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Global prevalence and contributing factors of nurse burnout: an umbrella review of systematic review and meta-analysis

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Abstract

Introduction Nurse burnout negatively impacts patient care quality, safety, and outcomes, while harming nurses' mental health, job satisfaction, and retention. It also imposes financial burdens on healthcare organizations through absenteeism, reduced productivity, and higher turnover costs, highlighting the need for research to address these challenges. The umbrella review methodology was selected to integrate evidence from multiple systematic reviews and meta-analyses, offering a broad and in-depth summary of existing research to guide practice and policy. This approach equips stakeholders with a holistic understanding of the multifaceted impacts of nurse burnout, facilitating the design of effective interventions that support nurses, enhance healthcare delivery, and optimize patient outcomes. Consequently, this umbrella review aims to evaluate the global prevalence and contributing factors of nurse burnout.

Methods This umbrella review included 14 systematic reviews and meta-analyses identified from various databases. The quality of each study was assessed using the Assessment of Multiple Systematic Reviews (AMSTAR II). Data were extracted using Microsoft Excel and analyzed with STATA 17.0. Heterogeneity was measured using Higgin's I^2 Statistics, and summary prevalence estimates were calculated with the Der Simonian-Laird random-effects model. Meta-regression and subgroup analyses were conducted to identify the source of high heterogeneity. Publication bias was assessed using funnel plots and Egger's regression test, with the former providing a visual assessment of bias and the latter offering a statistical method to detect asymmetry.

Results The global prevalence of nurse burnout was evaluated in three areas: emotional exhaustion (33.45%, 95% CI 27.31–39.59), depersonalization (25.0%, 95% CI 17.17-33.00), and low personal accomplishment (33.49%, 95% CI 28.43–38.55). Emotional exhaustion was most common among nurses working during the COVID-19 pandemic (39.23%, 95% CI 16.22–94.68). Oncology nurses experienced the highest rate of depersonalization (42%, 95% CI 16.71–77.30), while nurses in intensive care units reported the highest rate of low personal accomplishment (46.02%, 95% CI 43.83–48.28).

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Conclusions Nurse burnout is prevalent worldwide, often marked by a sense of low personal accomplishment. Several factors contribute to this issue, including role conflict, negative emotions, family problems, moral distress, stress, commuting distance, predictability of work tasks, and workplace advancement.

Keywords Nurse, Burnout, Determinant factors, And umbrella review

Introduction

Nurse burnout significantly impacts nurses' mental well-being, causing exhaustion and disengagement, while also affecting patient care, organizational productivity, and overall healthcare quality. It is linked to decreased safety, lower patient satisfaction, and reduced commitment among nurses [1]. Burnout arises from chronic stressors, leading to a decline in key psychological dimensions. The Maslach Burnout Inventory (MBI) measures three dimensions: emotional exhaustion (EE), caused by physical and emotional fatigue; depersonalization (Dp), marked by cynicism and detachment; and low personal accomplishment (PA), characterized by negative attitudes, low self-esteem, and reduced job satisfaction, ultimately affecting professional performance [2].

Globally, nurse burnout symptoms were reported at a rate of 11.23%, with significant variations across different geographical regions, specialties, and types of burnout measurement used [3]. The Sub-Saharan African region exhibited the highest prevalence of burnout symptoms, while the Europe and Central Asia regions had the lowest [4]. Over the past decade, a considerable number of nurses have been found to experience moderate to high levels of burnout syndrome [5]. Various studies have demonstrated that a significant percentage of nurses suffer from burnout, with a strong correlation to specific demographic factors, particularly nationality and work unit [6]. In Ethiopia, the prevalence of burnout syndrome among nurses was 34%. This was associated with factors such as educational status, job title, work experience, fatigue, and social support [7].

There are different factors affecting nurse burnout; two-thirds of intensive care unit nurses were at risk of burnout, a risk linked to their working conditions during the initial wave of the COVID-19 pandemic. The COVID-19 pandemic worsened nurse burnout by increasing workload, stress, and resource shortages, with long-term effects on nurses' mental health and the healthcare system, directly linking these challenges to the study's focus on global burnout trends and contributing factors [8]. Facing challenges caused by this pandemic, pregnant women used a variety of strategies to cope with and adapt to the changes, but sometimes the adaption is limited. Emotional, instrumental, and informational support should be provided to them in an accessible way [9].

Being single in marital status and experiencing workplace stressors, such as impatience with colleagues and feelings of melancholy were identified as significant predictors of nurse burnout. Additionally, nursing professionals who expressed a willingness to choose their profession again were less likely to experience burnout [10]. In addition, the most common risk factors for burnout syndrome included stress, lack of family support, and organizational factors like prolonged night shifts, length of experience, and exposure to traumatic events [11].

Umbrella review provides a key advantage by synthesizing evidence from multiple systematic reviews and meta-analyses, offering a comprehensive overview of research on a specific topic. It integrates findings across various studies to highlight broader trends, identify gaps, and assess the quality of evidence, making it a valuable tool for informing practice, policy, and future research. Conducting an umbrella review on the "Global Prevalence and Contributing Factors of Nurse Burnout" consolidates existing research, enhancing our understanding of burnout across diverse populations and settings. Unlike traditional systematic reviews, which focus on specific questions, umbrella reviews provide a higher-level synthesis, revealing patterns, limitations in generalizability, and areas requiring further investigation. This approach underscores the importance of addressing nurse burnout through targeted interventions and informed policies while highlighting the need for more research on burnout's trajectory and contributing factors. Therefore, the goal of this umbrella review was to evaluate the global prevalence and contributing factors of nurse burnout.

Methods

In this umbrella review, a comprehensive analysis of systematic reviews and meta-analyses (SRMA) studies on the prevalence and contributing factors of nurse burnout worldwide was conducted using a systematic and comprehensive umbrella review methodology [12]. This is not registered in PROSPERO which is considered the drawback of the review.

Databases and search strategy

Three authors (AG, TA, and BTA) searched several databases: PubMed, Science Direct, Web of Science, and CINAHL from June 1 to June 30, 2024, to retrieve SRMA studies on nurse burnout and its determinants globally. The search terms included: "Nurse" OR "Nurses" AND "Prevalence", "Magnitude" OR "Burden" AND "Burnout" OR "Emotional Exhaustion" OR "Depersonalization" OR "Low Personal Accomplishment" AND "Associated

Factors" OR "Determinants" OR "Predictors" OR "Risk Factors" AND "Systematic Review" OR "Meta-Analysis".

Screening and eligibility of studies

Retrieved SRMA articles were exported to EndNote reference software version 8 for sorting, cleaning, and removing duplicates. All authors independently reviewed and evaluated each study for relevance based on predetermined inclusion criteria, including relevance, title, and abstracts. Further full-text assessments of the remaining articles were conducted. All SRMA studies on the global prevalence of nurse burnout and its predictors until June 2024 and published in English were included. However, studies that were not SRMA, reviews, editorials, abstracts, SRMA studies that did not report the outcome of interest, trials, policy statements, and articles without full text after two email attempts to the corresponding author were excluded. Excluding articles without full-text access in a review is a methodological decision aimed at ensuring the inclusion of complete and verifiable data. Full-text articles provide essential details about study design, methodologies, sample characteristics, and outcomes, which are critical for assessing the quality, relevance, and risk of bias in a study [13]. Additionally, incomplete data may introduce bias or reduce the overall transparency of the review process. During the study selection and quality assessment for our umbrella review, the authors encountered several disagreements regarding the inclusion criteria and evaluation of study quality, which were resolved through discussion. To resolve the encountered disagreement, the authors implemented a systematic approach that involved open discussions where each author presented their perspectives and supporting evidence. These were implemented by establishing clear criteria based on predefined guidelines to assess study relevance and quality. For the disagreements that persisted, we consulted a third author who acted as an impartial mediator, ensuring that all voices were heard while facilitating consensus. This collaborative process not only helped us reach an agreement but also strengthened the overall rigor of our review by ensuring that our final selections were based on a thorough and transparent evaluation.

Data extraction

Information regarding authors, publication year, study population, number of studies in SRMA, sample size, and prevalence of nurse burnout domains (high emotional exhaustion (EE), high depersonalization (Dp), and low personal accomplishment (PA)) were extracted using a Microsoft Excel sheet. Additionally, any determinant factors that may affect nurse burnout were extracted.

Outcome measurement of the study

This umbrella review had one main outcome variable which is nurse burnout. In this review, nurse burnout is measured in three sub-scales which are high EE, high Dp, and low PA. The cut points of high EE, high Dp, and low PA were determined by the writers of each SRMA study after adapting the Maslach Burnout Inventory (MBI) tool [14]. Additionally, determinant factors of nurse burnout were the outcome variables of this review.

Risk of bias assessment

Assessment of Multiple Systematic Reviews (AMSTAR II) tool was used to assess the methodological quality of the included SRMA studies [15] (Table 2). The AMSTAR II is a critical tool used to evaluate the quality of systematic reviews. It provides a standardized approach to assess various aspects of a review, including its methodology, transparency, and risk of bias. By scoring reviews across several domains, AMSTAR II helps ensure that systematic reviews adhere to rigorous standards, making their findings more reliable and trustworthy. This tool is particularly useful in identifying areas for improvement in review processes and enhancing the overall quality of evidence synthesis, thereby guiding researchers and policymakers in making informed decisions based on high-quality evidence.

Data synthesis and heterogeneity assessment

In this umbrella review, Stata version 17.0 software (Stata Corp, TX USA) was utilized for data analysis. Higgin's I2 Statistics [16] were employed to evaluate the presence of high heterogeneity. Due to the substantial heterogeneity between studies, the Der Simonian-Laird random-effects model [17] was used to pool the summary prevalence of nurse burnout. Meta-regression by the number of studies included in each SRMA study and sample size was conducted to identify potential sources of high heterogeneity. Additionally, subgroup analysis by working unit was performed for further evaluation of the source of heterogeneity. Publication bias was assessed through visual inspection of funnel plots and Egger's regression tests [18]. To address publication bias, a trim and fill analysis was conducted. A p-value of less than 0.05 was considered statistically significant.

Result

Literature search findings

The database search provided a total of 17,600 articles; however, after removing studies that are not SRMA, duplications, and irrelevant studies by title and abstract, 14 studies remained for final analysis [2, 19–31] (Fig. 1).

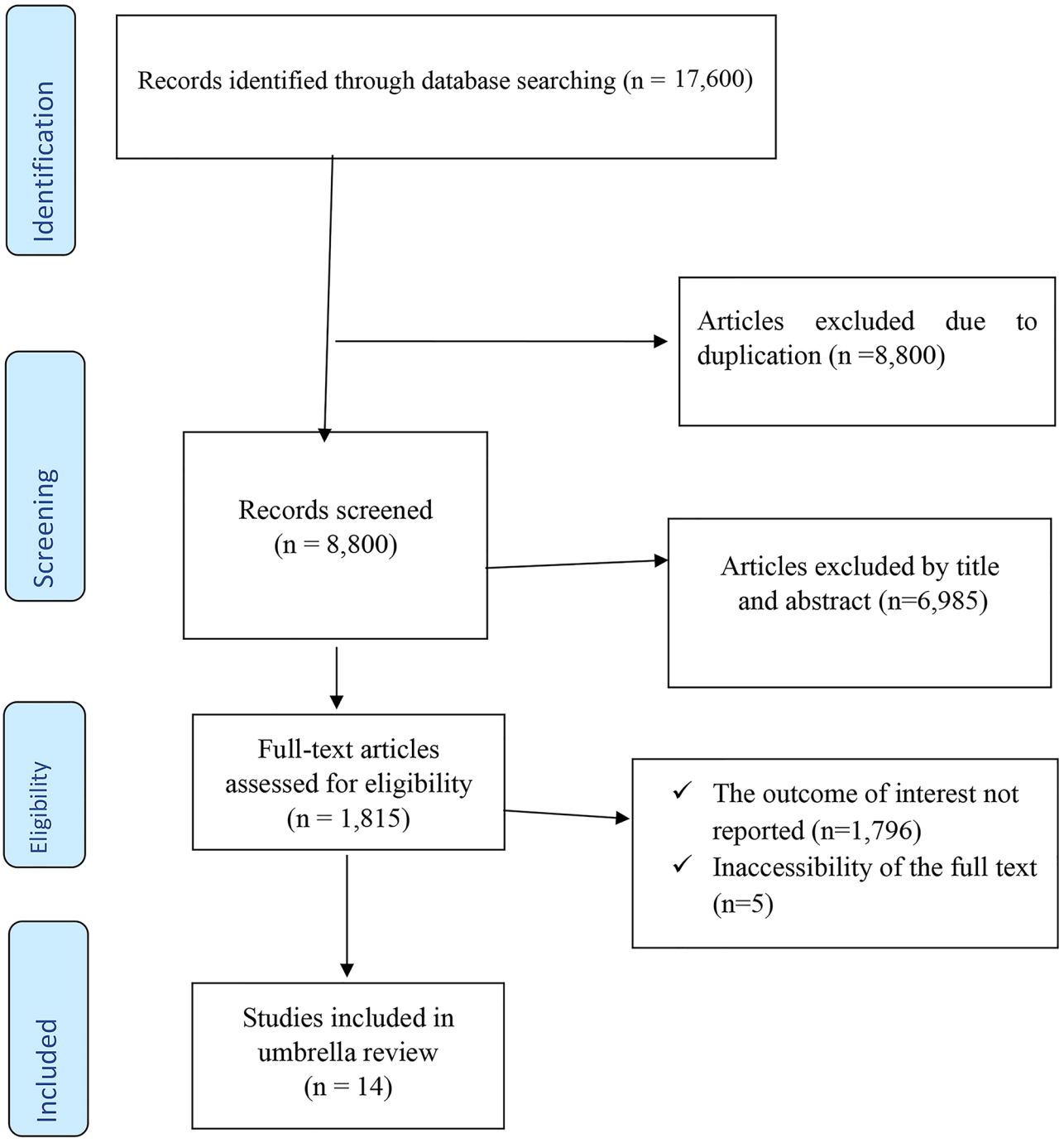

Fig. 1 The PRISMA flow diagram of identification and selection of systematic review and meta-analysis studies done on nurses' burnout and associated factors for the umbrella review

Characteristics of included studies

This umbrella review incorporated 14 systematic reviews and meta-analyses, which collectively included 209 studies with a total sample size of 80,314 nurses. All the systematic reviews and meta-analyses were observational studies. The number of studies in each review and meta-analysis ranged from 6 [2, 21, 24] to 38 [22], and sample sizes varied from 361 [21] to 32,724 [20]. These studies were published between 2017 and 2023. The reviews and meta-analyses covered a range of nursing specialties: two each on general nurses, mental health nurses, oncology nurses, and nurses working during the COVID-19 pandemic; and one each on intensive care unit nurses, emergency nurses, gynecology and obstetrics nurses, palliative

care nurses, primary care nurses, and pediatric nurses (Table 1).

The methodological quality of the included studies

The methodological quality of the included SRMA studies was evaluated using the AMSTAR II tool. The AMSTAR II tool consists of 11 items that address criteria related to the assessment of methodological rigor. Each item is scored as "yes," "no," "cannot answer," or "not applicable," with a maximum possible score of 11. Scores of 0–4 indicate low quality, 5–8 indicate moderate quality, and 9–11 indicate high quality. The authors conducted the appraisal independently using a standardized form and found that scores ranged from 10 to 11, with an average score of 10.64 points, indicating a generally high quality (Table 2).

Global prevalences of nurse burnout

The global summary pooled prevalence of nurse burnout was assessed across three domains: emotional exhaustion, depersonalization, and low personal accomplishment. The umbrella review estimated the prevalence of high emotional exhaustion to be 33.45% (95% CI 27.31–39.59) (Fig. 2). Heterogeneity analysis indicated a Cochran Q value of 169.5 with $P<0.001$ and an I^2 index of 99.66%, signifying high heterogeneity. The estimated prevalence of depersonalization was 25.0% (95% CI 17.17-33.00) (Fig. 3), with a Cochran Q value of 403.9 and $P<0.001$, and an I^2 index of 99.86%, indicating high heterogeneity. The prevalence of low personal accomplishment was estimated at 33.49% (95% CI 28.43–38.55) (Fig. 4), with a Cochran Q value of 176.3 and $P<0.001$, and an I^2 index of 99.56%, indicating high heterogeneity.

Publication bias

The funnel plot showed an asymmetrical distribution of the systematic reviews and meta-analyses included in the study, with Egger's test yielding a statistically significant result ($p=0.05$), suggesting publication bias (Fig. 5A). To address this bias, a trim-and-fill analysis was conducted, resulting in 21 identified systematic reviews and meta-analyses. The bias-adjusted summary prevalence of low personal accomplishment was 23.36% (95% CI 17.66–29.07) (Fig. 5B).

Heterogeneity and investigation of source heterogeneity

This review identified a high level of heterogeneity, with I^2 values of 99.66% for emotional exhaustion, 99.86% for depersonalization, and 99.56% for low personal accomplishment. The significant variability among the included studies reflects differences in methodologies, participant characteristics, and contextual factors related to nurse burnout. This high heterogeneity underscores the complexity of the issue, as diverse study designs,

Table 1 General characteristics of included systematic review and meta-analysis studies done on nurse burnout and associated factors

Author and publication year	Countries of authors	Study population	Mean age of participants	% females	Number of studies	Sample size	Burnout Domains					
							EE	%	DP	%	LPA	%
Gómez-Urquiza et al., 2017	Canada	Emergency nurses	-	-	13	1,566	485	31	564	36	457	29
De la Fuente-Solana et al., 2019	Spain	Nurses Working in Gynecology & Obstetrics	37.4	91.9	6	464	135	29	88	19	204	44
Ghahramani et al., 2021	Iran	Nurses during COVID-19	38	-	30	32,724	16,689	51	17,016	52	9,163	28
De la Fuente-Solana et al., 2020	Spain	Oncology nurses	-	-	6	361	134	37	58	16	97	27
Molina-Praena et al., 2018	Spain	Nurses	-	-	38	1,234	383	31	296	24	469	38
López-López et al., 2019	Spain	Mental health nurses	-	-	11	868	217	25	130	15	191	22
Gómez-Urquiza et al., 2020	Spain	Palliative care nurses	-	-	6	693	166	24	208	30	194	28
Monsalve-Reyes et al., 2018	Spain	Primary care nurses	-	-	8	1,110	311	28	167	15	344	31
Galanis P et al., 2021	Greece	Nurses during COVID-19	32.78	80.7	16	18,935	6,438	34	2,462	13	2,840	15
Pradas-Hernández et al., 2018	Spain	Pediatrics nurses	35.19	98.6	12	9,075	2,813	31	1,906	21	3,539	39
Owuor et al., 2020	Kenya	Nurses	32.5	-	12	2,543	1,675	66	1,526	60	1,246	49
Ramírez-Elvira et al., 2021	Spain	Intensive care unit nurses		-	12	1,986	616	31	357	18	914	46
Ma Y et al., 2023	China	Oncology nurses	35.34	-	20	5,904	1,299	22	413	7	1,948	33
Zeng et al., 2020	China	Mental health nurses	33.79	87.51	19	2,851	798	28	713	25	1,140	40

Dp: Depersonalization, EE: Emotional Exhaustion, LPA: Low Personal accomplishment

measurement approaches, and outcomes contribute to inconsistent findings. While this variability highlights the multifaceted nature of nurse burnout, it limits the ability to draw definitive conclusions or generalize results across contexts. Such heterogeneity may also undermine the reliability of pooled estimates, complicating their application in clinical or policy settings. To address these challenges, it is crucial to explore potential sources of heterogeneity through subgroup analyses or meta-regressions and to standardize research methods where possible. Doing so will enhance the validity and applicability of conclusions, ensuring that recommendations are both meaningful and actionable for diverse healthcare environments. To determine the source of heterogeneity, meta-regression, and subgroup analyses were conducted. Meta-regression was performed using the number of studies included in each systematic review and meta-analysis and the sample size as moderators. For the emotional exhaustion sub-scale of nurse burnout, the number of studies ($p = 0.93$) and sample size ($p = 0.21$) were not significant. Similarly, for the depersonalization sub-scale, the number of studies ($p = 0.8$) and sample size ($p = 0.38$) were not significant, and for the low personal accomplishment sub-scale, the number of studies ($p = 0.47$) and sample size ($p = 0.13$) were also not significant. These results indicate that these factors are not the sources of heterogeneity. Additionally, subgroup analysis was performed based on the working unit. The highest summary prevalence of emotional exhaustion was observed among nurses working during the COVID-19 pandemic at 39.23% (95% CI 16.22–94.68). The highest summary prevalence of depersonalization was found among nurses working in oncology units at 42% (95% CI 16.71–77.30). Furthermore, the highest prevalence of low personal accomplishment was reported among intensive care unit nurses at 46.02% (95% CI 43.83–48.28).

Determinants of nurse burnout

This umbrella review identified different determinants of nurse burnout, highlighting how specific clinical settings can significantly influence the well-being of nursing professionals. For instance, nurses working during the COVID-19 pandemic reported high emotional exhaustion, reflecting the intense pressures associated with managing a global health crisis. This period was marked by increased patient perception, long hours, and emotional strain from witnessing patient suffering, leading to feelings of helplessness and fatigue [20, 26], Similarly, those nurses employed in intensive care units (ICUs) experienced significant high emotional exhaustion due to the demands of caring for critically ill patients, who often require complex interventions and monitoring [29]. Furthermore, nurses who are working in oncology settings develop high depersonalization. This is due to the reason that nurses frequently confront the realities of patient suffering and mortality, which is characterized by emotional detachment from patients as a coping mechanism [21, 30].

The analysis also revealed that sociodemographic factors play a crucial role in influencing nurse burnout. Older nurses exhibited higher levels of emotional exhaustion and high depersonalization, possibly due to the cumulative stress of their careers, as well as the challenges of adapting to evolving healthcare demands. In addition, gender differences were also significant, with women experiencing greater emotional exhaustion and depersonalization than men. This disparity may be attributed to various factors, including social expectations, caregiving roles outside of work, and the psychological burden of balancing multiple responsibilities. Additionally, single nurses reported lower levels of personal accomplishment compared to their counterparts in stable relationships, suggesting that social support may play a crucial role in enhancing job satisfaction and mitigating feelings of inadequacy. Furthermore, the presence of children in a nurse's life was linked to increased emotional exhaustion and lower personal accomplishment, highlighting the additional pressures that parenting can impose on working professionals. This finding underscores the importance of understanding the interplay between personal and professional responsibilities in assessing burnout risk [2, 21, 23, 26].

This review also identified that nurses experiencing work overload, and those with limited experience in the field are particularly vulnerable to burnout, as they may lack the coping strategies and resilience that develop with experience [27]. In addition to these factors, role conflict, negative affectivity, family issues, moral distress, stress from commuting, the predictability of work tasks, and limited opportunities for career progression were all found to contribute to burnout. Role conflict arises when nurses face competing demands from different stakeholders, leading to confusion and stress. Negative affectivity, characterized by a tendency to experience negative emotions, further exacerbates feelings of burnout [23, 24].

High emotional exhaustion was also associated with depression and certain personality traits, including neuroticism, agreeableness, responsibility, and extraversion, indicating that individual differences can influence how nurses experience and cope with stress [29]. Thus, this comprehensive review underscores the multifaceted nature of nurse burnout, emphasizing the need for targeted interventions that consider both workplace conditions and individual characteristics. The interactions between psychological and organizational factors significantly influence nurse burnout, creating a complex environment where both individual and workplace conditions

Table 2 Methodological quality of the included systematic review and meta-analysis studies based on the AMSTAR criteria

Author and publication year	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Total
Gómez-Urquiza et al., 2017	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	10
De la Fuente-Solana et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Ghahramani et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
De la Fuente-Solana et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Molina-Praena et al., 2018	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	10
López-López et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Gómez-Urquiza et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Monsalve-Reyes, 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Galanis P et al., 2021	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10
Pradas-Hernández et al., 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Owuor et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Ramírez-Elvira et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11
Ma Y et al., 2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	10
Zeng et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10

AMSTAR: Assessment of Multiple Systematic Reviews. Q1: A priori design; Q2: Duplicate study selection and data extraction; Q3: Search comprehensiveness; Q4: Inclusion of grey literature; Q5: Included and excluded studies provided; Q6: Characteristics of the included studies provided; Q7: Scientific quality of the primary studies assessed and documented; Q8: Scientific quality of included studies; Q9: Appropriateness of methods used to combine studies' findings; Q10: Likelihood of publication bias was assessed; Q11: Conflict of interest

contribute to burnout symptoms. Psychological factors such as high emotional demands, lack of social support, and personal coping strategies interact with organizational factors like excessive workloads, understaffing, and poor work-life balance. These combined stressors not only exacerbate burnout but also lead to negative outcomes such as decreased job satisfaction, mental health issues, and reduced quality of patient care [32]. Organizational factors like leadership style and workplace culture can either mitigate or worsen the psychological impact, highlighting the need for systemic changes to address burnout effectively [33].

Discussion

An umbrella review on nurse burnout globally aggregates and synthesizes findings from multiple systematic reviews and meta-analyses, providing a comprehensive overview of the prevalence, causes, and consequences of burnout among nurses. This approach helps identify overarching patterns and gaps in the literature, guiding future research and interventions to address this critical issue. According to this review, the overall combined prevalence of nurse burnout across three domains globally is as follows: emotional exhaustion at 33.45% (95% CI 27.31–39.59), depersonalization at 25.0% (95% CI 17.17-33.00), and low personal accomplishment at 33.49% (95% CI 28.43–38.55). These heightened levels of burnout may be attributed to several factors, including the increasing demand for nurses due to the aging Baby Boomer population and rising rates of chronic illnesses. Persistent sleep deprivation, particularly prevalent among nurses working extended hours and consecutive shifts, and encountering challenging situations such as aggressive patients, traumatic injuries, ethical dilemmas, and high mortality rates, also contributes to these elevated levels of burnout [34].

This review identified a high level of heterogeneity, which poses challenges to the interpretation and generalization of findings. This variability reduces the reliability of overall conclusions, making it difficult to draw clear and consistent insights [13]. Additionally, high heterogeneity undermines the precision of pooled estimates, as the presence of variability may inflate confidence intervals and reduce the robustness of the findings. This has practical implications for clinicians and policymakers, who may find it challenging to apply generalized estimates to specific settings or populations [35].

In this umbrella review, the highest prevalence of emotional exhaustion was found among nurses during the COVID-19 pandemic, with a prevalence rate of 39.23% (95% CI 16.22–94.68). This significant emotional strain may be due to the intense pressures nurses face, including fears of contracting the virus and uncertainties about its societal and economic impacts. The rapidly changing

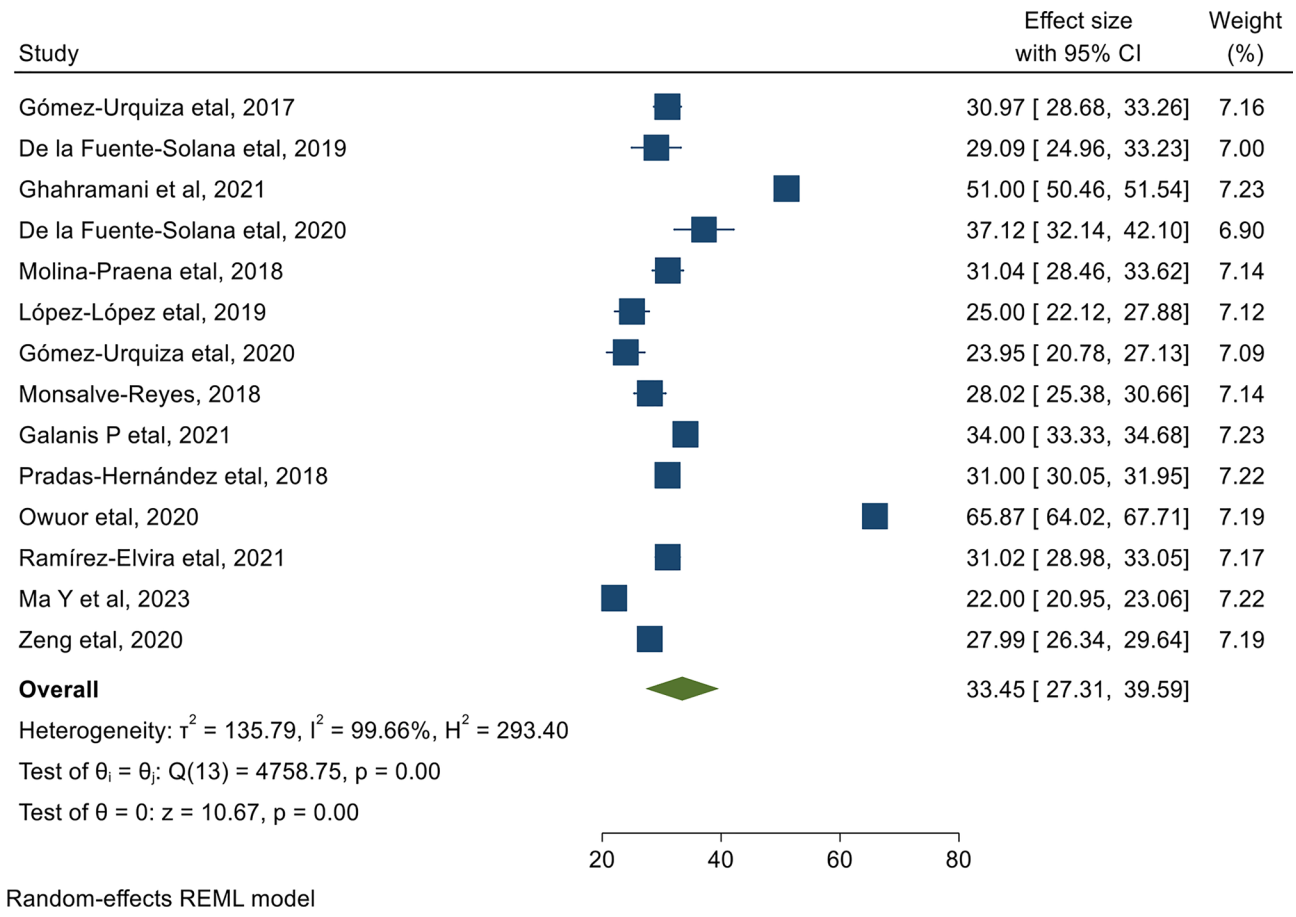

Fig. 2 Umbrella review of systematic reviews and meta-analysis on emotional exhaustion domain of nurse burnout in the world

healthcare landscape exacerbated their stress, intensifying worries about their own and family's health. These challenges were a notable decrease in social support, both professionally and personally, which strongly correlated with increased burnout. Family and social connections proved essential for providing comfort and an outlet for expressing concerns, highlighting the critical role of strong support networks in alleviating feelings of isolation and anxiety. Therefore, addressing social support deficits is vital for not only the well-being of nurses but also for the overall effectiveness of healthcare systems during public health crises [36, 37]. Post-pandemic, it is recommended that healthcare organizations implement sustained mental health support, workload adjustments, and improved staffing to address the long-term impact of COVID-19 on nurse burnout. The highest prevalence of depersonalization among nurses was found in oncology units, accounting for 42% (95% CI 16.71–77.30). This is due to the stressful nature of caring for cancer patients, who often require complex and multifaceted treatment regimens. The emotional ring of witnessing patients suffering and dealing with the reality of patient deaths significantly contributes to the psychological distress experienced by healthcare providers. Oncology nurses must navigate not only the medical intricacies of treatment but also the profound emotional needs of patients and their families, which can be deeply strenuous. The challenges of coordinating care, responding to emergencies, and addressing organizational issues, such as inadequate staffing, add to the emotional burden. These factors can lead nurses to develop a protective mechanism known as depersonalization, where they emotionally distance themselves from patients to cope with the overwhelming nature of their work [38]. The highest prevalence of low personal accomplishment was found among intensive care unit (ICU) nurses, which was 46.02% (95% CI 43.83–48.28). This might be the high-pressure nature of their work environment, where nurses are responsible for managing patients with severe and life-threatening conditions. The complexities of their roles require them to perform intricate clinical interventions and make rapid decisions under stress, which can foster feelings of inadequacy, especially when outcomes fall short of expectations or when patients do not recover. Moreover, constant exposure to critical care scenarios can lead to a cycle of self-doubt and frustration and

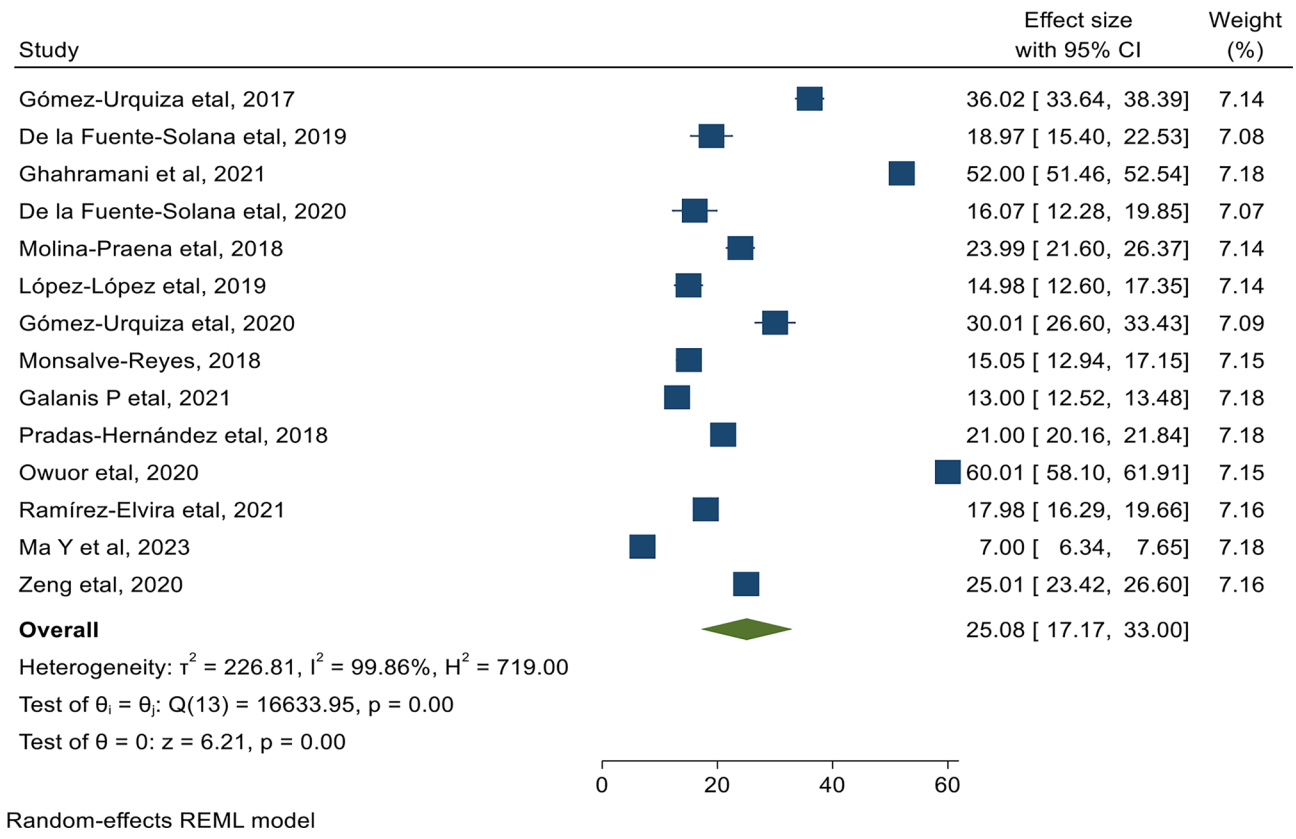

Fig. 3 Umbrella review of systematic reviews and meta-analysis on the depersonalization domain of nurse burnout in the world

feeling overwhelmed by the high stakes associated with their decisions and the weight of their responsibilities [39].

Sociodemographic factors play a significant role in influencing nurse burnout, with various characteristics contributing to differences in burnout levels. Older nurses tend to experience higher levels of emotional exhaustion and depersonalization, likely due to the cumulative stress of many years in the profession, which can lead to emotional fatigue and a sense of detachment from their work. Gender also plays a role, as women, who make up the majority of the nursing workforce, tend to report higher levels of emotional exhaustion and depersonalization than men. This disparity may be attributed to gender-specific stressors, such as the dual burden of work and family responsibilities, which can increase emotional strain. Single nurses are more likely to report lower levels of personal accomplishment compared to their peers in stable relationships. This could be because single nurses might have more time to dedicate to their work but may also experience feelings of loneliness or lack of emotional support, potentially affecting their job satisfaction and sense of accomplishment. Furthermore, having children is associated with higher emotional exhaustion and lower personal accomplishment, as the added responsibilities of parenting can increase overall stress and limit the time and energy available for work-related tasks, leading to a diminished sense of personal fulfillment in the workplace. These sociodemographic factors highlight the complex and multifaceted nature of nurse burnout, indicating that tailored interventions are necessary to address the unique challenges faced by different groups within the nursing workforce [29, 40, 41].

Strengths and limitations of the study

The study exhibits notable strengths that enhance its credibility and reliability. By minimizing the risk of bias, it ensures that the findings accurately represent the true prevalence and factors associated with nurse burnout. The comprehensive global literature review effectively encompasses a diverse range of studies across various settings and populations, thereby improving the generalizability of the results. The use of robust statistical methods for analyzing the pooled data further strengthens the validity of the conclusions, providing clear insights into trends and relationships. Additionally, the management of publication bias through trim and fill analysis adds rigor by addressing potential biases from unpublished data, ensuring a more complete representation of the available evidence.

However, some limitations were considered. The significant heterogeneity among the included studies poses

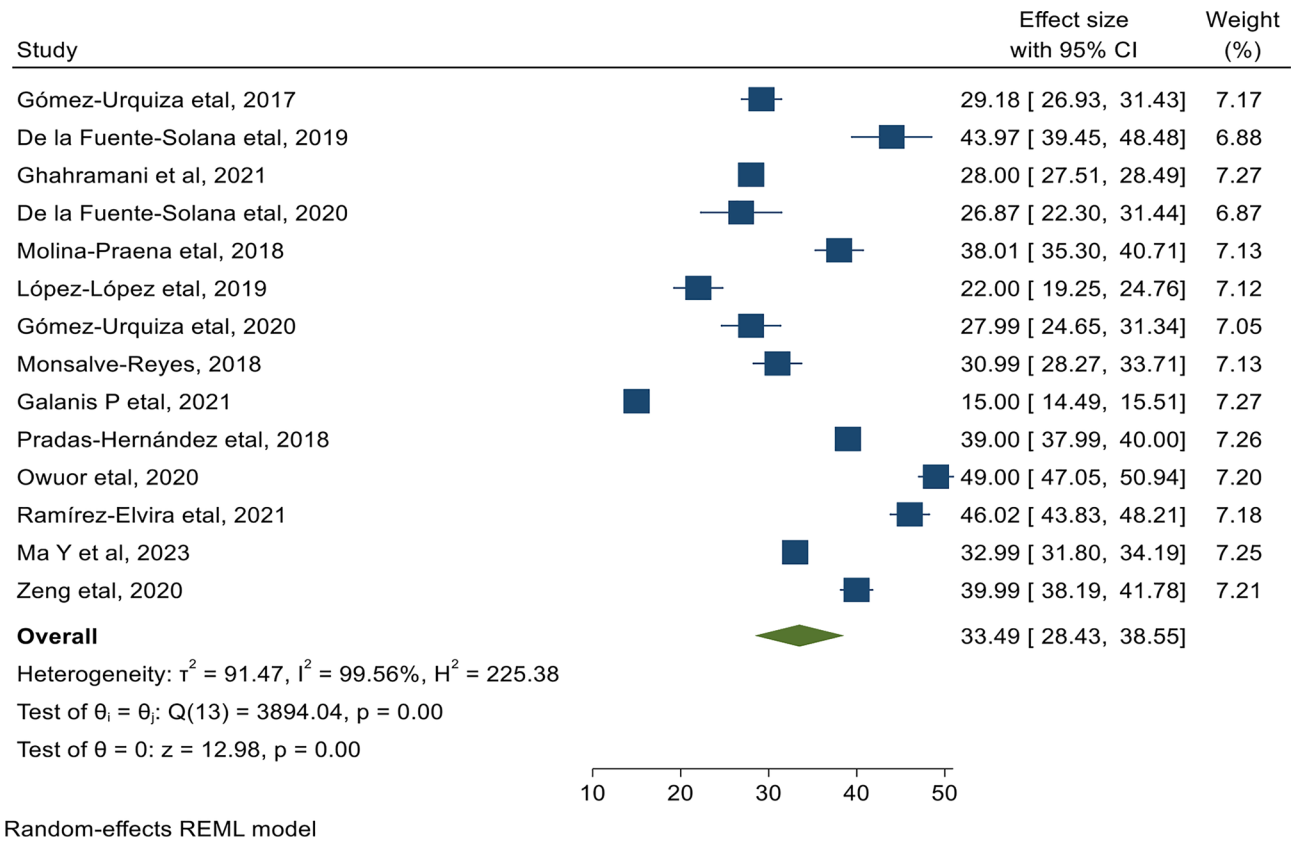

Fig. 4 Umbrella review of systematic reviews and meta-analysis on low personal accomplishment domain of nurse burnout in the world

a challenge to the reliability of the pooled estimates, as differences in study design, sample sizes, and measurement tools can lead to varying results across studies. Additionally, differences in sample sizes may contribute to variability in the precision of the estimates, with smaller studies potentially introducing more bias or less robust conclusions. These factors can complicate efforts to draw clear, generalizable conclusions from the pooled data, as the results may reflect the unique characteristics of the individual studies rather than a true overall effect. The exclusion of non-English studies also restricts the literature review's breadth, potentially overlooking valuable insights from research conducted in other languages and cultural contexts. Additionally, the lack of registration in the PROSPERO database raises concerns regarding the study's transparency and methodological rigor, as prospective registration is crucial for ensuring research integrity and minimizing selective reporting. Furthermore, there is a possibility that some primary research studies were repeated across these reviews, which could result in potential data duplication in the meta-analyses.

Conclusion and recommendation

The global prevalence of nurse burnout syndrome is notably high, with approximately one-third of nurses experiencing emotional exhaustion and low personal accomplishment, while one-fourth report depersonalization. Emotional exhaustion is particularly pronounced among nurses during the COVID-19 pandemic, with oncology nurses facing the highest levels of depersonalization and ICU nurses commonly experiencing low personal accomplishment. Various factors contribute to nurse burnout, including sociodemographic variables, role conflict, negative affectivity, family issues, moral distress, work-related stress, commuting distance, and career progression. To tackle the issue of nurse burnout, healthcare organizations can create a more supportive work environment through targeted interventions, such as providing mental health resources, promoting regular debriefing sessions, and fostering a culture of teamwork and open communication. However, implementing these initiatives may face challenges, such as limited resources, resistance to cultural changes, or logistical barriers in arranging flexible scheduling and adequate staffing. To overcome these challenges, healthcare organizations can prioritize efficient resource allocation, engage staff in the decision-making process to enhance buy-in and develop scalable solutions for flexible work schedules. Moreover, professional development opportunities and peer support programs can aid in reducing burnout but ensuring participation and effectiveness requires careful planning and consistent engagement.

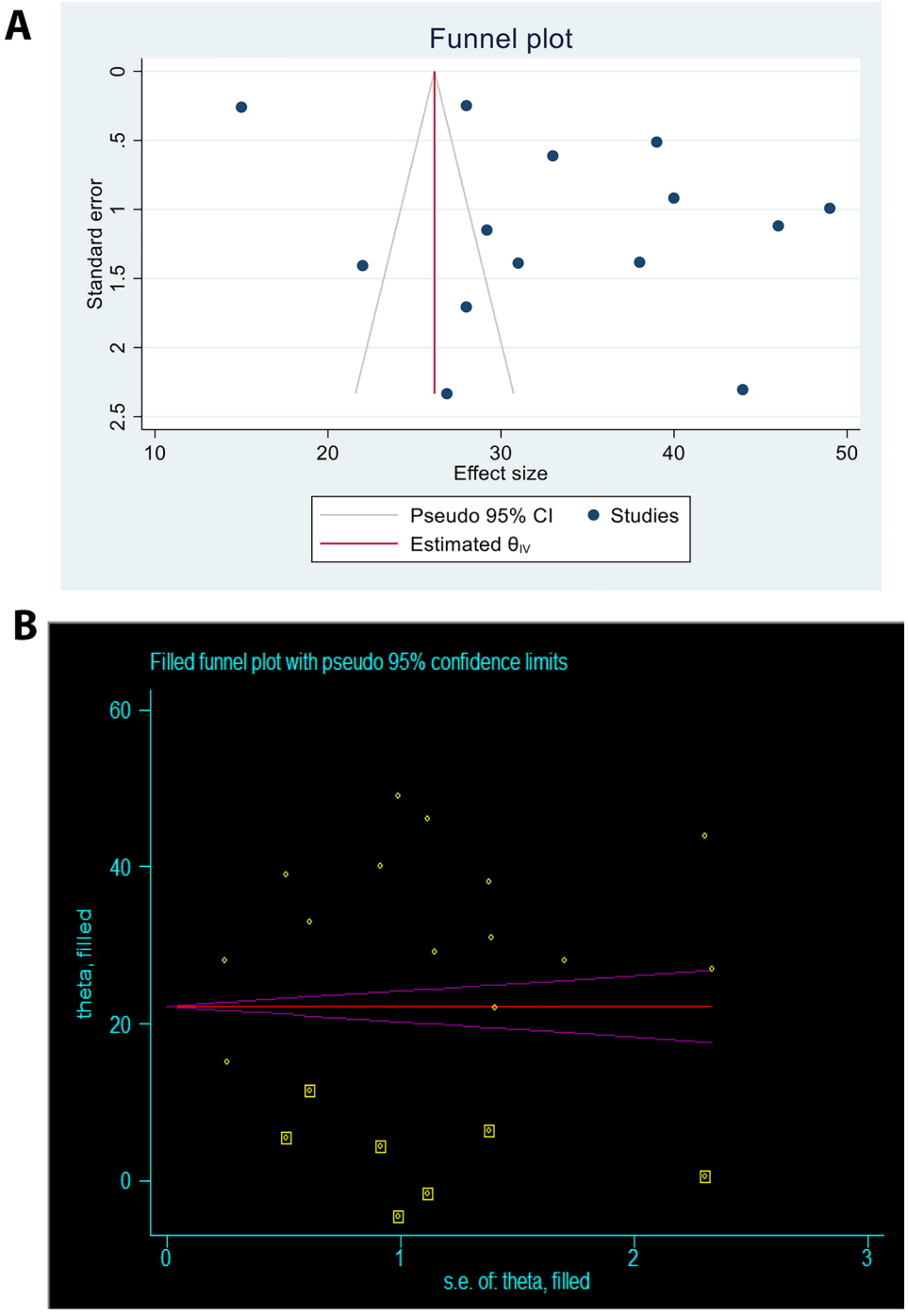

Fig. 5 **A** Funnel plot with 95% confidence limits on the summary prevalence of nurse burnout in the world. **B** Filled funnel plot with pseudo 95% confidence limits on the summary prevalence of nurse burnout in the world

Future research should focus on longitudinal studies to assess the long-term impact of these interventions, particularly for high-risk groups like ICU nurses, and explore how tailored strategies can address the unique needs of various nursing specialties. Furthermore, future researchers should focus on the ultimate consequence of nurse burnout, which is staff turnover. Investigating this outcome is crucial for understanding how burnout impacts workforce retention and the broader implications for healthcare systems. By examining the relationship between burnout and turnover, future studies can provide valuable insights into effective strategies to mitigate this issue and improve both organizational stability and patient care. Policymakers and healthcare

organizations must prioritize mental health support, adequate staffing levels, and effective communication. The findings from this review can guide national and international policies, highlighting the importance of interventions that consider the specific challenges faced by nurses. By addressing the potential barriers to implementing these strategies, organizations can enhance workforce resilience and improve patient care outcomes globally.

Abbreviations

AMSTAR II	Assessment of Multiple Systematic Reviews
CI	Confidence Interval
COVID-19	Corona Virus Disease-19
Dp	Depersonalization
EE	Emotional Exhaustion
ICU	Intensive Cre Unit
LPA	Low Personal Accomplishment
MBI	Maslach Burnout Inventory
OR	Odds Ratio
PRISMA	Preferred Reporting Items for Systematic Review and Meta-analysis, and SRMA: Systematic Review and Meta-Analysis

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Declarations

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