Prevalence and Correlates of Depression, Anxiety, and Burnout Among Physicians and Postgraduate Medical Trainees: A Scoping Review of Recent Literature

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Abstract

Background: The mental well-being of physicians is increasingly recognized as vital, both for their personal health and the quality of care they provide to patients. Physicians face a variety of mental health challenges, including depression, anxiety, and burnout, which have become prevalent issues globally. These mental health concerns are like those found in the general population but are particularly significant in the demanding healthcare setting.

Objective: This review aims to explore the prevalence and correlates of depression, anxiety, and burnout among physicians and residents in training.

Methods: A comprehensive literature review was conducted, searching databases such as Medline, PubMed, Scopus, CINAHL, and PsycINFO. The review focused on studies published from 2021 to 2024 that addressed the prevalence of these mental health conditions in physicians and residents. The findings, in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, were summarized in detailed tables.

Results: Following titles and abstracts screening, 196 publications were selected for full-text review, with 92 articles ultimately included in the analysis. The results revealed significant variability in the prevalence of burnout, depression, and anxiety. Burnout rates among physicians ranged from 4.7% to 90.1% and from 18.3% to 94% among residents. Depression prevalence ranged from 4.8% to 66.5% in physicians and from 7.7% to 93% in residents. Anxiety rates were between 8% and 78.9% in physicians and 10% to 63.9% in residents. Notably, women reported higher rates of all three conditions compared to men. Key factors influencing these mental health conditions included demographics (age, gender, education, financial status, family situation, occupation), psychological conditions, social factors (stigma, family life), work organization (workload, work conditions), and COVID-19-related issues (caring for COVID-19 patients, fear of infection, working in high-risk areas, concerns about PPE, and testing positive).

Conclusions: This review indicates a high prevalence of burnout, depression, and anxiety among physicians and residents, with female participants consistently showing higher rates than males. These findings can guide policymakers and healthcare administrators in designing targeted programs and interventions to help reduce these mental health issues in these groups.

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Prevalence and Correlates of Depression, Anxiety, and Burnout Among Physicians and Postgraduate Medical Trainees: A Scoping Review of Recent Literature

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Abstract

Background: The mental well-being of physicians is increasingly recognized as vital, both for their personal health and the quality of care they provide to patients. Physicians face a variety of mental health challenges, including depression, anxiety, and burnout, which have become prevalent issues globally. These mental health concerns are like those found in the general population but are particularly significant in the demanding healthcare setting. **Objective**: This review aims to explore the prevalence and correlates of depression, anxiety, and burnout among physicians and residents in training. **Methods**: A comprehensive literature review was conducted, searching databases such as Medline, PubMed, Scopus, CINAHL, and PsycINFO. The review focused on studies published from 2021 to 2024 that addressed the prevalence of these mental health conditions in physicians and residents. The findings, in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, were summarized in detailed tables. **Results**: Following titles and abstracts screening, 196 publications were selected for full-text review, with 92 articles ultimately included in the analysis. The results revealed significant variability in the prevalence of burnout, depression, and anxiety. Burnout rates among physicians ranged from 4.7% to 90.1% and from 18.3% to 94% among residents. Depression prevalence ranged from 4.8% to 66.5% in physicians and from 7.7% to 93% in residents. Anxiety rates were between 8% and 78.9% in physicians and 10% to 63.9% in residents. Notably, women reported higher rates of all three conditions compared to men. Key factors influencing these mental health conditions included demographics (age, gender, education, financial status, family situation, occupation), psychological conditions, social factors (stigma, family life), work organization (workload, work conditions), and COVID-19-related issues (caring for COVID-19 patients, fear of infection, working in high-risk areas, concerns about PPE, and testing positive). **Conclusion**: This review indicates a high prevalence of burnout, depression, and anxiety among physicians and residents, with female participants consistently showing higher rates than males. These findings can guide policymakers and healthcare administrators in designing targeted programs and interventions to help reduce these mental health issues in these groups.

Keywords: physicians, residents, prevalence, burnout, depression, anxiety

Introduction

In the demanding and high-stress environment of the healthcare profession, the mental well-being of physicians is increasingly recognized as a critical component of both individual health and patient care quality. Ensuring a robust and capable cadre of physicians is fundamental to the effectiveness of any nation's healthcare infrastructure [1]. The suboptimal mental health and wellness of healthcare personnel have organizational repercussions for patient safety, satisfaction, and overall experience [1]. Physicians can experience a wide array of mental health conditions alongside various challenges impacting their overall wellness, including burnout. Like the broader populace, prevalent mental health issues among physicians include depression, anxiety, and burnout [2]. Depression, anxiety, and burnout represent significant challenges faced by physicians worldwide [3-9], impacting not only their personal lives but also their professional performance and the broader healthcare system. As frontline providers, physicians bear the crucial duty of delivering top-tier medical care to patients

amidst the intricacies of healthcare systems, rapidly evolving medical knowledge, and the emotional rigors of patient engagements. Intense work settings, substantial workloads, extended shifts, resource constraints, organizational changes, and a culture characterized by blame and apprehension have all been identified as contributing elements[10-12], increasing the susceptibility of physicians to mental health issues. Physicians and residents often avoid seeking mental health support due to stigma and concerns over their professional reputations. Many fear that acknowledging psychological issues such as burnout, anxiety, or depression might be seen as a weakness [2] and negatively impact their careers. A 2018 study by Aaronson et al. identified key barriers to mental health care access during residency, highlighting a lack of time, confidentiality concerns, and potential career consequences as major deterrents [13]. Additionally, notable medical professionals have publicly discussed their own mental health struggles, further illustrating the damaging effects of stigma within the medical field [2].

Depression ranks as the primary contributor to global ill health and disability. It is characterized by persistent feelings of sadness, fatigue, hopelessness, loss of appetite, and loss of interest or pleasure in activities[14], and it is a prevalent mental health condition among physicians. Approximately 280 million people in the world have depression, and more than 700, 000 people die due to suicide every year [14]. Studies consistently report higher rates of depression among physicians compared to the general population [15-17]. Numerous people grappling with mental health difficulties encounter insufficient support structures and are discouraged by the social stigma attached to such issues, impeding their capacity to access the essential treatment needed to pursue fulfilling and productive lives, a circumstance in which physicians are not exempt. Mata et al. conducted a significant systematic review and meta-analysis that brought together findings from 54 distinct cross-sectional and longitudinal studies encompassing more than 17,500 resident physicians across 18 nations. Regardless of the country or specialty under investigation, similar rates of depression symptoms among physicians were observed. The combined assessment of depression caseness, indicating the proportion of physicians exhibiting clinically significant depressive symptoms, was calculated at 28.8% (with a 95% confidence interval of 25.3–32.5%) [18].

Anxiety is another common mental health challenge faced by physicians. In 2019, approximately 301 million individuals globally experienced anxiety disorders, which stood as the most prevalent among all mental health conditions, characterized by feelings of apprehension, worry, and tension [19]. The pressure to make critical decisions, maintain clinical competence, and provide optimal care in high-stakes situations can contribute to heightened anxiety levels among physicians. Moreover, the rapid pace of medical advancements, coupled with the need to keep abreast of new diagnostic and treatment modalities, can exacerbate feelings of uncertainty and insecurity, further impacting physician well-being. Numerous studies have demonstrated a higher prevalence of anxiety among physicians [6, 20, 21]. A cross-sectional study conducted by Gong et al., among 2,641 physicians working in public hospitals in China found that approximately 25.67% of doctors displayed signs of anxiety, while 28.13% exhibited symptoms of depression, and 19.01% experienced both anxiety and depression. These mental health challenges among the surveyed physicians were linked with self-reported declines in physical well-being, instances of workplace violence, extended work hours surpassing 60 per week, frequent night shifts occurring twice or more weekly, and a lack of consistent physical activity [22].

Freudenberger, a psychologist, introduced the notion of burnout in a paper titled "Staff Burnout,"[23] and its recognition gained traction with the introduction of the Maslach Burnout Inventory (MBI) assessment tool by Maslach and Jackson in 1981[24]. Burnout arises as an adverse workplace condition due to prolonged exposure to stress associated with one's job [25]. It is often described as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment [26]. It is particularly prevalent among individuals who are employed in roles that involve frequent direct interaction with others [27] and is prevalent among physicians across various specialties and practice settings [28-33]. The chronic stressors inherent in medical practice, such as heavy workloads, time

pressures, and the emotional toll of patient care, can lead to feelings of burnout over time. Physician burnout has garnered more focus over the years [34, 35]. Physicians experiencing burnout tend to make more medical errors [36, 37], are more inclined to leave their positions [38], express lower job satisfaction [39], and have implications on healthcare costs [37]. Also, burnout among physicians has been associated with poorer patient perceptions of care [40], making it a significant concern for healthcare organizations and policymakers. In a cross-sectional study conducted by O'Dea et al., among 683 general practitioners (constituting 27.3% of practicing Irish general practitioners), 52.7% reported significant emotional exhaustion, 31.6% scored high on depersonalization, and 16.3% exhibited low levels of personal accomplishment. Overall, 6.6% experienced all three symptoms, meeting the criteria for burnout [41].

Despite growing recognition of the importance of addressing mental health issues among physicians, there remains a need for a comprehensive understanding of the prevalence and correlates of depression, anxiety, and burnout within this population. The primary objective of this scoping review is to map the existing literature on the prevalence and correlates of depression, anxiety, and burnout among physicians. It aims to provide insights into the scope and magnitude of mental health challenges faced by physicians and medical trainees (residents and fellows) across different specialties, practice settings, and geographic regions. Specifically, this scoping review will address the following: The prevalence of depression, anxiety, and burnout among physicians across different specialties and practice settings; Influence of associated factors e.g., demographic characteristics (e.g., age, gender), professional factors (e.g., years of experience, work hours), social and psychological factors on the prevalence of depression, anxiety, and burnout among physicians. The review seeks to offer critical insights for healthcare policymakers, administrators, educators, and researchers. The findings can serve as a foundation for developing targeted interventions and support systems aimed at improving the mental health and well-being of physicians and residents. In turn, this not only enhances patient care but also boosts the overall efficiency and effectiveness of the healthcare system.

Methods

Search Strategy

A literature search was conducted to look for articles that explored the prevalence and correlates of depression, anxiety, and burnout among physicians, residents, and fellows. The databases Medline, PubMed, Scopus, CINAHL, and PsycINFO were searched in the second week of April 2024, focusing on studies published from January 1, 2021, to May 1, 2024. Only articles written in English were considered. The search aimed to find studies examining the prevalence of each condition separately (e.g., just depression) and those addressing two or all three conditions together (e.g., depression, anxiety, and burnout). The search terms included: "prevalence of depression," "prevalence of anxiety," "prevalence of burnout," "depression", "burnout", "anxiety", "prevalence", "physicians," "doctors," "medical practitioners," and "resident physicians." Appendix 1 provides some examples of the search strategy. Two reviewers (S.O.N and M.A) independently searched the databases and reviewed the articles. The screening process had two stages: an initial screening of titles and abstracts to assess relevance, followed by a full-text screening. Articles meeting the initial inclusion criteria advanced to the full-text screening phase. Disagreements were resolved by consulting a third reviewer (B.A). The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [42].

Inclusion and Exclusion Criteria

Articles were included based on the following criteria: (1) studies published between 2021 and 2024 in English, (2) a clearly defined sample of physicians, residents, and fellows, (3) clear reporting of prevalence for depression, burnout, or anxiety, and (4) a clearly stated study design, such as cross-sectional, cohort, mixed-method, transverse, or longitudinal. Studies that did not sample physicians, were reviews, protocols, or experimental studies were excluded. The study measures of interest were depression, anxiety, or burnout. Thus, studies were excluded if they did not report prevalence or did not focus on physicians or residents. Excluded populations were: (1) Medical students (2) individuals from other health-related fields (e.g., dentistry, pharmacy, nursing, allied health sciences), and (3) other healthcare professionals.

Data Extraction Process

Information was extracted and summarized in a table, which included the author's name, publication year, country of study, study population, sample size, response rate, tools used to assess mental health conditions (depression, anxiety, or burnout), prevalence of these conditions, and any associated factors (Table 1).

Results

A total of 3,367 records were retrieved from the search (Figure 1). After removing 799 duplicates, 2,568 publications remained. Title and abstract screening further reduced this number to 196 publications for full-text review. Of these, 3 could not be retrieved, leaving 193 publications for review. Ultimately, 101 articles were excluded, resulting in 92 articles selected for data extraction.

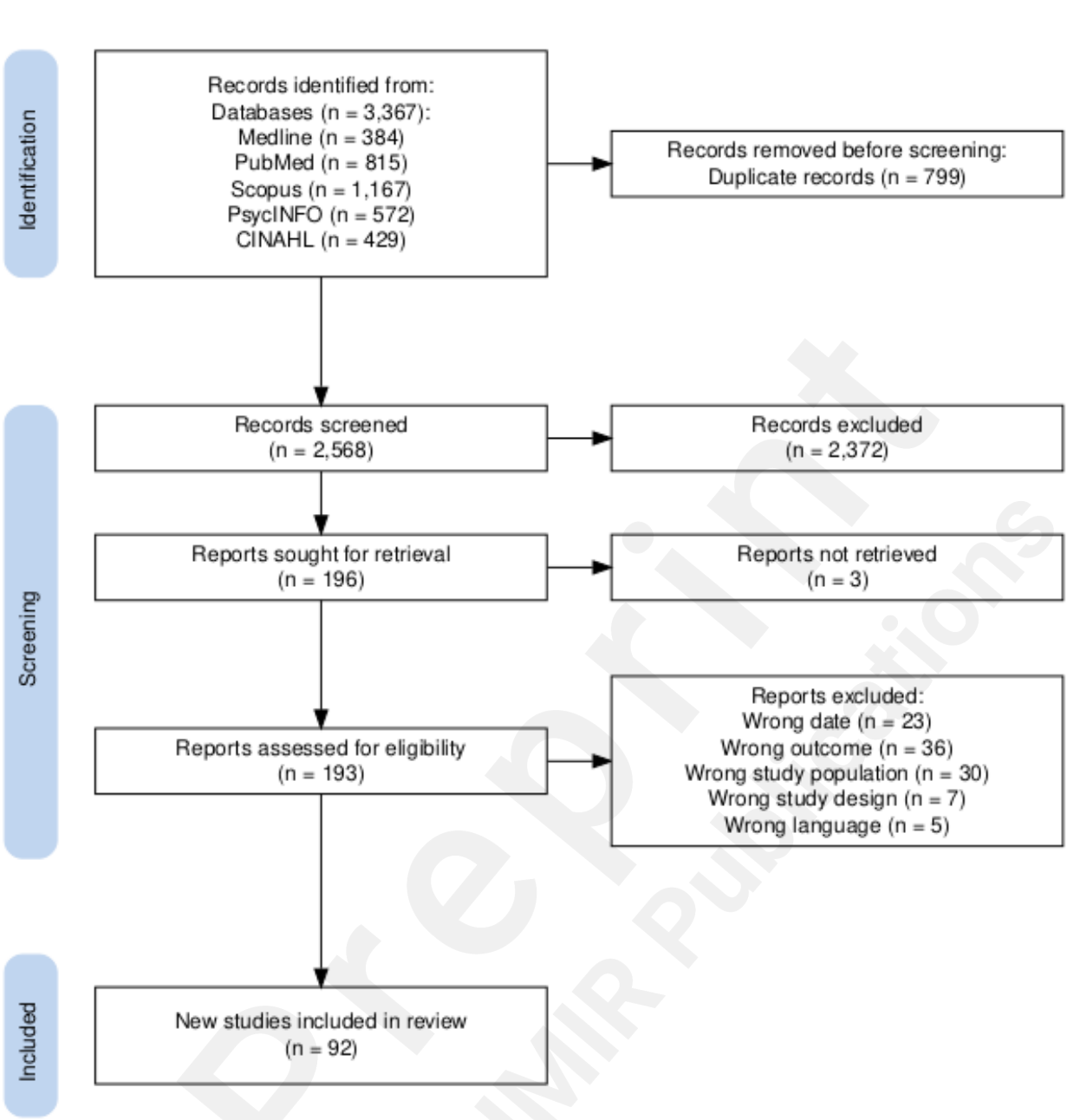


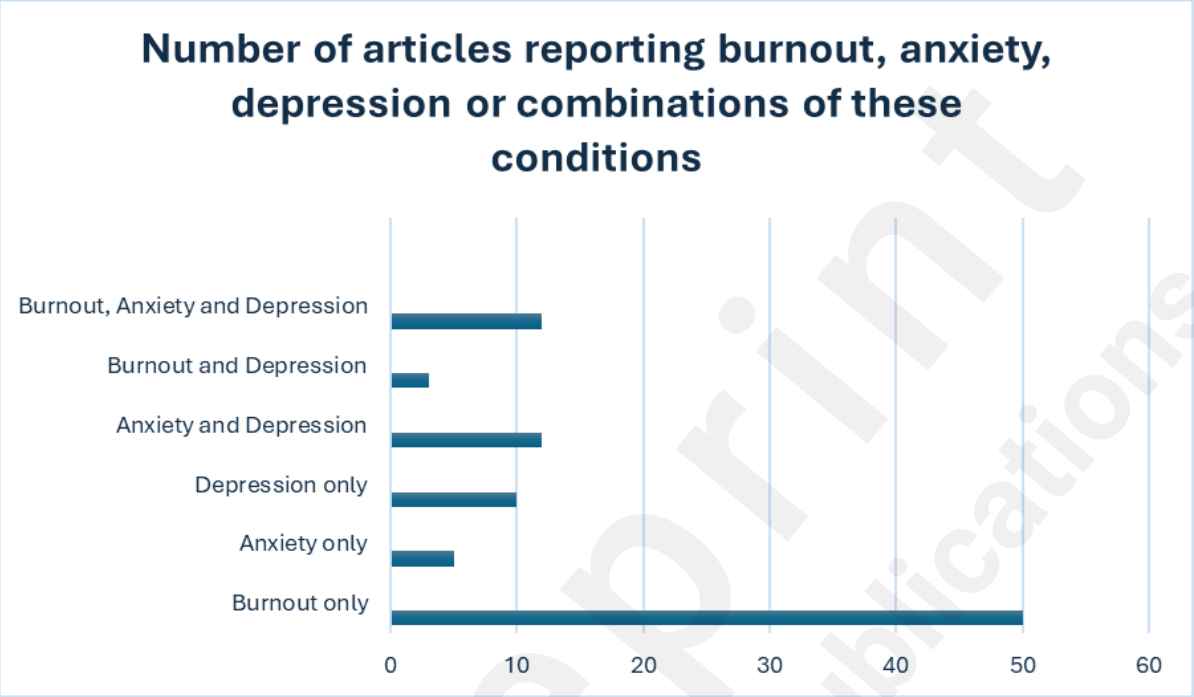
Figure 1. PRISMA Flow Diagram illustrating the selection process for relevant studies on the prevalence and correlates of burnout, depression, and anxiety among physicians and postgraduate medical trainees.

Study Characteristics

The articles reviewed included study designs such as cross-sectional, longitudinal, transverse, cohort and mixed methods. Of the 92 articles included in the review, 44 (47.8%) were published in 2021, 27 (29.3%) were published in 2022, 16 (17.4%) were published in 2023 and 5 (5.4%) were published in 2024. Among the studies, four were cohort studies [43-46], two used mixed methods [47, 48], one was transverse [49], one was longitudinal [50], and the remaining 84 were cross-sectional. The sample sizes ranged from 120 to 11,570 for residents in training and from 51 to 55,000 for physicians/doctors. Out of the 92 studies, 50 focused solely on burnout, 10 addressed only depression, and 5 examined anxiety alone. Additionally, 12 studies investigated both anxiety and depression, 3 focused on burnout and depression, and 12 covered burnout, anxiety, and depression (as shown in **Figure 2**). Burnout was the most frequently assessed condition 70.65% (n=65),

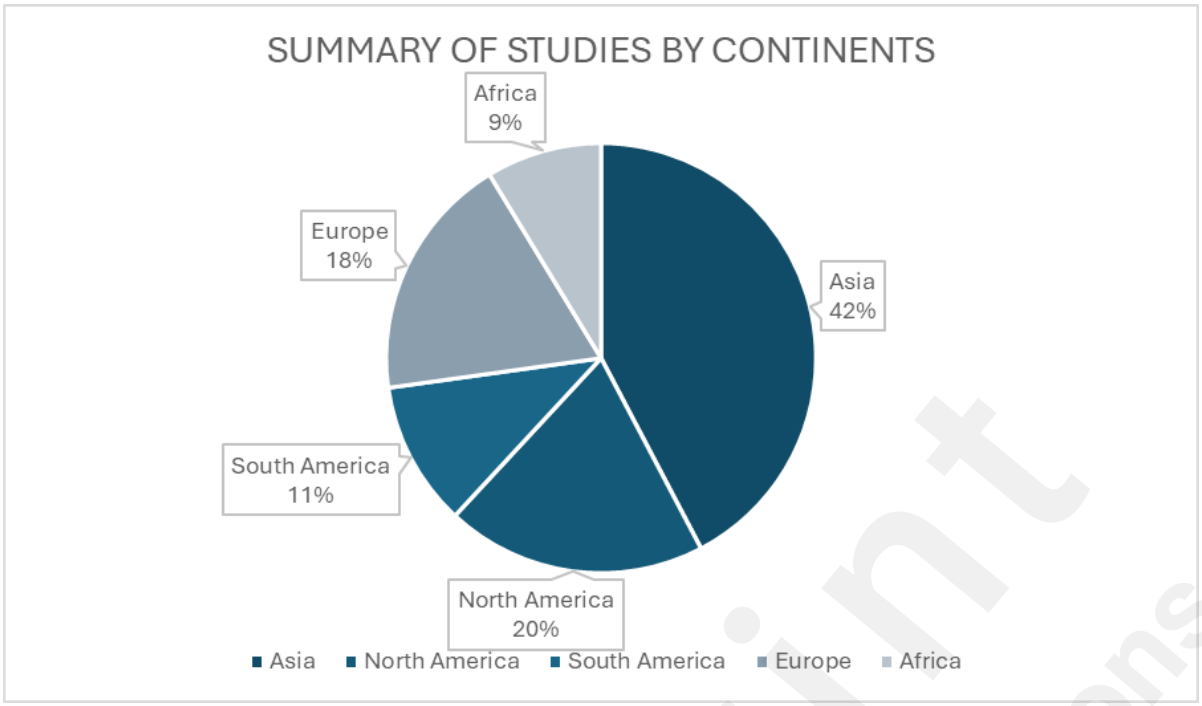
followed by depression 40.2% (n=37) and anxiety 29.3% (n=29). Response rates varied widely from 9.9% to 96.89%, with 22 studies not reporting response rates at all. Most of the studies were conducted in Asia, accounting for 42% (n=39), followed by North America at 20% (n=18), Europe at 18% (n=17), South America at 11% (n=10), and Africa at 9% (n=8) as illustrated in **Figure 3**. The target population in most studies was physicians 67.4% (n=62), followed by residents 27.2% (n=25), with 5.4% (n=5) targeting both physicians and residents.

Figure 2.



Number of articles reporting burnout, anxiety, depression or combinations of these conditions

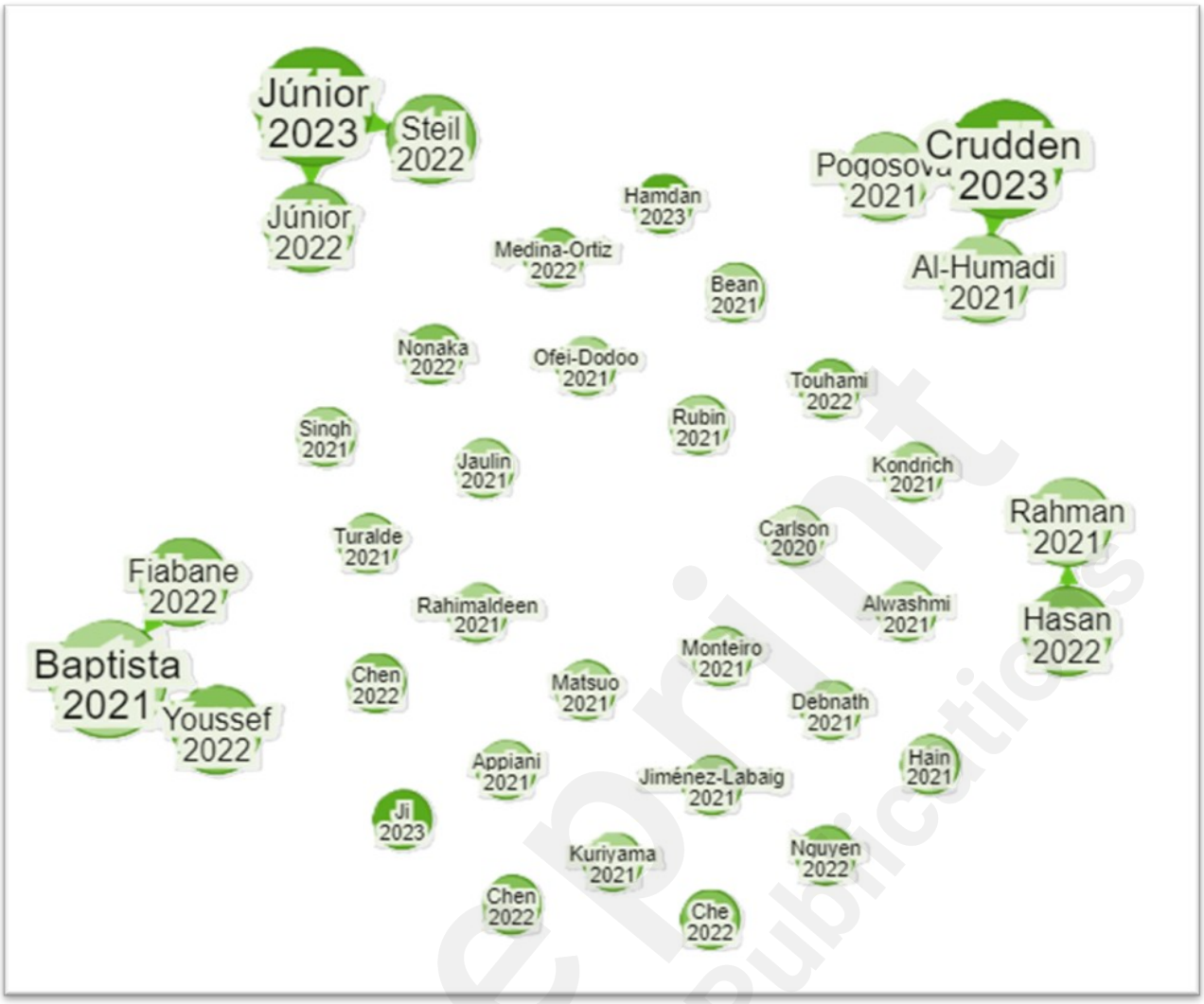
Figure 3.



Summary of studies by continents

Figure 4 presents a visual network of the individual studies. This network was generated by entering all studies included in this scoping review into the ResearchRabbit online application [51]

Figure 4.



Visual network of included studies (authors and year of publication).

Figure 4 indicates that Baptista 2021, Junior 2023, and Crudden 2023 each have citation links to two of the included articles. Meanwhile, Rahman 2021, Hasan 2022, Al-Humadi 2021, Pogosova 2021, Steil 2022, Junior 2022, Fiabane 2022, and Youssef 2022 are each connected by citation to only one of the studies in this review. The remaining studies, such as Nonaka 2022, Ofei-Dodoo 2021, Hamdan 2023, Alwashmi 2021, Ji 2023, Rahimaldeen 2021, Turalde 2021, and Chen 2022, have no citation links to other studies included in this review.

Prevalence of burnout

Table 1. Prevalence and correlates of burnout among Physicians and postgraduate medical trainees in studies conducted from 2021 to 2024

Author's Name	Year of Publication	Country study was conducted	Study Population	Sample Size	Response Rate	Tool for measuring Burnout	Prevalence of Burnout	Associated Factors
Appiani et al., [52]	2021	Argentina	Physicians	440	68.63%	MBI	Overall prevalence: 73.5%	Increasing burnout: -having less seniority -being a resident -caring for patients with potential or confirmed COVID-19 infection -Having transient COVID-19-like symptoms - working 24-hour shifts
Fiabane et al., [53]	2023	Italy	Physicians	18,516	6.5%	CBI	Overall prevalence: 18.5%	Increasing burnout: -female sex -younger age -shorter job tenure -trainee status -higher PHQ-8 and GAD-7 scores
Matsuo et al., [54]	2021	Japan	Residents	4,754	12.7%	MBI-GS	Overall prevalence: 28%	Increasing burnout: -excessive working hours -low autonomy -communication problems at the workplace - complaints from patients -peer competition -anxiety about the future
Hain et al., [55]	2021	South Africa	Doctors	213	45%	MBI	Overall prevalence: 65.8%	Increasing burnout: -Female gender -Occupational rank -planning to leave the public

								sector in the next 2 years.
Crudden et al., [56]	2023	Ireland	Physicians	2,160	21.9%	MBI	Overall prevalence: 42%	Increasing burnout: - elevated symptoms of depression on the DASS depressive symptom subscale (EE) - higher rates of face-to-face patient contact (EE) Decreasing burnout: - professional efficacy
Ofei-Dodoo et al., [57]	2021	USA	Physicians	113	45.6%	MBI	Overall prevalence: 50.4%	Increasing Burnout: -personally, treating patients suspected or confirmed to have COVID-19.
Al-Humadi et al., [58]	2021	USA	Physicians and residents/fellows	1379	16.3%	MBI (2 single items)	Overall prevalence: 19.6%	Increasing burnout: -History of depression or anxiety -younger age - female gender (physician) -higher number of on call time
de Mélo Silva Júnior et al., [59]	2022	Brazil	Residents	1,989	71.4%	MBI 2-items version	Overall prevalence: 37%	Associated with increasing burnout: -lower age and leisure time -male sex - longer duty hours -absence of day off -provision of care without supervision -choice of the wrong specialty -poor learning -psychological abuse -depression

Rubin et al., [60]	2021	Canada	Physicians	151	84.1%	WBI	Overall prevalence: 65.4%	Increasing burnout: -perception of inadequate staffing levels -being treated unfairly in the workplace.
Che et al., [61]	2023	China	Physicians (anesthesiologists)	8850	74.93%	MBI-HSS	Overall prevalence: 52.7%	Increasing burnout: - redeployment outside normal professional boundaries* - depression - anxiety - PTSD Protective factors: - resilience - good institutional support
Alwashmi et al., [62]	2021	Saudi Arabia	Physicians(psychiatrist)	101	Not reported	MBI-HSS	Overall prevalence: 80.2%	Significantly increasing burnout: -gender (female) -working in tertiary centers -psychiatrist in-training (junior and senior residents)
Kuriyama et al., [63]	2022	Japan	Physicians	1,173	18.2%	Mini-Z	Overall prevalence: 31.8%	Increasing burnout: -having no partner* - shortage of PPE*
Carneiro Monteiro et al., [64]	2021	Brazil	Psychiatry residents	185	62%	MBI-HSS	EE:60% DP:54.8% PA:33%	Significantly associations: -nature of relations to the institutions (EE) -nature of relationships with preceptors/ supervisors (EE, DP) -quality of relationship with family (EE, DP) -age (DP)
Jiménez-Labaig et	2021	Spain	Residents and Specialists	243	26.6%	MBI-HSS MP	Overall prevalence:	Increasing burnout:

al., [65]							25.1%	-Younger age* -perceived lack of leisure time or vacation time* -poor perception of work life balance*
Steil et al., [66]	2022	Brazil	Residents	3071	10%	OLBI	Overall prevalence: 48.6%	Associated with burnout: -avoidance of seeing patients with confirmed or suspected cases of COVID-19 -lack of supervisor support for the treatment of COVID-19 patients -working in a wing with high risk of contamination -belief that PPE is not efficacious -fear of getting COVID-19 and -transmitting it to significant others -having personal relationships impaired since the pandemic
de Mélo Silva Júnior et al., [67]	2023	Brazil	Physician residents	First cohort(pre-COVID): 524 Second cohort (pandemic group): 419	Not reported	2-item MBI	Overall prevalence: - pre-COVID cohort: 37% -pandemic cohort: 26.1%	No information provided
Pogosova et al., [68]	2021	Russia	Physicians	108	Not reported	MBI-HSS	EE: high-50%, moderate-33% DP:34.1% reduced PA:37.5%	Increasing burnout: -being female (EE)
Rahimaldeen et	2021	Saudi Arabia	Physicians(pediatricians)	386	65%	CBI	Overall prevalence: 80.5%	Increasing burnout: -female gender

al., [69]								-being junior pediatrician -being younger pediatricians
Tipwong et al., [70]	2024	Thailand	Physicians	227	Not reported	PFI	Overall prevalence: 30.7%	Negatively predicting burnout: -clinical teaching self-efficacy
Hamdan et al., [71]	2023	Jordan	Residents and specialist surgeons	180	75%	aMBI	Overall prevalence: 45.2%	Associated with burnout: - age positively correlated with PA and negatively with EE and DP - number of children negatively correlated with DP - years of experience among specialists negatively correlated with EE and DP
Youssef et al., [72]	2022	Lebanon	Physicians	398	Not reported	CBI-Arabic version	Overall prevalence (high and moderate levels): 90.1% PB:80.4% WB:75.6 % CB:69.6%	Increasing burnout: -female gender -younger age -being single -having a dependent child, -living with elderly or a family member with comorbidities -insufficient sleeping hours -working in a public health facility -limited years of professional Experience -lack of previous experience in a pandemic -extensive working hours Decreasing burnout: -being married

								-financial well-being -good health -history of COVID-19 -previous pandemic experience
Nonaka et al., [73]	2022	Japan	Physicians	First survey: 1,251 Second survey: 1,241	First survey: 22.6% Second survey: 25.9%	Single-item Mini-Z	Overall prevalence: -First survey: 34.6% -Second survey: 34.5%	Increasing burnout: - history of self-quarantine* Not associated with exacerbation: -being a woman* -being a clinical resident* -having worked in a prefecture under a state of emergency*
Turalde et al., [74]	2022	Philippines	Residents	120	71.67%	MBI	Overall prevalence: 94% EE:34.8% DP:8.14% Low PA:93%	Associated with burnout: -the lack of compensation (EE) -number of on-duty days (EE, DP)
Singh et al., [75]	2022	Canada	Physicians	634	44%	MBI	Overall prevalence: 72.9% EE:64.9% DP:47.2% Low PA:27.2%	Increasing burnout: -working in a hectic or chaotic atmosphere -feeling unappreciated on the job -reporting poor or marginal control over workload -not being comfortable talking to peers about workplace stress decreasing burnout: -older age
Alrawashdeh et al., [48]	2021	Jordan	Physicians	973	Not reported	BMS	Overall prevalence: 57.7%	Increasing burnout: -female gender -working at highly loaded

								hospitals - working for long hours -doing night shifts - lack of sufficient access to PPE -being positively tested for SARS-CoV-2.
Blazin et al., [47]	2021	USA	Physicians	132	40%	MBI	Overall prevalence: 28%	Increasing burnout: -frequent meetings -insufficient support staff - workflow interruptions
Wang et al., [76]	2021	China	Physicians	1813	90.7%	MBI	Overall prevalence: 82.1%; severe burnout: 38.8%	Increasing burnout: - difficulty in making treatment decisions Protective factors: -higher number of children -higher “income satisfaction”
Carlson et al., [77]	2021	USA	Physicians	186	56%	2-item MBI	Overall prevalence: 26%	Positive association with burnout: -hours worked in a typical week
Medina-Ortiz et al., [78]	2022	Venezuela	Physicians	150	Not reported	MBI	Overall prevalence: 76.7%	Increasing burnout: -higher number of years working in the hospital -lower job satisfaction
Nimer et al., [79]	2021	Jordan	Residents	481	Not reported	CBI	Overall prevalence: 77.5%; severe burnout: 16.2%; moderate burnout: 61.3%	Increasing burnout: -psychological stress - longer working -being obstetrics/gynecology residents
Celik et al., [80]	2021	Turkey	Physicians (surgeons)	3815	16.1%	MBI	Overall prevalence: 69.1%; severe burnout: 22.0%	factors independently associated with Burnout: -working in a

								training and research hospital or state hospital* -working ≥ 60 h per week* - less frequent participation in social activities*
Sharp et al., [81]	2021	USA	Fellows	976	51%	MBI two-item measure	Overall prevalence: 32%	Increasing burnout: -Working more than 70 hours in an average clinical week - burdens of electronic health record (EHR) Documentation Decreasing burnout: -access to mental health services -coverage system in the case of personal illness or emergency
Nguyen et al., [82]	2022	USA	Physicians	400	13%	MBI-HSS	Overall prevalence: 57%	Increasing burnout: -increased feelings of burnout due to the COVID-19 pandemic (EE, PA)* -total hours of w ork per week (EE, PA)* -younger age (EE, PA)*
Bean et al., [83]	2022	USA	Residents	1298	22.8%	2-item MBI	Overall prevalence: 35.8%	Increasing burnout: - Residents' perception of not having adequate time for personal/family life -Residents who reported inappropriate clerical burden -working more than 50 hrs/wk on inpatient rotations

								Protective against burnout: - Faculty support - performing activities that led residents to choose physical medicine and rehabilitation as a specialty
Hagqvist et al., [44]	2022	Sweden	Physicians	6699	41%	BAT	Overall prevalence: 4.7%	Increasing burnout: -working in the emergency department -junior physicians
Boland et al., [84]	2023	UK and Ireland	Physicians	815	66.8%	MBI-HSS (MP)	Overall prevalence: 39.2%	Increasing burnout: -formal supervision in palliative medicine -high levels of depressive symptoms -working over 40 h per week -high-risk alcohol consumption Decreasing burnout: -staff grade or trainee status -higher perceived level of support
Kondrich et al., [85]	2022	USA and Canada	Physicians	416	49.5%	MBI	EE: 34.9% DP: 33.9% PA: 20%	Associated with burnout: -lack of appreciation from patients* -lack of appreciation from supervisors* -perception of an unfair clinical work schedule* -dissatisfaction with promotion opportunities* -feeling that the electronic medical record detracts from

								patient care* -working in a non-academic setting*
McGarry et al., [86]	2024	USA	Physicians	386	21.6%	CBI	Overall prevalence: 55.4%	Associated with positive burnout: -inadequate compensation -inadequate opportunity to process trauma
Doe et al., [87]	2024	USA	Residents	11,570	Not reported	MBI	Overall prevalence: 36.4%	Increasing burnout: -female gender -white race - educational debt exceeding $250,000 Decreasing burnout: -being black and Asian race -smaller program size
Keith, J [88]	2023	Canada	Physicians	847	50%	MBI-HSS (MP)	Overall prevalence: 58.9%	Increasing burnout: -female pathologists (Significantly higher EE and lower PA)
Chan et al., [45]	2021	Canada	Physicians (Urologists)	609	17.2%	MBI	Overall prevalence: 31.8% EE:8.0% DP:31.8% low PA:10.6%	Increasing burnout: -urologists under financial strain -female urologists -early-to-mid-career urologists.
Alenezi et al., [89]	2022	Saudi Arabia	Residents	426	77.45%	MBI-HSS	Overall prevalence (high on all subscales): 18.31% High EE: 57.51% High DP: 36.62% High PA: 12.91% moderate EE: 28.87% moderate DP:	Increasing burnout: -lack of physical exercise (EE, DP, PA) -having less than 3 weekends on-call per month (EE) -dissatisfaction with work–life balance (EE, DP) -time pressures and deadlines (EE)

							32.63% moderate PA: 33.57% High on at least one subscale of burnout: 81.22%	-work overload (EE) -inability to participate in decision-making (EE) -inability to make full use of their skills and abilities (EE, PA) -work centered life (EE) -difficulty in maintaining relationship with their superiors (EE, DP)
Kurzthaler et al., [90]	2021	Austria	Physicians (GP vs OS)	481 (252 GP and 229 OS)	Not reported	CBI	Overall prevalence (GP vs OS): Intermediate: 43.8% vs 39.8% High: 26.9% vs 22.0%	Predictors of burnout: -being single -financial problems experienced during COVID-19 -stigmatization because of treatment of SARS-CoV-2-positive patients -facing violence in patient care -longer working hours during the pandemic.
Marques-Pinto et al., [91]	2021	Portugal	Physicians	43,983	9176 (29%)	MBI	EE:66% DP:33% decrease-PA:39%	Predictors of burnout: -organizational resources (EE, DP)* -demands of the relationship with the patients (EE, DP)* -work schedule (EE, DP)*
Yuan et al., [92]	2023	Canada	Resident physicians	345	48%	MBI-HSS	Overall prevalence: 58%	Decreasing burnout: -having dependent -being IMG -being racial minority
Mcloughlin et al., [93]	2022	Ireland	Residents (psychiatry trainees)	510	21%	aMBI	Overall prevalence: 65%	Associated with burnout: -staff shortages -longer hours

								-less experience.
Werdecker et al., [94]	2021	Germany	Physicians (GP)	548	Not reported	CBI	PB:35.2% WB:26.6 % P_aB:12%	Increasing burnout: -being female (PB) -working as an employed physician (PB). -working in a single practice (PB, WB, P_aB)
Shalaby et al., [95]	2023	Canada	Resident Doctors	1594	9.8%	MBI	Overall prevalence: 58.2%	Associated with burnout: -working more than 80 h/week (high EE and ID) -being dissatisfied or being neither satisfied nor dissatisfied with a career in medicine (high EE and DP) -agreeing that the residency program has enough strategies aimed at resident well-being in place (EE, ID) -young age of residents (low PF)
Salihu et al., [96]	2023	Nigeria	Resident doctors	185	90.1%	MBI-HSS MP	High EE: 21.6% High DP: 13.6% Low PA: 30.7%	Association with burnout: -Being a younger resident doctor aged 31–35 (EE, DP) -duty hours >50 hours per week (DP) -presence of work-related stress (DP)
Rashid et al., [97]	2022	Bangladesh	Doctors	185	90.81%	MBI-HSS	overall prevalence: 55.4% High EE: 95.8% High DP:	Increasing burnout (high levels in all 3 domains EE, DP, PA): -Younger age (25–29 years)

							98.2% Reduced PA: 97%	- being female -working as a medical officer
Gajjar et al., [98]	2022	Canada	Physicians	First survey (March 2020): 1,400 Second survey (March 2021): 2,638	First survey: 76.3% Second survey: 75.9%	Validated, single-item, self-defined burnout measure (1-no symptoms of burnout to 5-completely burned out).	Overall prevalence: -First survey:28% -Second survey: 34.7%	Increasing burnout: - patient expectations/ patient accountability -reporting and administrative obligations -practice environment as the three factors that contributed most to burnout.
Ghazwani, E.Y., [99]	2022	Saudi Arabia	Physicians	51	86%	MBI-22 point scale	Overall prevalence: <25% EE: 18.2% DP: 25% Reduced PA: 25%	Increasing burnout (in all 3 domains EE, DP, PA): -having less (<5 years) experience -attending more patients (5–10/day) on all the three domains of burnout.
Shahi et al., [100]	2022	Nepal	Resident Doctors	410	84.6%	MBI	Overall prevalence: 42.4% High EE: 16.6% High DP: 15.9% Reduced PA: 9.8%	Independently increasing burnout: -Gender (male) -marital status -having children -specialty -year of residency -specialties -hours of work per week (≥80 h)
Pawłowicz-Szlarska et al., [101]	2022	Poland	Physicians	225	43%	aMBI	High EE: 39.2% High DP: 38.1% Reduced PA: 21.6% Medium level in all 3 dimensions: 26.8% High levels in	Increasing burnout: -excessive bureaucracy in healthcare systems -rush at work -overtime work

							all 3 dimensions: 8.2%	
Fumis et al., [102]	2022	Brazil	Physicians	62	82%	MBI	Overall prevalence: 37.2% High EE: 51.0% High DP: 51.0% Reduced PA: 96.1%	No information provided
Ghoraishian et al., [103]	2022	Iran	Physicians (Surgeon) and Residents	180	Not reported	MBI	Overall prevalence: 50.0%	Significant associations with burnout: -younger age -lower academic rank or being a resident -working in the public sector -spending less time in leisure and sports activities.
Passos et al., [104]	2022	Brazil	Residents	139	49.26%	MBI	Overall prevalence: 73.1% EE: 44.8% DP: 64.2% PA: 47.8%	No association between overall burnout level and all analyzed variables -current year in the residency program (EE) - the use of antidepressant/hypnotic medication (EE) -current work routine (DP) -having children (PA)
Kwan et al., [105]	2021	Hong Kong	Doctor/residents	2,879	Doctors: 284 (9.9%) Residents-in-training: not reported	CBI	PB:72.6% WB:70.6 % CB:55.5%	Increasing PB: -engagement in longer working hour(s) per week -working in Hospital Authority clinics Decreasing PB: -Older age -possession of a first university degree in medicine

								-possession of Academy fellowship status Increasing WB: -Being single, separated, or divorced -longer working hour(s) per week
Seda-Gombau et al., [50]	2021	Spain	Physicians	150	27%	MBI for medical professionals	Time1: Overall prevalence:7.5% EE:37.5% DP:32.5% PA:27.5% Time 2: Overall prevalence: 10% EE:55% DP:30% PA:27.5% Time 3: Overall prevalence:50% EE:77.5% DP:70% PA:67.5%	Increasing burnout: -Age (being older) -Having children
Doolittle et al., [46]	2021	USA	Physicians	1,021	33%	ProQol	Overall prevalence: 52%	Increasing burnout: -being a woman -single physicians Decreasing burnout: -older age - Exercise (3 times per week for 20 min)
Khan et al., [106]	2024	South Africa	Doctors	430	68%	OLBI	Overall prevalence: 78%	Significant association with burnout: -being a medical intern or community-service medical officer -being in the lowest income band -using alcohol to manage work-

								related stress -experiencing high conflict at work -high role ambiguity and role conflict
Sobczuk et al., [107]	2024	Poland	Physicians	228	Not reported	MBI-HSS	Overall prevalence: 74.9% EE: 64.5% DP: 37.0% PA: 43.1%	Increasing burnout: - bureaucracy and administrative duties overload -admissions of many patients -poor work culture -night/on-call duties
Pius et al., [108]	2023	Nigeria	Doctors	685	38.1%	CBI	PB:62.2% WB:52.2 % P_aB:27.5%	Increasing burnout: - female gender -less than 6 years of work experience -working for at least 71 hours in a week
Baptista et al., [109]	2021	Portugal	Physicians	225	Not reported	CBI	PB: 65.9% WB:68.7% P_aB :54.7%	Increasing burnout: -higher levels of depression (PB, WB, P_aB) * -higher anxiety levels (PB, WB) * -being female (P_aB)* - having worked for 6 to15 years (P_aB)* -reduction in monthly income inversely correlated with P_aB*
Oluwadiya et al., [110]	2023	Nigeria	Physicians	256	60.5%	MBI-ES	Overall prevalence: 57.7%	Associated with burnout: -religion (Muslims) (EE) -geopolitical zone of practice (working in the north)- (EE) -enjoyment of academic

								writing (EE) -apathy toward teaching (EE) -university ownership number of published peer-reviewed articles (EE) -salary, and supplementary income (EE) -number of weeks spent teaching in a year (DP, PA) -teaching hours/ week (DP, PA)

MBI- Maslach Burnout Inventory; MBI-HSS- Maslach Burnout Inventory-Human Services Survey; MBI-GS- Maslach Burnout Inventory-General Survey; MBI-ES- Maslach Burnout Inventory for Educators; aMBI - abbreviated-Maslach Burnout Inventory; CBI- Copenhagen Burnout Inventory; OLBI – Oldenburg Burnout Inventory; ProQol- Professional Quality of Life Scale; BMS- 10-Item Burnout Measure-Short version; BAT- Burnout Assessment Tool; Mini-Z - Mini-Z Burnout Assessment; WBI- Well-Being Index; PFI - Professional Fulfillment Index; PB- Personal-related Burnout; WB- work-related burnout; P_aB- patient-related burnout; CB- client-related burnout; EE- emotional exhaustion; DP- depersonalization; PA- personal accomplishments; ID- interpersonal disengagement; PF- professional fulfillment; GP- General Practitioner; MP- Medical Personnel; OS- Other Specialties

PPE- Personal Protective Equipment

* Multivariable analysis

Sixty-five (70.7%) of the included studies addressed burnout (**Table 1**). Out of these, 76.9% (50 out of 65) focused solely on burnout [45-48, 50, 53, 54, 57, 58, 60, 61, 65, 70-76, 78-80, 82-104, 106-110], 4.6% (3 studies) assessed both burnout and depression [44, 81, 105], and 18.5% (12 studies) examined burnout together with depression, and anxiety [52, 55, 56, 59, 62-64, 66-69, 77]. Of the 65 studies on burnout, 26.2% (n=17) sampled residents, 7.7% (n=5) sampled both residents and physicians, while the remainder 66.2% (n=43) focused on physicians. Most surveys (n=45) used the Maslach Burnout Inventory (MBI) or a variation of it, and researchers presented the outcomes in different ways (Table 1). Although the majority of studies used the MBI tool, the criteria for classifying 'overall burnout' varied. Some studies defined burnout as having at least one of the following: high levels of emotional exhaustion, high depersonalization, or low personal accomplishment [97, 100, 102]. Others required high levels in all three constructs simultaneously [89]. Other tools included the Copenhagen Burnout Inventory (CBI) [53, 69, 72, 79, 86, 90, 94, 105, 108, 109], Oldenburg Burnout Inventory (OLBI) [66, 106], and the Mini-Z Burnout Assessment [63, 73]. Single-study tools included the Burnout Assessment Tool [44], Burnout Measure-Short Version [48], Professional Fulfillment Index [70], Well-Being Index [60], and Professional Quality of Life Scale [46]. One study used a single-item, non-proprietary validated burnout measure developed by Schmoldt and colleagues [98]. Nearly all studies reported the overall prevalence of burnout, which ranged from 4.7% [44] to 94% [74]. For residents, the prevalence ranged from 18.3% [89] to 94% [74], while for physicians, it ranged from 4.7% [44] to 90.1% [72]. Burnout prevalence was generally higher among females compared to males, except for two studies which reported the opposite [59, 100]. Most of the included studies (n=63/65) identified factors associated with burnout among physicians and residents, while the remaining two papers reported only the prevalence of burnout [67, 102].

Prevalence of depression

Table 2. Prevalence and correlates of depression among Physicians and postgraduate medical trainees in studies conducted from 2021 to 2024

Author's Name	Year of Publication	Country study was conducted	Study Population	Sample Size	Response Rate	Tool for measuring Burnout	Prevalence of Depression Level(s)	Associated Factors
Appiani et al., [52]	2021	Argentina	Physicians	440	55%	HADS	21.9%	Increasing depression: -transient SARS-CoV-2-like symptoms -taking anxiolytics -working 24-hour shifts at the emergency department -physicians with less seniority
Jaulin et al., [111]	2021	France	Residents	2,302	22.5%	HADS	7.8%	Increasing depression: -female gender -working time (volume of hours worked above 60 h per week) -on-going training in intensive care
Ouazzani Housni Touhami et al., [112]	2023	Morocco	Doctors	1,267	63.3%	PHQ-9	31.5%	Increasing depression: -working in primary and secondary hospitals* -moderate and high- stress perceptions* -chronic physical illness* -family history of psychiatric disorder*
Hain et al., [55]	2021	South Africa (SA)	Doctors	213	45%	PHQ-9	35.6%	Associated with depression: -doctors planning on leaving the public sector within the next 2 years - country of qualification, with SA-qualified doctors reporting higher rates.
Crudden et al., [56]	2023	Ireland	Physicians	2,160	21.9%	DASS	25.8%	Increasing depression: -high levels of emotional exhaustion -higher clinical workload
de Mélo Silva Júnior et al., [59]	2022	Brazil	Residents	1,989	71.4%	PHQ-4	46.9%	Associated with depression: -female sex -longer duty hours -absence of day off -poor learning perception -poor feeling about the residency program -overall occurrence of

								psychological abuse -anxiety -diurnal somnolence and burnout
Alwashmi et al., [62]	2021	Saudi Arabia	Physicians (psychiatrist)	101	Not reported	DASS-21	6.9%	No significant influence on depression
Carlson et al., [77]	2021	USA	Physicians	186	56%	PHQ-2	8%	No information provided
Steil et al., [66]	2022	Brazil	Residents	3071	10%	PHQ-9	67.7%	Increasing depression: -being a woman -avoidance of seeing patients with confirmed or suspected cases of COVID-19 -working in a wing with a high risk of Contamination -the belief that personal protection equipment is not efficacious -fear of getting COVID-19 and transmitting it to significant Others -having personal relationships impaired since the pandemic
de Mélo Silva Júnior et al., [67]	2023	Brazil	Physician residents	First cohort(pre-COVID): 524 Second cohort (pandemic group): 419	Not reported	PHQ-2	-pre-COVID cohort: 46.0% -pandemic cohort: 58.8%	No information provided
Pogosova et al., [68]	2021	Russia	Physicians	108	Not reported	HADS	22.7%	Increasing depression: -being a male physician
Rahimaldeen et al., [69]	2021	Saudi Arabia	Physicians (pediatricians)	386	65%	DASS-21	66.5%	Increasing depression: -female gender -being junior pediatrician -being younger pediatricians
Kuriyama et al.,	2022	Japan	Physicians	1,173	18.2%	PHQ-9	15.4%	No information provided

[63]								
Hasan et al., [113]	2022	Bangladesh	Physicians	442	93.2%	HADS	48.5%	Increasing depression: - being female -physicians who had experienced COVID-19 like symptoms during the pandemic -those who had not received incentives -those who used self-funded personal protective equipment (PPE) -not received adequate training -lacking perceived self-efficacy to manage COVID-19 positive patients -greater perceived stress of being infected -fear of getting assaulted/humiliated -being more connected with social media -having lower income levels to support the family -feeling more agitated -less than 2 h of leisure activity per day -short sleep duration.
Rahman et al., [114]	2021	Bangladesh	Physicians	395	Not reported	DASS-21	55.3%	Increasing depression: -being a male physician -age (physicians less than or equal to 27 years) * -physicians with previous history of mental health issues
Carneiro Monteiro et al., [64]	2021	Brazil	Psychiatry residents	185	62%	PHQ-2	16.5%	No information provided
Debnath et al., [115]	2023	Bangladesh	Trainee physicians	130	83%	DASS-21	53.7%	Associated with depression: - not receiving mental health counseling during the pandemic -anxiety -stress - loneliness
Pitanupong et al., [116]	2024	Thailand	Psychiatrists/ psychiatry trainees	622	36.2%	PHQ-9	Overall prevalence: 12.4% Psychiatrists: 13.9%	Depression in Psychiatrists was associated with: -loneliness -perceived levels of work satisfaction -work stress

							Psychiatry trainees: 7.7%	Depression in Psychiatry trainees was associated with: - loneliness -perceived level of ability to control work schedule.
Ji et al., [117]	2023	China	Doctors	750	94%	GHQ-12	40.85%	Associated with depression: -interaction of long working hours -effort-reward imbalance
Chen et al., [43]	2022	China & USA	Resident physicians	China: 3,666 USA: 14,723	China: 45% USA: 56%	PHQ-9	Overall prevalence: China-35.1% USA-34.9%	Associated with depression (USA): -neuroticism -early family environment -female gender -not being coupled -long duty hours -reduced sleep duration Associated with depression (China): -young age -long duty hours -reduced sleep duration
Ng et al., [118]	2021	Hong Kong	Doctors	1,607	393 (24.4 %)	PHQ-9	16.0%	Increasing depression: -sleeping fewer hours per night
Chen et al., [3]	2022	China	Physicians	15,455	Not reported	CESD-20	35.59%	Increasing depression: -female physician* -younger age* -unmarried* -smokers* -having a low salary* -higher education level* -long working tenure* -poor health status and sleep quality* -history of hypertension and coronary heart disease*
Fu et al., [119]	2021	China	Physicians	677	96.89 %	CESD-10	42.3%	Increasing depression (both male and female physicians): -lower subjective support score -lower objective support score Increasing depression (only male physicians): -lower support utilization score

Nair et al., [120]	2021	Malaysia	Residents	Estimated to be 448	Estimated to be around 50%	PHQ-9	25.1%	Increasing depression: -longer working hours -missing meals at work -being a resident in the department of surgery and department anaesthesia Decreasing depression: - Protected study time -having CMEs/lectures -leisure or hobby -exercise
Khatun et al., [121]	2021	Bangladesh	Physicians	114	Not reported	PHQ-9	34.2%	Increasing depression: -being a female* -unmarried/divorced/ widowed/separated physicians* -younger physicians (<35 years) *
Sharp et al., [81]	2021	USA	Fellows	976	51%	PRIME-MD	41%	Increasing depression: -financial concern* -working more than 70 hours in an average clinical week* -the burdens of electronic health record (EHR) documentation*
Abu-Elenin, [122]	2021	Egypt	Physicians	254	93.36 %	PHQ-9	43.8%	Associated with depression: -poor sleep quality -being a resident physician -disrupted social life -stigma exposure due to COVID-19
Hagqvist et al., [44]	2022	Sweden	Physicians	6699	41%	SCL-CD6	4.8%	Increasing depression: -being female physicians -being junior physicians
He et al., [123]	2021	China	Doctors	1,521	Not reported	SDS	16.9%	Increasing depression: -female sex* -having a minor child* Decreasing depression: -older age*
Jarad et al., [124]	2023	Saudi Arabia	Physicians	917	48%	PHQ-9	45.7%	Associated with depression: -physicians aged 25–30 years -females - residents -physicians who expressed self-perceived reduction in work quality Independent predictors of depression: -female gender* - self-perceived reduction in work quality*

Bai et al., [125]	2022	China	Residents	1,533	86.48 %	PHQ-9	Overall prevalence : 44.9% Moderate/ severe symptoms: 12.9%	Increasing depression: - poor sleep quality - lower optimism of psychological capital -higher depersonalization -reduced personal accomplishment -inappropriate working duration weekly -higher emotional exhaustion
Quintana-Domeque et al., [126]	2021	Catalonia (Spain), Italy and UK	Doctors	55,000	First round (June 2020): 3,025 (5.5%) Second round (Nov/ Dec 2020): 2,250 (4.1%)	PHQ-9	Overall prevalence : Catalonia: June 2020- 17.4%, Nov/Dec 2020- 15.9% Italy: June 2020- 20.1%, Nov/Dec 2020- 21.7% UK-: June 2020- 13.7%, Nov/Dec 2020- 20.0%	Increasing depression: -being a women -individuals below 60 years old -feeling vulnerable/exposed at work -reporting normal/below-normal health.
Kwan et al., [105]	2021	Hong Kong	Doctor/ residents	2,879	Doctors-284 (9.9%) Residents-in-training- not reported	PHQ-9	21%	Positively associated with depression: -number of working hour(s) per week Negatively associated with depression: -Doctors who completed a project-based learning curriculum during undergraduate studies
Hameed et al., [127]	2021	Saudi Arabia	Residents	425	42.6%	PHQ-2	93%	Associated with depression: -excessive sleepiness
Elghazally et al., [128]	2021	Egypt	Physicians	2331	Not reported	PHQ-9	Mild depression : Group 1- 31.2%	Increasing depression: -females -younger age groups -divorced or widowed -frontline physicians -1–5 years of work

							Group 2- 32.9% Severe depression : Group 1- 5.1% Group 2- 14.6%	experience -specialty jobs -contact with patients with COVID-19
Sarkar et al., [129]	2021	Bangladesh	Physicians (gastroenterologists)	166	37.9%	HADS	20.7%	Depression was more common in: -gastroenterologists of older (41-50-years) age group -doing government service -service length ≤ 15 years -working as specialist less than or equal to 10 years
Varela et al., [130]	2021	Venezuelan	Residents	120	Not reported	DASS-21	11.7%	Associated with depression: -marital status (married and divorced residents)

HADS-Hospital Anxiety and Depression Scale; PHQ-9- Patient Health Questionnaire-9; PHQ-4- Patient Health Questionnaire-4; DASS-Depressive Anxiety Stress Scale; GHQ-12- General Health Questionnaire-12; CES-D- Center for Epidemiological Studies Depression scale; PRIME-MD-Primary Care Evaluation of Mental Disorders; SCL-CD_6-Symptom Checklist-Core Depression; SDS-Self-Rating Depression Scale
*Multivariate analysis

A total of 37 studies reported the prevalence of depression among physicians or residents in training (**Table 2**). Of these, 27% (10 studies) focused solely on depression, 32.4% (12 studies) examined both depression and anxiety, 8.1% (3 studies) looked at depression and burnout, and another 32.4% (12 studies) assessed depression in combination with both burnout and anxiety. Among these studies, 32.4% (12 studies) sampled residents, 5.4% (2 studies) sampled both residents and physicians, and 62.2% (23 studies) focused exclusively on physicians. The study samples varied, as did the tools used to measure depression. The most frequently used tool was the Patient Health Questionnaire, employed in 54.1% (20 studies) of the studies [43, 55, 59, 63, 64, 66, 67, 77, 105, 112, 116, 118, 120-122, 124-128]. Other tools included the Depression Anxiety Stress Scale (DASS), used in 16.2% (6 studies) [56, 62, 69, 114, 115, 130], the Hospital Anxiety Depression Scale (HADS), used in 13.5% (5 studies) [52, 68, 111, 113, 129], and the Center for Epidemiological Studies Depression scale (CESD), used in 5.4% (2 studies) [3, 119]. Single-study tools included the Self-Rating Depression Scale (SDS) [123], Symptom Checklist-Core Depression (SCL-CD) [44], General Health Questionnaire (GHQ) [117], and Primary Care Evaluation of Mental Disorders (PRIME-MD) [81]. The overall prevalence of depression varied widely, ranging from 4.8% [44] to 66.5% [69] among physicians, and from 7.7% [116] to 93% [127] among residents in training (Table 2). Depression prevalence was generally higher among females compared to males. Most of the studies (n=33) explored factors associated with depression, while the remaining four studies focused solely on prevalence.

Prevalence of anxiety

Table 3. Prevalence and correlates of anxiety among Physicians and postgraduate medical trainees in studies conducted from 2021 to 2024

Author's Name	Year of Publication	Country study was conducted	Study Population	Sample Size	Response Rate	Tool for measuring Anxiety	Prevalence of Anxiety Level(s)	Associated Factors
Appiani et al., [52]	2021	Argentina	Physicians	440	55%	HADS	44%	Increasing anxiety: -transient SARS-CoV-2-like symptoms -taking anxiolytics -working 24-hour shifts at the emergency department -physicians with less seniority
Jaulin et al., [111]	2021	France	Residents	2,302	22.5%	HADS	19.8%	Increasing anxiety: -female gender -working time (volume of hours worked above 60 h per week) -on-going training in intensive care
Crudden et al., [56]	2023	Ireland	Physicians	2,160	21.9%	DASS	13.8%	Associated with Anxiety: -reduced satisfaction with remuneration
Bai et al., [131]	2021	China	Residents	1,533	86.48%	GAD-7 (Chinese version)	Overall prevalence: 32.8% Major anxiety symptoms: 9.9%	Associated with major anxiety: -poor sleep Quality* -higher emotional Exhaustion* -higher depersonalization* -reduced personal Accomplishment*
Hain et al., [55]	2021	South Africa	Doctors	213	45%	GAD-7	23.3%	Associated with Anxiety: -doctors planning to leave the public sector in the next 2

								years. -occupational rank
Ouazzani Housni Touhami et al., [112]	2023	Morocco	Doctors	1,267	63.3%	GAD-7	29.2%	Increasing anxiety: -being female* -working in primary and secondary hospitals* -moderate and high- stress perceptions* -chronic physical illness* -family history of psychiatric disorder*
Alwashmi et al., [62]	2021	Saudi Arabia	Physicians (psychiatrist)	101	Not reported	DASS-21	22.8%	Increasing anxiety: -handling COVID-19 patients.
Kuriyama et al., [63]	2022	Japan	Physicians	1,173	18.2%	GAD-7	34.6%	Associated with Anxiety: -having no partner* -stigma* -experience of self-quarantine*
Carneiro Monteiro et al., [64]	2021	Brazil	Psychiatry residents	185	62%	DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure -Adult	53%	No information provided
Steil et al., [66]	2022	Brazil	Residents	3071	10%	GAD-7	52.8%	Increasing anxiety: -being a woman -avoidance of seeing patients with confirmed or suspected cases of COVID-19 -failure of supervisor support for the treatment of COVID-19 patients -working in a wing with high

								risk of contamination -belief that personal protection equipment is not efficacious -fear of getting COVID-19, transmitting it to significant others - having personal relationships impaired since the pandemic
de Mélo Silva Júnior et al., [67]	2023	Brazil	Physician residents	First cohort(pre-COVID): 524 Second cohort (pandemic group): 419	Not reported	GAD-2	-pre-COVID cohort: 56.5% -pandemic cohort: 56.5%	No information provided
Pogosova et al., [68]	2021	Russia	Physicians	108	Not reported	HADS	23.8%	Increasing anxiety: -being a female physician
Rahimaldeen et al., [69]	2021	Saudi Arabia	Physicians (pediatricians)	386	65%	DASS-21	71.3%	Increasing anxiety: -female gender -being junior pediatrician -being younger pediatricians
Hasan et al., [113]	2022	Bangladesh	Physicians	442	93.2%	HADS	67.72%	Increasing anxiety: - being female -physicians who had experienced COVID-19 like symptoms during the pandemic -those who had not received incentives -those who used self-funded personal protective equipment (PPE) -not received adequate

								training -lacking perceived self-efficacy to manage COVID-19 positive patients -greater perceived stress of being infected -fear of getting assaulted/humiliated -being more connected with social media -having lower income levels to support the family -feeling more agitated -less than 2 h of leisure activity per day -short sleep duration.
Rahman et al., [114]	2021	Bangladesh	Physicians	395	Not reported	DASS-21	35.2%	Increasing anxiety: -age (physicians less than or equal to 27 years)* -history of availing or Receiving psychotherapy -being a physician of COVID-19 hospitals
Debnath et al., [115]	2023	Bangladesh	Intern Doctors (Trainee physicians	130	83%	DASS-21	63.9%	Associated with anxiety: -depression -stress
de Mélo Silva Júnior et al., [59]	2022	Brazil	Residents	1,989	71.4%	PHQ-4	56.6%	Increasing Anxiety: -being a woman -older age -more frequent diurnal somnolence -unsatisfactory work-personal life balance -depression
Khatun et	2021	Bangladesh	Physicians	114	Not reported	GAD-7	32.5%	Increasing anxiety:

al., [121]								-physicians who worked in Dhaka division -physicians who worked more than 8 h per day
Sharma et al., [132]	2021	India	Physicians	100	Not reported	GAD-7	Minimal: 53% Mild: 27% Moderate: 12% Severe: 8%	Associated with anxiety: - working in primary or secondary level healthcare facility* -sleep disturbance*
Abu-Elenin, [122]	2021	Egypt	Physicians	254	93.36%	GAD-7	78.9%	Increasing anxiety: -poor sleep quality -being a resident physician -disrupted social life -stigma exposure due to COVID-19
He et al., [123]	2021	China	Doctors	1,521	Not reported	SAS	11.11%	Increasing anxiety: -female sex* -having a minor child*
Saeed et al., [133]	2021	Iraq	Physicians	450	44.7%	GAD-7	Mild: 28.4% Moderate: 39.3% Severe: 22.9%	Associated with anxiety (moderate/severe): -working in COVID-19 centers -being a general practitioner
Jarad et al., [124]	2023	Saudi Arabia	Physicians	917	48%	GAD-7	43.4%	Associated with anxiety: -physicians aged 25–30 years -females -residents -physicians working an average of > 11 hours/day -physicians reporting self-perceived reduction in work quality Independent

								predictors of anxiety: -female gender* - working an average 9–11 hours/day* - self-perceived reduction in work quality *
Zehra et al., [49]	2022	Pakistan	Residents	260	Not reported	GAD-7	Mild: 35% Moderate: 16.9% Severe: 10.0%	Increasing anxiety: -younger age (mild) -single status (moderate and severe) -low household income (severe) -lack of job satisfaction (severe) Protective towards anxiety: -being male
Quintana-Domeque et al., [126]	2021	Catalonia (Spain), Italy and UK	Doctors	55,000	First round (June 2020): 3,025 (5.5%) Second round (Nov/Dec 2020): 2,250 (4.1%)	GAD-7	Overall prevalence: Catalonia: June 2020-15.9%, Nov/Dec 2020-14.0% Italy: June 2020-24.6%, Nov/Dec 2020-28.2% UK-: June 2020-11.7%, Nov/Dec 2020-17.9%	Increasing anxiety: -being a women -individuals below 60 years old -feeling vulnerable/exposed at work -reporting normal/below-normal health.
Chalhub et al., [134]	2021	Brazil	Physicians	450	49.6%	BAI	17%	Associated with anxiety: -being female

								physician -burnout (high EE, high DP, and lower PA)
Sarkar et al., [129]	2021	Bangladesh	Physicians (gastroenterologists)	166	37.9%	HADS	25.4%	Associated with anxiety: -gastroenterologists of older (41-50-years) age group -working as specialists less than or equal to 5 years
Varela et al., [130]	2021	Venezuelan	Residents	120	Not reported	DASS-21	39.2%	No information provided
Carlson et al., [77]	2021	USA	Physicians	186	56%	GAD-2	11%	No information provided

HADS- Hospital Anxiety and Depression Scale; DASS- Depressive Anxiety Stress Scale; GAD-7- Generalized Anxiety Disorder 7-item; GAD-2- Generalized Anxiety Disorder 2-item; PHQ-4- Patient Health Questionnaire-4; SAS- Self-Rating Anxiety Scale; BAI- Beck Anxiety Inventory; DSM-5- Diagnosis and Statistical Manual of Mental Disorders; EE- emotional exhaustion; DP- depersonalization; PA- personal accomplishments
*Multivariate analysis

A total of 29 studies investigated the prevalence of anxiety among physicians and/or residents in training (**Table 3**). Among these, 17.2% (5 studies) focused exclusively on anxiety, 41.4% (12 studies) examined both anxiety and depression and another 41.4% (12 studies) assessed anxiety along with burnout and depression. Of these studies, 69% (20 studies) sampled physicians, while 31% (9 studies) focused on residents in training. The most commonly used survey tool is the Generalized Anxiety Disorder scale or its variations, utilized in 48.3% (14 studies) [49, 55, 63, 66, 67, 77, 112, 121, 122, 124, 126, 131-133], with outcomes detailed in (Table 3). Other tools included the Depression Anxiety Stress Scale (DASS), used in 20.7% (6 studies) [56, 62, 69, 114, 115, 130], and the Hospital Anxiety Depression Scale (HADS), used in 17.4% (5 studies) [52, 68, 111, 113, 129]. Additionally, single-study tools included the Beck Anxiety Inventory (BAI) [134], the Self-Rating Anxiety Scale (SAS) [123], the Patient Health Questionnaire (PHQ) [59], and the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [64]. The overall prevalence of anxiety ranged from 8% [132] to 78.9% [122] among physicians and from 10% [49] to 63.9% [115] among residents in training. Additionally, the prevalence of anxiety reported in the included studies showed higher levels among females. Most of the studies (n=25) investigated factors associated with anxiety, while the remaining four studies did not provide any information on associated factors with anxiety.

Discussion

This scoping review explores and summarizes the literature related to the prevalence of burnout, depression, and anxiety and associated factors among physicians and residents in training (including fellows) that was published from 2021 to April 2024. In this review, the studies varied considerably in their methodology and findings. The most used tools by researchers were the Maslach Burnout Inventory (MBI) for burnout, the Patient Health Questionnaire-9 (PHQ-9) for depression, and the Generalized Anxiety Disorder-7 (GAD-7) for anxiety. These tools are recognized as the standard instruments to measure these mental health conditions. For burnout, different versions of the MBI were applied. Additionally, even in studies that utilized the same MBI version, results were reported inconsistently. For example, some studies presented burnout rates as an overall figure [55, 60, 62, 66], while others broke down the results into burnout subdimensions [68, 85, 89]. Similarly, in studies measuring depression and anxiety, alongside the commonly used PHQ-9 and GAD-7, other instruments such as the Depression, Anxiety, and Stress Scales (DASS) and the Hospital Anxiety and Depression Scale (HADS) were also employed. Key findings from the review include:

- A larger proportion of the studies focused on physicians compared to residents in training, with burnout being the most researched issue, followed closely by depression.
- Burnout prevalence among physicians ranged from 4.7% to 90.1%, and among residents, it ranged from 18.3% to 94%.
- Depression prevalence varied from 4.8% to 66.5% in physicians, and from 7.7% to 93% in residents.
- Anxiety prevalence ranged from 8% to 78.9% in physicians, and from 10% to 63.9% in residents.

- Across the studies, females consistently showed higher prevalence rates of burnout, depression, and anxiety compared to males. This disparity can be partly explained by gender role theory, which posits that women are generally more likely than men to express feelings of emotional and physical exhaustion openly [135].

The review indicated a stronger focus on assessing burnout, depression, and anxiety among physicians compared to residents in training. This discrepancy was further evident in studies that included both groups, with physicians being more frequently sampled [71, 103]. One potential reason for this could be the differing accessibility between physicians and residents. Physicians often remain in one facility, while residents frequently rotate through different healthcare centers, making it more challenging to reach them for surveys and assessments.

In terms of burnout, the review uncovered considerable variability in prevalence estimates among physicians, with significant differences in how burnout was defined and measured across studies. Burnout prevalence ranged widely from 4.7% to 90.1% among physicians and from 18.3% to 94% among residents in training. These findings seem to agree with what has been reported in a previous systematic review (0% to 80.5%) [28]. Although global estimates suggest that burnout affects around 50% of both physicians [136] and residents [137], the review found that over 20 studies on physicians and 7 studies on residents reported burnout prevalence levels exceeding 50%. Regarding depression and anxiety, the prevalence was also wide ranged among physicians and residents. Most of the studies reviewed reported prevalence exceeding 35% in both conditions, which is higher than the 20.5% for depression and 25.8% for anxiety found in a global systematic review and meta-analysis [138]. Similarly, Mata et al. reported a 28.8% prevalence of depression among resident physicians [18], a figure lower than what was found in the majority of studies assessing depression in residents included in this review.

Factors associated with burnout, depression and anxiety

Factors associated with burnout, depression and anxiety were grouped into the following categories: sociodemographic, psychological, social, and organizational. Most of these factors were increasing burnout, depression and anxiety, but protective factors were also identified.

Factors associated with burnout

Sociodemographic factors

Age: In eight studies, younger age was associated with higher levels of burnout [53, 58, 59, 65, 69, 72, 96, 97]. One study specifically found that younger residents were more likely to experience reduced personal accomplishment (PA) [95]. The impact of older age on burnout was less consistent: three studies reported that older individuals experienced lower levels of burnout [46, 75, 105], while another study found higher burnout rates among older age groups [50].

Gender: Sixteen studies found that females experienced higher levels of burnout [45, 46, 48, 53, 55, 58, 62, 68, 69, 72, 87, 88, 94, 97, 108, 109]. Conversely, two studies reported that males had higher burnout levels [59, 100].

Marital Status/Having Children: The findings on marital status and burnout were inconsistent. In some studies, being married was associated with increased burnout [63, 100], while in others, it was linked to decreased burnout [72]. Being single or not married was associated with higher burnout levels [46]. Additionally, four studies found that having children increased burnout [50, 71, 72, 100], whereas one study reported that having more children served as a protective factor against burnout [76].

Financial Situation: Factors such as inadequate compensation [86], financial problems [90],

financial pressure [45], lower income [106], and educational debt exceeding $250,000 [87] were all associated with increased burnout. Conversely, financial well-being was linked to decreased burnout [72], and higher income satisfaction was identified as a protective factor against burnout [76].

Professional Experience: Three studies found increased burnout among junior physicians [44, 52, 69]. Being a resident was often associated with increased burnout [53, 62, 103, 106], though one study reported decreased burnout [84]. Less professional experience generally correlated with higher burnout [71, 72, 93, 99, 108].

Psychological Factors

Higher burnout was associated with independent psychological factors including depression [56, 58, 59, 61, 84, 109], anxiety [58, 61, 109], and stress [79, 96].

Social Factors associated with burnout

Burnout was associated with several social factors, including psychological abuse [59], unfair treatment at work [60], poor work-life balance and lack of vacation or leisure [65], limited social activities [80], stigmatization for treating COVID-19 patients, and workplace violence [90]. In four studies, physicians and residents reported that family life was associated with increased burnout. High burnout was linked to factors such as the quality of family relationships [64], living with a family member with comorbidities [72], limited family time for residents [83], and strained personal relationships since the COVID-19 pandemic [66].

Organizational Factors

Eight studies found that working long hours (over 40 hours per week) were associated with higher burnout [80, 81, 83, 84, 95, 96, 100, 108]. Additionally, more frequent night shifts [48, 107], extended on-call hours [58, 107], and 24-hour shifts [52] were all linked to increased burnout.

Burnout related to COVID-19 pandemic

The COVID-19 pandemic led to higher burnout due to factors including transient symptoms [52], caring for COVID-19 patients [57], fear of infection, working in high-risk contamination areas, concerns about PPE effectiveness [66], and testing positive for COVID-19 [48].

Protective factors against burnout

The authors also highlighted protective factors against burnout, including resilience and strong institutional support [61], having more children and greater income satisfaction [76], and faculty support [83]. Additionally, researchers identified several other factors that help reduce burnout: professional efficacy [56], access to mental health services and insurance for personal illness or emergencies [81], staff grade or trainee status combined with higher perceived support [84], being of Black or Asian descent and being in smaller programs [87], being an International Medical Graduate (IMG) and part of a racial minority [92], and regular exercise (three times a week for 20 minutes) [46].

Factors associated with depression

Sociodemographic factors

Age: Younger age was linked to higher levels of depression in 7 studies [3, 43, 69, 114, 121, 124, 128]. The relationship between older age and depression was inconsistent. One study found that

older age was associated with lower depression rates in a multivariable analysis [123], while another study found the opposite, with older age linked to higher depression [129].

Gender: Thirteen studies identified being female as a factor associated with increased depression [3, 43, 44, 59, 66, 69, 111, 113, 121, 123, 124, 126, 128], while two studies reported higher depression rates in males [68, 114].

Marital Status/Having Children: In four studies, being single or unmarried was associated with higher depression [3, 43, 121, 128]. Only one study found that being married was linked to increased depression [130]. Additionally, a multivariate analysis indicated that having children was associated with higher depression levels [123].

Educational Level and Financial Situation: A multivariate analysis found that a higher educational level was linked to increased depression [3]. Low income [113], low salary [3], and financial concerns [81] were associated with higher depression.

Professional Experience

Two studies reported increased depression among junior physicians [44, 52]. Three studies found that being a resident in training was linked to increased depression [120, 122, 124], and less professional experience was associated with higher depression [128].

Psychological Factors

Higher depression levels were associated with independent factors, including anxiety [59, 115], burnout [59], stress [112, 115, 116], and poor sleep [3, 43, 113, 122, 125].

Social Factors

Several social factors were linked to increased depression, including psychological abuse [59], stigmatization from exposure to COVID-19 and disrupted social life [122], and fewer than 2 hours of daily leisure activities [113]. In one study, having a hobby or leisure time was associated with lower depression [120].

Organizational Factors

Four studies found that long working hours were associated with higher depression [43, 81, 111, 120]. Additionally, working 24-hour shifts in the emergency department [52] and a higher clinical workload [56] were all linked to increased depression.

Depression related to the COVID-19 Pandemic

The COVID-19 pandemic led to increased depression levels due to several factors, including

transient symptoms [52, 113], direct contact with COVID-19 patients [128], avoiding patients with confirmed or suspected COVID-19 cases, working in high-risk contamination areas, fear of contracting the virus and transmitting it to loved ones [66]; and a lack of confidence in effectively managing COVID-19 patients [113].

Factors associated with anxiety
Sociodemographic factors

Age: Four studies [49, 69, 114, 124] found that younger age was linked to higher levels of anxiety. Conversely, two studies [59, 129] found that older age was associated with increased anxiety.

Gender: Eleven studies [59, 66, 68, 69, 111-113, 123, 124, 126, 134] identified being female as a factor associated with increased anxiety, while one study [49] reported that being male was a protective factor against anxiety.

Marital Status/Having Children: Two studies [49, 63] linked being single or unmarried with higher anxiety. Additionally, a multivariate analysis suggested that having children was associated with higher anxiety levels [123].

Financial Situation: Factors such as lower income levels [113], dissatisfaction with remuneration [56], and low household income [49] were all linked to higher anxiety.

Occupational and Professional Experience

Two studies [52, 69] reported increased anxiety among junior physicians while being a resident was associated with higher anxiety in two studies [122, 124]. Increased anxiety was also linked to a lack of job satisfaction [49] and working as a specialist for five years or less [129].

Psychological Factors

Anxiety was associated with stress [113, 115], depression [59, 115], burnout [134], and poor sleep [113, 122, 131, 132]. A multivariate analysis linked moderate to high stress perceptions and a family history of psychological disorders to increased anxiety [112].

Social Factors

Several social factors, such as stigmatization from COVID-19 exposure [63, 122], disrupted social life [122], less than two hours of daily leisure activities [113], and unsatisfactory work-life balance [59], were associated with increased anxiety.

Organizational Factors

Increased anxiety was found in physicians working more than 8 hours per day [121] or an average of 11 hours per day [124], and working 24-hour shifts in the emergency department [52]. Increased anxiety was reported in residents working over 60 hours per week [111].

Anxiety related to the COVID-19 pandemic

The COVID-19 pandemic increased anxiety levels due to various factors, including transient symptoms [52, 113]; handling of COVID-19 patients [62]; avoiding contact with confirmed or suspected COVID-19 cases, working in high-risk areas, fear of contracting and transmitting the virus [66]; lack of confidence in managing COVID-19 patients [113]; and working in COVID-19 hospitals or centers [114, 133].

Strength and Limitations

One of the key strengths of this study is its comprehensive and up-to-date examination of the prevalence of major mental health conditions, such as burnout, depression, and anxiety, which are often studied individually but not collectively. The findings offer valuable data that can assist in monitoring changes in these conditions over time. However, the study has some limitations. Firstly, while a significant number of papers were included, the search did not cover all available databases, leaving a possibility that some relevant studies were missed or excluded due to publication bias. Secondly, the research was limited to studies published between 2021 and April 2024 and written only in English, which further restricts its scope. Thirdly, different methods were used to measure the prevalence of burnout, depression, and anxiety, making it difficult to produce a unified estimate for each condition. Future studies should focus on reporting rates specific to each assessment tool rather than merging results from different scales. Lastly, many of the studies did not mention the validity and reliability of the tools they used. Among the most used tools were the Maslach Burnout Inventory (MBI) for burnout, the Patient Health Questionnaire (PHQ-9) for depression, and the Generalized Anxiety Disorder Scale (GAD-7) for anxiety. These tools are widely used globally, with strong evidence supporting their reliability and consistency. For instance, the GAD-7 demonstrates good test-retest reliability and strong internal consistency [139, 140]. The Maslach Burnout Inventory (MBI), a concise questionnaire used to evaluate burnout symptoms and their intensity, has shown strong reliability. Specifically, it has Cronbach's alpha values of 0.90 for emotional exhaustion, 0.76 for depersonalization, and 0.76 for personal accomplishment [141]. Similarly, the Patient Health Questionnaire-9 (PHQ-9), widely used for depression screening, exhibits solid psychometric properties with good sensitivity and high internal consistency [142, 143], making it a reliable tool for assessing depression symptoms. Thus, the choice and selection of tools in the retrieved studies seem to be appropriate. Despite these limitations, this study provides a crucial resource for future research on the prevalence of burnout, depression, and anxiety, emphasizing the need for consistent methodologies and longitudinal studies.

Conclusion

This scoping review offers a comprehensive overview of the prevalence and associated factors of key mental health issues such as burnout, depression, and anxiety among physicians and residents in training. The results indicate a consistently high prevalence of these mental health conditions across most studies, although prevalence rates varied due to differences in outcome

measures, sample sizes, and study settings. Both physicians and residents showed elevated levels of these conditions, with the prevalence being notably higher among females in both groups. Various factors influence the prevalence of burnout, depression, and anxiety, including demographic characteristics like age, gender, education, financial situation, family status, and occupation. Psychological factors such as stress, existing burnout, anxiety, depression, and sleep disturbances play a significant role, while social aspects like stigmatization and family life also contribute. Additionally, work-related factors, such as workload and working conditions, are critical contributors. Finally, COVID-19-related factors exacerbated these mental health conditions. These include transient symptoms, caring for COVID-19 patients, fear of infection, working in high-risk areas, lack of confidence in managing COVID-19 patients, concerns about the effectiveness of personal protective equipment (PPE), and testing positive for COVID-19. This review offers valuable insights that can guide policymakers and healthcare administrators in creating effective programs and interventions to prevent burnout, depression, and anxiety among both physicians and residents.

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Appendix 1

Search Strategy

We searched Medline, PubMed, Scopus, PsycINFO, and CINAHL. Search terms include: “prevalence of depression,” “prevalence of anxiety,” “prevalence of burnout,” “depression”, “burnout”, “anxiety”, “prevalence”, “physicians,” “doctors,” “medical practitioners,” and “resident physicians.” Search was conducted in April, 2024.

Example of search in Medline

1. *Depression/ or depression.mp.
2. Burnout, Psychological/ or Burnout, Professional/ or burnout.mp.
3. Anxiety.mp. or Anxiety/
4. Prevalence/ or prevalence.mp.
5. Physicians, Family/ or Physicians/ or physicians.mp. or Physicians, Primary Care/
6. medical practitioners.mp.

7. Physicians/ or Doctors.mp.
8. "Internship and Residency"/ or resident physicians.mp.
9. 1 and 2 and 3
10. 4 and 9
11. 5 or 6 or 7 or 8
12. 10 and 11

Example of search in PubMed

Search: **((((depression) AND (burnout)) AND (anxiety)) AND (prevalence)) AND ((((physicians) OR (doctors)) OR (medical practitioners)) OR (resident physicians))**

("depressed"[All Fields] OR "depression"[MeSH Terms] OR "depression"[All Fields] OR "depressions"[All Fields] OR "depression s"[All Fields] OR "depressive disorder"[MeSH Terms] OR ("depressive"[All Fields] AND "disorder"[All Fields]) OR "depressive disorder"[All Fields] OR "depressivity"[All Fields] OR "depressive"[All Fields] OR "depressively"[All Fields] OR "depressiveness"[All Fields] OR "depressives"[All Fields]) AND ("burnout s"[All Fields] OR "burnout, psychological"[MeSH Terms] OR ("burnout"[All Fields] AND "psychological"[All Fields]) OR "psychological burnout"[All Fields] OR "burnout"[All Fields] OR "burnouts"[All Fields]) AND ("anxiety"[MeSH Terms] OR "anxiety"[All Fields] OR "anxieties"[All Fields] OR "anxiety s"[All Fields]) AND ("epidemiology"[MeSH Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms] OR "prevalance"[All Fields] OR "prevalences"[All Fields] OR "prevalence s"[All Fields] OR "prevalent"[All Fields] OR "prevalently"[All Fields] OR "prevalents"[All Fields]) AND ("physician s"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields] OR "physicians s"[All Fields] OR ("doctor s"[All Fields] OR "doctoral"[All Fields] OR "doctorally"[All Fields] OR "doctorate"[All Fields] OR "doctorates"[All Fields] OR "doctoring"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "doctor"[All Fields] OR "doctors"[All Fields]) OR (("medic"[All Fields] OR "medical"[All Fields] OR "medicalization"[MeSH Terms] OR "medicalization"[All Fields] OR "medicalizations"[All Fields] OR "medicalize"[All Fields] OR "medicalized"[All Fields] OR "medicalizes"[All Fields] OR "medicalizing"[All Fields] OR "medically"[All Fields] OR "medicals"[All Fields] OR "medicated"[All Fields] OR "medication s"[All Fields] OR "medics"[All Fields] OR "pharmaceutical preparations"[MeSH Terms] OR ("pharmaceutical"[All Fields] AND "preparations"[All Fields]) OR "pharmaceutical preparations"[All Fields] OR "medication"[All Fields] OR "medications"[All Fields]) AND ("practitioner"[All Fields] OR "practitioner s"[All Fields] OR "practitioners"[All Fields])) OR (("internship and residency"[MeSH Terms] OR ("internship"[All Fields] AND "residency"[All Fields]) OR "internship and residency"[All Fields] OR "residencies"[All Fields] OR "residency"[All Fields] OR "reside"[All Fields] OR "resided"[All Fields] OR "residence"[All Fields] OR "residence s"[All Fields] OR "residences"[All Fields] OR "residency s"[All Fields] OR "resident"[All Fields] OR "resident s"[All Fields] OR "residents"[All Fields] OR "resides"[All Fields] OR "residing"[All Fields]) AND ("physician s"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields] OR "physicians s"[All Fields])))

Translations

depression: "depressed"[All Fields] OR "depression"[MeSH Terms] OR "depression"[All Fields] OR "depressions"[All Fields] OR "depression's"[All Fields] OR "depressive

disorder"[MeSH Terms] OR ("depressive"[All Fields] AND "disorder"[All Fields]) OR "depressive disorder"[All Fields] OR "depressivity"[All Fields] OR "depressive"[All Fields] OR "depressively"[All Fields] OR "depressiveness"[All Fields] OR "depressives"[All Fields]
burnout: "burnout's"[All Fields] OR "burnout, psychological"[MeSH Terms] OR ("burnout"[All Fields] AND "psychological"[All Fields]) OR "psychological burnout"[All Fields] OR "burnout"[All Fields] OR "burnouts"[All Fields]
anxiety: "anxiety"[MeSH Terms] OR "anxiety"[All Fields] OR "anxieties"[All Fields] OR "anxiety's"[All Fields]
prevalence: "epidemiology"[Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms] OR "prevalance"[All Fields] OR "prevalences"[All Fields] OR "prevalence's"[All Fields] OR "prevalent"[All Fields] OR "prevalently"[All Fields] OR "prevalents"[All Fields]
physicians: "physician's"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields] OR "physicians's"[All Fields]
doctors: "doctor's"[All Fields] OR "doctoral"[All Fields] OR "doctorally"[All Fields] OR "doctorate"[All Fields] OR "doctorates"[All Fields] OR "doctoring"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "doctor"[All Fields] OR "doctors"[All Fields]
medical: "medic"[All Fields] OR "medical"[All Fields] OR "medicalization"[MeSH Terms] OR "medicalization"[All Fields] OR "medicalizations"[All Fields] OR "medicalize"[All Fields] OR "medicalized"[All Fields] OR "medicalizes"[All Fields] OR "medicalizing"[All Fields] OR "medically"[All Fields] OR "medicals"[All Fields] OR "medicated"[All Fields] OR "medication's"[All Fields] OR "medics"[All Fields] OR "pharmaceutical preparations"[MeSH Terms] OR ("pharmaceutical"[All Fields] AND "preparations"[All Fields]) OR "pharmaceutical preparations"[All Fields] OR "medication"[All Fields] OR "medications"[All Fields]
practitioners: "practitioner"[All Fields] OR "practitioner's"[All Fields] OR "practitioners"[All Fields]
resident: "internship and residency"[MeSH Terms] OR ("internship"[All Fields] AND "residency"[All Fields]) OR "internship and residency"[All Fields] OR "residencies"[All Fields] OR "residency"[All Fields] OR "reside"[All Fields] OR "resided"[All Fields] OR "residence"[All Fields] OR "residence's"[All Fields] OR "residences"[All Fields] OR "residency's"[All Fields] OR "resident"[All Fields] OR "resident's"[All Fields] OR "residents"[All Fields] OR "resides"[All Fields] OR "residing"[All Fields]
physicians: "physician's"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields] OR "physicians's"[All Fields]

Example of search in Scopus
(TITLE-ABS-KEY (prevalence AND of AND depression) OR TITLE-ABS-KEY (prevalence AND of AND anxiety) OR TITLE-ABS-KEY (prevalence AND of AND burnout) AND TITLE-ABS-KEY (physicians) OR TITLE-ABS-KEY (medical AND doctors) OR TITLE-ABS-KEY (medical AND practitioners) OR TITLE-ABS-KEY (resident AND physicians))

Example of search in CINAHL

Search ID#	Search Terms	Search Options

S10	S7 AND S8	**Limiters** - Publication Date: 20210101-20241231 **Expanders** - Apply related words; Apply equivalent subjects **Search modes** – Proximity
S9	S7 AND S8	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S8	S4 OR S5 OR S6	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S7	S1 OR S2 OR S3	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S6	resident physicians	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S5	medical practitioners	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S4	physicians or doctors or clinicians	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S3	prevalence of anxiety	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S2	prevalence of burnout	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S1	prevalence of depression	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** – Proximity

Example of search in PsycINFO

Search ID#	**Search Terms**	**Search Options**
S10	S7 AND S8	**Limiters** - Publication Date: 20210101-20241231 **Expanders** - Apply related words; Apply equivalent subjects

		Search modes – Proximity
S9	S7 AND S8	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S8	S4 OR S5 OR S6	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S7	S1 OR S2 OR S3	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S6	resident physicians	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S5	medical practitioners	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S4	physicians or doctors or clinicians	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S3	prevalence of burnout	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S2	prevalence of anxiety	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** - Proximity
S1	prevalence of depression	**Expanders** - Apply related words; Apply equivalent subjects **Search modes** – Proximity

Supplementary Files

Figures

Prisma flow diagram illustrating the selection process for relevant studies on the prevalence and correlates of burnout, depression, and anxiety among physicians and postgraduate medical trainees.