



Systematic Review

# Occupational Risk Factors for Burnout Syndrome Among Healthcare Professionals: A Global Systematic Review and Meta-Analysis

Sohrab Amiri <sup>1</sup>, Nailah Mahmood <sup>2</sup>, Halla Mustafa <sup>3</sup>, Syed Fahad Javaid <sup>4,\*</sup> and Moien AB Khan <sup>3,\*</sup>

<sup>1</sup> Spiritual Health Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran 17166, Iran; rsr.amiri.s@bmsu.ac.ir

<sup>2</sup> Division of Health Research, Lancaster University, Lancaster LA1 4YW, UK; n.mahmood2@lancaster.ac.uk

<sup>3</sup> Health and Wellness Research Group, Department of Family Medicine, College of Medicine and Health Sciences, United Arab Emirates University, Al-Ain 15551, United Arab Emirates; h.mustafa@uaeu.ac.ae

<sup>4</sup> Health and Wellness Research Group, Department of Psychiatry, College of Medicine and Health Sciences, United Arab Emirates University, Al-Ain 15551, United Arab Emirates

\* Correspondence: sjavaid@uaeu.ac.ae (S.F.J.); moien.khan@uaeu.ac.ae (M.A.K.); Tel.: +971-503-97-9565 (S.F.J.); Fax: +971-3-767-2995 (S.F.J.)

**Abstract:** Health professionals are disproportionately affected by burnout compared to other occupational groups. This study aims to systematically review and meta-analyze thirteen occupational risk factors related to burnout syndrome among health professionals globally. A comprehensive literature search was conducted in August 2023. The protocol was registered in The International Prospective Register of Systematic Reviews (PROSPERO), registration number CRD42023396081. Using a random-effects model, this meta-analysis assessed the association between occupational risk factors and burnout, reporting odds ratios (ORs) and 95% confidence intervals (CIs). The meta-analysis included 109 studies from diverse global locations. Key factors influencing burnout included workplace bullying, job stress, and poor communication, with protective factors such as supportive work environments, adequate staffing, and individual resilience. All risk factors examined showed a significant positive relationship with burnout incidence. Workplace bullying was strongly associated with increased burnout (OR 4.05–15.01,  $p < 0.001$ ). Similarly, low job satisfaction and high job stress were strongly associated with burnout, with ORs of 5.05 (95% CI 3.88–6.56,  $p < 0.001$ ) and 4.21 (95% CI 1.62–10.94,  $p = 0.003$ ), respectively. The review findings highlight the importance of addressing these risk factors through enhanced supportive work environments and promoting personal resilience strategies.

**Keywords:** burnout syndrome; health professionals; occupational risk factors; meta-analysis; systematic review



**Citation:** Amiri, S.; Mahmood, N.; Mustafa, H.; Javaid, S.F.; Khan, M.A. Occupational Risk Factors for Burnout Syndrome Among Healthcare Professionals: A Global Systematic Review and Meta-Analysis. *Int. J. Environ. Res. Public Health* **2024**, *21*, 1583. <https://doi.org/10.3390/ijerph21121583>

Academic Editor: Luenda E. Charles

Received: 3 September 2024

Revised: 20 November 2024

Accepted: 22 November 2024

Published: 27 November 2024



**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Burnout syndrome is a condition characterized by the inability to effectively manage work-related stress, leading to three key elements: feelings of exhaustion or energy depletion, increased mental distance or negative feelings towards one's job, and reduced professional efficacy [1]. The study of burnout has been primarily driven by Maslach, who developed a widely used questionnaire that assesses burnout based on three components: emotional exhaustion (EE), depersonalization (D), and decreased personal accomplishment (PA) [2,3].

Burnout syndrome is a widespread phenomenon across various occupational settings [4], with a particularly important focus on the healthcare industry [5,6]. Studies have found a significant prevalence of burnout syndrome among healthcare professionals [5–7], with a global study reporting a prevalence rate of 67.0% [5]. Physicians are particularly

susceptible to burnout, with a 15-fold higher risk compared to other professionals [8]. Emergency physicians, in particular, have been found to have high rates of burnout, with 88.6% experiencing medium to high emotional exhaustion and 82.8% experiencing medium to high depersonalization [9]. The global prevalence of burnout syndrome among nurses is 11.2% [10]. Healthcare professionals face unique stressors and challenges that contribute to burnout. Experiencing intense situations, working long hours, having a high patient load, and being exposed to trauma and suffering often all contribute to burnout [5–7]. Burnout syndrome negatively impacts various job dimensions, physical health, and productivity beyond the individual. Furthermore, burnout syndrome has been linked to a higher risk of medical errors, highlighting the importance of proactive measures. The COVID-19 pandemic has further exacerbated burnout syndrome among healthcare professionals, leading to a plethora of studies on this topic [11–14].

Various factors can contribute to burnout syndrome in health professionals, including age, marital status, lack of control over work, job seniority, work shifts, and work demands [15–21]. A broad range of studies have examined the risk factors of burnout syndrome in health professionals, and some of these factors have been examined [15,17,21–27].

Despite the large amount of literature about burnout syndrome among health professionals and a detailed review of studies that have examined occupational risk factors for burnout syndrome in this population, several issues emerged that provided the basis for this research. Firstly, no comprehensive global study has addressed occupational burnout syndrome risk factors. What has been done has mostly focused on investigating the prevalence of occupational burnout syndrome or has examined only some risk factors of occupational burnout. Identifying the underlying factors of burnout syndrome can increase insight and help make health policy more robust. In addition, we do not know which occupational risk factors contribute the most to burnout syndrome, in other words, the hierarchy of occupational risk factors for burnout syndrome in healthcare professionals.

In this study, thirteen occupational risk factors related to burnout syndrome are systematically reviewed and meta-analyzed, and a hierarchy of the most important causes are presented. This research, therefore, aims to provide the most comprehensive and complete analysis of occupational risk factors and burnout syndrome in health professionals.

## 2. Materials and Methods

### 2.1. Registration and Protocol

The research protocol was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards [28], as depicted in the PRISMA checklist (Supplementary File S1). The protocol was registered in The International Prospective Register of Systematic Reviews (PROSPERO), registration number CRD42023396081 (Supplementary File S2).

### 2.2. Eligibility Criteria

The inclusion criteria for the current study included the following: (1) The study population was health professionals. (2) Cross-sectional, cohort and case-control studies were eligible. (3) To reduce selection bias, a minimum sample size of 100 participants was considered for each study. These studies were not eligible: (1) Studies whose population was volunteers were not eligible. (2) Studies that did not report enough data to calculate the odds ratio and 95% confidence interval.

### 2.3. Information Sources

This research systematically searched three databases (PubMed, Web of Science, and Scopus) and manually searched one gray literature database (Google Scholar). To retrieve more studies, the references of similar studies were checked. For the systematic search, a keyword syntax was used for each database. The search in these databases was carried out until August 2023, and all the manuscripts were included from the beginning of their formation.

#### 2.4. Search Strategy

This review was conducted following the PRISMA standards [29]. SA and MABK conducted each stage of the review procedure separately. Both authors individually evaluated each obtained record from the systematic and manual search using the predetermined keywords (Supplementary S3). In addition, they independently performed the risk of bias evaluation for each paper that was included (Supplementary S4). Disagreements between SA and MABK were addressed and resolved through consensus or by engaging a third reviewer, NM. Initially, data extraction was performed by one reviewer. However, this procedure was later modified to incorporate independent verification by the second author.

#### 2.5. Selection Process

First, the studies were stored in a file and screened based on the title and abstract. All the authors participated in this process. After identifying potentially eligible studies, all their full texts were collected. In the process of screening the articles, all the authors worked independently. Regarding the final studies, the articles were screened interactively. In general, screening included four components: population, exposure, comparison, and outcomes.

#### 2.6. Data Collection Process

Data was first extracted in August 2023. Each author synthesized a subset of eligible studies and extracted the necessary data. This process was independent, but, in the end, each mutually rechecked the extracted data from the other authors.

#### 2.7. Data Items

The exposure variables in this research included a variety of occupational factors, including job demands, working hours, job stress, job strain, social support at work, job satisfaction, job control, job insecurity, workload, work–life imbalance, effort–reward imbalance, violence at work, and workplace bullying. The definitions of each of these were based on the definitions in the eligible articles. The outcome variable of interest in this study was burnout syndrome. The measurement of this variable was also based on the models briefly included in the Supplementary table (Supplementary S4).

#### 2.8. Study Risk of Bias Assessment

In measuring the risk of bias, the Effective Public Health Practice Project Quality Assessment Tool [30,31] was used as a reliable tool that included four dimensions: selection bias, confounders bias, data collection method bias, and withdrawals and dropouts bias (Supplementary S5).

#### 2.9. Effect Measures

In this research, the effect size used was an odds ratio and 95% confidence interval. The odds ratio and the standard error of the odds ratio were used to check for heterogeneity and publication bias.

#### 2.10. Synthesis Methods

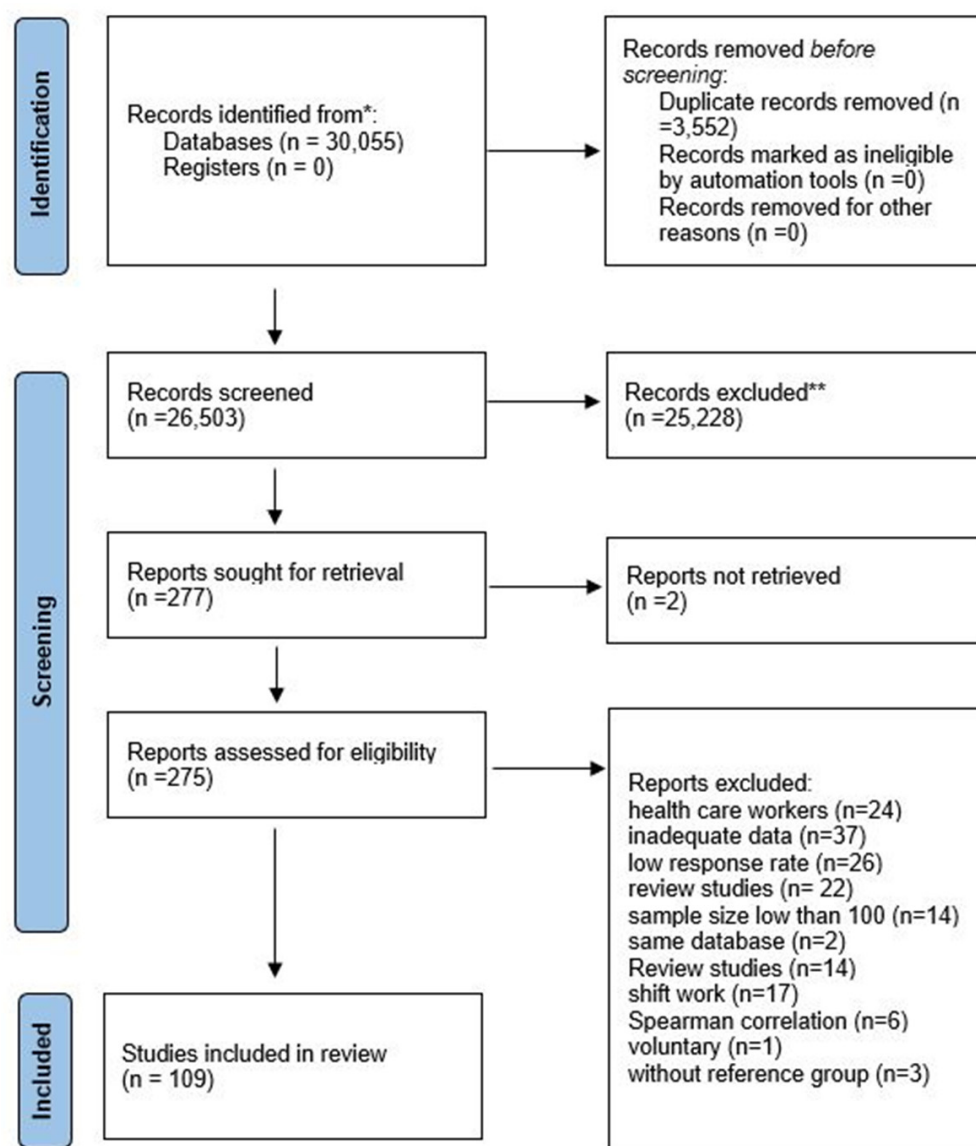
Eligible studies were able to calculate the odds ratio and 95% confidence interval; based on this, studies that reported the following indicators in the relationship between the exposure variable and the outcome were included in the meta-analysis: odds ratio and 95% confidence interval reported; or the Pearson correlation coefficient and sample size; or the mean, standard deviation, and sample size in the case and control groups. The data were converted to the odds ratio and 95% confidence interval by Comprehensive meta-analysis-3 software [32]. The standard error for the odd ratio was also calculated. This procedure was performed for all levels of exposure variables. In the following, the heterogeneity was checked using the heterogeneity chi-squared test and  $I^2$  [33,34]. Selection bias was assessed as part of the analyses using a funnel plot, Egger's test, and the trim-and-fill

method [35–37]. “The ‘trim and fill’ method aims both to identify and correct for funnel plot asymmetry arising from publication bias. The basis of the method is to (1) ‘trim’ (remove) the smaller studies causing funnel plot asymmetry, (2) use the trimmed funnel plot to estimate the true ‘centre’ of the funnel, then (3) replace the omitted studies and their missing ‘counterparts’ around the centre (filling)” [38]. “Egger’s test is commonly used to assess potential publication bias in a meta-analysis via funnel plot asymmetry (Egger’s test is a linear regression of the intervention effect estimates on their standard errors weighted by their inverse variance)” [38]. In the review of publication bias, the number of 10 studies was considered as a cut-off point [39].

### 3. Results

#### 3.1. Study Selection

Figure 1 depicts the screening process for the studies. The studies were screened step by step. Finally, based on this study’s eligibility criteria, 109 studies [39–147] were selected, listed in the Supplementary table (Supplementary S4).



**Figure 1.** The PRISMA flow diagram. \* The number of records identified from each database or register searched (rather than the total number across all databases/registers). \*\* Automation tools utilized to exclude records.

### 3.2. Study Characteristics

The characteristics of every study included in this research are listed in the supplementary table (Supplementary S4). These studies included a series of cross-sectional and longitudinal studies from all inhabited continents of the world. From the point of view of biographers, the age of the population studied in this meta-analysis was 18 years and older. In most of the studies, the population included both sexes. The two dominant populations in this study were nurses and physicians.

### 3.3. Risk of Bias in Studies

After the qualitative evaluation of the studies based on four dimensions, the results of this evaluation were included in the Supplementary table (Supplementary S4).

## 4. Results of Individual Studies

For each of the studies mentioned in this research, there was a range of data, including sample size, correlation coefficient, odds ratio, 95% confidence interval, and sample size, mean, and standard deviation in each group, which are listed in the Supplementary table (Supplementary S4).

## 5. Results of Syntheses

### 5.1. Long Working Hours and Burnout Syndrome

In the relationship between long working hours and burnout syndrome, 39 studies were included in the meta-analysis, as shown in Figure 2. Based on the obtained result, the odds ratio was equal to 1.23, with a 95% confidence interval of 1.17–1.30 ( $p < 0.001$ ;  $Z = 7.64$ ;  $I^2 = 83.21$ ).

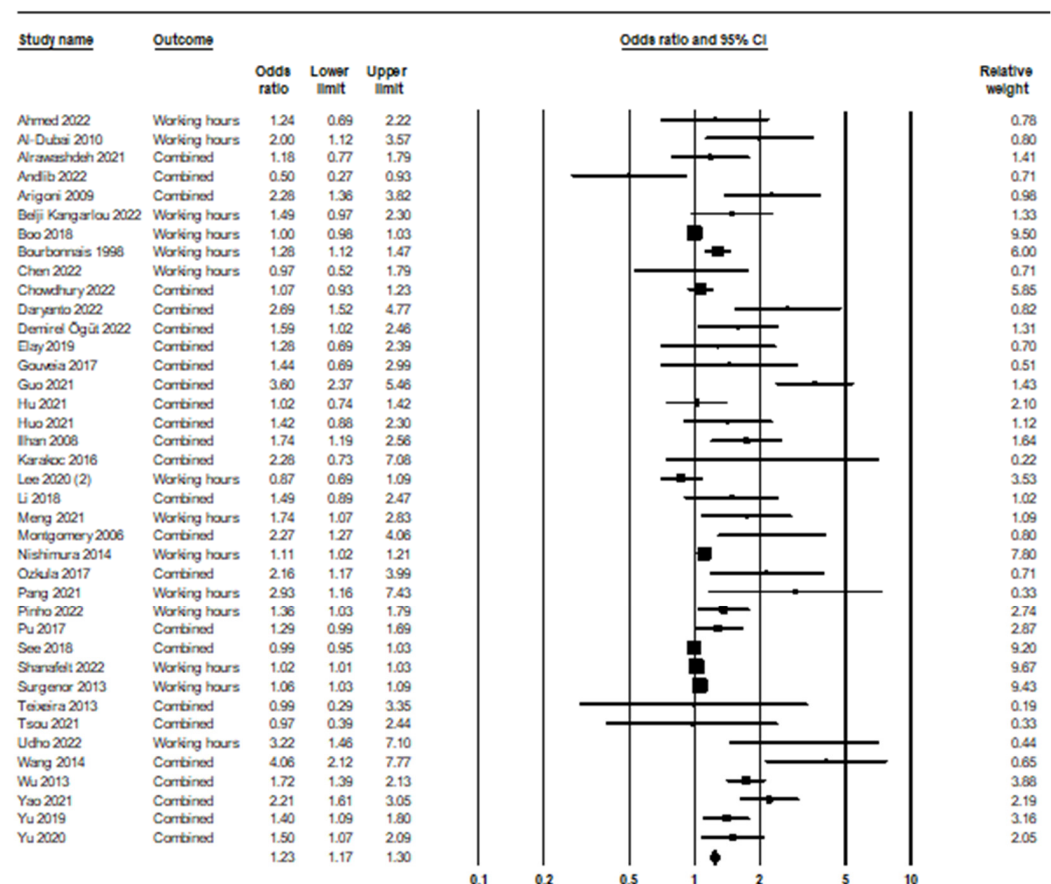


Figure 2. Long working hours and burnout syndrome [40–77].



### 5.2. Job Demand and Burnout Syndrome

In the relationship between job demand and burnout syndrome, 22 studies were included in the meta-analysis, as shown in Figure 3. Based on the obtained result, the odds ratio was equal to 3.14, with a 95% confidence interval of 2.56–3.86 ( $p < 0.001$ ;  $Z = 10.91$ ;  $I^2 = 82.43$ ).

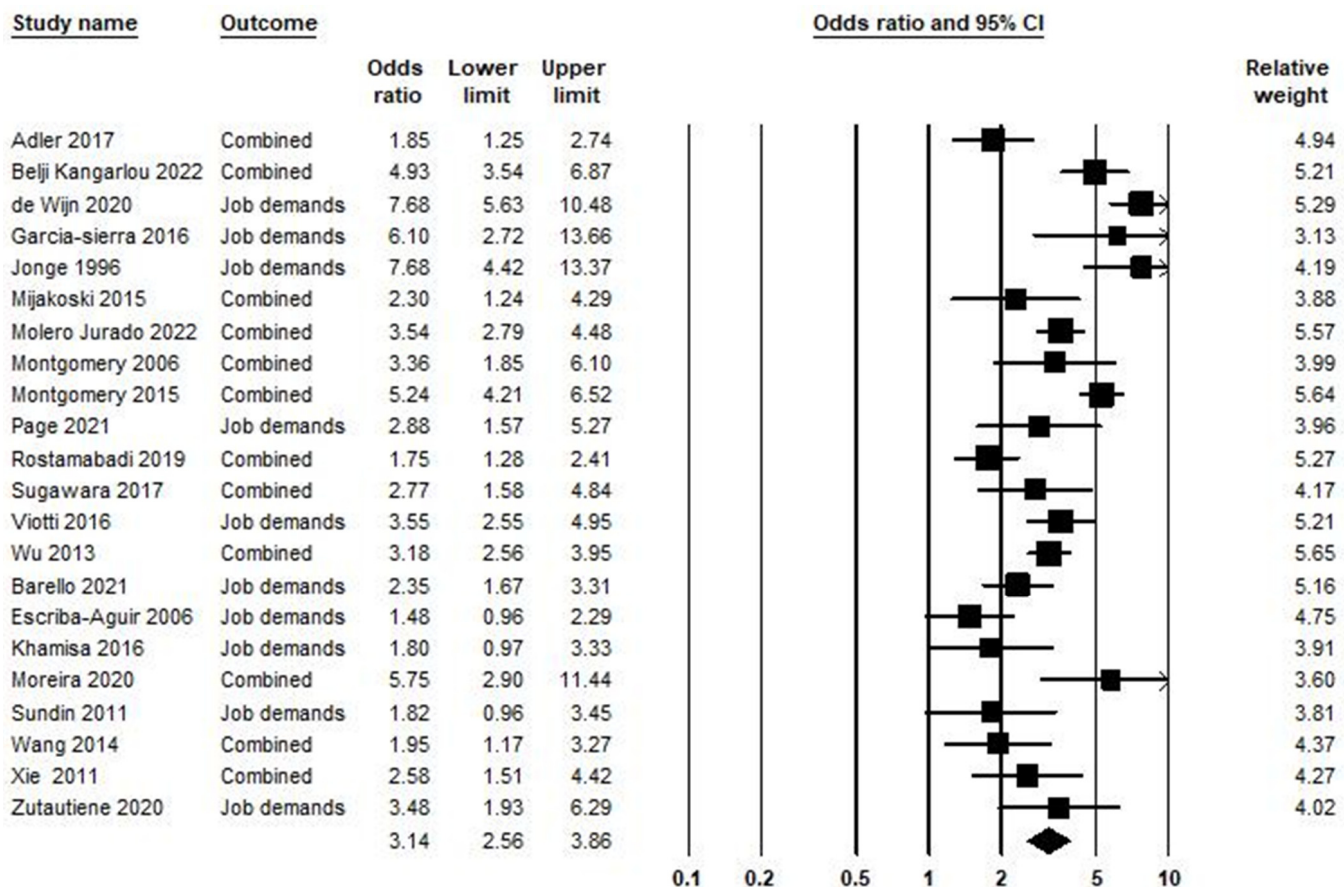


Figure 3. Job demand and burnout syndrome [61,72,73,78–96].

### 5.3. Workload and Burnout Syndrome

In the relationship between workload and burnout syndrome, 16 studies were included in the meta-analysis, as shown in Figure 4. Based on the result, the odds ratio was equal to 1.97, with a 95% confidence interval of 1.09–3.55 ( $p = 0.024$ ;  $Z = 2.26$ ;  $I^2 = 98.32$ ).

### 5.4. Job Stress and Burnout Syndrome

Job stress incorporates the psychological and emotional response to workplace challenges and conditions. Job stress is influenced not only by structural elements like demands and control but also by individual perceptions, coping mechanisms, and support systems, reflecting an individual's subjective appraisal of stressors and their impact on well-being [148]. In the relationship between job stress and burnout syndrome, 15 studies were included in the meta-analysis, as shown in Figure 5. Based on the result, the odds ratio was equal to 4.21, with a 95% confidence interval of 1.62–10.94 ( $p = 0.003$ ;  $Z = 2.95$ ;  $I^2 = 99.17$ ).

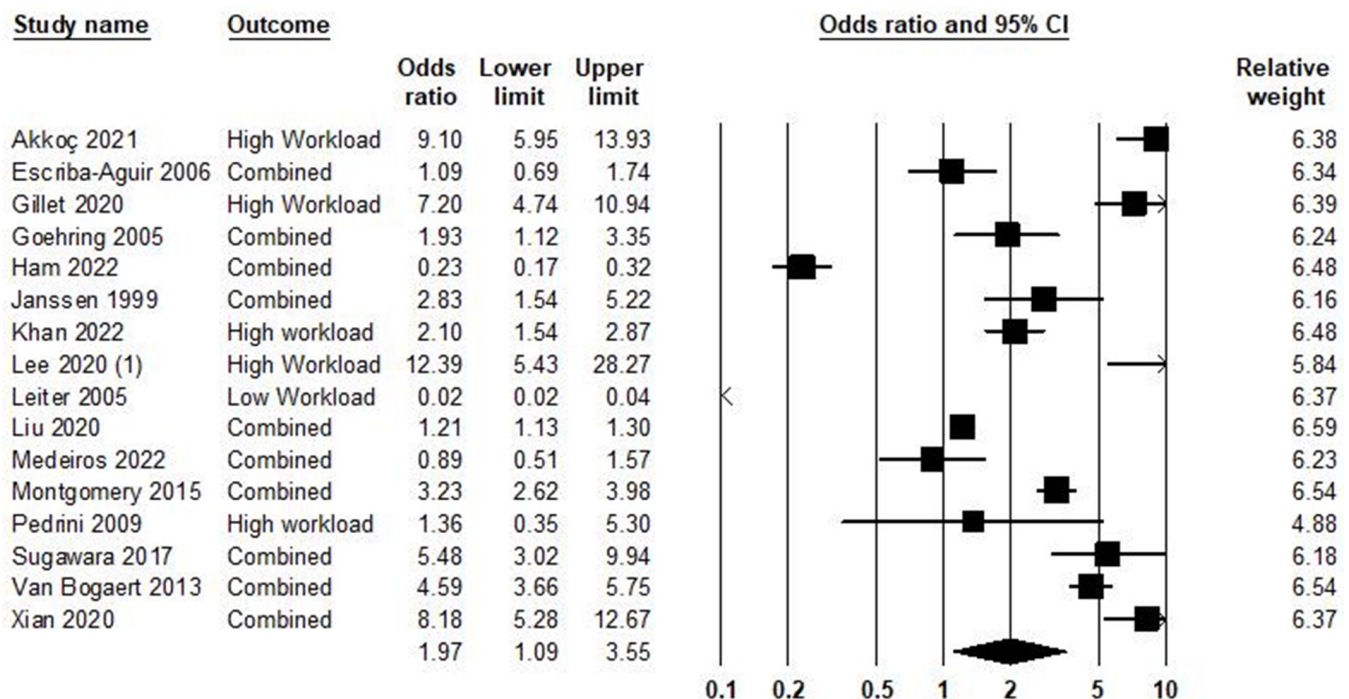


Figure 4. Workload and burnout syndrome [58,82,88,92,97–108].

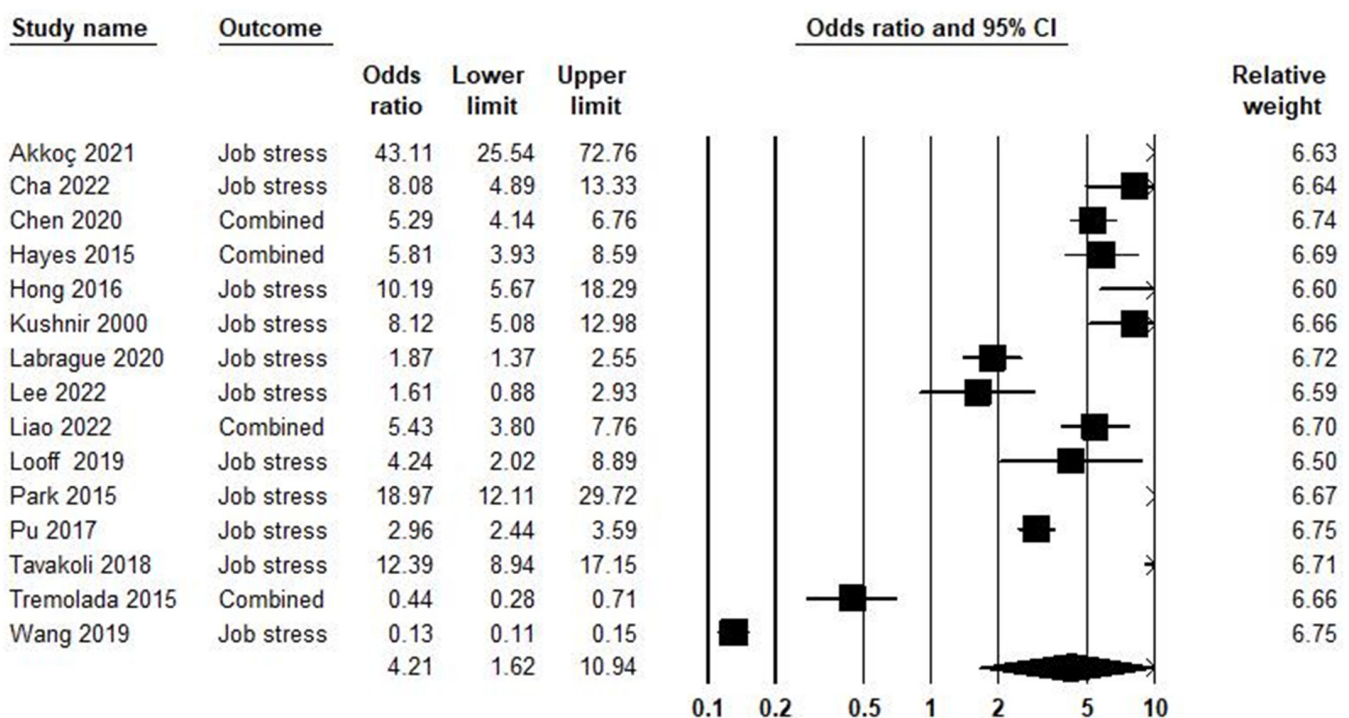


Figure 5. Job stress and burnout syndrome [66,97,109–121].

### 5.5. Low Social Support at Work and Burnout Syndrome

In the relationship between low social support at work and burnout syndrome, 15 studies were included in the meta-analysis, as shown in Figure 6. Based on the result, the odds ratio was equal to 2.04, with a 95% confidence interval of 1.77–2.35 ( $p < 0.001$ ;  $Z = 9.86$ ;  $I^2 = 55.89$ ).

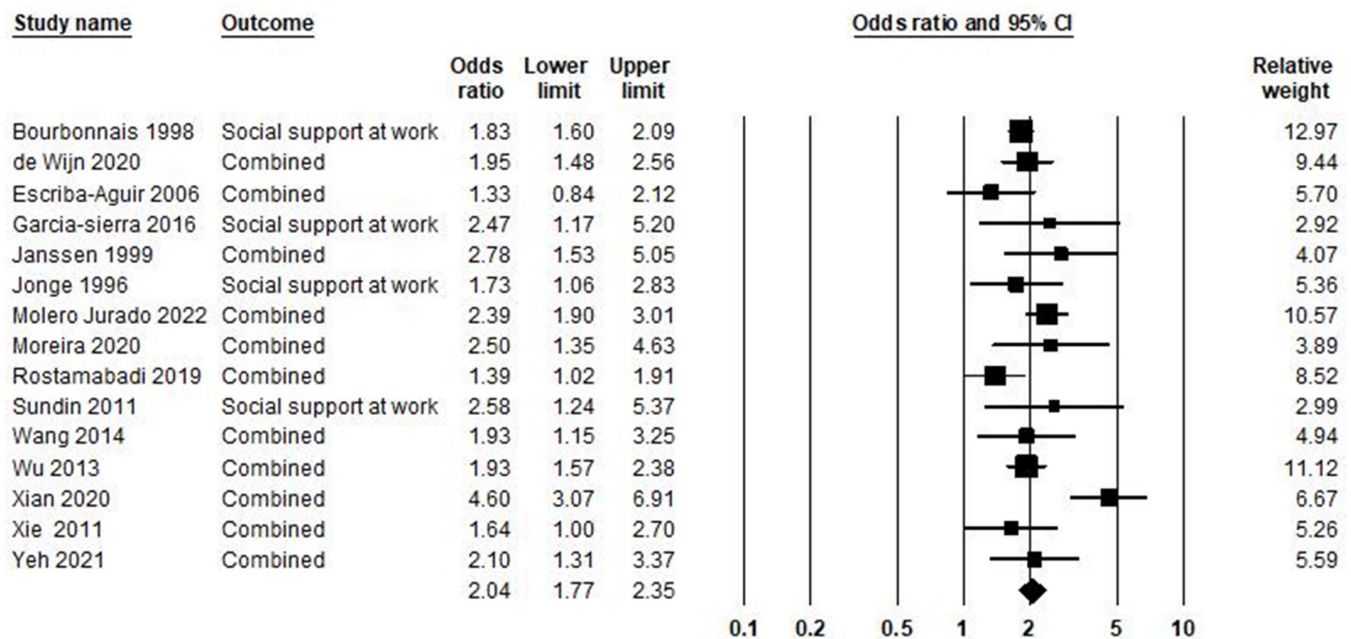


Figure 6. Low social support at work and burnout syndrome [46,72,73,81–84,87,89,91,93,95,101,108,122].

#### 5.6. Low Job Satisfaction and Burnout Syndrome

In the relationship between low job satisfaction and burnout syndrome, 23 studies were included in the meta-analysis, as shown in Figure 7. Based on the obtained result, the odds ratio was equal to 5.05, with a 95% confidence interval of 3.88–6.56 ( $p < 0.001$ ;  $Z = 12.10$ ;  $I^2 = 92.89$ ).

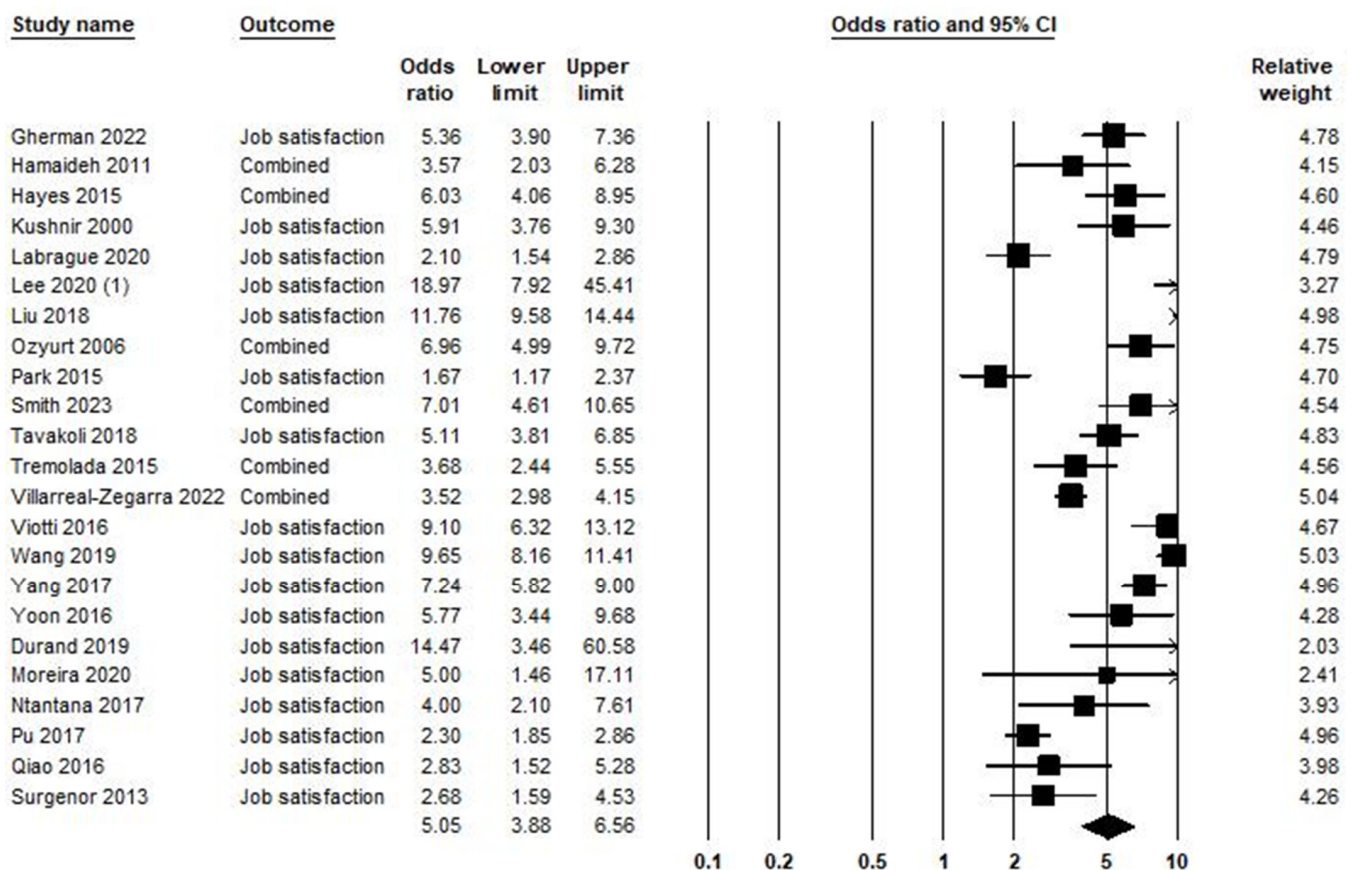


Figure 7. Low job satisfaction and burnout syndrome [58,59,66,68,89,94,112,114,115,118–121,123–132].



### 5.7. Job Control and Burnout Syndrome

Job control is one of the components of job strain. Based on Karasek's job demands–control model, job strain is the combination of high job demands with low job control [4,133,134]. In the relationship between job control and burnout syndrome, 13 studies were included in the meta-analysis, as shown in Figure 8. Based on the obtained result, the odds ratio was equal to 2.39, with a 95% confidence interval of 1.62–3.53 ( $p < 0.001$ ;  $Z = 4.39$ ;  $I^2 = 92.71\%$ ).

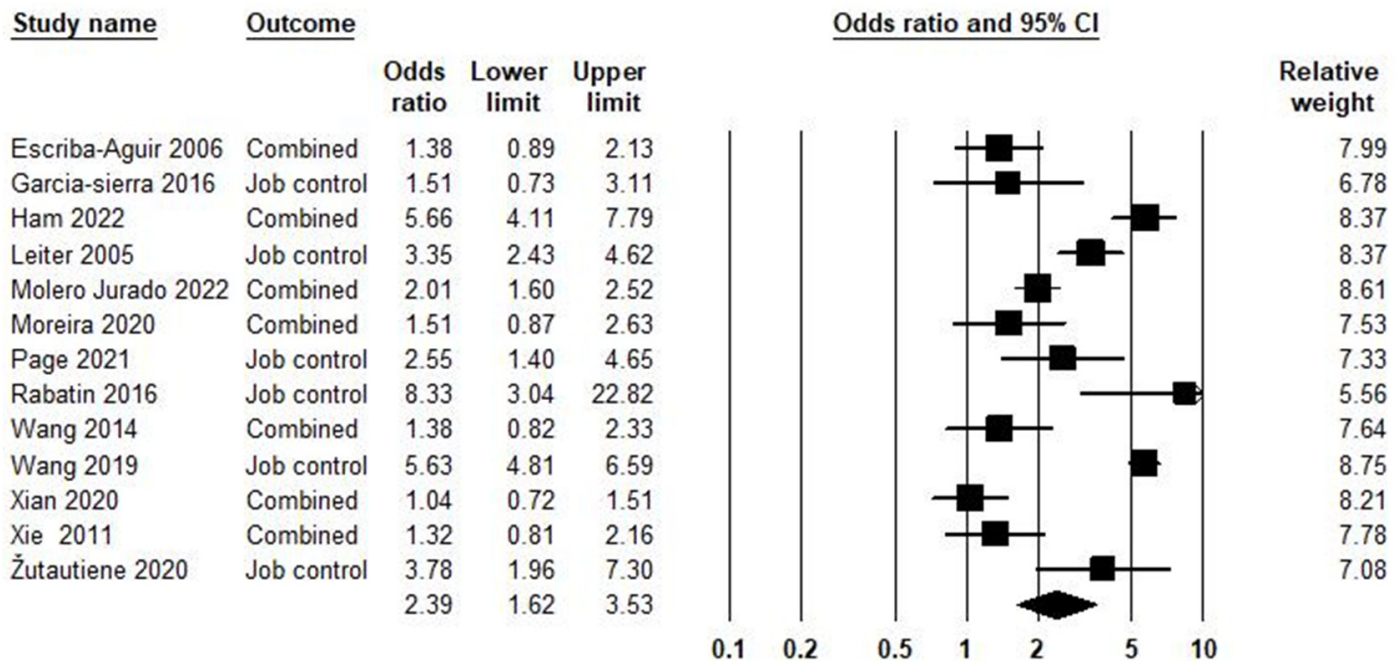


Figure 8. Job control and burnout syndrome [72,82,83,87,89,90,95,96,100,103,108,121,135].

### 5.8. Work–Life Imbalance and Burnout Syndrome

In the relationship between work–life imbalance and burnout syndrome, ten studies were included in the meta-analysis, as shown in Figure 9. Based on the result, the odds ratio was equal to 4.48, with a 95% confidence interval of 2.35–8.52 ( $p < 0.001$ ;  $Z = 4.56$ ;  $I^2 = 98.65\%$ ).

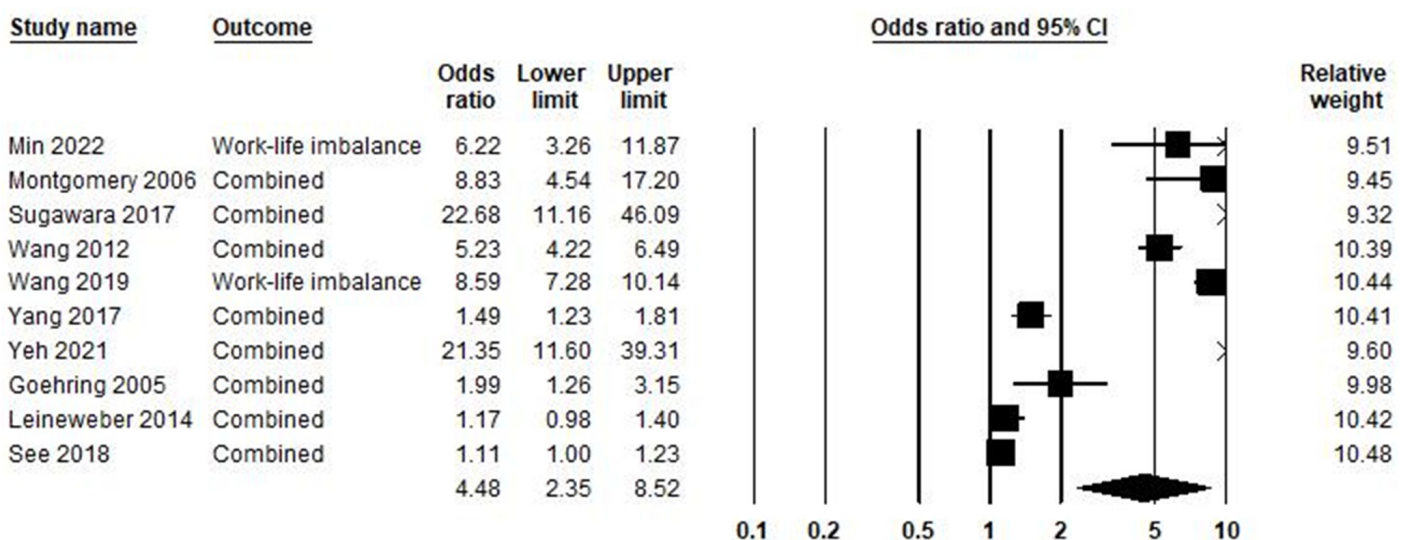
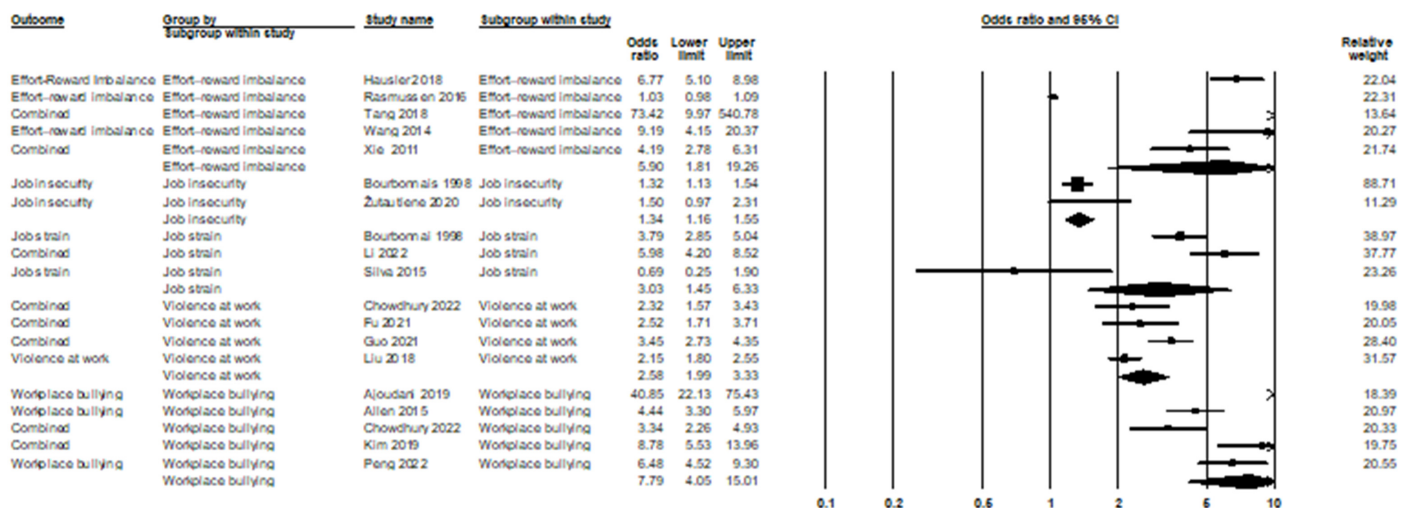


Figure 9. Work–life imbalance and burnout syndrome [61,67,92,99,121,122,131,136–138].

### 5.9. Effort–Reward Imbalance, Other Stressors, and Burnout Syndrome

Effort–reward imbalance is a mismatch between high efforts spent and low rewards received at work. In the relationship between effort–reward imbalance and burnout syndrome, five studies were included in the meta-analysis, and the odds ratio was equal to 5.90, with a 95% confidence interval of 1.81–19.26 ( $p = 0.003$ ;  $Z = 2.94$ ;  $I^2 = 98.38\%$ ). In the relationship between job insecurity and burnout syndrome, two studies were included in the meta-analysis; the odds ratio was equal to 1.34, with a 95% confidence interval of 1.16–1.55 ( $p < 0.001$ ;  $Z = 3.93$ ;  $I^2 = 0\%$ ). Job strain, a related yet distinct concept from job stress, refers to the structural imbalance between job demands and the degree of control an individual has over their work [148]. While job strain is often an objective measure based on workplace conditions, job stress is subjective and varies according to personal resilience and environmental factors [148]. In the relationship between job strain and burnout syndrome, three studies were included in the meta-analysis; the odds ratio was equal to 3.03, with a 95% confidence interval of 1.45–6.33 ( $p = 0.003$ ;  $Z = 2.95$ ;  $I^2 = 87.93\%$ ). In the relationship between violence at work and burnout syndrome, four studies were included in the meta-analysis; the odds ratio was equal to 2.58, with a 95% confidence interval of 1.99–3.33 ( $p < 0.001$ ;  $Z = 7.18$ ;  $I^2 = 71.41\%$ ). In the relationship between workplace bullying and burnout syndrome, five studies were included in the meta-analysis; the odds ratio was equal to 7.79, with a 95% confidence interval of 4.05–15.01 ( $p < 0.001$ ;  $Z = 6.14$ ;  $I^2 = 92.45\%$ ). The relationship between these stressors and burnout syndrome is depicted in Figure 10.



**Figure 10.** Effort–reward imbalance [72,95,139,140], job insecurity [46,96,141], job strain [46,141,142], violence at work [48,53,143,144], workplace bullying [48,145,146,149], and burnout syndrome.

### 5.10. Publication Bias and Heterogeneity

The publication bias in the association between long working hours and burnout syndrome is depicted in Supplementary Figure S1. The Egger test ( $p < 0.001$ ) showed publication bias. The trim-and-fill [37] imputed 15 studies. Heterogeneity across studies was equal to  $I^2 = 83.21\%$ ; this means high heterogeneity [150], and the heterogeneity of chi-square was equal to 226.34 (d.f = 38;  $p < 0.001$ ).

The publication bias in the association between job demand and burnout syndrome is shown in Supplementary Figure S2. The Egger test ( $p = 0.285$ ) did not show publication bias. The trim-and-fill [37] has not imputed any study. Heterogeneity across studies was equal to  $I^2 = 82.43\%$ ; this means high heterogeneity [150], and the heterogeneity of chi-square was equal to 119.52 (d.f = 21;  $p < 0.001$ ).

Supplementary Figure S3 demonstrates publication bias in the association between workload and burnout syndrome (Figure S3). The Egger test ( $p = 0.433$ ) did not show publication bias. The trim-and-fill [37] imputed five studies. Heterogeneity across studies

was equal to  $I^2 = 98.32\%$ ; this means high heterogeneity [150], and the heterogeneity of chi-square was equal to 893.78 (d.f = 15;  $p < 0.001$ ).

The publication bias in the association between job stress and burnout syndrome is shown in Supplementary Figure S4. The Egger test ( $p = 0.020$ ) showed publication bias. The trim-and-fill [37] imputed four studies. Heterogeneity across studies was equal to  $I^2 = 99.17\%$ ; this means high heterogeneity [150], and the heterogeneity of chi-square was equal to 1696.69 (d.f = 14;  $p < 0.001$ ).

Supplementary Figure S5 examines the publication bias associated with low social support at work and burnout syndrome (Figure S5). The Egger test ( $p = 0.379$ ) did not show publication bias. The trim-and-fill [37] has not been imputed in any study. Heterogeneity across studies was equal to  $I^2 = 55.89\%$ ; this means medium heterogeneity [150], and the heterogeneity of chi-square was equal to 31.74 (d.f = 14;  $p = 0.004$ ).

The publication bias in the association between low job satisfaction and burnout syndrome is shown in Supplementary Figure S6. The Egger test ( $p = 0.646$ ) did not show publication bias. The trim-and-fill [37] imputed two studies. Heterogeneity across studies was equal to  $I^2 = 92.89\%$ , which means high heterogeneity [150], and the heterogeneity of chi-square was equal to 309.305 (d.f = 22;  $p < 0.001$ ).

The publication bias in the association between job control and burnout syndrome is demonstrated in Supplementary Figure S7. The Egger test ( $p = 0.081$ ) showed publication bias. The trim-and-fill [37] has not imputed any study. Heterogeneity across studies was equal to  $I^2 = 92.71\%$ , which means high heterogeneity [150], and the heterogeneity of chi-square was equal to 164.601 (d.f = 12;  $p < 0.001$ ).

Supplementary Figure S8 depicts the publication bias associated with work–family imbalance and burnout syndrome (Figure S8). The Egger test ( $p = 0.124$ ) did not show publication bias. The trim-and-fill [37] has not imputed any study. Heterogeneity across studies was equal to  $I^2 = 98.65\%$ ; this means high heterogeneity [150], and the heterogeneity of chi-square was equal to 665.10 (d.f = 9;  $p < 0.001$ ).

## 6. Discussion

The prevalence of burnout varies significantly across different healthcare professions and settings, ranging from 3.3% to 64.0% [9,15,70,102,117,119,121,130,151–153]. These findings are consistent with previous studies reporting varying burnout rates across professions, highlighting demographic factors such as age, gender, and marital status as significant contributors to burnout levels [82,91,122].

In previous studies, health professionals are at high risk of burnout syndrome due to emotional pressure and a work environment characterized by stress caused by dealing with patients and the deaths of patients [154,155]. Another prominent factor influencing burnout in healthcare professionals is secondary traumatic stress (STS), a condition arising from indirect exposure to trauma, such as through repeated encounters with patient suffering and death [156]. STS mimics symptoms of direct trauma, including anxiety, detachment, and intrusive thoughts, contributing to an intensified emotional toll on healthcare workers [157]. Evidence suggests that professionals engaged in frequent end-of-life care experience heightened STS, which exacerbates burnout [158]. Other work-related factors, including workload, job stress, temporary work contracts, conflicts, ethical decision-making, and occupational stress, have been identified as significant contributors to burnout [14,70,72,94,100,107,119,120,138,159–161]. This is supported by studies examining the impact of job demands, lack of support, and workplace bullying on exacerbating burnout levels [78,80]. However, while these studies shed light on the adverse effects of a hostile workplace environment, the complex interplay between individual resilience and organizational culture deserves further exploration. Nevertheless, these findings underscore the importance of workload management strategies and the need for organizations to implement measures to alleviate excessive work demands.

Similarly, workplace bullying, effort–reward imbalance, and low job satisfaction were among the factors leading to burnout syndrome. As a result, these factors increased the risk

of job burnout by nearly eight times, nearly six times, and almost five times, respectively. Long working hours and lack of job security were factors at the bottom of the hierarchy of occupational risk factors for burnout syndrome. While extended working hours and employment stability are relevant, they are often secondary to more significant stressors, such as workload demands and perceived lack of control [162,163]. Limited autonomy and decision-making power weigh more heavily on the personal well-being and efficacy of healthcare professionals and drive burnout more strongly than total work hours or worries about job security [163,164]. These findings highlight the crucial role these occupational risk factors play in the development of burnout syndrome among health professionals. Addressing these workplace stressors is essential for fostering a supportive and safe work environment conducive to staff well-being.

Burnout syndrome is considered a psychological phenomenon [164]. Therefore, many factors may influence its psychological dimension. As a result, it comes as no surprise that occupational risk factors contribute to burnout syndrome. Various mechanisms can influence burnout syndrome depending on the investigated occupational risk factor. Studies have shown that occupational risk factors are associated with an increased risk of depression, which is an important underlying factor in burnout syndrome [165–170]. It is a vicious cycle and can lead to job inefficiency, reduced income, and sick leave, aggravating job burnout [171,172]. Burnout syndrome in health professionals is a consequence of occupational risk factors and can negatively affect various job dimensions. Also, burnout syndrome reduces physical health and productivity [173–175]. In contrast, protective factors against burnout include supportive work environments, social support, healthy lifestyles, and adequate coping mechanisms, which are crucial in mitigating burnout levels [71,94,107,119–121,131]. Supportive leadership, adequate staffing, and good work–family balance have also been identified as protective factors [60,136,176,177]. This comprehensive approach is supported by the work of Lee (2022), Peng et al. (2022), and Silva et al. (2015), who found that resilience, communication competence, and social support significantly reduce burnout levels [116,142,149]. These findings highlight the potential for resilience-building interventions and organizational support structures to mitigate burnout and promote staff well-being.

Research on burnout syndrome among health professionals has increased the importance of awareness about the mental health and well-being of this population. Based on this, several countries, notably Sweden, Canada, the United Kingdom, and the United States, have implemented policies to address burnout among healthcare professionals by improving workplace conditions, promoting peer mentoring, increasing mental health resources, and implementing systemic reforms [163,178–180]. Health professionals must pay more attention to burnout syndrome since it is associated with a higher risk of medical errors [181,182].

The findings from this work have important clinical implications for healthcare professionals. To promote healthcare professionals' mental health and well-being, healthcare organizations and policymakers must address the identified occupational risk factors. Health professionals are at risk of burnout syndrome because of emotional pressure and a stressful work environment. Interventions like enhanced workplace flexibility, staff counseling services, resilience training, and peer-based support programs should be implemented to help healthcare professionals cope with the emotional demands of their jobs and provide them with emotional support and coping strategies. Other factors that contribute to burnout syndrome are workplace bullying, effort–reward imbalance, and low job satisfaction. Healthcare organizations must establish policies and mechanisms to prevent workplace harassment and bullying like anonymous reporting lines, ombudspersons, and leadership accountability systems. Healthcare professionals should be rewarded fairly and appropriately for their efforts with performance-based rewards, career advancement opportunities and enhanced wellness programs like family support services. There must exist opportunities for them to develop professionally and achieve work–life balance like



access to continuous education programs, research and innovation grants, and soft-skills development initiatives.

Long working hours and job insecurity negatively impact burnout syndrome. To mitigate these risk factors, healthcare organizations should optimize work schedules, implement strategies to manage workload efficiently, and provide job security measures including transparent job progression schemes, robust mentorship, streamlined communication, and task sharing and delegation systems. This study also addresses the psychological dimension of burnout syndrome. As occupational risk factors can contribute to depression, mental health support services should be integrated into healthcare settings. Counselling, psychoeducation, and resilience-building programs should be provided regularly to support mental health for healthcare professionals.

This study entails a comprehensive meta-analysis of occupational risk factors for burnout syndrome. This research has limitations. Although most of the included studies used the same scale to measure burnout syndrome, the difference between the scales is a source of heterogeneity in this study. This study's results may have been influenced by the heterogeneity in the results of most of the studies included in this study. There were insufficient studies for each of the occupational and gender risk factors to analyze subgroups. Since most of the studies in this research were cross-sectional, causal relationships cannot be drawn.

## 7. Conclusions

This systematic review and meta-analysis demonstrated a significant association between various occupational risk factors and burnout syndrome among health professionals. Bullying at work, an imbalance between effort and reward, and low job satisfaction were found to be the highest risk factors for burnout syndrome. Professionals should be made aware of burnout syndrome, and policies should be implemented to examine their mental health, specifically burnout syndrome. Burnout syndrome should be prioritized in health-related policies due to its potential consequences, including medical errors.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ijerph21121583/s1>, Supplementary File S1: PRISMA checklist; Supplementary File S2: Study Protocol; Supplementary File S3: Keywords used for PubMed, Scopus, and Web of Science search; Supplementary File S4: Characteristics of the studies included in the analyses; Supplementary File S5: Quality assessment framework; Figure S1: Publication bias in the association between long working hours and burnout syndrome; Figure S2: Publication bias in the association between job demand and burnout syndrome; Figure S3: Publication bias in the association between workload and burnout syndrome; Figure S4: Publication bias in the association between job stress and burnout syndrome; Figure S5: Publication bias in the association between low social support at work and burnout syndrome; Figure S6: Publication bias in the association between low job satisfaction and burnout syndrome; Figure S7: Publication bias in the association between job control and burnout syndrome; Figure S8: Publication bias in the association between work–family imbalance and burnout syndrome.

**Author Contributions:** Conceptualization M.A.K., S.A. and N.M.; methodology, S.A., H.M. and M.A.K.; formal analysis, S.A., N.M. and H.M.; data curation, M.A.K., S.A., S.F.J. and N.M.; writing—original draft preparation, S.A., N.M. and M.A.K.; writing—review and editing, S.F.J., S.A. and M.A.K.; supervision, S.A., M.A.K. and S.F.J.; project administration, M.A.K. and S.F.J. All the authors have revised the manuscript for intellectual content. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors on request.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

- World Health Organization. Burn-Out an “Occupational Phenomenon”: International Classification of Diseases. 2019. Available online: <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases> (accessed on 11 August 2024).
- Maslach, C.; Jackson, S.; Leiter, M. The Maslach Burnout Inventory Manual. In *Evaluating Stress: A Book of Resources*; The Scarecrow Press: Lanham, MD, USA, 1997; Volume 3, pp. 191–218.
- Yazici, M.U.; Teksam, O.; Agin, H.; Erkek, N.; Arslankoylu, A.E.; Akca, H.; Esen, F.; Derinoz, O.; Yener, N.; Kilinc, M.A.; et al. The Burden of Burnout Syndrome in Pediatric Intensive Care Unit and Pediatric Emergency Department: A Multicenter Evaluation. *Pediatr. Emerg. Care* **2021**, *37*, e955–e961. [[CrossRef](#)] [[PubMed](#)]
- Al-Haddad, A.; Al-Omar, F.; Al-Khaleel, A.; Al-Khalaf, A. Prevalence of burnout syndrome and its related risk factors among physicians working in primary health care centers of the Ministry of Health, Al Ahsa region, Saudi Arabia, 2018–2019. *J. Fam. Med. Prim. Care* **2020**, *9*, 571–579. [[CrossRef](#)] [[PubMed](#)]
- Rotenstein, L.S.; Torre, M.; Ramos, M.A.; Rosales, R.C.; Guille, C.; Sen, S.; Mata, D.A. Prevalence of Burnout Among Physicians: A Systematic Review. *JAMA* **2018**, *320*, 1131–1150. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Shah, M.K.; Gandrakota, N.; Cimiotti, J.P.; Ghose, N.; Moore, M.; Ali, M.K. Prevalence of and Factors Associated With Nurse Burnout in the US. *JAMA Netw. Open* **2021**, *4*, e2036469. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Kansoun, Z.; Boyer, L.; Hodgkinson, M.; Villes, V.; Lançon, C.; Fond, G. Burnout in French physicians: A systematic review and meta-analysis. *J. Affect. Disord.* **2019**, *246*, 132–147. [[CrossRef](#)] [[PubMed](#)]
- E, C. Doctor Burnout, Stress and Depression: Not an Easy Fix. U.S News & World Repor 2016. Available online: <http://health.usnews.com/health-news/patient-advice/articles/2016-04-12/doctor-burnout-stress-and-depression-not-an-easy-fix> (accessed on 11 August 2024).
- Lovell, L.P.; Atherley, A.E.N.; Watson, H.R.; King, R.D. An exploration of burnout and resilience among emergency physicians at three teaching hospitals in the English-speaking Caribbean: A cross-sectional survey. *Lancet Reg. Health Am.* **2022**, *15*, 100357. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Woo, T.; Ho, R.; Tang, A.; Tam, W. Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *J. Psychiatr. Res.* **2020**, *123*, 9–20. [[CrossRef](#)] [[PubMed](#)]
- Ulbrichtova, R.; Svihrova, V.; Tatarkova, M.; Svihra, J., Jr.; Novak, M.; Hudeckova, H. Prevalence of Burnout Syndrome in COVID-19 and Non-COVID-19 Units in University Hospital: A Cross-Sectional Study. *Int. J. Environ. Res. Public Health* **2022**, *19*, 12664. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Fortuna, F.; Gonzalez, D.; Fritzler, A.; Ibar, C.; Nenda, G.; D’Isa, E.; Otero, P.; Jamardo, J.; Calvo, M.; Funez, F.; et al. Burnout components, perceived stress and hair cortisol in healthcare professionals during the second wave of COVID 19 pandemic. *Sci Rep.* **2024**, *14*, 28828. [[CrossRef](#)]
- Jalili, M.; Niroomand, M.; Hadavand, F.; Zeinali, K.; Fotouhi, A. Burnout among healthcare professionals during COVID-19 pandemic: A cross-sectional study. *Int. Arch. Occup. Environ. Health* **2021**, *94*, 1345–1352. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Ferry, A.V.; Wereski, R.; Strachan, F.E.; Mills, N.L. Predictors of UK healthcare worker burnout during the COVID-19 pandemic. *QJM* **2021**, *114*, 374–380. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Zhou, A.Y.; Panagioti, M.; Esmail, A.; Agius, R.; Van Tongeren, M.; Bower, P. Factors Associated With Burnout and Stress in Trainee Physicians: A Systematic Review and Meta-analysis. *JAMA Netw. Open* **2020**, *3*, e2013761. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Taranu, S.M.; Ilie, A.C.; Turcu, A.M.; Stefaniu, R.; Sandu, I.A.; Pislaru, A.I.; Alexa, I.D.; Sandu, C.A.; Rotaru, T.S.; Alexa-Stratulat, T. Factors Associated with Burnout in Healthcare Professionals. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14701. [[CrossRef](#)] [[PubMed](#)]
- Mazzetti, G.; Çetin, M.; Guglielmi, D.; Simbula, S. Resilience and the Dynamics of Job Demands: A Diary Study on Interactions in Healthcare Professionals During the COVID-19 Pandemic. *J. Adv. Nurs.* **2024**. [[CrossRef](#)] [[PubMed](#)]
- Gómez-Urquiza, J.L.; Vargas, C.; De la Fuente, E.I.; Fernández-Castillo, R.; Cañadas-De la Fuente, G.A. Age as a risk factor for burnout syndrome in nursing professionals: A meta-analytic study. *Res. Nurs. Health* **2017**, *40*, 99–110. [[CrossRef](#)]
- Canadas-De la Fuente, G.A.; Vargas, C.; San Luis, C.; Garcia, I.; Canadas, G.R.; De la Fuente, E.I. Risk factors and prevalence of burnout syndrome in the nursing profession. *Int. J. Nurs. Stud.* **2015**, *52*, 240–249. [[CrossRef](#)] [[PubMed](#)]
- Bridgeman, P.J.; Bridgeman, M.B.; Barone, J. Burnout syndrome among healthcare professionals. *Am. J. Health Syst. Pharm.* **2018**, *75*, 147–152. [[CrossRef](#)] [[PubMed](#)]
- Vargas, C.; Cañadas, G.A.; Aguayo, R.; Fernández, R.; de la Fuente, E.I. Which occupational risk factors are associated with burnout in nursing? A meta-analytic study. *Int. J. Clin. Health Psychol.* **2014**, *14*, 28–38. [[CrossRef](#)]
- López-López, I.M.; Gómez-Urquiza, J.L.; Cañadas, G.R.; De la Fuente, E.I.; Albendín-García, L.; Cañadas-De la Fuente, G.A. Prevalence of burnout in mental health nurses and related factors: A systematic review and meta-analysis. *Int. J. Ment. Health Nurs.* **2019**, *28*, 1032–1041. [[CrossRef](#)] [[PubMed](#)]
- Gómez-Urquiza, J.L.; Aneas-López, A.B.; Fuente-Solana, E.I.; Albendín-García, L.; Díaz-Rodríguez, L.; Fuente, G.A. Prevalence, Risk Factors, and Levels of Burnout Among Oncology Nurses: A Systematic Review. *Oncol. Nurs. Forum* **2016**, *43*, E104–E120. [[CrossRef](#)] [[PubMed](#)]

24. Membrive-Jiménez, M.J.; Pradas-Hernández, L.; Suleiman-Martos, N.; Vargas-Román, K.; Cañadas-De la Fuente, G.A.; Gomez-Urquiza, J.L.; De la Fuente-Solana, E.I. Burnout in Nursing Managers: A Systematic Review and Meta-Analysis of Related Factors, Levels and Prevalence. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3983. [CrossRef] [PubMed] [PubMed Central]
25. Boutou, A.; Pitsiou, G.; Sourla, E.; Kioumis, I. Burnout syndrome among emergency medicine physicians: An update on its prevalence and risk factors. *Eur. Rev. Med. Pharmacol. Sci.* **2019**, *23*, 9058–9065. [CrossRef] [PubMed]
26. Adriaenssens, J.; De Gucht, V.; Maes, S. Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *Int. J. Nurs. Stud.* **2015**, *52*, 649–661. [CrossRef] [PubMed]
27. Molina-Praena, J.; Ramirez-Baena, L.; Gómez-Urquiza, J.L.; Cañadas, G.R.; De la Fuente, E.I.; Cañadas-De la Fuente, G.A. Levels of Burnout and Risk Factors in Medical Area Nurses: A Meta-Analytic Study. *Int. J. Environ. Res. Public Health* **2018**, *15*, 2800. [CrossRef] [PubMed] [PubMed Central]
28. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* **2021**, *372*, n71. [CrossRef]
29. Moher, D.; Shamseer, L.; Clarke, M.; Ghersi, D.; Liberati, A.; Petticrew, M.; Shekelle, P.; Stewart, L.A.; Group, P.-P. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst. Rev.* **2015**, *4*, 1. [CrossRef]
30. Armijo-Olivo, S.; Stiles, C.R.; Hagen, N.A.; Biondo, P.D.; Cummings, G.G. Assessment of study quality for systematic reviews: A comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: Methodological research. *J. Eval. Clin. Pract.* **2012**, *18*, 12–18. [CrossRef] [PubMed]
31. Thomas, H. Quality assessment tool for quantitative studies. In *Effective Public Health Practice Project*; McMaster University: Toronto, ON, Canada, 2003.
32. Borenstein, M.; Hedges, L.; Higgins, J.; Rothstein, H.J.E. *Comprehensive Meta-Analysis, version 3.3. 070*; Biostatistics: Newark, NJ, USA, 2014; 97p.
33. Higgins, J.P.; Thompson, S.G. Quantifying heterogeneity in a meta-analysis. *Stat. Med.* **2002**, *21*, 1539–1558. [CrossRef] [PubMed]
34. Ioannidis, J.P.; Patsopoulos, N.A.; Evangelou, E. Uncertainty in heterogeneity estimates in meta-analyses. *BMJ* **2007**, *335*, 914–916. [CrossRef] [PubMed] [PubMed Central]
35. Begg, C.B.; Mazumdar, M. Operating characteristics of a rank correlation test for publication bias. *Biometrics* **1994**, *50*, 1088–1110. [CrossRef] [PubMed]
36. Egger, M.; Davey Smith, G.; Schneider, M.; Minder, C. Bias in meta-analysis detected by a simple, graphical test. *BMJ* **1997**, *315*, 629–634. [CrossRef] [PubMed] [PubMed Central]
37. Duval, S.; Tweedie, R. Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics* **2000**, *56*, 455–463. [CrossRef] [PubMed]
38. Higgins, J.P. Cochrane Handbook for Systematic Reviews of Interventions. 2019. Available online: <http://www.cochrane-handbook.org> (accessed on 11 August 2024).
39. Sterne, J.A.; Sutton, A.J.; Ioannidis, J.P.; Terrin, N.; Jones, D.R.; Lau, J.; Carpenter, J.; Rucker, G.; Harbord, R.M.; Schmid, C.H.; et al. Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *BMJ* **2011**, *343*, d4002. [CrossRef] [PubMed]
40. Ahmed, F.; Hawulte, B.; Yuya, M.; Birhanu, S.; Oljira, L. Prevalence of burnout and associated factors among health professionals working in public health facilities of Dire Dawa city administration, Eastern Ethiopia. *Front. Public Health* **2022**, *10*, 836654. [CrossRef]
41. Al-Dubai, S.A.; Rampal, K.G. Prevalence and associated factors of burnout among doctors in Yemen. *J. Occup. Health* **2010**, *52*, 58–65. [CrossRef] [PubMed]
42. Alrawashdeh, H.M.; Al-Tammemi, A.a.B.; Alzawahreh, M.K.; Al-Tamimi, A.; Elkholy, M.; Al Sarireh, F.; Abusamak, M.; Elehamer, N.M.K.; Malkawi, A.; Al-Dolat, W. Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: A convergent parallel mixed-method study. *BMC Public Health* **2021**, *21*, 811. [CrossRef]
43. Andlib, S.; Inayat, S.; Azhar, K.; Aziz, F. Burnout and psychological distress among Pakistani nurses providing care to COVID-19 patients: A cross-sectional study. *Int. Nurs. Rev.* **2022**, *69*, 529–537. [CrossRef]
44. Arigoni, F.; Bovier, P.A.; Mermillod, B.; Waltz, P.; Sappino, A.-P. Prevalence of burnout among Swiss cancer clinicians, paediatricians and general practitioners: Who are most at risk? *Support. Care Cancer* **2009**, *17*, 75–81. [CrossRef]
45. Boo, Y.L.; Liam, C.C.K.; Lim, S.Y.; Look, M.; Tan, M.H.; Ching, S.M.; Wan, J.L.; Chin, P.; Hoo, F. Stress and burnout syndrome in health-care providers treating dengue infection: A cross-sectional study. *Med. J. Malays.* **2018**, *73*, 371–375.
46. Bourbonnais, R.; Comeau, M.; Vezina, M.; Dion, G. Job strain, psychological distress, and burnout in nurses. *Am. J. Ind. Med.* **1998**, *34*, 20–28. [CrossRef]
47. CChen, Y.J.; Lin, K.P. Association among work characteristics, role transition, and job burnout in nurse practitioners in Taiwan. *INQUIRY J. Health Care Organ. Provis. Financ.* **2022**, *59*, 00469580221081403. [CrossRef] [PubMed]
48. Chowdhury, S.R.; Kabir, H.; Chowdhury, M.R.; Hossain, A. Workplace bullying and violence on burnout among Bangladeshi registered nurses: A survey following a year of the COVID-19 pandemic. *Int. J. Public Health* **2022**, *67*, 1604769. [CrossRef] [PubMed]

49. Daryanto, B.; Putri, F.R.; Kurniawan, J.; Ilmawan, M.; Fajar, J.K. The Prevalence and the Associated Sociodemographic–Occupational Factors of Professional Burnout Among Health Professionals During COVID-19 Pandemic in Malang, Indonesia: A Cross-Sectional Study. *Front. Public Health* **2022**, *10*, 894946. [\[CrossRef\]](#) [\[PubMed\]](#)
50. Demirel Ögüt, N.; Ögüt, Ç.; Eşme, P. The role of online consultation requests to personal social media accounts and instant messaging services of dermatologists in occupational burnout: An emerging problem. *J. Cosmet. Dermatol.* **2022**, *21*, 2542–2549. [\[CrossRef\]](#)
51. Elay, G.; Bahar, I.; Demirkiran, H.; Oksüz, H. Severe burnout among critical care workers in Turkey. *Saudi Med. J.* **2019**, *40*, 943. [\[CrossRef\]](#)
52. Gouveia, P.A.d.C.; Ribeiro, M.H.C.; Aschoff, C.A.d.M.; Gomes, D.P.; Silva, N.A.F.d.; Cavalcanti, H.A.F. Factors associated with burnout syndrome in medical residents of a university hospital. *Rev. Assoc. Médica Bras.* **2017**, *63*, 504–511. [\[CrossRef\]](#)
53. Guo, Y.; Hu, S.; Liang, F. The prevalence and stressors of job burnout among medical staff in Liaoning, China: A cross-section study. *BMC Public Health* **2021**, *21*, 777. [\[CrossRef\]](#)
54. Hu, Z.; Wang, H.; Xie, J.; Zhang, J.; Li, H.; Liu, S.; Li, Q.; Yang, Y.; Huang, Y. Burnout in ICU doctors and nurses in mainland China—A national cross-sectional study. *J. Crit. Care* **2021**, *62*, 265–270. [\[CrossRef\]](#) [\[PubMed\]](#)
55. Huo, L.; Zhou, Y.; Li, S.; Ning, Y.; Zeng, L.; Liu, Z.; Qian, W.; Yang, J.; Zhou, X.; Liu, T.; et al. Burnout and Its Relationship With Depressive Symptoms in Medical Staff During the COVID-19 Epidemic in China. *Front. Psychol.* **2021**, *12*, 616369. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
56. İlhan, M.N.; Durukan, E.; Taner, E.; Maral, I.; Bumin, M.A. Burnout and its correlates among nursing staff: Questionnaire survey. *J. Adv. Nurs.* **2008**, *61*, 100–106. [\[CrossRef\]](#) [\[PubMed\]](#)
57. Karakoc, A.; Yilmaz, M.; Alcalar, N.; Esen, B.; Kayabasi, H.; Sit, D. Burnout Syndrome Among Hemodialysis and Peritoneal Dialysis Nurses. *Iran J. Kidney Dis.* **2016**, *10*, 395–404. [\[PubMed\]](#)
58. Lee, Y.G.; Maeng, C.H.; Kim, D.Y.; Kim, B.S. Perspectives on Professional Burnout and Occupational Stress among Medical Oncologists: A Cross-sectional Survey by Korean Society for Medical Oncology (KSMO). *Cancer Res. Treat.* **2020**, *52*, 1002–1009. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
59. Li, H.; Zuo, M.; Gelb, A.W.; Zhang, B.; Zhao, X.; Yao, D.; Xia, D.; Huang, Y. Chinese anesthesiologists have high burnout and low job satisfaction: A cross-sectional survey. *Anesth. Analg.* **2018**, *126*, 1004–1012. [\[CrossRef\]](#) [\[PubMed\]](#)
60. Meng, H.; Bai, S.; Cao, Q. Risk factors of role stress and professional burnout among nurse anesthetists: A multicenter cross-sectional study. *Jpn. J. Nurs. Sci.* **2021**, *18*, e12413. [\[CrossRef\]](#) [\[PubMed\]](#)
61. Montgomery, A.J.; Panagopolou, E.; Benos, A. Work–family interference as a mediator between job demands and job burnout among doctors. *Stress Health J. Int. Soc. Investig. Stress* **2006**, *22*, 203–212. [\[CrossRef\]](#)
62. Nishimura, K.; Nakamura, F.; Takegami, M.; Fukuhara, S.; Nakagawara, J.; Ogasawara, K.; Ono, J.; Shiokawa, Y.; Miyachi, S.; Nagata, I. Cross-sectional survey of workload and burnout among Japanese physicians working in stroke care: The nationwide survey of acute stroke care capacity for proper designation of comprehensive stroke center in Japan (J-ASPECT) study. *Circ. Cardiovasc. Qual. Outcomes* **2014**, *7*, 414–422. [\[CrossRef\]](#)
63. Ozkula, G.; Durukan, E. Burnout syndrome among physicians: The role of socio-demographic characteristics. *Dusunen Adam J. Psychiatry Neurol. Sci.* **2017**, *30*, 136. [\[CrossRef\]](#)
64. Pang, Y.; He, Y.; Chen, Z.; Han, X.; Leng, J.; Tang, L. The perceptions of burnout and related influencing factors in Chinese physicians and nurses working in a cancer hospital. *Psycho Oncol.* **2021**, *30*, 1525–1534. [\[CrossRef\]](#)
65. Pinho, R.d.N.L.; Costa, T.F.; Silva, N.M.; Barros-Areal, A.F.; Salles, A.d.M.; Oliveira, A.P.R.A.; Rassi, C.H.R.E.; Gomes, C.M.; Silva, D.L.M.d.; Oliveira, F.A.R.d. High prevalence of burnout syndrome among medical and nonmedical residents during the COVID-19 pandemic. *PLoS ONE* **2022**, *17*, e0267530. [\[CrossRef\]](#)
66. Pu, J.; Zhou, X.; Zhu, D.; Zhong, X.; Yang, L.; Wang, H.; Zhang, Y.; Fan, S.; Liu, L.; Xie, P. Gender differences in psychological morbidity, burnout, job stress and job satisfaction among Chinese neurologists: A national cross-sectional study. *Psychol. Health Med.* **2017**, *22*, 680–692. [\[CrossRef\]](#)
67. See, K.C.; Zhao, M.Y.; Nakataki, E.; Chittawatanarat, K.; Fang, W.-F.; Faruq, M.O.; Wahjuprajitno, B.; Arabi, Y.M.; Wong, W.T.; Divatia, J.V. Professional burnout among physicians and nurses in Asian intensive care units: A multinational survey. *Intensive Care Med.* **2018**, *44*, 2079–2090. [\[CrossRef\]](#) [\[PubMed\]](#)
68. Surgenor, L.J.; Spearing, R.L.; Horn, J.; Beautrais, A.L.; Mulder, R.T.; Chen, P. Burnout in hospital-based medical consultants in the New Zealand public health system. *N. Z. Med. J.* **2009**, *122*, 11–18. [\[PubMed\]](#)
69. Teixeira, C.; Ribeiro, O.; Fonseca, A.M.; Carvalho, A.S. Burnout in intensive care units—A consideration of the possible prevalence and frequency of new risk factors: A descriptive correlational multicentre study. *BMC Anesthesiol.* **2013**, *13*, 38. [\[CrossRef\]](#) [\[PubMed\]](#)
70. Tsou, M.-T.; Pai, T.-P.; Chiang, T.-M.; Huang, W.-H.; Lin, H.-M.; Lee, S.-C. Burnout and metabolic syndrome among different departments of medical center nurses in Taiwan—Cross-sectional study and biomarker research. *J. Occup. Health* **2021**, *63*, e12188. [\[CrossRef\]](#)
71. Udho, S.; Kabunga, A. Burnout and Associated Factors among Hospital-Based Nurses in Northern Uganda: A Cross-Sectional Survey. *BioMed Res. Int.* **2022**, *2022*, 8231564. [\[CrossRef\]](#)
72. Wang, Z.; Xie, Z.; Dai, J.; Zhang, L.; Huang, Y.; Chen, B. Physician burnout and its associated factors: A cross-sectional study in Shanghai. *J. Occup. Health* **2014**, *56*, 73–83. [\[CrossRef\]](#) [\[PubMed\]](#)



73. Wu, H.; Liu, L.; Wang, Y.; Gao, F.; Zhao, X.; Wang, L. Factors associated with burnout among Chinese hospital doctors: A cross-sectional study. *BMC Public Health* **2013**, *13*, 786. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
74. Yao, H.; Wang, P.; Tang, Y.L.; Liu, Y.; Liu, T.; Liu, H.; Chen, Y.; Jiang, F.; Zhu, J. Burnout and job satisfaction of psychiatrists in China: A nationwide survey. *BMC Psychiatry* **2021**, *21*, 593. [\[CrossRef\]](#)
75. Yu, J.; Gao, J.; Chen, J.; Sun, Y. Academic versus non-academic neurosurgeons in China: A national cross-sectional study on workload, burnout and engagement. *BMJ Open* **2019**, *9*, e028309. [\[CrossRef\]](#)
76. Yu, J.; Zou, F.; Sun, Y. Job satisfaction, engagement, and burnout in the population of orthopedic surgeon and neurosurgeon trainees in mainland China. *Neurosurg. Focus* **2020**, *48*, E3. [\[CrossRef\]](#)
77. Shanafelt, T.D.; West, C.P.; Dyrbye, L.N.; Trockel, M.; Tutty, M.; Wang, H.; Carlasare, L.E.; Sinsky, C. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians During the First 2 Years of the COVID-19 Pandemic. *Mayo Clin. Proc.* **2022**, *97*, 2248–2258. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
78. Adler, A.B.; Adrian, A.L.; Hemphill, M.; Scaro, N.H.; Sipos, M.L.; Thomas, J.L. Professional stress and burnout in US military medical personnel deployed to Afghanistan. *Mil. Med.* **2017**, *182*, e1669–e1676. [\[CrossRef\]](#) [\[PubMed\]](#)
79. Barello, S.; Caruso, R.; Palamenghi, L.; Nania, T.; Dellafiore, F.; Bonetti, L.; Silenzi, A.; Marotta, C.; Graffigna, G. Factors associated with emotional exhaustion in healthcare professionals involved in the COVID-19 pandemic: An application of the job demands-resources model. *Int. Arch. Occup. Environ. Health* **2021**, *94*, 1751–1761. [\[CrossRef\]](#) [\[PubMed\]](#)
80. Belji Kangarlou, M.; Fatemi, F.; Paknazar, F.; Dehdashti, A. Occupational Burnout symptoms and its relationship with workload and fear of the SARS-CoV-2 pandemic among hospital nurses. *Front. Public Health* **2022**, *971*, 852629. [\[CrossRef\]](#)
81. de Wijn, A.N.; van der Doef, M.P. Patient-related stressful situations and stress-related outcomes in emergency nurses: A cross-sectional study on the role of work factors and recovery during leisure time. *Int. J. Nurs. Stud.* **2020**, *107*, 103579. [\[CrossRef\]](#) [\[PubMed\]](#)
82. Escribà-Agüir, V.; Martín-Baena, D.; Pérez-Hoyos, S. Psychosocial work environment and burnout among emergency medical and nursing staff. *Int. Arch. Occup. Environ. Health* **2006**, *80*, 127–133. [\[CrossRef\]](#)
83. García-Sierra, R.; Fernández-Castro, J.; Martínez-Zaragoza, F. Relationship between job demand and burnout in nurses: Does it depend on work engagement? *J. Nurs. Manag.* **2016**, *24*, 780–788. [\[CrossRef\]](#)
84. Jonge, J.D.; Janseen, P.P.M.; Van Breukelen, G.J.P. Testing the demand-control-support model among health-care professionals: A structural equation model. *Work. Stress* **1996**, *10*, 209–224. [\[CrossRef\]](#)
85. Khamisa, N.; Peltzer, K.; Ilic, D.; Oldenburg, B. Work related stress, burnout, job satisfaction and general health of nurses: A follow-up study. *Int. J. Nurs. Pract.* **2016**, *22*, 538–545. [\[CrossRef\]](#) [\[PubMed\]](#)
86. Mijakoski, D.; Karadzinska-Bislimovska, J.; Basarovska, V.; Montgomery, A.; Panagopoulou, E.; Stoleski, S.; Minov, J. Burnout, engagement, and organizational culture: Differences between physicians and nurses. *Open Access Maced. J. Med. Sci.* **2015**, *3*, 506. [\[CrossRef\]](#)
87. Molero Jurado, M.d.M.; Martos Martínez, Á.; Pérez-Fuentes, M.d.C.; Castiñeira López, H.; Gázquez Linares, J.J. Job strain and burnout in Spanish nurses during the COVID-19: Resilience as a protective factor in a cross-sectional study. *Hum. Resour. Health* **2022**, *20*, 79. [\[CrossRef\]](#) [\[PubMed\]](#)
88. Montgomery, A.; Spânu, F.; Băban, A.; Panagopoulou, E. Job demands, burnout, and engagement among nurses: A multi-level analysis of ORCAB data investigating the moderating effect of teamwork. *Burn. Res.* **2015**, *2*, 71–79. [\[CrossRef\]](#) [\[PubMed\]](#)
89. Moreira, A.S.; Lucca, S.R.d. Psychosocial factors and Burnout Syndrome among mental health professionals. *Rev. Lat. Am. Enferm.* **2020**, *28*, e3336. [\[CrossRef\]](#) [\[PubMed\]](#)
90. Page, K.; Graves, N. A cross sectional study of organizational factors and their impact on job satisfaction and emotional burnout in a group of Australian nurses: Infection control practitioners. *BMC Health Serv. Res.* **2021**, *21*, 441. [\[CrossRef\]](#)
91. Rostamabadi, A.; Shouroki, F.K.; Jalilian, H.; Choobineh, A.; Azmoon, H.; Shakerian, M. The relationship between work-related psychosocial factors and burnout among Iranian nurses: Job Demand-Control-Support model. *La Med. Lav.* **2019**, *110*, 312.
92. Sugawara, N.; Danjo, K.; Furukori, H.; Sato, Y.; Tomita, T.; Fujii, A.; Nakagami, T.; Kitaoka, K.; Yasui-Furukori, N. Work-family conflict as a mediator between occupational stress and psychological health among mental health nurses in Japan. *Neuropsychiatr. Dis. Treat.* **2017**, *13*, 779–784. [\[CrossRef\]](#)
93. Sundin, L.; Hochwälder, J.; Lisspers, J. A longitudinal examination of generic and occupational specific job demands, and work-related social support associated with burnout among nurses in Sweden. *Work* **2011**, *38*, 389–4000. [\[CrossRef\]](#)
94. Viotti, S.; Converso, D. Relationship between job demands and psychological outcomes among nurses: Does skill discretion matter? *Int. J. Occup. Med. Environ. Health* **2016**, *29*, 439–460. [\[CrossRef\]](#) [\[PubMed\]](#)
95. Xie, Z.; Wang, A.; Chen, B. Nurse burnout and its association with occupational stress in a cross-sectional study in Shanghai. *J. Adv. Nurs.* **2011**, *67*, 1537–1546. [\[CrossRef\]](#) [\[PubMed\]](#)
96. Žutautienė, R.; Radišauskas, R.; Kaliniene, G.; Ustinavičienė, R. The prevalence of burnout and its associations with psychosocial work environment among Kaunas region (Lithuania) hospitals' physicians. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3739. [\[CrossRef\]](#)
97. Akkoç, İ.; Okun, O.; Türe, A. The effect of role-related stressors on nurses' burnout syndrome: The mediating role of work-related stress. *Perspect. Psychiatr. Care* **2021**, *57*, 583–596. [\[CrossRef\]](#) [\[PubMed\]](#)
98. Gillet, N.; Huyghebaert-Zouaghi, T.; Réveillère, C.; Colombat, P.; Fouquereau, E. The effects of job demands on nurses' burnout and presenteeism through sleep quality and relaxation. *J. Clin. Nurs.* **2020**, *29*, 583–592. [\[CrossRef\]](#) [\[PubMed\]](#)

99. Goehring, C.; Gallacchi, M.B.; Kunzi, B.; Bovier, P. Psychosocial and professional characteristics of burnout in Swiss primary care practitioners: A cross-sectional survey. *Swiss Med. Wkly.* **2005**, *135*, 101–108. [[PubMed](#)]
100. Ham, E.; Seto, M.C.; Rodrigues, N.C.; Hilton, N.Z. Workplace stressors and PTSD among psychiatric workers: The mediating role of burnout. *Int. J. Ment. Health Nurs.* **2022**, *31*, 1151–1163. [[CrossRef](#)]
101. Janssen, P.P.M.; Schaufelie, W.B.; Houkes, I. Work-related and individual determinants of the three burnout dimensions. *Work. Stress* **1999**, *13*, 74–86. [[CrossRef](#)]
102. Khan, Y.; Bruyneel, A.; Smith, P. Determinants of the risk of burnout among nurses during the first wave of the COVID-19 pandemic in Belgium: A cross-sectional study. *J. Nurs. Manag.* **2022**, *30*, 1125–1135. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
103. Leiter, M.P. Perception of risk: An organizational model of occupational risk, burnout, and physical symptoms. *Anxiety Stress Coping* **2005**, *18*, 131–144. [[CrossRef](#)]
104. Liu, Y.; Lu, L.; Wang, W.-X.; Liu, S.; Chen, H.-R.; Gao, X.; Huang, M.-Y.; Liu, Y.-N.; Ren, Y.-M.; Wang, C.-C. Job burnout and occupational stressors among Chinese healthcare professionals at county-level health alliances. *Int. J. Environ. Res. Public Health* **2020**, *17*, 1848. [[CrossRef](#)]
105. Medeiros, A.I.C.d.; Mesquita, R.B.d.; Macêdo, F.d.S.; Matos, A.G.d.C.; Pereira, E.D. Prevalence of burnout among healthcare workers in six public referral hospitals in northeastern Brazil during the COVID-19 pandemic: A cross-sectional study. *Sao Paulo Med. J.* **2022**, *140*, 553–558. [[CrossRef](#)]
106. Pedrini, L.; Magni, L.R.; Giovannini, C.; Panetta, V.; Zacchi, V.; Rossi, G.; Placentino, A. Burnout in nonhospital psychiatric residential facilities. *Psychiatr. Serv.* **2009**, *60*, 1547–1551. [[CrossRef](#)]
107. Van Bogaert, P.; Kowalski, C.; Weeks, S.M.; Clarke, S.P. The relationship between nurse practice environment, nurse work characteristics, burnout and job outcome and quality of nursing care: A cross-sectional survey. *Int. J. Nurs. Stud.* **2013**, *50*, 1667–1677. [[CrossRef](#)] [[PubMed](#)]
108. Xian, M.; Zhai, H.; Xiong, Y.; Han, Y. The role of work resources between job demands and burnout in male nurses. *J. Clin. Nurs.* **2020**, *29*, 535–544. [[CrossRef](#)] [[PubMed](#)]
109. Cha, Y.J.; Lee, K.-S.; Cho, J.H.; Choi, I.S.; Lee, D. Effect of job stress on burnout among nurses responding to COVID-19: The mediating effect of resilience. *Int. J. Environ. Res. Public Health* **2022**, *19*, 5409. [[CrossRef](#)] [[PubMed](#)]
110. Chen, J.; Li, J.; Cao, B.; Wang, F.; Luo, L.; Xu, J. Mediating effects of self-efficacy, coping, burnout, and social support between job stress and mental health among young Chinese nurses. *J. Adv. Nurs.* **2020**, *76*, 163–173. [[CrossRef](#)] [[PubMed](#)]
111. de Looft, P.; Didden, R.; Embregts, P.; Nijman, H. Burnout symptoms in forensic mental health nurses: Results from a longitudinal study. *Int. J. Ment. Health Nurs.* **2019**, *28*, 306–317. [[CrossRef](#)] [[PubMed](#)]
112. Hayes, B.; Douglas, C.; Bonner, A. Work environment, job satisfaction, stress and burnout among haemodialysis nurses. *J. Nurs. Manag.* **2015**, *23*, 588–598. [[CrossRef](#)] [[PubMed](#)]
113. Hong, E.; Lee, Y.S. The mediating effect of emotional intelligence between emotional labour, job stress, burnout and nurses' turnover intention. *Int. J. Nurs. Pract.* **2016**, *22*, 625–632. [[CrossRef](#)] [[PubMed](#)]
114. Kushnir, T.; Cohen, A.H.; Kitai, E. Continuing medical education and primary physicians' job stress, burnout and dissatisfaction. *Med. Educ.* **2000**, *34*, 430–436. [[CrossRef](#)] [[PubMed](#)]
115. Labrague, L.J.; De Los Santos, J.A.A.; Falguera, C.C.; Nwafor, C.E.; Galabay, J.R.; Rosales, R.A.; Firmo, C.N. Predictors of nurses' turnover intention at one and five years' time. *Int. Nurs. Rev.* **2020**, *67*, 191–198. [[CrossRef](#)] [[PubMed](#)]
116. Lee, E.Y.; Kim, K.-j.; Ko, S.; Song, E.K. Communication competence and resilience are modifiable factors for burnout of operating room nurses in South Korea. *BMC Nurs.* **2022**, *21*, 203. [[CrossRef](#)]
117. Liao, H.; Liang, R.; He, H.; Huang, Y.; Liu, M. Work stress, burnout, occupational commitment, and social support among Chinese pediatric nurses: A moderated mediation model. *J. Pediatr. Nurs.* **2022**, *67*, e16–e23. [[CrossRef](#)] [[PubMed](#)]
118. Park, S.-A.; Ahn, S.-H. Relation of compassionate competence to burnout, job stress, turnover intention, job satisfaction and organizational commitment for oncology nurses in Korea. *Asian Pac. J. Cancer Prev.* **2015**, *16*, 5463–5469. [[CrossRef](#)] [[PubMed](#)]
119. Tavakoli, N.; Shaker, S.H.; Soltani, S.; Abbasi, M.; Amini, M.; Tahmasebi, A.; Kasnavieh, S.M.H. Job burnout, stress, and satisfaction among emergency nursing staff after health system transformation plan in Iran. *Emergency* **2018**, *6*, e41. [[PubMed](#)]
120. Tremolada, M.; Schiavo, S.; Tison, T.; Sormano, E.; De Silvestro, G.; Marson, P.; Pierelli, L. Stress, burnout, and job satisfaction in 470 health professionals in 98 apheresis units in Italy: A SIdEM collaborative study. *J. Clin. Apher.* **2015**, *30*, 297–304. [[CrossRef](#)]
121. Wang, Q.Q.; Lv, W.J.; Qian, R.L.; Zhang, Y.H. Job burnout and quality of working life among Chinese nurses: A cross-sectional study. *J. Nurs. Manag.* **2019**, *27*, 1835–1844. [[CrossRef](#)] [[PubMed](#)]
122. Yeh, T.F.; Chang, Y.C.; Hsu, Y.H.; Huang, L.L.; Yang, C.C. Causes of nursing staff burnout: Exploring the effects of emotional exhaustion, work–family conflict, and supervisor support. *Jpn. J. Nurs. Sci.* **2021**, *18*, e12392. [[CrossRef](#)]
123. Durand, A.-C.; Bompard, C.; Sportiello, J.; Michelet, P.; Gentile, S. Stress and burnout among professionals working in the emergency department in a French university hospital: Prevalence and associated factors. *Work* **2019**, *63*, 57–67. [[CrossRef](#)]
124. Gherman, M.A.; Arhiri, L.; Holman, A.C.; Soponaru, C. The Moral Impact of the COVID-19 Pandemic on Nurses' Burnout, Work Satisfaction and Adaptive Work Performance: The Role of Autobiographical Memories of Potentially Morally Injurious Events and Basic Psychological Needs. *Int. J. Environ. Res. Public Health* **2022**, *19*, 7645. [[CrossRef](#)]
125. Hamaideh, S.H. Burnout, social support, and job satisfaction among Jordanian mental health nurses. *Issues Ment. Health Nurs.* **2011**, *32*, 234–242. [[CrossRef](#)]

126. Ntantana, A.; Matamis, D.; Savvidou, S.; Giannakou, M.; Gouva, M.; Nakos, G.; Koulouras, V. Burnout and job satisfaction of intensive care personnel and the relationship with personality and religious traits: An observational, multicenter, cross-sectional study. *Intensive Crit. Care Nurs.* **2017**, *41*, 11–17. [\[CrossRef\]](#)
127. Ozyurt, A.; Hayran, O.; Sur, H. Predictors of burnout and job satisfaction among Turkish physicians. *J. Assoc. Physicians* **2006**, *99*, 161–169. [\[CrossRef\]](#) [\[PubMed\]](#)
128. Qiao, Z.; Chen, L.; Chen, M.; Guan, X.; Wang, L.; Jiao, Y.; Yang, J.; Tang, Q.; Yang, X.; Qiu, X. Prevalence and factors associated with occupational burnout among HIV/AIDS healthcare workers in China: A cross-sectional study. *BMC Public Health* **2016**, *16*, 335. [\[CrossRef\]](#) [\[PubMed\]](#)
129. Smith, S.; Lapkin, S.; Halcomb, E.; Sim, J. Job satisfaction among small rural hospital nurses: A cross-sectional study. *J. Nurs. Scholarsh.* **2023**, *55*, 378–387. [\[CrossRef\]](#) [\[PubMed\]](#)
130. Villarreal-Zegarra, D.; Lázaro-Illatopa, W.I.; Castillo-Blanco, R.; Cabieses, B.; Blukacz, A.; Bellido-Boza, L.; Mezones-Holguin, E. Relationship between job satisfaction, burnout syndrome and depressive symptoms in physicians: A cross-sectional study based on the employment demand-control model using structural equation modelling. *BMJ Open* **2022**, *12*, e057888. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
131. Yang, S.; Liu, D.; Liu, H.; Zhang, J.; Duan, Z. Relationship of work-family conflict, self-reported social support and job satisfaction to burnout syndrome among medical workers in southwest China: A cross-sectional study. *PLoS ONE* **2017**, *12*, e0171679. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
132. Yoon, H.S.; Sok, S.R. Experiences of violence, burnout and job satisfaction in Korean nurses in the emergency medical centre setting. *Int. J. Nurs. Pract.* **2016**, *22*, 596–604. [\[CrossRef\]](#)
133. Perrewé, P.L.; Ganster, D.C. *New Developments in Theoretical and Conceptual Approaches to Job Stress*; Emerald Group Publishing Limited: Bingley, UK, 2010.
134. Gribben, L.; Semple, C.J. Factors contributing to burnout and work-life balance in adult oncology nursing: An integrative review. *Eur. J. Oncol. Nurs.* **2021**, *50*, 101887. [\[CrossRef\]](#)
135. Rabatin, J.; Williams, E.; Baier Manwell, L.; Schwartz, M.D.; Brown, R.L.; Linzer, M. Predictors and outcomes of burnout in primary care physicians. *J. Prim. Care Community Health* **2016**, *7*, 41–43. [\[CrossRef\]](#)
136. Leineweber, C.; Westerlund, H.; Chungkham, H.S.; Lindqvist, R.; Runesdotter, S.; Tishelman, C. Nurses' practice environment and work-family conflict in relation to burn out: A multilevel modelling approach. *PLoS ONE* **2014**, *9*, e96991. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
137. Min, D. Effects of resilience, burnout, and work-related physical pain on work-life balance of registered nurses in South Korean nursing homes: A cross-sectional study. *Medicine* **2022**, *101*, e29889. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
138. Wang, Y.; Chang, Y.; Fu, J.; Wang, L. Work-family conflict and burnout among Chinese female nurses: The mediating effect of psychological capital. *BMC Public Health* **2012**, *12*, 915. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
139. Häusler, N.; Bopp, M.; Hämmig, O. Effort–Reward Imbalance, Work–Privacy Conflict, and Burnout Among Hospital Employees. *J. Occup. Environ. Med.* **2018**, *60*, e183–e187. [\[CrossRef\]](#) [\[PubMed\]](#)
140. Rasmussen, V.; Turnell, A.; Butow, P.; Juraskova, I.; Kirsten, L.; Wiener, L.; Patenaude, A.; Hoekstra-Weebers, J.; Grassi, L.; Committee, I.R. Burnout among psychosocial oncologists: An application and extension of the effort–reward imbalance model. *Psycho-Oncology* **2016**, *25*, 194–202. [\[CrossRef\]](#) [\[PubMed\]](#)
141. Li, N.; Zhang, L.; Li, X.; Lu, Q. Moderated role of social support in the relationship between job strain, burnout, and organizational commitment among operating room nurses: A cross-sectional study. *Int. J. Environ. Res. Public Health* **2022**, *19*, 10813. [\[CrossRef\]](#)
142. Silva, J.L.L.d.; Soares, R.d.S.; Costa, F.d.S.; Ramos, D.d.S.; Lima, F.B.; Teixeira, L.R. Psychosocial factors and prevalence of burnout syndrome among nursing workers in intensive care units. *Rev. Bras. Ter. Intensiv.* **2015**, *27*, 125–133. [\[CrossRef\]](#)
143. Fu, C.; Wang, G.; Shi, X.; Ren, Y.; Cao, F. The association between fear of future workplace violence and burnout among nurses in China: A cross-sectional study. *J. Affect. Disord.* **2021**, *293*, 29–35. [\[CrossRef\]](#)
144. Liu, W.; Zhao, S.; Shi, L.; Zhang, Z.; Liu, X.; Li, L.I.; Duan, X.; Li, G.; Lou, F.; Jia, X. Workplace violence, job satisfaction, burnout, perceived organisational support and their effects on turnover intention among Chinese nurses in tertiary hospitals: A cross-sectional study. *BMJ Open* **2018**, *8*, e019525. [\[CrossRef\]](#)
145. Ajoudani, F.; Baghaei, R.; Lotfi, M. Moral distress and burnout in Iranian nurses: The mediating effect of workplace bullying. *Nurs. Ethics* **2019**, *26*, 1834–1847. [\[CrossRef\]](#)
146. Allen, B.C.; Holland, P.; Reynolds, R. The effect of bullying on burnout in nurses: The moderating role of psychological detachment. *J. Adv. Nurs.* **2015**, *71*, 381–390. [\[CrossRef\]](#)
147. Kim, Y.; Lee, E.; Lee, H. Association between workplace bullying and burnout, professional quality of life, and turnover intention among clinical nurses. *PLoS ONE* **2019**, *14*, e0226506. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)
148. Saiki, M.; Matthews, T.A.; Kawakami, N.; Robbins, W.; Li, J. Formulations of Job Strain and Psychological Distress: A Four-year Longitudinal Study in Japan. *Saf. Health Work* **2024**, *15*, 59–65. [\[CrossRef\]](#) [\[PubMed\]](#)
149. Peng, J.; Luo, H.; Ma, Q.; Zhong, Y.; Yang, X.; Huang, Y.; Sun, X.; Wang, X.; He, J.; Song, Y. Association between workplace bullying and nurses' professional quality of life: The mediating role of resilience. *J. Nurs. Manag.* **2022**, *30*, 1549–1558. [\[CrossRef\]](#) [\[PubMed\]](#)
150. Higgins, J.P.; Thompson, S.G.; Deeks, J.J.; Altman, D.G. Measuring inconsistency in meta-analyses. *BMJ* **2003**, *327*, 557–560. [\[CrossRef\]](#) [\[PubMed\]](#) [\[PubMed Central\]](#)



151. Lee, S.E.; MacPhee, M.; Dahinten, V.S. Factors related to perioperative nurses' job satisfaction and intention to leave. *Jpn. J. Nurs. Sci.* **2020**, *17*, e12263. [[CrossRef](#)] [[PubMed](#)]
152. Li, X.; Wang, J.; He, L.; Hu, Y.; Li, C.; Xie, Y.; Wang, N.; Luo, A.; Lu, Z. Turnover intention and influential factors among primary healthcare workers in Guangdong province, China: A cross-sectional study. *BMJ Open.* **2024**, *14*, e084859. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
153. Pepper, S.N.; Farrell, E.T.; Dawson, R.M.; Wirth, M.D. The Relationship Between Work Engagement, Depression, Anxiety, and COVID-19 Anxiety in Physician Assistant Students. *Psychol. Rep.* **2024**, 332941241300968. [[CrossRef](#)] [[PubMed](#)]
154. Khamisa, N.; Peltzer, K.; Oldenburg, B. Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review. *Int. J. Environ. Res. Public Health* **2013**, *10*, 2214–2240. [[CrossRef](#)]
155. Maslach, C.; Jackson, S.E. The measurement of experienced burnout. *J. Organ. Behav.* **1981**, *2*, 99–113. [[CrossRef](#)]
156. Cr, F. Compassion fatigue as secondary traumatic stress disorder-An overview. In *Compassion Fatigue*; Routledge: London, UK, 1995; pp. 1–20.
157. Bride, B.E.; Robinson, M.M.; Yegidis, B.; Figley, C.R. Development and Validation of the Secondary Traumatic Stress Scale. *Res. Soc. Work. Pract.* **2004**, *14*, 27–35. [[CrossRef](#)]
158. Dominguez-Gomez, E.; Rutledge, D.N. Prevalence of secondary traumatic stress among emergency nurses. *J. Emerg. Nurs.* **2009**, *35*, 199–204, quiz 73–94. [[CrossRef](#)] [[PubMed](#)]
159. Ong, Y.T.; Sinnathamby, A.; Tan, J.H.; Ravindran, N.; Lim, S.X.; Hiew, A.W.H.; Ng, S.Y.; Ong, S.Y.K.; Krishna, L.K.R. Towards a Clinically Relevant Appreciation of the Cost of Caring: A Study of Palliative Care Physicians in Malaysia. *Am. J. Hosp. Palliat. Care.* **2024**, 10499091241298281, Epub ahead of print. [[CrossRef](#)] [[PubMed](#)]
160. Miljeteig, I.; Førde, R.; Rø, K.I.; Bååthe, F.; Bringedal, B.H. Moral distress among physicians in Norway: A longitudinal study. *BMJ Open.* **2024**, *14*, e080380. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
161. Galbany-Estragués, P.; Millán-Martínez, P. Escasez de enfermeras en España: Del caso global a la situación particular. Informe SESPAS 2024 [Shortage of nurses in Spain: From the global case to particular situation. SESPAS Report 2024]. *Gac Sanit.* **2024**, *38*, 102376. Spanish. [[CrossRef](#)] [[PubMed](#)]
162. Shanafelt, T.D.; Noseworthy, J.H. Executive Leadership and Physician Well-being: Nine Organizational Strategies to Promote Engagement and Reduce Burnout. *Mayo Clin. Proc.* **2017**, *92*, 129–146. [[CrossRef](#)]
163. Shanafelt, T.D.; Dyrbye, L.N.; West, C.P.; Sinsky, C.A. Potential Impact of Burnout on the US Physician Workforce. *Mayo Clin. Proc.* **2016**, *91*, 1667–1668. [[CrossRef](#)]
164. Maslach, C.; Leiter, M.P. Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry* **2016**, *15*, 103–111. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
165. Niedhammer, I.; Malard, L.; Chastang, J.F. Occupational factors and subsequent major depressive and generalized anxiety disorders in the prospective French national SIP study. *BMC Public Health* **2015**, *15*, 200. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
166. Wedegaertner, F.; Arnhold-Kerri, S.; Sittaro, N.A.; Bleich, S.; Geyer, S.; Lee, W.E. Depression- and anxiety-related sick leave and the risk of permanent disability and mortality in the working population in Germany: A cohort study. *BMC Public Health* **2013**, *13*, 145. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
167. Yates, M.; Samuel, V. Burnout in oncologists and associated factors: A systematic literature review and meta-analysis. *Eur. J. Cancer Care* **2019**, *28*, e13094. [[CrossRef](#)] [[PubMed](#)]
168. Oenning, N.S.X.; Ziegelmann, P.K.; Goulart, B.N.G.; Niedhammer, I. Occupational factors associated with major depressive disorder: A Brazilian population-based study. *J. Affect. Disord.* **2018**, *240*, 48–56. [[CrossRef](#)] [[PubMed](#)]
169. Bonde, J.P. Psychosocial factors at work and risk of depression: A systematic review of the epidemiological evidence. *Occup. Environ. Med.* **2008**, *65*, 438–445. [[CrossRef](#)] [[PubMed](#)]
170. Santa Maria, A.; Wörfel, F.; Wolter, C.; Gusy, B.; Rotter, M.; Stark, S.; Kleiber, D.; Renneberg, B. The Role of Job Demands and Job Resources in the Development of Emotional Exhaustion, Depression, and Anxiety Among Police Officers. *Police Q.* **2017**, *21*, 109–134. [[CrossRef](#)]
171. Zare, H.; Meyerson, N.S.; Nwankwo, C.A.; Thorpe, R.J., Jr. How Income and Income Inequality Drive Depressive Symptoms in U.S. Adults, Does Sex Matter: 2005-2016. *Int. J. Environ. Res. Public Health* **2022**, *19*, 6227. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
172. Woo, J.M.; Kim, W.; Hwang, T.Y.; Frick, K.D.; Choi, B.H.; Seo, Y.J.; Kang, E.H.; Kim, S.J.; Ham, B.J.; Lee, J.S.; et al. Impact of depression on work productivity and its improvement after outpatient treatment with antidepressants. *Value Health* **2011**, *14*, 475–482. [[CrossRef](#)] [[PubMed](#)]
173. Amer, S.; Elotla, S.F.; Ameen, A.E.; Shah, J.; Fouad, A.M. Occupational Burnout and Productivity Loss: A Cross-Sectional Study Among Academic University Staff. *Front. Public Health* **2022**, *10*, 861674. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
174. Melamed, S.; Kushnir, T.; Shirom, A. Burnout and risk factors for cardiovascular diseases. *Behav. Med.* **1992**, *18*, 53–60. [[CrossRef](#)] [[PubMed](#)]
175. Alameri, F.; Aldaheri, N.; Almesmari, S.; Basaloum, M.; Albeshr, N.A.; Simsekler, M.C.E.; Ugwuoke, N.V.; Dalkilinc, M.; Al Qubaisi, M.; Campos, L.A.; et al. Burnout and Cardiovascular Risk in Healthcare Professionals During the COVID-19 Pandemic. *Front. Psychiatry* **2022**, *13*, 867233. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
176. De Guillebon, E.; He, C.; Akhtar, S.; Pietrzak, R.H.; Ripp, J.; Peccoralo, L. Association of Psychological Safety with Burnout and Intent to Leave Among Physician Faculty in New York City. *J. Gen. Intern. Med.* **2024**. epub ahead of print. [[CrossRef](#)]



177. Musio, M.E.; Russo, M.; Barbieri, M.; Moro, A.; Zanini, M.; Sasso, L.; Bagnasco, A.; Catania, G. Influencing Factors of Nurses' Well-Being in Critical Care During Pandemic Era: A Systematic Review. *Public Health Nurs.* **2024**. *epub ahead of print*. [[CrossRef](#)] [[PubMed](#)]
178. Dean, W.; Talbot, S.; Dean, A. Reframing Clinician Distress: Moral Injury Not Burnout. *Fed. Pract.* **2019**, *36*, 400–440. [[PubMed](#)] [[PubMed Central](#)]
179. Maslach, C.; Schaufeli, W.B.; Leiter, M.P. Job Burnout. *Annu. Rev. Psychol.* **2001**, *52*, 397–422. [[CrossRef](#)] [[PubMed](#)]
180. Thomas, L.R.; Ripp, J.A.; West, C.P. Charter on physician well-being. *JAMA* **2018**, *319*, 1541–1542. [[CrossRef](#)] [[PubMed](#)]
181. Motluk, A. Do doctors experiencing burnout make more errors? *CMAJ* **2018**, *190*, E1216–E1217. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
182. Menon, N.K.; Shanafelt, T.D.; Sinsky, C.A.; Linzer, M.; Carlasare, L.; Brady, K.J.S.; Stillman, M.J.; Trockel, M.T. Association of Physician Burnout with Suicidal Ideation and Medical Errors. *JAMA Netw. Open* **2020**, *3*, e2028780. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.