Population | Burnout(%) EE/DP/PA | JBI Quality |
|-----------------------|-------------------------------|--|------------------|---------------------|-------------|
| Lange et al.          | France/October/2020           | Pharmacists                                | 135              | 0.24/0.34/0.03      | 5           |
| Barello et al.        | Italy/October/2020b           | All  | 532              | 0.41/0.27/0.43      | 4           |
| Monte et al.          | Italy/October/2020            | Physicians                                 | 102              | 0.46/0.18/0.42      | 6           |
| Barello et al.        | Italy/May/2020a               | All  | 376              | 0.37/0.25/0.13      | 4           |
| Naldi et al.          | Italy/January/2021            | Physician, nurse                           | 797              | 0.41/0.30/0.36      | 6           |
| Martínez-López et al. | Spain/September/2020          | Nurses, physicians, and nursing assistants | 157              | 0.20/0.39/0.46      | 5           |
| Luceño-moreno et al.  | Spain/July/2020               | All  | 1539             | 0.41/0.15/0.08      | 5           |
| Varani et al.         | Italy/February/2020           | Palliative care professionals              | 145              | 0.08/0.26/0.12      | 6           |
| Treluyer et al.       | France/January/2021           | Physicians                                 | 340              | 0.24/0.28/0.25      | 4           |
| Lasalvia et al.       | Italy/January/2021            | All  | 1961             | 0.43/0.45/0.27      | 5           |

EE: Emotional Exhaustion, DP:Depersonalization, PA:Personal Accomplishment

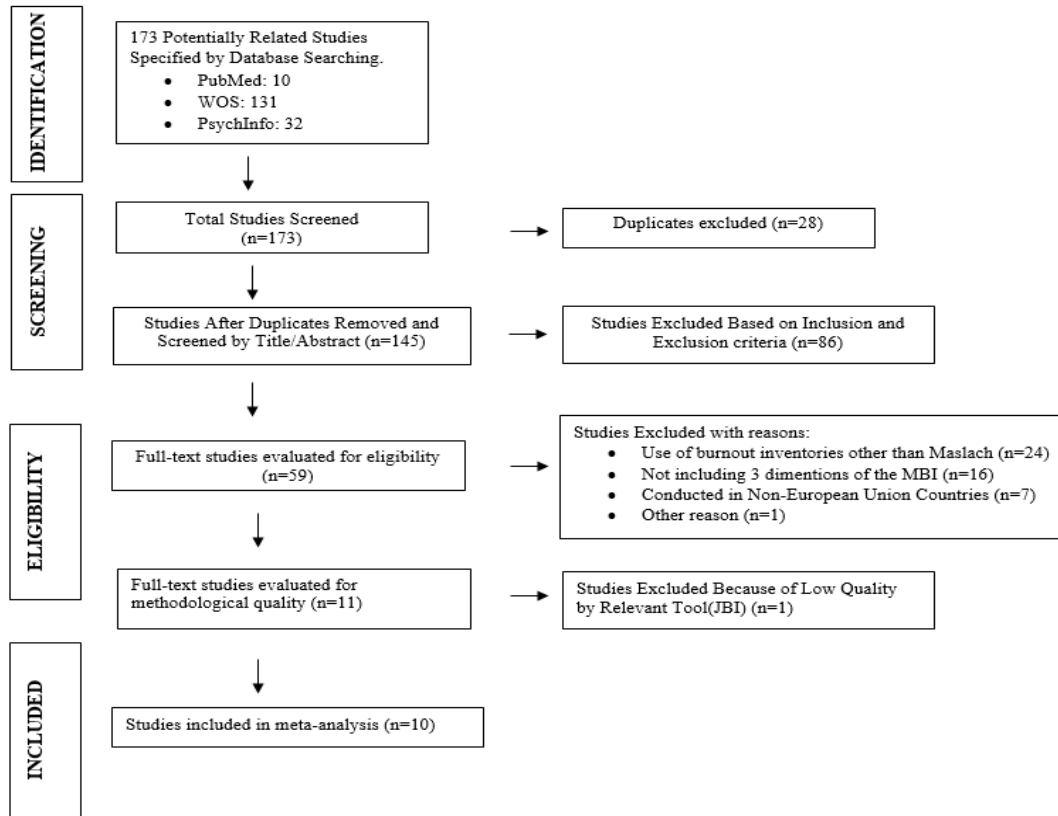


Figure 1. PRISMA (2009) flowchart describing the inclusion and exclusion phases of studies in this meta-analysis.

The results of the 3 dimensions of MBI were evaluated separately. To evaluate the heterogeneity of the studies, the  $I^2$  indices for the proportion of EE ( $I^2$ :93%), DP ( $I^2$ : 96%) and PA ( $I^2$ : 98%) and Q statistics for the proportion of EE ( $\chi^2=120.5$ ,  $p<0.01$ ), DP( $\chi^2=256.2$ ,  $p<0.01$ ) and PA( $\chi^2=427.2$ ,  $p<0.01$ ) were obtained. Due to the high and statistically significant heterogeneity in the studies, the random-effect models were used in the analysis.

The overall estimated pooled proportion for EE was 31% (95% CI: 24%-40%), for DP was 28% (95% CI: 23%-38%) and for low levels of PA was 22% (95% CI: 13%-34%).

To assess publication bias the Egger’s tests were obtained for EE ( $p=0.008$ ), DP ( $p=0.702$ ), PA ( $p=0.461$ ), referring that publication bias was significant only EE. Also, the visual inspection of the funnel plot showed symmetrical distribution except for EE (Figure 2, 3, and 4, respectively).

Besides, the power of meta-analysis for EE, DP and PA, was obtained 99%, 99% and 94%, respectively. We performed 4 subgroup analyses for case-related risk factors. Since the NCPo and NCB results were same, only NCPo results were shown. The results of 4 subgroup analyses were summarized in Table 3 and presented in Fig 5, Fig 6, Fig 7, respectively.

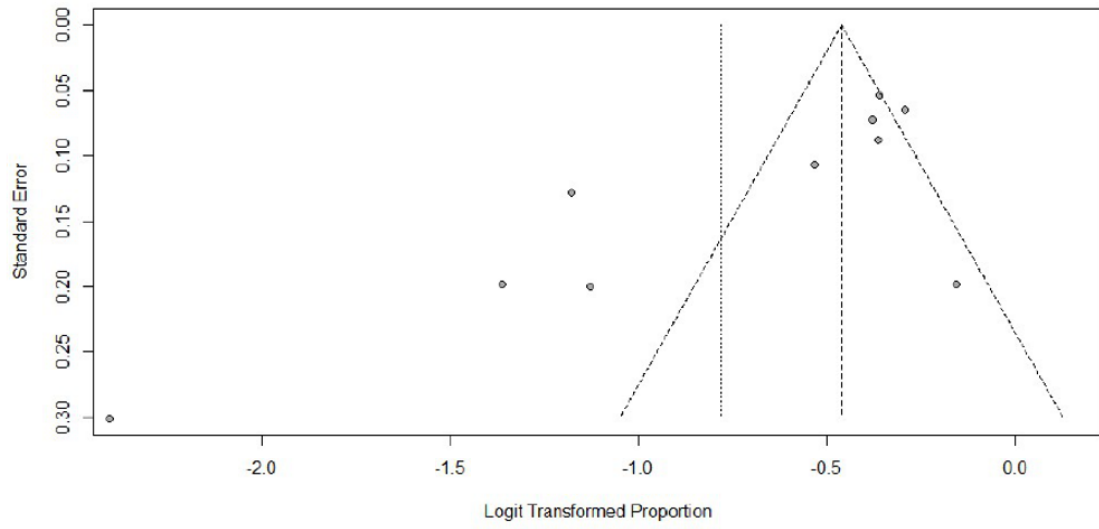


Figure 2. Funnel plot of EE

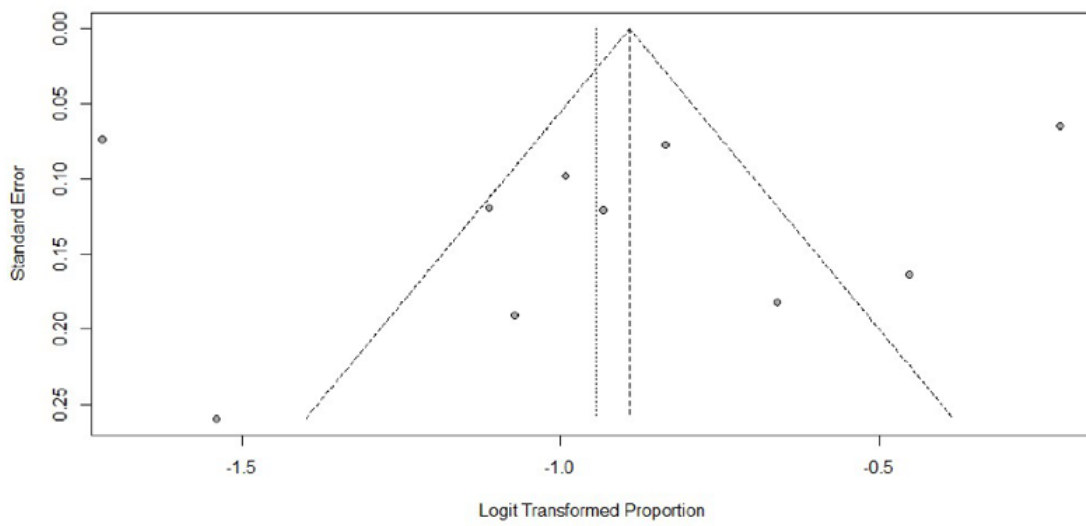


Figure 3. Funnel plot of DP

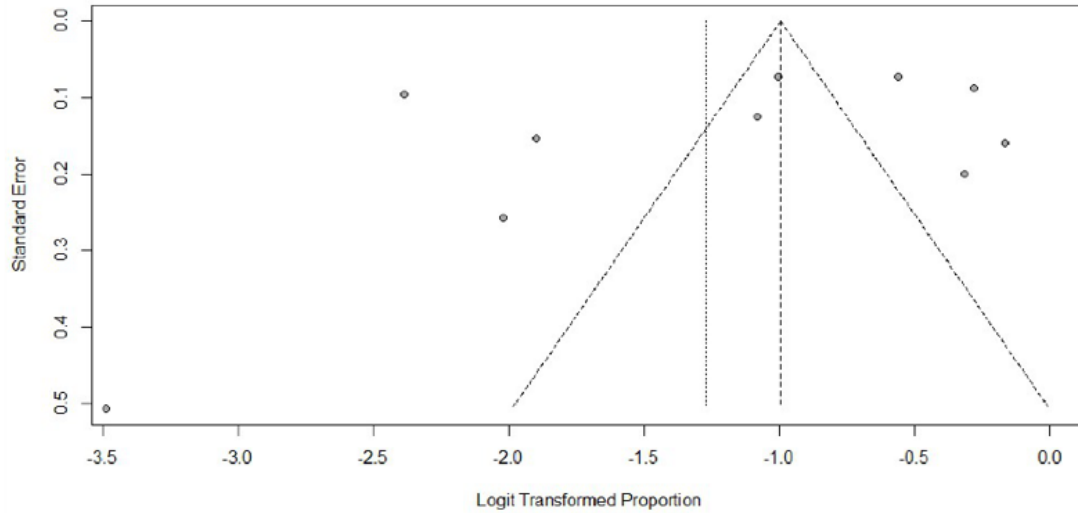


Figure 4. Funnel plot of PA.

Table 3. Subgroup analysis of Burnout Prevalence

|                                | % of Burnout Prevalence (%95CI) |                   |                         |
|--------------------------------|---------------------------------|-------------------|-------------------------|
|                                | Emotional Exhaustion            | Depersonalization | Personal Accomplishment |
| Time Period                    |                                 |                   |                         |
| Below median(Early)            | 0.34(0.28-0.41)                 | 0.27(0.21-0.34)   | 0.20(0.09-0.38)         |
| Above median (Risk-Late)       | 0.27(0.14-0.47)                 | 0.29(0.20-0.39)   | 0.25(0.16-0.37)         |
| Number of cases per population |                                 |                   |                         |
| Below median(Ref. Normal)      | 0.33(0.33-0.41)                 | 0.28(0.26-0.31)   | 0.20(0.09-0.38)         |
| Above median(Risk-High)        | 0.29(0.17-0.46)                 | 0.27(0.18-0.39)   | 0.24(0.12-0.40)         |
| Number of cases per physician  |                                 |                   |                         |
| Below median(Normal)           | 0.31(0.25-0.38)                 | 0.30(0.27-0.33)   | 0.19(0.10-0.35)         |
| Above median(Risk-High)        | 0.32(0.16-0.52)                 | 0.25(0.15-0.37)   | 0.24(0.12-0.42)         |
| Total                          | 0.39(0.37-0.40)                 | 0.29(0.28-0.30)   | 0.27(0.26-0.28)         |
| Random effects model           | 0.31(0.24-0.40)                 | 0.28(0.23-0.34)   | 0.22(0.13-0.34)         |

In subgroup 1 (TP) analysis, a pooled proportion was found to be 34% in early time period and 27% in late time period for EE; 27% in early time period and 29% in late time period for DP; 20% in early time period and 25% in late time period for PA. However there was no significant differences between time period groups for all 3 components (p=0.469, p=0.771 and p=0.559, respectively), the proportion of EE was found to be decreased and PA increased

slightly at late time period. The results of other subgroup analyses give similar tendency. The results shows that when the NCPo, NCP and NCB groups are above median the proportion of EE appears to be slightly lower and of PA appears to be slightly higher. However, there were no significant differences between the proportions of EE, DP and PA according to NCPo, NCP and NCB groups (p>0.05 for all).

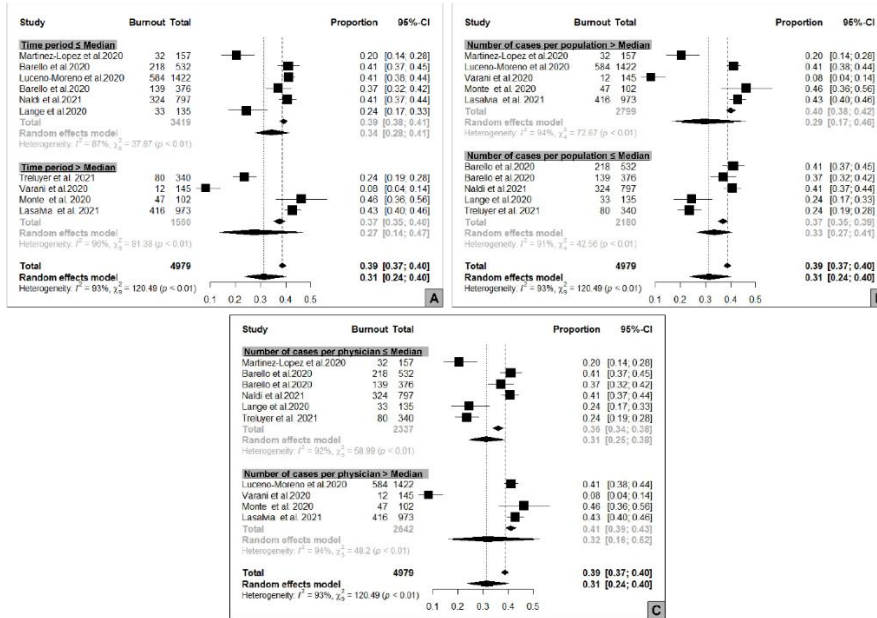


Figure 5. Forest plot for EE proportion in the subgroup analysis. (A) Time Period, (B) Number of cases per population, (C) Number of cases per physician

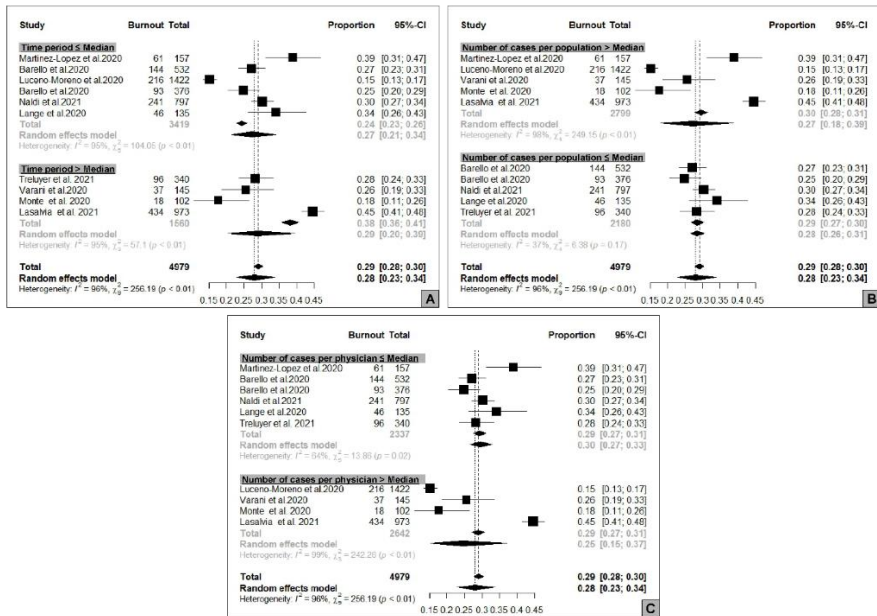


Figure 6. Forest plot for DP proportion in the subgroup analysis. (A) Time Period, (B) Number of cases per population, (C) Number of cases per physician.



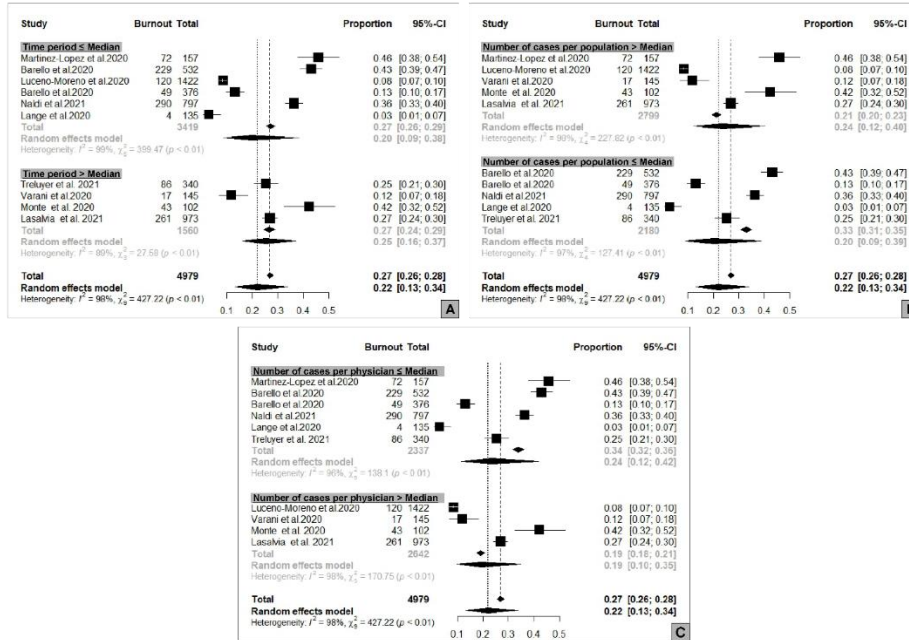


Figure 7. Forest plot for PA proportion in the subgroup analysis. (A) Time Period, (B) Number of cases per population, (C) Number of cases per physician.

**DISCUSSION**

Coronavirus disease 2019 is a severe respiratory infectious disease that was first reported in China. While countries continued their fight against the pandemic, all HCWs took part in this difficult struggle. In this process, HCWs provided the necessary care for COVID-19 patients, taking into account the risk of being infected by the virus. Thus the rapid spread of the COVID-19 pandemic has a crucial impact on HCWs. Researches show that following the news of COVID-19 increases the exposure of individuals to vexing psychological problems. Face-to-face exposure of HCWs to COVID-19 patients can exacerbate negative psychological symptoms, especially burnout<sup>24</sup>. Several studies in the literature state that burnout is associated with lower job satisfaction, anxieties, more substance use behaviors and suicide<sup>25</sup>.

The prevalence obtained from studies conducted all over the world on this subject are ranged between 24-44% for EE; 10%-43.6% for DP and 18-34.3% for PA<sup>26-30</sup>. Results reported in two previous meta-analyses in Europe: 11%, 21% for EE; 65%, 29% for

DP and 22% and 29% for PA, respectively<sup>23,31</sup>. The prevalence rates of burnout in our study are broadly comparable to the previously reported prevalence of burnout among HCWs identified for the general population in Europe although EE was high. Especially, the higher EE level of our study shows the considerable effect of the crisis on the European HCW population during the early pandemic period.

To our knowledge, this is the first systematic review and meta-analysis to assess the pooled proportion of burnout on HCWs during early term of the COVID-19. Systematic review and meta-analysis provide evidence that a remarkable proportion of burnout was seen during early onset of COVID-19 pandemic. According to our findings the proportion of EE, DP and PA are 31%, 28% and 22%, respectively in HCWs. Considering the MBI components, PA is lower while EE and DP are high; EE and DP are arisen in 1 out of every 3 person, while PA is seen in 2 out of 5 person. These results sign that while the HCWs feel tired, lose their energy and loss of idealism, feel cold, harsh or even have negative attitudes towards people encountered at work but their personal morale and achievements are not

affected that much. While the whole world is in the weakness of a death wave, healthcare professionals may perceive themselves more successful than ever with the power of resisting this weakness and stopping death. Besides this, the public's gratitude to the HCWs during this time may be also one of the reasons for low PA.

However there were no significant differences between time period groups, the proportion of EE was found to be decreased and PA increased slightly during the late time period. The public expectation and power of stopping COVID-19 deaths may makes HCWs forget their emotional exhaustion in this war, as time goes on. But slightly increasing PA at a late time may indicate that healthcare professionals may experience failure and coping problems in the future. The fact that society and social media see healthcare workers as life-saving heroes may also contribute to narcissistic satisfaction, which is inherent in the physician. However, when the epidemic is over and the conditions under which this narcissistic satisfaction ends, the suspended exhaustion may surface. Because they will begin to descend from the throne. They will dethrone in a double sense; 1- appreciation of community will decrease and 2- since they are addicted to this success feeling (there will no patients to be saved), they will experience success depression. In other words, when the pandemic ends and the world passes into the post-epidemic period, then it will be necessary to pay close attention to health professionals' mental health. For this reason, it is necessary to prepare a rehabilitation program for health workers, especially after the pandemic.

Risk factors related to health system management as well as individual risk factors should also be questioned in detail. The results of this study show that when the NCPo, NCP, and NCB groups are above median, the proportion of EE appears to be slightly lower and of PA appears to be slightly higher. That indicates the personal success of HCWs in these conditions is adversely affected. These risk factors seem to affect the PA such as productivity ability, coping with stressors, and morale of HCWs more than EE.

Our analyses also highlighted the necessity of reflecting all three dimensions of burnout at the same time and suggested that the general burnout criteria should be discontinued. Moreover, although statistically significant differences were not detected, the subgroup analysis of burnout based on time

period, NCPo, NCP, and NCB provided additional worthwhile perspective.

Despite our broad research, only European countries were included in the study, as the policies implemented for health services were similar. In that case, representativeness and generalizability may be a possible limitation. Subgroup analysis according to HCW groups can be considered as another study due to the limited number of burnout studies that represent specific HCWs. From a different viewpoint, in the study of Rodrigues et al., burnout was evaluated according to different medical specialties and it was found to be higher in surgery/emergency residents<sup>29</sup>.

The risk of burnout is higher in women, therefore, different regulations are needed in HCWs according to gender in order to reduce burnout<sup>32</sup>. The relationship between burnout and gender in 10 studies included in our meta-analysis: This issue was not addressed in 2 studies<sup>16,19</sup>, total burnout was evaluated in 2 studies<sup>22,23</sup>, means were used instead of proportions in 1 study<sup>17</sup>, correlation analysis was performed in 1 study<sup>15</sup> general linear model was evaluated in 1 study<sup>16</sup> and only 3 studies included the ratios of burnout components by gender<sup>14,18,21</sup>.

Many challenges are facing HCWs during COVID-19, such as excessive workload, job change, length of working time, and restrictions. Although these challenges were correlated with burnout, it was not considered in the meta-analysis due to the inadequate sample size. Another frequent limitation was that prepress or possible incomplete studies were unnoticed; in gray literature. At the same time, some articles may have been overlooked because MeSH terms are not used in our search strategy.

In our meta-analysis, since burnout was measured valid and reliable way with MBI, the risk of misclassification bias was minimized. Although it is taken into account with the random effects model, the high heterogeneity, which is likely due to varying MBI cutoffs, may cause the obtained estimates to be less reliable than expected. Still, the power of meta-analysis for each component is high.

In conclusion, our meta-analysis can provide insight into HCWs burnout in the COVID-19 pandemic. Early studies highlight the fact that a significant proportion of healthcare workers suffer from burnout during this pandemic and highlight the need to identify ways to reduce mental health risks and intervene during and after the pandemic. This meta-

analysis shows us that, HCWs struggled against adverse working conditions with the power of the ontological/historical identity of the profession. This power is vital but not sufficient in the long-term. Also it has a limit and cannot continue for years. Secondly, when the pandemic is over, one day it will return to normal working conditions, and many difficulties may be encountered. As the COVID-19 pandemic affects the whole world, there is a need to reduce the burnout of HCWs. In this context, one of the matters that countries should be prepared for possible pandemics in the future is to take the necessary protective measures and develop supportive strategies to eliminate the burnout of HCWs. Within this framework, it is necessary to prepare a rehabilitation program for the HCWs during and after the pandemic; health interventions such as reduction in currently recommended duty hours, mindfulness training, psychiatry-guided self-development groups and meditation can promote to diminishing burnout.

**Yazar Katkıları:** Çalışma konsepti/Tasarımı: GS, SPY, NT, AB, SC; Veri toplama: GS, SPY, NT; Veri analizi ve yorumlama: GS, SPY, NT, AB, SC; Yazı taslağı: GS, SPY, NT, AB, SC; İçeriğin eleştirel incelenmesi: GS, SPY, NT, AB, SC; Son onay ve sorumluluk: GS, SPY, NT, AB, SC; Teknik ve malzeme desteği: -; Süpervizyon: GS, SPY, NT, AB, SC; Fon sağlama (mevcut ise): yok.

**Etik Onay:** Bu çalışma için etik kurul onayına ihtiyaç olmadığını beyan etmişlerdir.

**Hakem Değerlendirmesi:** Dış bağımsız.

**Çıkar Çatışması:** Yazarlar çıkar çatışması beyan etmemişlerdir.

**Finansal Destek:** Yazarlar finansal destek beyan etmemişlerdir.

**Author Contributions:** Concept/Design : GS, SPY, NT, AB, SC; Data acquisition: GS, SPY, NT; Data analysis and interpretation: GS, SPY, NT, AB, SC; Drafting manuscript: GS, SPY, NT, AB, SC; Critical revision of manuscript: GS, SPY, NT, AB, SC; Final approval and accountability: GS, SPY, NT, AB, SC; Technical or material support: -; Supervision: GS, SPY, NT, AB, SC; Securing funding (if available): n/a.

**Ethical Approval:** They stated that there is no need for ethics committee approval for this study.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** Authors declared no conflict of interest.

**Financial Disclosure:** Authors declared no financial support

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