AMERICAN PSYCHOLOGICAL ASSOCIATION

Professional Psychology: Research and Practice

ISSN: 0735-7028

2022, Vol. 53, No. 6, 564–573
https://doi.org/10.1037/pro0000483

Prevalence of Burnout Among Health Care Workers During Coronavirus Disease (COVID-19) Pandemic: A Systematic Review and Meta-Analysis

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The aim of this systematic review and meta-analysis study was to estimate the pooled prevalence of burnout among health care workers (HCWs), who worked in health centers during the coronavirus disease (COVID-19) outbreak, based on the Maslach Burnout Inventory (MBI) Questionnaire. A comprehensive search based on specific terms was performed through the online studies of Pubmed, Scopus, Web of Science, and ProQuest, until January 2022. The methodological quality of included studies was assessed using the National Institutes of Health (NIH) tool. Data analysis was carried out through the random-effects model, and the heterogeneity was investigated by I^2 statistic using the software STATA Version 16. In total, seven articles with 5,022 participants were included in the final analysis. Four studies with 4,419 participants reported the prevalence of burnout as percent in moderate and severe types for all three components of burnout syndrome. Our results showed that the 45% of pooled moderate and 37% of severe levels of emotional exhaustion, 49% of pooled moderate and 18% of severe levels of depersonalization, 38% of pooled moderate and 51% of pooled severe levels of reduced personal accomplishment. Whereas six studies with 4,838 sample size reported the mean prevalence of MBI-based burnout syndrome and the mean pooled prevalence of emotional exhaustion, depersonalization, and accomplishment was 21.57, 7.47, and 33.48, respectively. Based on our findings, HCWs who worked in health centers during COVID-19 outbreak, experienced significant burnout. Therefore, it is necessary to design and implement programs to deal with burnout among this populations.

This article was published Online First September 15, 2022.

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Thanks to guidance and advice from the "Clinical Research Development Unit of Baqiyatallah Hospital." The authors have no funding was received for this study. The authors have no conflict of interest to declare.

The present study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran, with code IR.BMSU.REC .1399.072.

All data collected and analyzed during the present study can be provided by the corresponding author on reasonable request.

All authors contributed to this study; Amir Vahedian-Azimi, Farshid Rahimi-Bashar, and Keivan Gohari-Moghadam designed the study. Amir Vahedian-Azimi, Sara Ashtari, and Akram Parandeh contributed to the concept of the review and meta-analysis, Amir Vahedian-Azimi, Sara Ashtari, and Akram Parandeh acquisition of data, analysis and interpretation of data, drafting the article. All authors edited and revised article and approved final version of article.

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Public Significance Statement
What is the public health significance of this article? This study suggests that health care workers (HCWs) who worked in health centers during the outbreak of COVID-19 and were in direct and/or indirect contact with COVID-19 patients experienced significant burnout. Burnout among HCWs is an important issue because it not only has an impact on their quality of life, but it can potentially affect the quality of care provided, increase medical errors, reduce patient safety, and even the influence on the mental health of their families and society. Therefore, it is necessary to design and implement programs to deal with burnout among this populations.

Keywords: COVID-19, SARS-CoV-2, psychological distress, burnout, meta-analysis

Supplemental materials: https://doi.org/10.1037/pro0000483.supp

Burnout is a psychological work-related stress syndrome which occurs as a negative reaction to occupational stressors (Maslach & Leiter, 2016). The concept of burnout was introduced in the early 1970s by psychoanalyst Freudenberger (1974) has subsequently been defined by Maslach et al. (Maslach & Jackson, 1981), consisting of three qualitative dimensions: emotional exhaustion and depersonalization, and reduce personal accomplishment. Burnout as a global health concern which can have the greatest impact on health care workers (HCWs) was a major issue for the recent decade. Before the coronavirus disease (COVID-19) pandemic, a systematic review and meta-analysis reported an overall prevalence of burnout symptoms of 11.23% among global nurses (Woo et al., 2020). Furthermore, burnout among physicians in the prepandemic period showed signs of increasing, rising by 11% between 2013 and 2017, from 40% to 51%.

The current COVID-19 pandemic has added to the already high levels of stress that medical professionals globally face (Amanullah & Ramesh Shankar, 2020; Vahedian-Azimi et al., 2020). HCWs, especially doctors and nurses caring for COVID-19 patients, face unpredictable events and emergencies situation that make them very frustrated, especially when they have to deal with an unknown diseases such as COVID-19 (De Hert, 2020). Besides, high workload, fear of infection, lack of enough time to recovery, and inadequate hospital facilities are important factors which put them under constant pressure. This workload leads to job dissatisfaction and as a result affects the quality of patient care, which gradually leads to burnout. During the COVID-19 pandemic, it is necessary to recognize the factors associated with burnout and also identify the ways to deal with them.

A previous cross-sectional survey, used the "Professional Quality of Life Questionnaire" (ProQoL) to assess burnout and despite the health crisis during the pandemic, showed similar burnout levels among Spanish health care professionals to prepandemic studies (Ruiz-Fernández et al., 2020). However, a study that used the Maslach Burnout Inventory (MBI) instrument showed that the physicians and nurses on the frontline wards had a significant lower frequency of burnout (13% vs. 39%; $p < .0001$) than those worked in usual wards (Wu et al., 2020). This difference can be related to different methods of assessing burnout.

In order to better understand the effect of COVID-19 on burnout among HCWs, it is necessary to analyze articles that have used the same measurement method. To our knowledge, no meta-analysis was performed to investigate burnout MBI-based prevalence in HCWs during the COVID-19 pandemic. Only a meta-analysis had evaluated the psychological impact of COVID-19 among HCWs, which reported a pooled prevalence of 37.4% burnout based on three studies with different instrument (Batra et al., 2020). Therefore, we conducted this systematic review and meta-analysis study on cross-sectional studies to estimate the pooled prevalence of burnout among HCWs during the COVID-19 pandemic based on the MBI instrument.

Method

Design and Search Strategy

The protocol of systematic review and meta-analysis on study including search strategies, eligibility criteria for study selection and methods for extracting data, was developed according to "Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines" (Moher et al., 2009). To estimate the pooled prevalence of burnout in HCWs based on MBI questionnaire during the COVID-19 pandemic previously published papers indexed in Pubmed (ncbi.nlm.nih.gov), Web of Science (webofknowledge.com), Scopus (scopus.org), and ProQuest were searched from January 1, 2020 to January 10, 2022. The search strategy followed by MeSH terms and keywords, including "coronavirus diseases-19," OR "SARS-CoV-2," OR "COVID-19," OR "novel coronavirus 2019," OR "Wuhan coronavirus" and "prevalence of burnout," and "health care workers," and "Maslach Questionnaire," alone or combination. In addition, for preprints, we searched medRxiv (https://www.medrxiv.org/). The full search strategy is available in Supplemental Material. The present study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran, with code IR.BMSU.REC.1399.072.

Eligibility Criteria

Studies were selected based on following inclusion criteria: (a) directly related to the context of the impact of COVID-19 pandemic and reported the burnout; (b) used the MBI questionnaire as a tool to assess burnout; (c) reported the prevalence of burnout among HCWs, those worked in health centers during COVID-19 outbreak and were in direct and/or indirect contact with COVID-19 patients, including physicians (specialist, surgeon, resident, and intern), nurses, nursing assistants, physiotherapist, psychologists, and radiologists as technicians; (d) available as full-texts. We excluded studies if they: (a) studies that assessed burnout among people other than HCWs; (b) interventional studies; (c) studies with insufficient data on the three components of burnout syndrome based on the

MBI questionnaire; (d) studies with unclear methods; (e) studies that were not in English language; (f) case reports, reviews, and duplicates studies.

Introducing MBI Tool

MBI is used to measure burnout which was regarded as the "measure of choice" for the assessment of burnout (Maslach et al., 1996). The MBI is a 22-item questionnaire on a 5-point Likert scale which assesses the three theoretical components of burnout syndrome, entities emotional exhaustion (feelings of emotional overextension by one's work), depersonalization (unfeeling and impersonal response toward patients), and personal accomplishment (feelings of competence and successful achievement in ones work) (Maslach & Jackson, 1981). Higher scores in the emotional exhaustion and depersonalization scales indicate greater burnout, whereas higher scores in the personal accomplishment subscale indicate less burnout (Doulougeri et al., 2016; Marcelino et al., 2012). "Cutoffs for moderate and severe emotional exhaustion were ≥17 and ≥27, for moderate and severe depersonalization ≥7 and ≥13, and for moderate and severe reduced personal accomplishment ≤38 and ≤21" (Giusti et al., 2020, p. 3; Maslach & Jackson, 1981, p. 100).

Selection of Studies and Data Extraction

After searching, all results were exported to the EndNote library for duplication. After removing duplicates as well as articles without full text, two independent investigators performed screening independently and did not know each other's decisions. In case of any disagreement, it was resolved upon discussion and judgment of a third independent reviewer. The Cohen's kappa (κ) coefficient was calculated to evaluate the agreement of the two investigators. The inter-authors reliability based on κ statistics was 84%. All articles were first screened for the title and then promoted to abstract screening if relevant. The full text of the selected abstracts was then evaluated to determine the eligibility of articles for entry. If an article was not included, the reason for deletion would be stated.

Data components including general information and outcomes related to prevalence of burnout from each eligible study were extracted as follows; the name of the first author, year of study, place of study (country), population, sample size, study design, gender, and age. Prevalence of three components of burnout syndrome, including emotional exhaustion, depersonalization and personal accomplishment among HCWs, depending on how it was recorded in each study, were extracted in the form of a percent (for two categorize of moderate and severe) and/or mean (M) ± standard deviation (SD).

Quality Assessment

The quality assessment was performed using National Institutes of Health (NIH) quality assessment tool (https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools) to assess the quality of cross-sectional studies. Eligible studies were rated according to the dictionary and guidelines of tool. After evaluating all study components, the overall rating was determined using the criteria set out in the tool. Based on the number of "yes" responses, a rating of good (7–9), medium (4–6), or poor (≤3) was assigned to each study.

Statistical Analysis

The overall prevalence and 95% confidence intervals (CI) of burnout among HCWs has pooled using the software STATA 16.0 (StataCorp, College Station, TX, USA), and the significant level was considered as 0.05. Due to methodologic variations and sample diversity across studies, the random-effects model was used to extract the pooled estimate. We applied the fixed-effect model when the data were homogeneous. When the cause of heterogeneity was not known, the random-effect model was used. Heterogeneity was assessed by the I^2 statistic, which measures the percentage of variance resulting from true differences in the effect sizes rather than the sampling error. Substantial heterogeneity was defined as $I^2 >$ 75%. I^2 between 25% and 75% and less than 25% was considered moderate and mild heterogeneity, respectively (Higgins & Green, 2011). Forest plot was used to graphically represent the study-specific and pooled prevalence estimates for overall and subgroup analysis. To explore the sources of heterogeneity, meta-regression analysis was done based on age and gender. Moreover, to assess the publication bias, Egger's (Egger et al., 1997) and Begg's (Begg & Mazumdar, 1994) tests were conducted.

Results

Search Outcomes

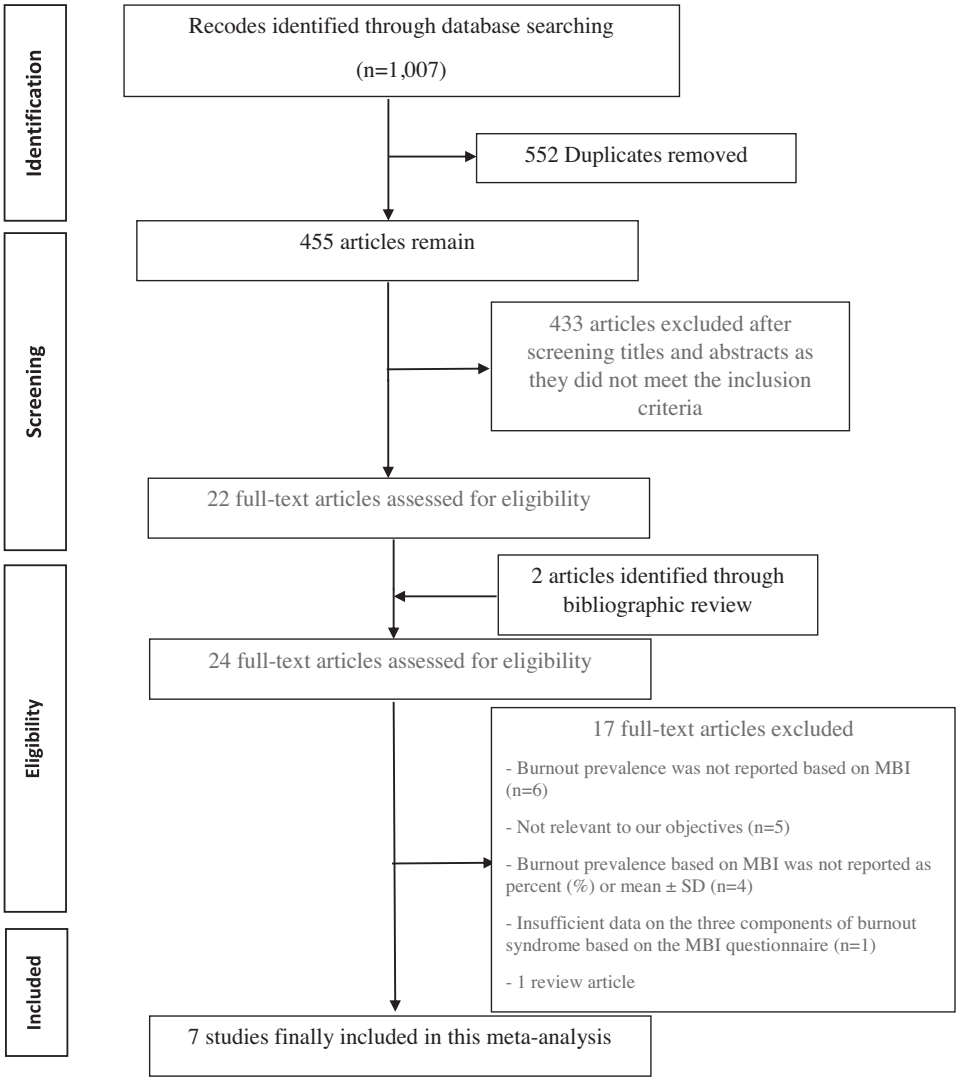
In total, 1,007 records were screened for their title, abstract, and keywords. After removing duplicates and articles which did not meet the inclusion criteria, we reviewed the full text of 22 articles. Hence, we reviewed the bibliographies of retrieved articles and found two more relevant studies. So, 24 full text articles were reviewed and 17 papers out of these 24 articles were excluded from the study as follows; (a) burnout prevalence was not reported based on MBI questionnaire ($n = 6$), (b) not relevant to our objectives ($n = 5$), (c) burnout prevalence based on MBI was not reported as percent (%) or $M \pm SD$ ($n = 4$), (d) and (e) insufficient data on the three components of burnout syndrome based on the MBI questionnaire ($n = 1$), and (f) review article ($n = 1$). Finally, we analyzed data from seven studies with 5,022 participants satisfying the inclusion criteria. PRISMA flowchart of study selections for the systematic review, along with the reasons for exclusion, is presented in Figure 1.

Studies Characteristics

The characteristics of studies included in the meta-analysis are presented in Table 1. All studies were cross-sectional in nature and conducted during the period of the COVID-19 pandemic among HCWs to assess the prevalence of burnout using the MBI questionnaire. Among seven studies, three were from Italy (Giusti et al., 2020; Orrù et al., 2021; Varani et al., 2021), two from China (Cao et al., 2020; Hu et al., 2020), one from Iran (Jalili et al., 2021), and one from the United State of America (USA; Sagherian et al., 2020). The mean age of study participants ranged from 30.9 to 46.4 years. The sample sizes in the studies varied from 37 to 3,290. Among seven studies, three studies from Italy (Giusti et al., 2020), China (Hu et al., 2020), and Iran (Jalili et al., 2021) reported the prevalence of burnout in two forms of a percent and mean. Three studies from the USA, Italy, and China only reported the mean of the prevalence of burnout, and one study from Italy reported the percentage of burnout prevalence in the moderate and severe categories based on MBI among HCWs.

Figure 1

PRISMA Flowchart Detailing the Disposition of Screened, Included, and Excluded Records



Note. PRISMA = preferred reporting items for systematic reviews and meta-analysis; MBI = Maslach Burnout Inventory.

The quality scores of the included study evaluation as assessed using the NIH quality assessment tool, and six studies were of good quality (score range 7–9), and one study was of medium quality (score range: 4–6) due to the low sample size and only reported the mean of the prevalence of burnout. Two reviewers were assessed the quality of studies, and disagreements among them were resolved with the final judgment offered by the senior investigator. The rating of two reviewers was compared and the interrater agreement was calculated using κ index (Supplemental Material Table 1).

Pooled Prevalence of Burnout

The burnout prevalence based on MBI was reported as percent in moderate and severe type for all three components of burnout syndrome in four studies with 4,419 participants. Thus, we estimated the pooled prevalence due to moderate and severe for three components of burnout syndrome separately. The pooled moderate and severe prevalence of emotional exhaustion were 45% (95% CI [22%–68%], $I^2 = 99.38\%$, $p < .001$), and 37% (95% CI [27%–48%], $I^2 = 96.7\%$, $p < .001$), respectively (Figure 2A and 2B). The pooled moderate and severe prevalence of depersonalization were 49% (95% CI [10%–89%], $I^2 = 99.88\%$, $p < .001$), and 18% (95% CI [10%–25%], $I^2 = 96.03\%$, $p < .001$), respectively (Figure 3A and 3B). The pooled moderate and severe prevalence of accomplishment were 38% (95% CI [12%–65%], $I^2 = 99.64\%$, $p < .001$), and 51% (95% CI [25%–77%], $I^2 = 96.59\%$, $p < .001$), respectively (Figure 4A and 4B). I^2 test indicated significant heterogeneity among the moderate and severe pooled prevalence of three components of burnout syndrome.

Besides, six studies were reported the mean MBI-based prevalence for three components of burnout syndrome with a sample size of 4,838. The pooled prevalence of emotional exhaustion, depersonalization, and accomplishment based on mean were 21.57

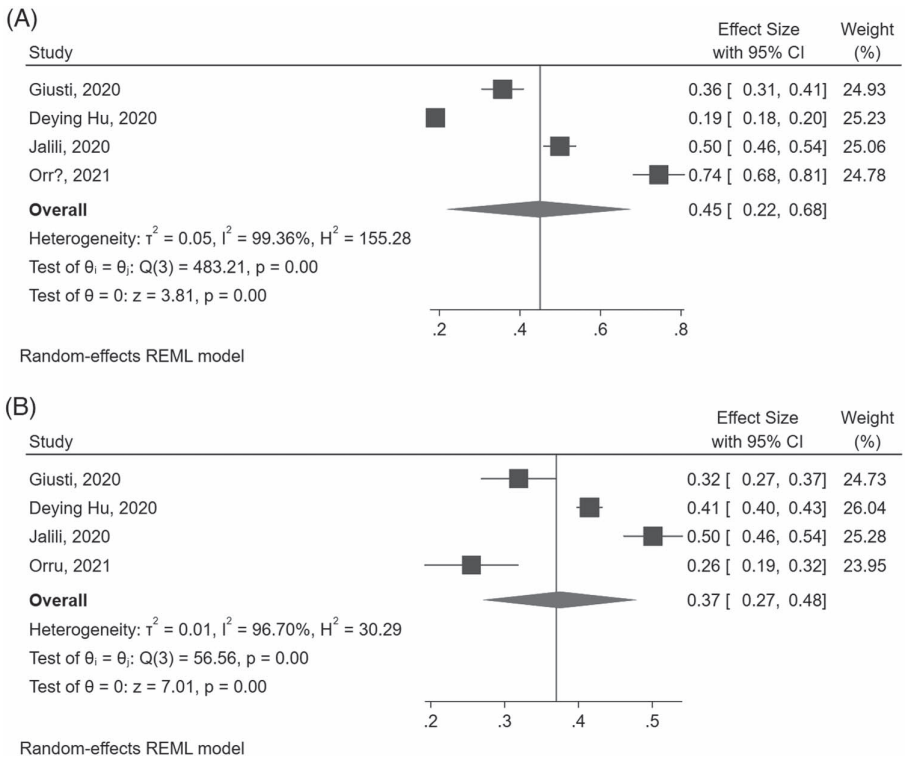
Table 1
Characteristics of the Studies Included

Refrences	Year	Country	Population	Study design	Sample size	Age (*M*)	Male (%)	Quality assessment	
								Score	Rating
Giusti et al. (2020)	2020	Italy	Physician, nurse, nurse assistant and physiotherapist	Cross sectional	330	44.6	37.4	9	Good
Sagherian et al. (2020)	2020	USA	Frontline nurses who were caring for COVID-19 patients	Cross sectional	421	38.4	5.94	7	Good
Varani et al. (2021)	2020	Italy	Physicians and nurses	Cross sectional	145	42.0	32.0	7	Good
Hu et al. (2020)	2020	China	Frontline nurses who were caring for COVID-19 patients	Cross sectional	3,290	30.9	12.9	9	Good
Cao et al. (2020)	2020	China	Doctors, nurses and technicians	Cross sectional	37	32.8	21.6	6	Medium
Jalili et al. (2021)	2020	Iran	Specialist, resident, intern and nurse	Cross sectional	615	34.4	33.8	8	Good
Orrù et al. (2021)	2021	Italy	Physicians, surgeons, nurse	Cross sectional	184	46.4	48.9	7	Good

Refrences	Emotional exhaustion based on MBI			Depersonalization based on MBI			Reduce personal accomplishment		
	Moderate (%)	Severe (%)	*M* (*SD*)	Moderate (%)	Severe (%)	*M* (*SD*)	Moderate (%)	Severe (%)	*M* (*SD*)
Giusti et al. (2020)	35.7	31.9	22.3	14.0	12.1	4.7	40.1	34.3	33.7
Sagherian et al. (2020)	NR	NR	32.21 (12.01)	NR	NR	11.13 (6.99)	NR	NR	32.95 (8.0)
Varani et al. (2021)	NR	NR	12.7	NR	NR	7.1	NR	NR	36.4
Hu et al. (2020)	19.0	41.5	23.44	14.7	27.6	6.77	22.2	39.5	34.83
Cao et al. (2020)	NR	NR	11.9	NR	NR	4.8	NR	NR	35.9
Jalili et al. (2021)	4.99	50.1	2.6	86.8	13.2	10.2	15.1	85.5	27.3
Orrù et al. (2021)	74.5	25.5	NR	82.6	17.4	NR	7.6	2.4	NR

Note. MBI = Maslach Burnout Inventory; NR = not reported.

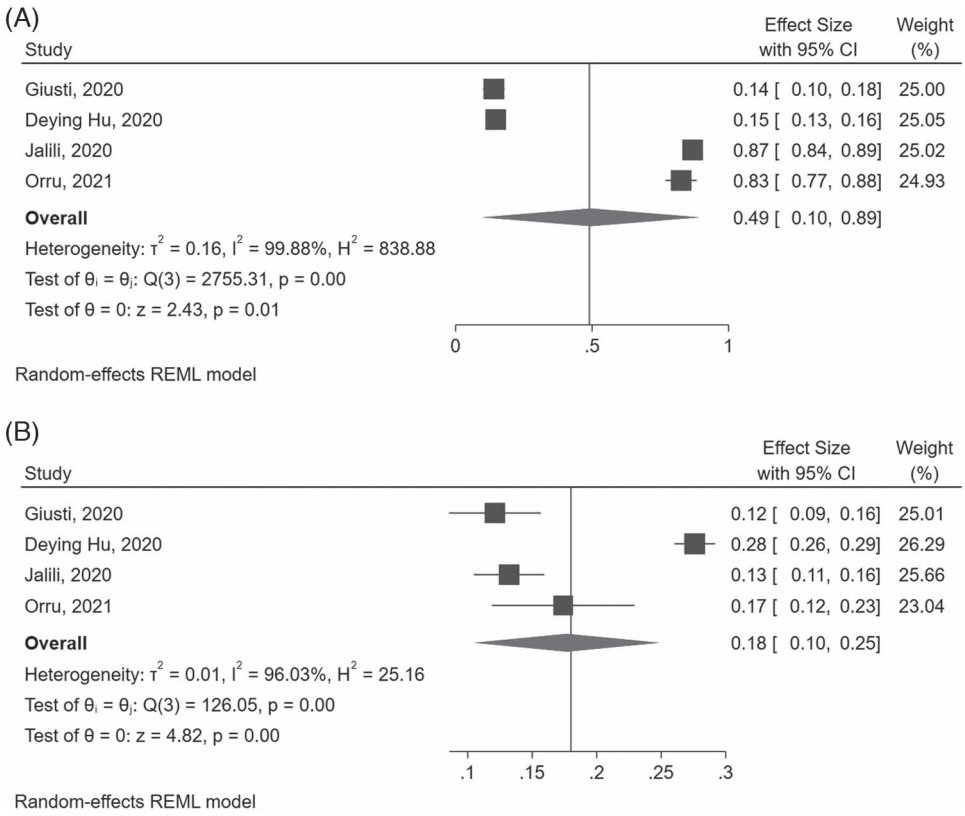
Figure 2
Forest Plot of MBI-Based Pooled Prevalence in (A) Mild-to-Moderate and (B) Severe for Emotional Exhaustion



Note. MBI = Maslach Burnout Inventory; CI = confidence interval; REML = Restricted (or residual, or reduced) Maximum Likelihood.

Figure 3

Forest Plot of MBI-Based Pooled Prevalence in (A) Mild-to-Moderate and (B) Severe for Depersonalization



Note. MBI = Maslach Burnout Inventory; CI = confidence interval; REML = Restricted (or residual, or reduced) Maximum Likelihood.

(95% CI [15.25–27.89], $I^2 = 99.68\%$, $p < .001$), 7.47 (95% CI [5.31–9.62], $I^2 = 99.46\%$, $p < .001$), and 33.48 (95% CI [30.81–36.15], $I^2 = 99.26\%$, $p < .001$), respectively (Figure 5A–5C). The I^2 test indicated significant heterogeneity among the pooled prevalence of three components of burnout syndrome based on the mean.

Meta-Regression

We performed a meta-regression analysis to find heterogeneity source of burnout prevalence among HCWs. The variables of age and gender of the subjects were used for exploration the heterogeneity for three components of burnout syndrome. Meta-regression analysis for exploring heterogeneity among studies according to three components of burnout is presented in Table 2. The results showed the association between gender and the moderate prevalence of emotional exhaustion ($p = .003$), and an inverse association between age of the participant and the severe prevalence of emotional exhaustion ($p = .026$). Besides, the association between the age of participant and the moderate prevalence of accomplishment was ($p = .021$) observed.

Publication Bias

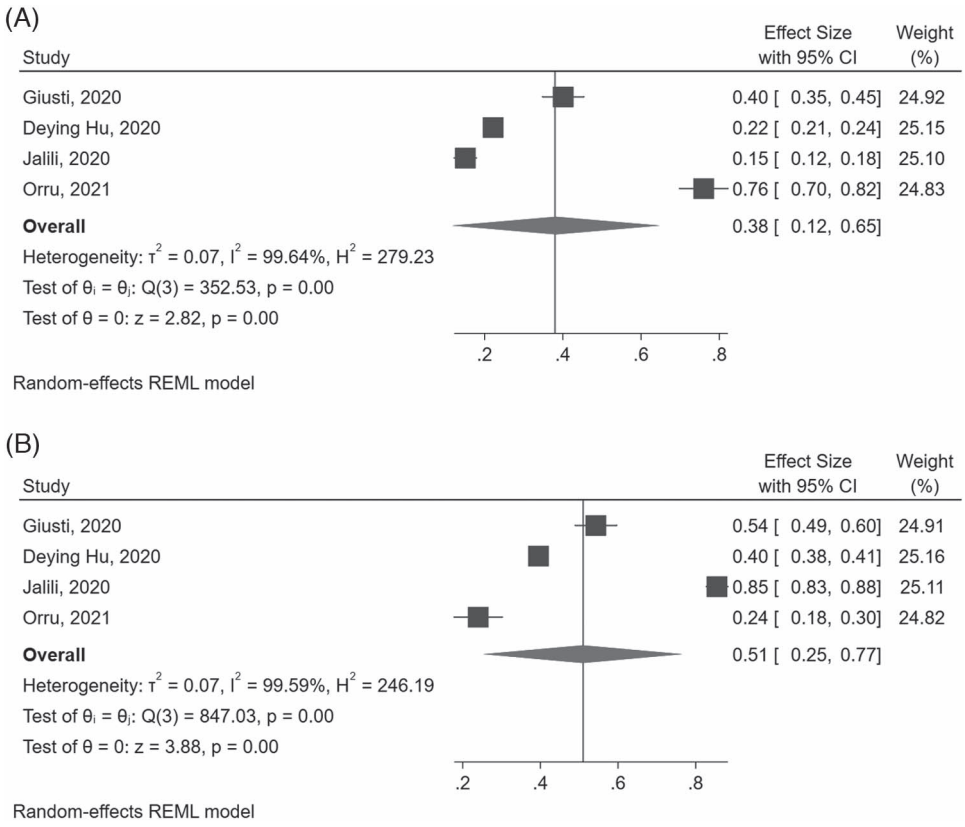
The publication bias was assessed with Egger and Begg test indices. As indicated by the p values for the pooled moderate, severe, and mean prevalence of emotional exhaustion (Egger test: $p = .027$ and Begg test: $p = .308$), (Egger test: $p = .207$ and Begg test: $p = .910$), and (Egger test: $p = .127$ and Begg test: $p = .547$), respectively. P values of Egger and Begg tests for the pooled moderate, severe, and mean prevalence of depersonalization indicated nonsignificant coefficient values for publication bias (Egger test: $p = .436$ and Begg test: $p = .734$), (Egger test: $p = .428$ and Begg test: $p = .265$), and (Egger test: $p = .339$ and Begg test: $p = .292$), respectively. P values of Egger and Begg tests for the third component of burnout means accomplishment according to pooled moderate, severe, and mean prevalence were as follows; (Egger test: $p = .019$ and Begg test: $p = .308$), (Egger test: $p = .521$ and Begg test: $p = .265$), and (Egger test: $p = .137$ and Begg test: $p = 1$), respectively.

Discussion

To our knowledge, this is the first study to estimate the pooled prevalence of MBI-based burnout impact of the COVID-19 pandemic among HCWs. This pooled analysis included seven studies with 5,022 participants. Among these studies, four studies with 4,419 participants reported the prevalence of burnout as percent in moderate and severe type for all three components of burnout syndrome. Our results showed that the 45% of pooled moderate and 37% of severe levels of emotional exhaustion, 49% of pooled

Figure 4

Forest Plot of MBI-Based Pooled Prevalence in (A) Mild-to-Moderate and (B) Severe for Accomplishment



Note. MBI = Maslach Burnout Inventory; CI = confidence interval; REML = Restricted (or residual, or reduced) Maximum Likelihood.

moderate and 18% of severe levels of depersonalization, 38% of pooled moderate and 51% of pooled severe levels of reduced personal accomplishment. This study demonstrated that nearly half of the HCWs experienced the moderate levels of emotional exhaustion and depersonalization. However, more than half of the HCWs experienced the severe levels of reduced personal accomplishment. Additionally, six studies with 4,838 sample size reported the mean prevalence of MBI-based burnout syndrome. According to our findings, the pooled prevalence of emotional exhaustion, depersonalization, and accomplishment were 21.57, 7.47, and 33.48, respectively, which was identified as the moderate levels for three components based on the cut-off point.

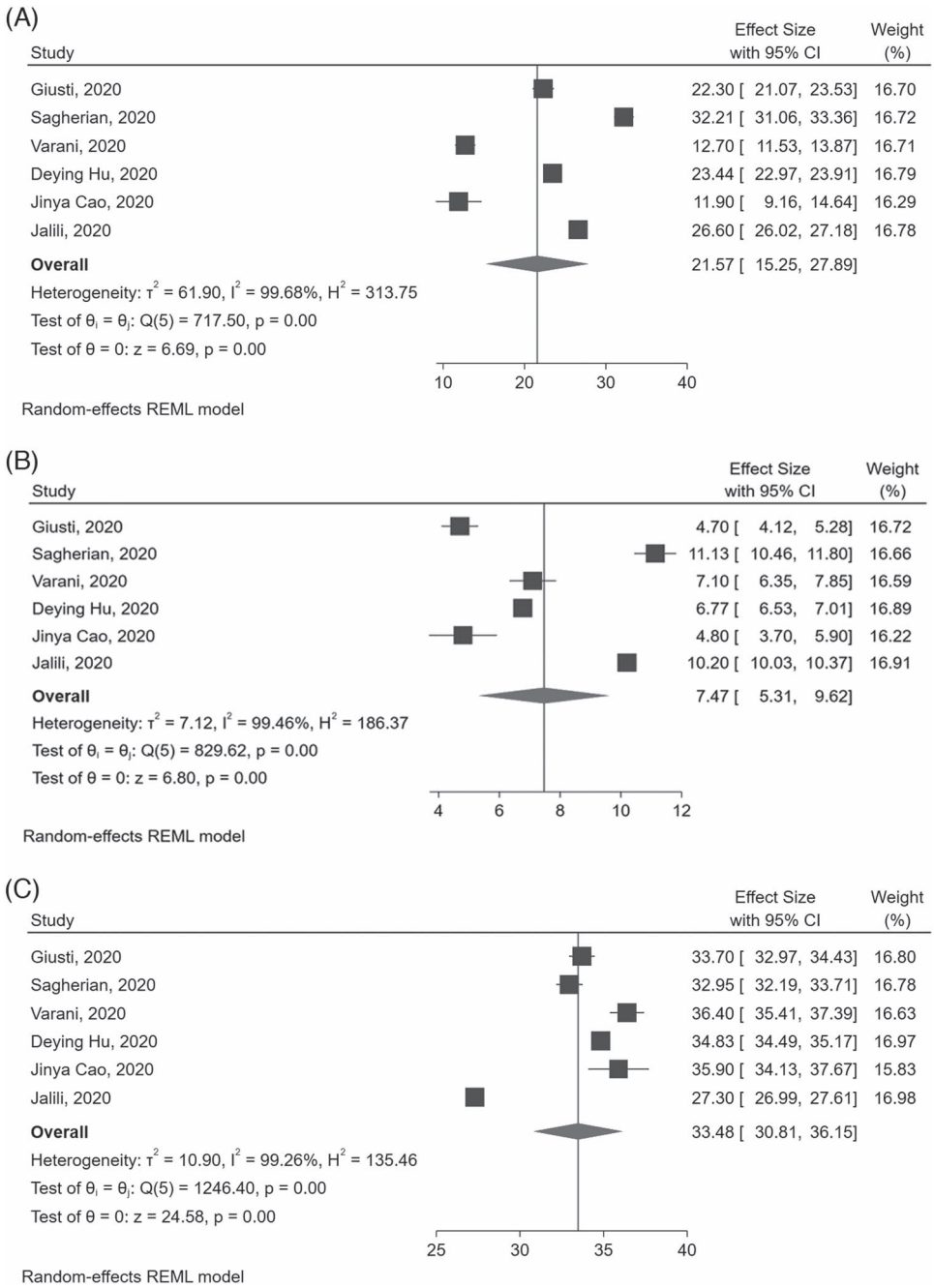
In line with our study, Giusti et al. (2020) examined the prevalence of burnout in 330 HCWs using MBI-Human Service Survey (MBI-HSS) and indicated that more than two-third of participants had reported moderate to severe levels of emotional exhaustion and reduced personal accomplishment, and more than a quarter of the sample reported moderate to severe levels of depersonalization. This level of physician burnout was supported by Hu et al., (2020), Jalili et al. (2021), and Orrù et al. (2021), whom also assessed MBI-based burnout.

Our analyses revealed a significant heterogeneity in prevalence of burnout according to three components based on MBI index. To explore this heterogeneity, we examined subgroups of studies such as age and gender. Meta-regression analysis has confirmed that the emotional exhaustion prevalence in moderate levels were increased in female gender and prevalence of severe levels were decreased with age. However, the prevalence of moderate levels of reduced personal accomplishment was increased with age. While, we did not find any association between age or gender and depersonalization prevalence in both moderate and severe levels. Therefore, heterogeneity was substantially reduced when the prevalence of burnout was calculated separately according to age and gender. These results are consistent with previous studies have reported that emotional exhaustion in women is higher than their male counterparts (Barello et al., 2020; Giusti et al., 2020; Jalili et al., 2021; Shah et al., 2020). Furthermore, men may experience fewer physical symptoms (Barello et al., 2020). The experience of further burnout in female HCWs can be related to their responsibility toward their children as well as the imbalance of life due to the COVID-19 outbreak. Contrary to these findings, Deldar et al. study reported that burnout was not related to gender (Deldar et al., 2018). Therefore, further studies are needed to confirm these findings.

Burnout among HCWs is an important issue because it not only has an impact on their quality of life (Shanafelt et al., 2012), but it can potentially affect the quality of care provided, increased

Figure 5

Forest Plot of MBI-Based Pooled Mean Prevalence for (A) Emotional Exhaustion; (B) Depersonalization; and (C) Accomplishment Components of Burnout Syndrome



Note. MBI = Maslach Burnout Inventory; CI = confidence interval; REML = Restricted (or residual, or reduced) Maximum Likelihood.

medical errors, reduce patient safety, and even the influence on the mental health of their families and society (Chemali et al., 2019; Hartzband & Groopman, 2020). The current pandemic has brought with the ways of working that physicians need to adapt to, in addition to monitoring and timely treatment of these conditions, developing ways to cope with burnout is important. Awareness of health managers and policy makers about burnout is important in the prevention and appropriately address it. Various studies have suggested different methods to prevent or reduce burnout, which can be divided into two categories: Individual methods and organizational approaches includes a formalized programs to burnout reduction offered within the institution or by the organization,

Table 2
Meta-Regression Analysis for Exploring Heterogeneity Among Studies According to Three Components of Burnout

	Emotional exhaustion			Depersonalization			Accomplishment		
Variable	Coefficient	*SE*	*p* value	Coefficient	*SE*	*p* value	Coefficient	*SE*	*p* value
Moderate									
Age	0.0205	0.0164	.211	0.00899	0.0374	.810	0.0304	0.0132	.021*
Gender	0.0140	0.0047	.003*	0.01624	0.0153	.289	0.0134	0.0085	.118
Severe									
Age	−0.0119	0.0053	.026*	−0.0055	0.0055	.311	−0.0144	0.0222	.517
Gender	−0.0041	0.0041	.320	−0.0036	0.0022	.098	−0.0022	0.0122	.854
Mean									
Age	−0.0557	0.7331	.939	−0.0663	0.2472	.788	0.0951	0.3050	.755
Gender	−0.2541	0.2858	.374	−0.0815	0.0985	.408	−0.0579	0.1284	.652

Note. *SE* = standard error.
* $p < .05$ was considered as significant.

monitoring and supporting by trained mental health professionals as counselors via online or telephone access, and training during medical school and residency education to stress management techniques and pandemic planning (Amanullah & Ramesh Shankar, 2020; Dimitriu et al., 2020; Fessell & Cherniss, 2020; Jose et al., 2020).

The strength of the study is that, to draw conclusions on the prevalence of burnout amidst the COVID-19 pandemic, only papers that used MBI were included in this pooled analysis. However, there are some limitations in this study that are as follows; all studies included in this meta-analysis were cross-sectional which only provided a snapshot of the existing situation with no exploration of longitudinal aspects. Due to the lack of data on the prevalence of MBI-based burnout according to gender or department of work for HCWs, it was not possible to estimate the pooled prevalence according to them.

Conclusion

This study suggests that HCWs who worked in health centers during the outbreak of COVID-19 and were in direct and/or indirect contact with COVID-19 patients experienced significant burnout. Therefore, it is necessary to design and implement programs to deal with burnout among this populations. Future studies are necessary to identify the frequency, associated factors, and effective preventive strategies of this phenomenon.

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Received March 13, 2021
Revision received May 28, 2022
Accepted July 13, 2022 ■