A Systematic Review of Burnout Among Nursing Students: Impact on Academic Performance, Psychological Well-Being, and Strategies for Prevention

Hasan H Alsararatee[1,2]*[ID], Ahmed Kawser[1], Mohammed Elachola[1]

[1]Acute Medicine, Northampton General Hospital, Northampton, England, UK
[2]Buckinghamshire New University, High Wycombe, England, UK
*Correspondence: hasan.alsararatee@nhs.net (Hasan H Alsararatee)

Abstract

Aims/Background Burnout among nursing students has become a critical issue, negatively impacting their academic performance, psychological well-being, and professional development. This systematic review aims to synthesise literature on nursing student burnout and explore its effects on self-concept, engagement, and psychological health, along with strategies to mitigate burnout.

Methods This review followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and included studies published between January 2015 and January 2024. Data were extracted from peer-reviewed studies identified in databases including MEDLINE, CINAHL, PsycINFO, and SCOPUS, focusing on burnout among undergraduate and graduate nursing students.

Results A total of 28 articles were included in the review. Three major themes emerged: (1) burnout's negative effect on student self-concept and self-efficacy, (2) the protective role of academic and clinical engagement in preventing burnout, and (3) interventions such as resilience training and mindfulness-based programs that help reduce burnout. Promoting self-concept, fostering engagement, and building resilience were identified as key strategies to alleviate student burnout.

Conclusion Burnout in nursing students is linked to poorer academic performance and psychological distress. Early interventions, such as resilience training and mindfulness, should be integrated into nursing programs to help mitigate burnout. Nurse educators and clinical supervisors can play a pivotal role by creating supportive and engaging learning environments that reduce burnout and promote students' well-being.

Key words: burnout; students; nursing; systematic review

Submitted: 19 February 2025   Revised: 2 April 2025   Accepted: 10 April 2025

Introduction

Burnout among nursing students is a growing concern globally, with serious consequences for the future healthcare workforce (Alghtany et al, 2024). Balancing rigorous academic demands with emotionally draining clinical placements, nursing students encounter significant stress (Xie et al, 2024). In the UK, the Royal College of Nursing (RCN) acknowledges the need for further support to help students manage the pressures of nursing education, particularly with ongoing workforce shortages and increased patient care demands (RCN, 2024). The RCN (2024) conducted

a survey which found that 70% of nursing students in England had considered leaving their studies, citing financial difficulties as the primary reason. The press release notes: "Among those who said they are considering leaving their courses, 70% gave financial difficulties as their reason" (RCN, 2024). The RCN's last shift survey (2022) highlighted that 21% of student nurses cited the impact on mental health and well-being, higher than the overall survey sample (RCN, 2023). These findings highlight the increasing pressures faced by nursing students, particularly during clinical placements, which have been exacerbated by staff shortages in both the National Health Service (NHS) and the private sector. If burnout is left unmanaged, it can lead to reduced academic performance, compromised mental health, and eventual attrition from the profession (Stephens and Clark, 2024). Initiatives such as the Amin Abdullah RCN Foundation Grant highlight the importance of resilience-building to sustain the nursing workforce (RCN Foundation, 2024).

The World Health Organization (WHO) defines burnout as a syndrome resulting from chronic workplace stress that has not been successfully managed, leading to emotional exhaustion, cynicism, and reduced professional efficacy (WHO, 2024). While this definition primarily applies to working professionals, burnout manifests differently in nursing students, as they face unique stressors related to academic and clinical training rather than workplace demands (Chernomas and Shapiro, 2013). Unlike professional nurses, who experience burnout due to high patient loads, extended shifts, and workplace inefficiencies, nursing students are in the early stages of professional development and often struggle with balancing academic demands, clinical placements, and financial pressures (Christiansen et al, 2019). Additionally, nursing students lack autonomy in clinical settings, which can contribute to feelings of helplessness and frustration (Tomaschewski-Barlem et al, 2014). It seems that burnout in nursing students is strongly associated with academic disengagement, self-doubt, and increased dropout rates, whereas burnout in professional nurses affects patient care quality, job retention, and mental health.

A recent systematic review found that up to 73.5% of nursing students report emotional exhaustion, 70.56% experience depersonalisation, and 76% feel a low sense of personal accomplishment, highlighting the prevalence of burnout in this population (Barboza and Beresin , 2007). Given these challenges, nursing-specific burnout prevention strategies, such as structured mentorship, academic resilience programs, and clinical stress management interventions, are critical to improving student well-being and retention (Pulido-Martos et al, 2012). Understanding these differences is essential for tailoring interventions that address the specific stressors faced by nursing students, rather than generalizing burnout prevention strategies used for professional nurses.

Burnout is often conflated with stress, depression, and compassion fatigue, yet each condition has distinct characteristics. Stress is a temporary response to external demands and can enhance performance when managed appropriately; however, when prolonged, it can contribute to burnout (Salvagioni et al, 2017). Depression, unlike burnout, is a clinical mental health disorder marked by persistent low mood, anhedonia, and cognitive impairments, often requiring pharmacological or psychological intervention (Harvey et al, 2021). Compassion fatigue, specific to caregiv-

ing professions, results from prolonged exposure to patients' suffering and leads to emotional exhaustion and diminished empathy (Cocker and Joss, 2016). While all these conditions can coexist, burnout among nursing students is uniquely linked to academic and clinical stressors, leading to reduced self-efficacy, disengagement, and the risk of professional attrition (Dyrbye et al, 2020). Recognising these distinctions is essential for developing targeted interventions that prevent burnout while addressing broader psychological challenges.

While burnout among qualified nurses has been extensively researched, a gap remains in the literature concerning burnout in nursing students (Liu et al, 2025; Lykins et al, 2024; Yang et al, 2024). A literature search on nursing student burnout identified three systematic reviews and three systematic reviews with meta-analyses. Pulido-Martos et al (2012) synthesised quantitative studies using stress instruments to identify sources of stress among nursing students but did not specifically focus on burnout. Dubale et al (2019) reviewed burnout among healthcare providers in sub-Saharan Africa but did not focus on nursing students. A more recent systematic review by Wei et al (2021) examined burnout among students but did not explore effective measures to mitigate it. In contrast, three systematic reviews with meta-analyses, Kong et al (2023), Gómez-Urquiza et al (2023), and Sveinsdóttir et al (2021), examined the prevalence and factors associated with burnout among nursing students, focusing on its impact on academic performance and well-being. While these meta-analyses provided valuable insights, they primarily quantified burnout and identified associated risk factors, leaving a gap regarding the effectiveness of specific interventions and their long-term impact on nursing students.

Burnout among nursing students is a significant concern, particularly for those in community and primary care placements. A study highlighted that 73.5% of nursing students reported emotional exhaustion, 70.56% experienced depersonalisation, and 76% felt low levels of personal accomplishment (Gómez-Urquiza et al, 2023).

The RCN has raised alarms over increasing attrition rates among student nurses, with reports indicating that one in four students do not complete their degree (Tennant, 2023). Factors contributing to this attrition include financial pressures, academic expectations, personal challenges, and clinical placement issues (RCN, 2024). The RCN has reported a significant increase in nurses leaving the profession within ten years of registration, attributing this trend to burnout and exhaustion resulting from low staffing levels and increasing patient needs (RCN Foundation, 2024).

This review addresses the research question: "What is the impact of burnout on nursing students' academic performance, self-concept, and psychological well-being, and what strategies can mitigate these effects?". By systematically reviewing the literature, the study aims to fill the existing knowledge gap by examining the prevalence of burnout among nursing students, its effects on academic and psychological outcomes, and the effectiveness of interventions to alleviate burnout. The findings have significant implications for nursing education and practice, informing the development of strategies to reduce burnout and enhance student well-being. In addition, this review adds to the existing literature by synthesising evidence on burnout's impact on academic performance, self-concept, and psychological health,

while identifying and evaluating interventions aimed at mitigating these effects. The insights gained can guide nursing faculties in fostering student well-being and improving academic outcomes, contributing to a more sustainable nursing workforce.

Methods

Research Design

This systematic literature review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al, 2009). The research question guiding the review was: "What is the impact of burnout on nursing students' academic performance, self-concept, and psychological well-being, and what strategies can mitigate these effects?". To ensure a comprehensive exploration of the relevant literature, the methodology included specific search strategies, eligibility criteria, data analysis, and quality assessment.

Search Strategy and Eligibility Criteria

To ensure a comprehensive and systematic exploration of the literature, a structured search was conducted across MEDLINE (https://pubmed.ncbi.nlm.nih.gov/), CINAHL (https://www.ebsco.com/products/research-databases/cinahl-database), PsycINFO (https://www.apa.org/pubs/databases/psycinfo), and SCOPUS (https://www.scopus.com/).

The search strategy incorporated Medical Subject Headings (MeSH) and free-text keywords to maximize retrieval of relevant studies. The MeSH terms and keyword variations used included:

• Burnout, Professional (MeSH) OR "Nursing Student Burnout" OR "Academic Burnout".

• Students, Nursing (MeSH) OR "Nursing Undergraduates" OR "Pre-registration Nursing Students".

• Resilience, Psychological (MeSH) OR "Psychological Adaptation" OR "Mental Toughness".

• Mindfulness (MeSH) OR "Mindfulness-Based Stress Reduction" OR "Meditation Interventions".

• Coping Strategies (MeSH) OR "Burnout Interventions" OR "Well-being Support Programs".

• Academic Performance (MeSH) OR "Student Achievement" OR "Educational Success".

• Psychological Well-being (MeSH) OR "Mental Health" OR "Emotional Health".

Boolean operators (AND/OR) were used to refine the search. Inclusion criteria required studies to:

(1) Be peer-reviewed journal articles published between 2015 and 2024.

(2) Focus on nursing students experiencing burnout or related stress.

(3) Assess burnout interventions and their impact on academic performance, resilience, and well-being.

(4) Use quantitative, qualitative, or mixed methods approaches.

Table 1. Inclusion and exclusion criteria.

Criteria	Inclusion	Exclusion
Type of study	Peer-reviewed studies published between 2015–2024.	Non-peer-reviewed articles, conference abstracts, editorials, dissertations, or studies outside the specified date range.
Population	Undergraduate or graduate nursing students.	Studies that included other healthcare students or professionals but did not isolate nursing data.
Focus	Primarily focused on burnout in nursing students.	Studies that did not specifically address burnout or focused on general stress without burnout.
Outcomes	Examined burnout's impact on academic performance, self-concept, or psychological well-being.	Studies that focused on outcomes unrelated to burnout, such as only physical health or career outcomes.
Interventions	Included interventions aimed at mitigating burnout, such as mindfulness-based or resilience training.	Studies that did not explore or discuss burnout among nursing students or lacked an intervention focus.

The search was restricted to peer-reviewed articles. Further inclusion and exclusion criteria are outlined in Table 1. Due to the limited availability of recent literature on this specific topic, many references are drawn from studies conducted before 2022.

The selection process began with 207 primary research articles identified through database searches. After removing 69 duplicates, 138 articles remained. A title and abstract screening were conducted, resulting in 68 full-text articles being assessed for eligibility. During the full-text review, 33 articles were excluded as outlined in Fig. 1. Ultimately, 28 studies were included in this review.

During data extraction, particular attention was given to the resilience measurement tools employed across studies, as these influenced the comparability of outcomes. The review identified that tools such as the Connor-Davidson Resilience Scale (CD-RISC), Brief Resilience Scale (BRS), and Academic Resilience Scale (ARS-30) were variably used to assess intervention effectiveness. Each tool's theoretical basis and psychometric properties were recorded and considered during narrative synthesis to account for differences in how resilience was conceptualised and operationalised. The Connor-Davidson Resilience Scale (CD-RISC) was the most frequently used tool (Gómez-Urquiza et al, 2023; Ríos-Risquez et al, 2018; Sveinsdóttir et al, 2021), and studies utilizing this scale found moderate to high effectiveness in burnout reduction, particularly in resilience training and mindfulness-based interventions. Notably, interventions assessed using CD-RISC demonstrated long-term benefits, but some studies indicated that immediate stress relief was limited (García-Izquierdo et al, 2018; Ríos-Risquez et al, 2018). In contrast, studies that used the Brief Resilience Scale (BRS) Valero-Chillerón et al (2019) reported short-term emotional relief, especially with peer support programs, yet lacked sufficient
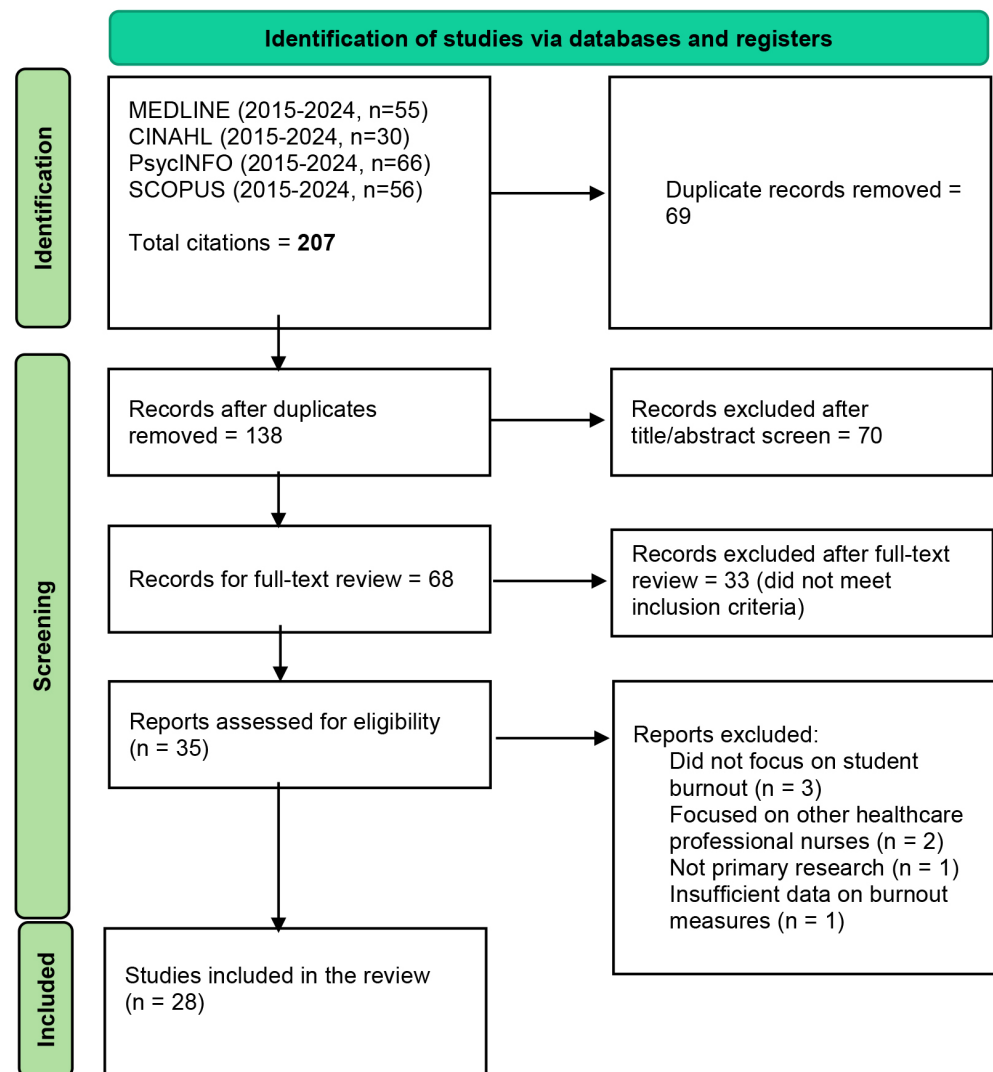
Identification of studies via databases and registers

Identification

MEDLINE (2015-2024, n=55)
CINAHL (2015-2024, n=30)
PsycINFO (2015-2024, n=66)
SCOPUS (2015-2024, n=56)

Total citations = **207**

→ Duplicate records removed = 69

Screening

Records after duplicates removed = 138

→ Records excluded after title/abstract screen = 70

Records for full-text review = 68

→ Records excluded after full-text review = 33 (did not meet inclusion criteria)

Reports assessed for eligibility (n = 35)

→ Reports excluded:
 Did not focus on student burnout (n = 3)
 Focused on other healthcare professional nurses (n = 2)
 Not primary research (n = 1)
 Insufficient data on burnout measures (n = 1)

Included

Studies included in the review (n = 28)

Fig. 1. PRISMA flow chart. The figure was created using Microsoft Word (version 2311, Microsoft Corporation, Redmond, WA, USA). PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

follow-up to determine sustained impact. Similarly, the Academic Resilience Scale (ARS-30) (Kong et al, 2023) was effective in addressing academic-related stress, but its ability to measure resilience in clinical environments was more limited.

This heterogeneity in resilience measurement likely contributed to variability in reported intervention success rates, making direct comparisons across studies difficult. Studies that focused on trait-based resilience tools (CD-RISC) generally showed more enduring intervention effects, whereas those using situational or academic resilience tools (BRS, ARS-30) captured short-term fluctuations in stress adaptation rather than long-term burnout mitigation. The PRISMA checklist was used and is provided in the **Supplementary Table 1**.

Analysis

Data extraction involved systematically gathering key information from each study using a standardised data extraction form. The extracted data included study

characteristics such as the author, year, country of study, sample size, and study design. In addition, information on the outcome measures used to assess burnout (e.g., Maslach Burnout Inventory, School Burnout Inventory) and findings on the impact of burnout on students' academic performance, psychological well-being, and self-concept were recorded. Information about interventions designed to mitigate burnout, such as resilience training and mindfulness-based approaches, was also noted.

Due to the heterogeneity of study designs, interventions, and outcomes, a narrative synthesis was conducted rather than a meta-analysis (Brignardello-Petersen et al, 2025). This approach allowed the review to focus on key themes and patterns across the studies. The narrative synthesis explored the relationship between burnout and factors such as academic engagement, self-concept, and resilience, as well as the effectiveness of burnout prevention strategies.

Quality Assessment and Assurance

The quality of the included studies was evaluated based on five key criteria as outlined by Hong et al (2018): (1) the relevance of the sampling strategy to address the research question, ensuring that the chosen population appropriately reflects the issue under investigation; (2) the representation of the sample relative to the target population, assessing whether the sample demographics align with the broader nursing student population; (3) the appropriateness of the measurement tools used, focusing on whether validated burnout measures were employed; (4) the risk of nonresponse bias, examining whether potential nonresponses could have influenced the results; and (5) the suitability of the statistical analysis to effectively answer the research question, ensuring that the methods used were robust and appropriate for the study's design and objectives.

Results

The summary of the quality assessment is demonstrated in Table 2. These criteria were essential in maintaining the integrity of the systematic review, ensuring that only high-quality studies were included in the analysis. Each study was critically appraised, and any discrepancies in quality were noted, allowing for a more accurate synthesis of findings related to nursing student burnout.

Burnout's Impact on Self-Concept and Academic Performance

Burnout has a profound impact on nursing students' self-concept, particularly in relation to self-esteem and self-efficacy, which are critical for academic and clinical success. Galdino et al (2016) found that burnout among nursing students pursuing postgraduate education was associated with reduced self-confidence and increased psychological distress, which in turn negatively influenced their commitment to the nursing profession. Mathias and Wentzel (2017) further reported that compassion fatigue and academic stress contributed to lowered professional identity, potentially leading to higher dropout rates among nursing students. These findings align with Valero-Chillerón et al (2019) and Naderi et al (2018), who ident-

Table 2. Quality assurance of the articles.

1. Quantitative randomized controlled trials (RCTs)

Study	Randomization Appropriately Performed	Groups Comparable at Baseline	Complete Outcome Data	Outcome Assessors Blinded to Intervention	Participants Adhere to Assigned Intervention
Frögéli et al (2016)	Yes	Yes	Yes	Yes	Yes
Cheli et al (2020)	Yes	Yes	Yes	Yes	Yes
Batista et al (2021)	Yes	Yes	Yes	Yes	Yes
Ma et al (2022)	Yes	Yes	Yes	Yes	Yes

2. Quantitative non-randomized studies

Study	Representative Participants of Target Population	Appropriate Measurements	Complete Outcome Data	Confounders Accounted for	Intervention Administered
Ayaz-Alkaya et al (2018)	Yes	Yes	Yes	Yes	Yes
Carvalho et al (2018)	Yes	Yes	Yes	Yes	Yes
Galdino et al (2016)	Yes	Yes	Yes	Yes	Yes
García-Izquierdo et al (2018)	Yes	Yes	Yes	Yes	Yes
Liébana-Presa et al (2018)	Yes	Yes	Yes	Yes	Yes
Majerníková and Obročníková (2017)	Yes	Yes	Yes	Yes	Yes
Mathias and Wentzel (2017)	Yes	Yes	Yes	Yes	Yes
McKee-Lopez et al (2019)	Yes	Yes	Yes	Yes	Yes
Naderi et al (2018)	Yes	Yes	Yes	Yes	Yes
Ríos-Risquez et al (2018)	Yes	Yes	Yes	Yes	Yes
Sanches et al (2017)	Yes	Yes	Yes	Yes	Yes
Škodová et al (2017)	Yes	Yes	Yes	Yes	Yes
Valero-Chillerón et al (2019)	Yes	Yes	Yes	Yes	Yes
Wang et al (2019)	Yes	Yes	Yes	Yes	Yes
Kong et al (2021)	Yes	Yes	Yes	Yes	Yes

Table 2. Continued.

3. Quantitative descriptive studies

Study	Relevant Sampling Strategy	Representative Sample of Target Population	Appropriate Measurements	Low Risk of Nonresponse Bias	Appropriate Statistical Analysis
Sveinsdóttir et al (2021)	Yes	Yes	Yes	Yes	Yes
Lopes and Nihei (2021)	Yes	Yes	Yes	Yes	Yes
March-Amengual et al (2022)	Yes	Yes	Yes	Yes	Yes
Rohmani and Andriani (2021)	Yes	Yes	Yes	Yes	Yes
Arian et al (2023)	Yes	Yes	Yes	Yes	Yes
Abram and Jacobowitz (2021)	Yes	Yes	Yes	Yes	Yes
Vasconcelos et al (2020)	Yes	Yes	Yes	Yes	Yes
Amaral et al (2021)	Yes	Yes	Yes	Yes	Yes

ified emotional exhaustion and cynicism as key negative predictors of students' academic performance.

Ríos-Risquez et al (2018) and Janatolmakan et al (2021) found that resilience played a moderating role, with students who demonstrated higher resilience scores maintaining a more positive self-concept despite experiencing burnout. This indicates that resilience training could buffer the effects of burnout on self-concept and improve overall academic outcomes. However, most of these studies employed cross-sectional designs, limiting their ability to determine causality. Ayaz-Alkaya et al (2018) also showed that students' self-concept and commitment to nursing were affected by burnout, particularly during clinical internships, further emphasising the need for longitudinal studies to understand how burnout develops and influences self-concept over time.

The Role of Academic Engagement in Reducing Burnout

Academic engagement has been consistently identified as a protective factor against burnout. Frögéli et al (2016) and Liébana-Presa et al (2018) found that higher engagement, characterised by vigor, dedication, and absorption, was inversely related to emotional exhaustion and cynicism, which are key dimensions of burnout. This was corroborated by Amaral et al (2021) and Batista et al (2021), who demonstrated that engagement not only reduced burnout but also improved students' academic performance and psychological well-being. Moreover, Lopes and Nihei (2021) and Sanches et al (2017) highlighted that students who had stronger faculty support and more meaningful clinical experiences were more engaged, which in turn reduced their likelihood of experiencing burnout. Engagement in both academic and clinical tasks was found to be essential in maintaining students' mental health and preventing burnout. Despite the strong evidence supporting the role of engagement in reducing burnout, most studies focused primarily on academic engagement. There is a need for future research to explore engagement in clinical settings and how clinical exposure, mentorship, and peer support contribute to reducing burnout among nursing students.

While academic engagement has been widely recognized as a protective factor against burnout, the role of clinical engagement remains less explored in the reviewed studies (Gómez-Urquiza et al, 2023; Kong et al, 2023). Clinical exposure, mentorship, and peer support play a crucial role in helping students develop confidence and coping strategies in real-world healthcare settings. However, most studies in this review primarily examined academic-related engagement, with limited discussion on how clinical involvement influences burnout levels. Future research should explore the interplay between academic and clinical engagement, assessing whether strong academic engagement translates into improved clinical resilience and how structured clinical mentorship programs may further support students in managing stress and reducing burnout during placements.

Risk Factors for Burnout: Personal and Contextual Influences

Several personal and contextual factors contribute to burnout among nursing students. Ayaz-Alkaya et al (2018) and Sanches et al (2017) identified financial

strain, caregiving responsibilities, and lack of personal time as significant risk factors for burnout. Arian et al (2023) and McKee-Lopez et al (2019) also reported that students with higher adverse childhood experiences (ACEs) were more likely to suffer from emotional exhaustion and depersonalisation.

In a broader context, Peng et al (2023) and Vasconcelos et al (2020) explored how socio-demographic factors such as age, gender, and work-study balance contribute to heightened burnout risks. These studies highlighted that mature students, those with caregiving responsibilities, or those working part-time while studying, were more prone to burnout. However, most of these studies were cross-sectional and relied on self-reported data, which may introduce bias. More robust longitudinal studies, such as those employed by Ríos-Risquez et al (2018), could offer better insights into how personal and contextual factors interact with burnout over time.

Burnout in nursing students is influenced by a combination of academic, clinical, and personal stressors, yet socio-demographic factors also play a critical role in determining vulnerability to burnout. Several studies included in this review identified financial strain, caregiving responsibilities, and part-time work as contributing factors to burnout, yet these aspects are often underexplored in intervention strategies (Gómez-Urquiza et al, 2023; Kong et al, 2023). Financial stress is particularly significant, as many nursing students work part-time jobs to support their education, leading to increased fatigue, reduced study time, and heightened stress levels (Sveinsdóttir et al, 2021). Moreover, students with caregiving responsibilities—whether for children, elderly family members, or ill relatives—face greater time constraints and emotional burdens, making it more difficult to balance clinical training, coursework, and self-care (Valero-Chillerón et al, 2019).

Resilience as a Buffer Against Burnout

Resilience plays a critical role in buffering the effects of burnout among nursing students. Majerníková and Obročníková (2017) explored the impact of personality traits on burnout, finding that students with higher levels of emotional stability and optimism exhibited greater resilience and lower burnout scores. This was consistent with findings from Škodová et al (2017), who noted that nursing students with strong social support networks and emotional intelligence demonstrated better coping mechanisms against academic stress and burnout-related exhaustion.

These findings reinforce the conclusions from García-Izquierdo et al (2018) that resilience moderates the relationship between burnout and perceived psychological health, suggesting that resilience training should be integrated into nursing curricula. Similarly, Carvalho et al (2018) and Kong et al (2021) demonstrated that students with higher levels of resilience were better able to cope with academic stress and were less likely to experience emotional exhaustion. While resilience training has shown promise, the inconsistency in resilience measurement tools across studies complicates the generalisation of these findings. Future studies should aim to standardise resilience assessments to better evaluate their protective effects on burnout.

Burnout in nursing students is not only influenced by academic and clinical pressures but also by socio-economic and demographic factors. Sveinsdóttir et

al (2021) found that students from lower-income backgrounds experienced higher burnout levels, particularly those who had to balance part-time work with academic commitments. Similarly, Rohmani and Andriani (2021) identified self-efficacy as a key factor influencing burnout and noted that students with caregiving responsibilities experienced higher emotional exhaustion and academic disengagement.

The Role of Socio-Demographic Factors in Burnout

These findings suggest that universities should provide targeted support mechanisms, such as financial aid, flexible study schedules, and institutional support programs, to help students at greater risk of burnout. Ayaz-Alkaya et al (2018) and Sanches et al (2017) also highlighted that students facing financial stress and caregiving duties were more prone to burnout due to increased time constraints and emotional burdens. Despite these challenges, few interventions specifically address the financial and caregiving burdens of nursing students. While some resilience programs provide stress management tools, they may not fully mitigate the structural stressors associated with socio-economic disadvantages. Future research should explore targeted financial and psychosocial support programs, including scholarships, flexible clinical schedules, and institutional support for students with caregiving duties, to develop more inclusive burnout prevention strategies.

Mindfulness-Based Interventions and Burnout Reduction

Mindfulness-based interventions (MBIs) have been effective in reducing burnout, as reported by Cheli et al (2020) and Frögéli et al (2016). These interventions helped students manage stress, regulate emotions, and improve present-moment awareness, leading to significant reductions in emotional exhaustion. Ma et al (2022) and Lopes and Nihei (2021) also demonstrated that mindfulness interventions not only reduced stress but also enhanced academic performance by increasing resilience and reducing burnout. Although MBIs show promise, the studies typically focus on short-term outcomes. Ríos-Risquez et al (2018) conducted a longitudinal study exploring the relationship between burnout, resilience, and psychological well-being among nursing students. Their study found that students with higher resilience scores demonstrated lower levels of emotional exhaustion and cynicism over time, suggesting that resilience acts as a protective factor against burnout. Furthermore, they reported that burnout levels fluctuated throughout the academic journey, peaking during clinical training periods and decreasing in later years, indicating that exposure to real-world clinical settings significantly impacts stress levels. These findings highlight the need for resilience-building interventions early in nursing education to mitigate long-term burnout risks and enhance coping mechanisms among students.

The Impact of Coronavirus Disease 2019 on Burnout Levels

The coronavirus disease 2019 (COVID-19) pandemic exacerbated burnout levels among nursing students, as reported by Wang et al (2021) and March-Amengual et al (2022). These studies found that students experienced heightened emotional exhaustion, anxiety, and stress due to the shift to online learning, isolation, and un-

certainty (Wang et al, 2021). Abram and Jacobowitz (2021) also noted a decline in students' psychological well-being during the pandemic, leading to higher burnout. However, Wang et al (2021) demonstrated that psychological capital, comprising resilience, optimism, and hope played a protective role in helping students cope with pandemic-related stress. Similarly, Kong et al (2021) found that students with higher resilience were less likely to experience burnout despite the increased academic pressures introduced by the pandemic.

Discussion

This review synthesised the literature on nursing student burnout, examining its effects on academic performance, self-concept, psychological well-being, and identifying strategies that can mitigate burnout. The findings confirmed that burnout has a detrimental impact on students' academic achievements and professional development, but strategies such as resilience-building, academic engagement, and mindfulness-based interventions can play a crucial role in reducing burnout levels.

Burnout was shown to negatively affect students' self-concept, including self-esteem and self-efficacy, which are vital for both academic and clinical success. Nursing students who experienced higher levels of emotional exhaustion and cynicism reported lower confidence in their academic abilities and professional roles. Studies by Valero-Chillerón et al (2019) and Naderi et al (2018) highlighted this inverse relationship between burnout and self-concept, demonstrating that students who experience burnout are more likely to perceive themselves as less competent, leading to reduced academic performance. These findings highlight the importance of fostering self-efficacy in nursing education. Positive reinforcement, structured feedback, and opportunities for clinical practice can enhance students' professional identity and reduce their susceptibility to burnout.

Building a positive self-concept in students requires intentional educational strategies. Wang et al (2019) emphasised that students with a strong professional self-concept were better able to withstand academic pressures, indicating that fostering a sense of professional identity early in nursing education could serve as a protective factor against burnout. Similarly, Ríos-Risquez et al (2018) showed that students with greater resilience maintained a more positive self-concept, even in high-stress environments. These findings suggest that nursing programs should integrate resilience-building activities alongside traditional academic content to help students develop the emotional tools necessary to cope with the demands of their education and future profession.

In addition to self-concept, academic engagement was identified as a key protective factor against burnout. Nursing students who were more engaged in their academic and clinical tasks were less likely to experience emotional exhaustion and other burnout symptoms. Studies by Frögéli et al (2016) and Liébana-Presa et al (2018) found that students who reported higher levels of engagement had lower levels of burnout, which contributed to better academic performance and psychological well-being. This suggests that fostering engagement through active learning,

meaningful clinical placements, and strong student-faculty relationships is crucial for preventing burnout.

Engagement, however, is not limited to classroom activities. Clinical placements, where students apply their knowledge in real-world settings, are an essential component of nursing education. Amaral et al (2021) and Batista et al (2021) found that engagement in clinical settings, where students feel supported and guided by faculty, can further reduce burnout and improve students' overall well-being. These studies emphasise the importance of creating an environment where students feel both academically and emotionally supported, as this can enhance their motivation and decrease the likelihood of burnout.

Despite the protective role of engagement, the review highlighted several risk factors that increase the likelihood of burnout, including financial strain, caregiving responsibilities, and adverse childhood experiences (ACEs). Ayaz-Alkaya et al (2018) and Sanches et al (2017) pointed out that students who struggle with financial stress or caregiving responsibilities are more likely to experience burnout due to the added pressure of balancing academic responsibilities with external commitments. These findings suggest that nursing programs must acknowledge the diverse personal circumstances of their students and provide flexible support, such as mental health services or financial aid, to help alleviate some of these pressures.

The role of ACEs in predisposing students to burnout was highlighted in a study by McKee-Lopez et al (2019) who found that students with higher ACE scores were more likely to experience emotional exhaustion and depersonalisation. This underscores the importance of providing targeted interventions for students who may be at greater risk due to their personal histories. By offering tailored support, such as counselling or resilience training, nursing programs can help students develop the emotional tools necessary to navigate their academic journey without succumbing to burnout.

Resilience emerged as one of the most critical factors in protecting nursing students from burnout. Studies such as those by Carvalho et al (2018) and García-Izquierdo et al (2018) demonstrated that students with higher levels of resilience were better able to cope with academic stress and were less likely to experience emotional exhaustion. These findings suggest that resilience is not only a personal trait but can be cultivated through targeted interventions. Kong et al (2021) and Janatolmakan et al (2021) showed that resilience training programs significantly reduced burnout levels by improving students' emotional regulation and coping mechanisms.

While resilience training has proven effective in the short term, the long-term sustainability of these interventions remains unclear. Many studies, including those by Abram and Jacobowitz (2021), employed short-term follow-up periods, which limits our understanding of how these interventions impact burnout over time. Future research should explore the long-term effects of resilience training and whether these benefits persist after students graduate and enter the workforce.

Mindfulness-based interventions (MBIs) have also been shown to reduce burnout by helping students regulate their emotions and manage stress. Cheli et al (2020) and Frögéli et al (2016) found that students who participated in MBIs reported

lower levels of emotional exhaustion and higher levels of present-moment awareness, which helped them cope with the demands of nursing education. Additionally, Ma et al (2022) and Lopes and Nihei (2021) demonstrated that mindfulness not only improved students' psychological well-being but also contributed to better academic outcomes by fostering a sense of calm and control over stressful situations. However, while MBIs have shown promise in reducing burnout, more research is needed to determine their long-term effectiveness. Ríos-Risquez et al (2018) highlighted the need for longitudinal studies to assess the sustained impact of mindfulness practices on burnout prevention. Incorporating mindfulness into nursing curricula as a long-term strategy, rather than a one-time intervention, could help students develop lifelong coping skills that protect them from burnout during both their education and professional careers.

The COVID-19 pandemic has exacerbated burnout among nursing students, as seen in studies by Wang et al (2021) and March-Amengual et al (2022). The shift to online learning, isolation from peers, and uncertainty surrounding the future of healthcare contributed to heightened levels of emotional exhaustion. However, students with higher psychological capital, including resilience and optimism, were better able to manage these challenges. Kong et al (2021) demonstrated that students with stronger resilience were less likely to experience burnout, even during the pandemic, suggesting that resilience-building interventions are particularly important during times of crisis. These findings emphasise the need for nursing programs to prioritise resilience-building and mindfulness-based interventions, especially during global health crises like the COVID-19 pandemic. By providing students with the tools to manage stress and develop emotional resilience, nursing educators can help reduce the long-term impact of burnout and promote psychological well-being.

Recommendations for Educational Institutions, Clinical Educators, and Nursing Faculty

Based on the findings from this review, the following recommendations aim to help nursing faculty, supervisors, and practice educators address burnout among nursing students, enhance resilience, and promote well-being:

1. Integrate burnout awareness into nursing curricula

Nursing institutions should formally incorporate burnout education into their curricula, ensuring that students recognise the signs of burnout and develop strategies to manage it. This could be achieved through dedicated lectures, workshops, and case-based discussions on stress management and resilience-building. Universities should also conduct regular burnout assessments via student well-being surveys, enabling early intervention where necessary. Confidential access to occupational health and counselling services should be promoted to prevent escalation of mental health concerns.

2. Enhance self-efficacy and professional identity development

Faculty and clinical supervisors should prioritise building students' self-efficacy through structured feedback, recognition of achievements, and progressive skill development in clinical settings. Encouraging self-reflection exercises and clinical

decision-making opportunities can help students develop confidence in their abilities, reducing feelings of helplessness and exhaustion. Shadowing opportunities with experienced community nurses could help students develop their professional identity and enhance their adaptability to high-pressure situations.

3. Strengthen academic and clinical engagement through innovative learning

Educational institutions should incorporate innovative learning techniques to promote engagement and reduce academic fatigue. This could include:

❖ blended learning approaches, combining in-person and online teaching to reduce academic overload.

❖ active learning strategies, such as simulation-based training, peer-led study groups, and interdisciplinary collaboration.

❖ structured clinical placement plans, ensuring students are given clear learning objectives, adequate supervision, and a balance between theoretical and hands-on experiences.

❖ recognition of students' contributions in clinical practice, reinforcing their role within the care team and reducing the likelihood of feeling undervalued.

4. Expand mentorship and peer support networks

A structured mentorship programme should be embedded within UK nursing education, allowing senior nursing students or newly qualified nurses to mentor incoming students. This can be particularly beneficial in community placements, where students may experience greater isolation due to working in small teams or lone-working environments. Universities could also introduce formal peer support groups, providing a safe space for students to discuss challenges, share experiences, and receive emotional support.

5. Implement mindfulness-based and stress-reduction interventions

Mindfulness-based interventions have been shown to reduce emotional exhaustion and stress-related burnout. Institutions should integrate structured mindfulness sessions, resilience-building workshops, and stress management training into nursing curricula. These could be delivered via:

❖ dedicated well-being sessions within university schedules, incorporating relaxation techniques, guided meditation, and cognitive behavioural strategies.

❖ online mindfulness resources for self-guided practice, enabling students to access support flexibly.

❖ embedding resilience-focused debriefing in clinical placements, allowing students to process challenging experiences and develop healthier coping mechanisms.

6. Address financial and social stressors affecting nursing students

Financial insecurity is a key driver of stress and burnout among nursing students, particularly for those balancing part-time work, caregiving responsibilities, or travel expenses related to placements. Universities and healthcare providers should consider:

❖ expanding financial support schemes, including hardship funds, travel bursaries, and placement-related financial assistance.

❖ providing flexible learning schedules, particularly for students with caregiving duties or additional responsibilities.

❖ strengthening access to mental health services, ensuring all students can seek professional help without financial or accessibility barriers.

7. Improve crisis preparedness and mental health support in nursing education

The COVID-19 pandemic underscored the importance of adaptability and crisis resilience in nursing education. Institutions should establish long-term contingency plans to ensure students receive continuous support during unexpected healthcare crises or workforce shortages. This could involve:

❖ crisis-responsive training programmes, equipping students with skills to handle high-stress healthcare environments.

❖ virtual mental health services and online peer support groups, ensuring access to support regardless of placement location.

❖ regular faculty-student communication channels, offering timely updates and emotional support during crisis periods.

While several interventions, such as resilience training, mindfulness programs, and academic support systems, have demonstrated effectiveness in reducing burnout among nursing students, their sustainability beyond the academic setting remains unclear. Many studies included in this review focused on short-term intervention outcomes, with limited evidence on whether these benefits persist as students transition into professional nursing roles. Research indicates that burnout tends to increase in newly graduated nurses due to the stress of professional responsibilities, workload pressures, and adaptation to clinical environments (Ríos-Risquez et al, 2018; Sveinsdóttir et al, 2021). Although some studies suggested that resilience-based training and coping strategies learned in nursing school may provide long-term benefits (Valero-Chillerón et al, 2019; Ríos-Risquez et al, 2018; García-Izquierdo et al, 2018), few studies have tracked participants post-graduation to assess the lasting effects of these interventions. Given that newly qualified nurses face high burnout rates, future research should examine the long-term effectiveness of student burnout interventions in preventing early-career attrition and professional disengagement. Implementing follow-up studies on graduates who participated in burnout prevention programs could help determine whether these interventions provide sustained protective effects in real-world clinical practice.

The strengths of this systematic review include its comprehensive search strategy, which utilized multiple databases to capture a broad range of relevant studies. By incorporating randomized controlled trials, non-randomized studies, and descriptive research, the review provides a diverse and well-rounded synthesis of burnout interventions in nursing students. Furthermore, it successfully identifies effective strategies, such as resilience training and mindfulness practices, while offering valuable insights into the relationship between burnout, academic performance, and psychological well-being.

However, this review has several limitations. One major constraint is the heterogeneity of included studies, as they employed different methodologies, sample populations, and burnout measurement tools, making direct comparisons challenging. The Maslach Burnout Inventory-Student Survey (MBI-SS) was the predominant assessment tool, but some studies used the School Burnout Inventory (SBI) and Copenhagen Burnout Inventory (CBI), each emphasising distinct aspects of

burnout. This variation likely contributed to disparities in reported prevalence rates and intervention effectiveness (Gómez-Urquiza et al, 2023; Sveinsdóttir et al, 2021; Valero-Chillerón et al, 2019). Due to this variability, a narrative synthesis was conducted instead of a meta-analysis, as the differences in methodologies, intervention strategies, and outcome measures prevented meaningful statistical pooling of data. Future research should focus on standardising burnout assessment tools and intervention methodologies to enhance cross-study comparability and facilitate more robust meta-analytical approaches.

Another limitation is the lack of longitudinal studies, which restricts the ability to assess the long-term impact of burnout interventions, as most studies focused on short-term outcomes (Ríos-Risquez et al, 2018; Cheli et al, 2020; Ma et al, 2022; Sveinsdóttir et al, 2021; Gómez-Urquiza et al, 2023). While quantitative studies provided robust data, the inclusion of more qualitative research could have offered deeper insights into the lived experiences of nursing students facing burnout. Additionally, study settings and cultural contexts varied, influencing the generalizability of findings. Some studies examined burnout within Western healthcare education systems, while others focused on countries with different educational structures and clinical expectations. These variations may impact the applicability of certain interventions across diverse nursing education settings.

Moreover, many studies assessed short-term intervention effects, with limited follow-up data to evaluate long-term burnout prevention (Ríos-Risquez et al, 2018; Sveinsdóttir et al, 2021). While resilience training and mindfulness programs showed initial effectiveness, their sustainability beyond the academic setting remains unclear. The transition from student to professional nurse introduces new workplace stressors, making it difficult to determine whether early interventions continue to provide benefits post-graduation. Future research should prioritise long-term follow-up studies, tracking participants as they enter clinical practice to assess the lasting impact of burnout interventions and their effectiveness in preventing early-career burnout and attrition.

In addition, this review acknowledges the potential for publication bias, as studies reporting positive intervention effects may be overrepresented, while those with negative or inconclusive findings are less likely to be published. This bias could influence the overall conclusions drawn about intervention effectiveness. Addressing this requires greater transparency in research publication, encouraging the reporting of all outcomes, including non-significant findings, to provide a more balanced understanding of burnout interventions.

Future research should focus on:

(1) Standardising burnout measurement tools to enhance cross-study comparability.

(2) Conducting more longitudinal and mixed-methods studies to explore intervention sustainability beyond academia.

(3) Examining the impact of socio-demographic factors, such as financial strain, caregiving responsibilities, and part-time work, to develop more inclusive burnout prevention strategies.

(4) Encouraging the publication of all findings, including studies with negative or inconclusive results, to reduce publication bias and strengthen evidence-based practice.

Conclusion

This systematic review highlights the profound effects of burnout on nursing students' academic performance, psychological well-being, and self-concept. The findings indicate that nursing students, facing the dual pressures of academic demands and emotionally challenging clinical placements, are particularly susceptible to burnout. Effective interventions such as resilience training, mindfulness, and promoting academic engagement have shown promise in mitigating these effects. However, further research is necessary to explore the long-term impacts of these interventions and to develop comprehensive support systems within nursing education. By fostering resilience, self-efficacy, and engagement, educational institutions and healthcare providers can better equip nursing students to manage stress and succeed both academically and professionally. Ultimately, addressing burnout in nursing students is critical to ensuring the sustainability of the healthcare workforce.

Key Points

- Burnout among nursing students significantly impacts their academic performance, psychological well-being, and professional self-concept.
- Factors contributing to burnout include financial pressures, caregiving responsibilities, academic workload, and clinical placement challenges.
- Interventions such as resilience training, mindfulness-based stress reduction, and structured mentorship programs can help mitigate burnout and support student well-being.
- Academic and clinical engagement, coupled with strong faculty support, are protective factors that improve student retention and reduce emotional exhaustion.
- Future research should focus on longitudinal studies, standardised resilience measures, and targeted support for students with caregiving duties to enhance the effectiveness of burnout prevention strategies.
- Addressing burnout in nursing students is essential to ensure a sustainable, healthy nursing workforce for the future.

Availability of Data and Materials

All data generated or analysed during this study are included in this published article.

Author Contributions

HHA: conceived and designed the study; collected and interpreted the clinical data; drafted the manuscript and revised it critically for important intellectual content; approved the final version; and agreed to be accountable for all aspects of the work. AK: contributed to the interpretation of the findings; critically reviewed and revised the manuscript for important intellectual content; approved the final version; and agreed to be accountable for all aspects of the work. ME: jointly completed data interpretation and critically reviewed the manuscript for important intellectual content; approved the final version; and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

Conflict of Interest

The authors declare no conflict of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at https://www.magonlinelibrary.com/doi/suppl/10.12968/hmed.2025.0145.

References

Abram MD, Jacobowitz W. Resilience and burnout in healthcare students and inpatient psychiatric nurses: A between-groups study of two populations. Archives of Psychiatric Nursing. 2021; 35: 1–8. https://doi.org/10.1016/j.apnu.2020.10.008

Alghtany S, Madhuvu A, Fooladi E, Crawford K. Assessment of academic burnout and professional self-concept in undergraduate nursing students: A cross-sectional study. Journal of Professional Nursing. 2024; 52: 7–14. https://doi.org/10.1016/j.profnurs.2024.03.003

Amaral KV, Galdino MJQ, Martins JT. Burnout, daytime sleepiness and sleep quality among technical-level Nursing students. Revista Latino-Americana De Enfermagem. 2021; 29: e3487. https://doi.org/10.1590/1518-8345.5180.3487

Arian M, Jamshidbeigi A, Kamali A, Ali-Abadi T. The prevalence of burnout syndrome in nursing students: A systematic review and meta-analysis. Teaching and Learning in Nursing. 2023; 18: 512–520. https://doi.org/10.1016/j.teln.2023.04.015

Ayaz-Alkaya S, Yaman-Sözbir Ş, Bayrak-Kahraman B. The effect of nursing internship program on burnout and professional commitment. Nurse Education Today. 2018; 68: 19–22. https://doi.org/10.1016/j.nedt.2018.05.020

Barboza JIRA, Beresin R. Burnout syndrome in nursing undergraduate students. Einstein (São Paulo). 2007; 5: 225–230.

Batista RDS, Santos MSD, Melo EC, Moreira RC, Martins JT, Galdino MJQ. Burnout and academic satisfaction of nursing students in traditional and integrated curricula. Revista Da Escola De Enfermagem Da U S P. 2021; 55: e03713. https://doi.org/10.1590/S1980-220X2020002003713

Brignardello-Petersen R, Santesso N, Guyatt GH. Systematic reviews of the literature: an introduction to current methods. American Journal of Epidemiology. 2025; 194: 536–542. https://doi.org/10.1093/aje/kwae232

Carvalho VS, Guerrero E, Chambel MJ. Emotional intelligence and health students' well-being: A two-wave study with students of medicine, physiotherapy and nursing. Nurse Education Today. 2018; 63: 35–42. https://doi.org/10.1016/j.nedt.2018.01.010

Cheli S, De Bartolo P, Agostini A. Integrating mindfulness into nursing education: A pilot non-randomized controlled trial. International Journal of Stress Management. 2020; 27: 93–100. https://doi.org/10.1037/str0000126

Chernomas WM, Shapiro C. Stress, depression, and anxiety among undergraduate nursing students. International Journal of Nursing Education Scholarship. 2013; 10: 255–266. https://doi.org/10.1515/ijnes-2012-0032

Christiansen A, Salamonson Y, Crawford R, McGrath B, Roach D, Wall P, et al. "Juggling many balls": Working and studying among first-year nursing students. Journal of Clinical Nursing. 2019; 28: 4035–4043. https://doi.org/10.1111/jocn.14999

Cocker F, Joss N. Compassion Fatigue among Healthcare, Emergency and Community Service Workers: A Systematic Review. International Journal of Environmental Research and Public Health. 2016; 13: 618. https://doi.org/10.3390/ijerph13060618

Dubale BW, Friedman LE, Chemali Z, Denninger JW, Mehta DH, Alem A, et al. Systematic review of burnout among healthcare providers in sub-Saharan Africa. BMC Public Health. 2019; 19: 1247. https://doi.org/10.1186/s12889-019-7566-7

Dyrbye LN, Shanafelt TD, Sinsky CA, Cipriano PF, Bhatt J, Ommaya A. Burnout among healthcare professionals: A call to explore and address this underrecognized threat to safe, high-quality care. 2020. Available at: https://nam.edu/burnout-among-health-care-professionals-a-call-to-explore-and-address-this-underrecognized-threat-to-safe-high-quality-care/ (Accessed: 21 March 2025).

Frögéli E, Djordjevic A, Rudman A, Livheim F, Gustavsson P. A randomized controlled pilot trial of acceptance and commitment training (ACT) for preventing stress-related ill health among future nurses. Anxiety, stress, and coping. 2016; 29: 202–218. https://doi.org/10.1080/10615806.2015.1025765

Galdino MJQ, Martins JT, Haddad MCFL, Robazzi MLCC, Birolim MM. Burnout syndrome among master's and doctoral students in nursing. Acta Paulista de Enfermagem. 2016; 29: 100–106. https://doi.org/10.1590/1982-0194201600014

García-Izquierdo M, Ríos-Risquez MI, Carrillo-García C, Sabuco-Tebar EÁ. The moderating role of resilience in the relationship between academic burnout and the perception of psychological health in nursing students. Educational Psychology. 2018; 38: 1068–1079. https://doi.org/10.1080/01443410.2017.1383073

Gómez-Urquiza JL, Velando-Soriano A, Membrive-Jiménez MJ, Ramírez-Baena L, Aguayo-Estremera R, Ortega-Campos E, et al. Prevalence and levels of burnout in nursing students: A systematic review with meta-analysis. Nurse Education in Practice. 2023; 72: 103753. https://doi.org/10.1016/j.nepr.2023.103753

Harvey SB, Epstein RM, Glozier N, Petrie K, Strudwick J, Gayed A. Mental illness and professional burnout: A narrative review of current evidence. The Lancet Psychiatry. 2021; 8: 487–500. https://doi.org/10.1016/S2215-0366(20)30574-3

Hong QN, Gonzalez-Reyes A, Pluye P. Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). Journal

of Evaluation in Clinical Practice. 2018; 24: 459–467. https://doi.org/10.1111/jep.12884

Janatolmakan M, Torabi Y, Rezaeian S, Andayeshgar B, Dabiry A, Khatony A. The relationship between resilience and academic burnout among nursing and midwifery students in Kermanshah, Iran. Journal of Education Evaluation for Health Professions. 2021; 18: 1–7. https://doi.org/10.3352/jeehp.2021.18.9

Kong LN, Yang L, Pan YN, Chen SZ. Proactive personality, professional self-efficacy and academic burnout in undergraduate nursing students in China. Journal of Professional Nursing. 2021; 37: 690–695. https://doi.org/10.1016/j.profnurs.2021.04.003

Kong LN, Yao Y, Chen SZ, Zhu JL. Prevalence and associated factors of burnout among nursing students: A systematic review and meta-analysis. Nurse Education Today. 2023; 121: 105706. https://doi.org/10.1016/j.nedt.2022.105706

Liébana-Presa C, Fernández-Martínez ME, Vázquez-Casares AM, López-Alonso AI, Rodríguez-Borrego MA. Burnout and engagement among university nursing students. Enfermería Global. 2018; 17: 131–152. https://doi.org/10.6018/eglobal.17.2.268831

Liu C, Zhou Y, Luo Q, Song L, Xiao J, Tan W, et al. A network analysis of self-compassion and burnout in a sample of nurses. Journal of Advanced Nursing. 2025; 81: 1343–1352. https://doi.org/10.1111/jan.16333

Lopes AR, Nihei OK. Burnout among nursing students: predictors and association with empathy and self-efficacy. Revista Brasileira De Enfermagem. 2021; 73: e20180280. https://doi.org/10.1590/0034-7167-2018-0280

Lykins AB, Seroka NW, Mayor M, Seng S, Higgins JT, Okoli CTC. Compassion Satisfaction, Burnout, and Secondary Traumatic Stress Among Nursing Staff at an Academic Medical Center: A Cross-Sectional Analysis. Journal of the American Psychiatric Nurses Association. 2024; 30: 63–73. https://doi.org/10.1177/10783903211066125

Ma Z, Wu X, He H. Burnout and related factors among nursing students: A cross-sectional study. Journal of Nursing Education and Practice. 2022; 12: 102–110. https://doi.org/10.5430/jnep.v12n3p102

Majerníková Ĺ, Obročníková A. Personality predictors and their impact on coping with burnout among students preparing for the nursing and midwifery profession. Kontakt. 2017; 19: e93–e98. https://doi.org/10.1016/j.kontakt.2017.02.002

March-Amengual JM, Cambra Badii I, Casas-Baroy JC, Altarriba C, Comella Company A, Pujol-Farriols R, et al. Psychological Distress, Burnout, and Academic Performance in First Year College Students. International Journal of Environmental Research and Public Health. 2022; 19: 3356. https://doi.org/10.3390/ijerph19063356

Mathias CT, Wentzel DL. Descriptive study of burnout, compassion fatigue and compassion satisfaction in undergraduate nursing students at a tertiary education institution in KwaZulu-Natal. Curationis. 2017; 40: e1–e6. https://doi.org/10.4102/curationis.v40i1.1784

McKee-Lopez G, Robbins L, Provencio-Vasquez E, Olvera H. The Relationship of Childhood Adversity on Burnout and Depression Among BSN Students. Journal of Professional Nursing. 2019; 35: 112–119. https://doi.org/10.1016/j.profnurs.2018.09.008

Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Medicine. 2009; 6: e1000097. https://doi.org/10.1371/journal.pmed.1000097

Naderi Z, Bakhtiari S, Momennasab M, Abootalebi M, Mirzaei T. Prediction of academic burnout and academic performance based on the need for cognition and general self-efficacy: A cross-sectional analytical study. Revista Latinoamericana de Hipertensión. 2018; 13: 584–591. https://www.researchgate.net/publication/332902109_Prediction_of_academic_burnout_and_academic_performance_based_on_the_need_for_cognition_and_general_self-efficacy_A_cross-sectional_analytical_study

Peng P, Hao Y, Liu Y, Chen S, Wang Y, Yang Q, et al. The prevalence and risk factors of mental problems in medical students during COVID-19 pandemic: A systematic review and meta-analysis. Journal of Affective Disorders. 2023; 321: 167–181. https://doi.org/10.1016/j.jad.2022.10.040

Pulido-Martos M, Augusto-Landa J, Lopez-Zafra E. Sources of stress in nursing students: A systematic review of quantitative studies. International Nursing Review. 2012; 59: 15–25. https://doi.org/10.1111/j.1466-7657.2011.00939.x

Ríos-Risquez MI, García-Izquierdo M, Sabuco-Tebar EDLÁ, Carrillo-Garcia C, Solano-Ruiz C. Connections between academic burnout, resilience, and psychological well-being in nursing students: A longitudinal study. Journal of Advanced Nursing. 2018; 74: 2777–2784. https://doi.org/10.1111/jan.13794

Rohmani N, Andriani R. Correlation between academic self-efficacy and burnout originating from distance learning among nursing students in Indonesia during the coronavirus disease 2019 pandemic. Journal of Educational Evaluation for Health Professions. 2021; 18: 9. https://doi.org/10.3352/jeehp.2021.18.9

Royal College of Nursing (RCN). Last shift survey 2022 – Qualitative report. 2023. Available at: https://www.rcn.org.uk/library/-/media/Royal-College-Of-Nursing/Documents/Library/Subject-Guides/SPJ-Last-shift-survey-qualitative-report.pdf (Accessed: 12 June 2025).

Royal College of Nursing (RCN). Support for newly qualified and student nurses. 2024. Available at: https://www.rcn.org.uk/congress/congress-events/support-for-newly-qualified-and-student-nurses-2024 (Accessed: 10 September 2024).

RCN Foundation. The Amin Abdullah RCN Foundation Grant. 2024. Available at: https://rcnfoundation.rcn.org.uk/Research-projects/Additional-research-areas/RCN-Foundation-Amin-Abdullah-Grant (Accessed: 21 May 2025).

Salvagioni DAJ, Melanda FN, Mesas AE, González AD, Gabani FL, Andrade SMD. Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. PLoS ONE. 2017; 12: e0185781. https://doi.org/10.1371/journal.pone.0185781

Sanches GF, do Vale BC, de Souza Pereira S, de Almeida CC, Preto VA, Sailer GC. Burnout syndrome among graduates of undergraduate nursing courses. Journal of Nursing UFPE. 2017; 11: 31–39. https://doi.org/10.5205/reuol.9978-88449-6-1101201705

Škodová Z, Bánovčinová Ĺ, Lajčiaková P. Engagement and burnout among nursing and psychology students in Slovakia. Central European Journal of Nursing and Midwifery. 2017; 8: 616–621. https://doi.org/10.15452/CEJNM.2017.08.0010

Stephens TM, Clark CM. Civility and resilience practices to address chronic workplace stress in nursing academia. Teaching and Learning in Nursing. 2024; 19: 119–126.

Sveinsdóttir H, Flygenring BG, Svavarsdóttir MH, Thorsteinsson HS, Kristófersson GK, Bernharðsdóttir J, et al. Predictors of university nursing students burnout at the time of the COVID-19 pandemic: A cross-sectional study. Nurse Education Today. 2021; 106: 105070. https://doi.org/10.1016/j.nedt.2021.105070

Tennant K. Holistic recognition: the path to satisfaction – an interpretive descriptive study of student nurses' experiences of the clinical learning environment [EdD thesis]. Staffordshire University. 2023. https://eprints.staffs.ac.uk/8112/8/Final%20EdD%20thesis%20KTennant.pdf

Tomaschewski-Barlem JG, Lunardi VL, Lunardi GL, Barlem EL, da Silveira RS, Vidal DA. Burnout syndrome among undergraduate nursing students at a public university. Rev Lat Am Enfermagem. 2014; 22: 934-41. https://doi.org/10.1590/0104-1169.3254.2498

Valero-Chillerón MJ, González-Chordá VM, López-Peña N, Cervera-Gasch Á, Suárez-Alcázar MP, Mena-Tudela D. Burnout syndrome in nursing students: An observational study. Nurse Education Today. 2019; 76: 38–43. https://doi.org/10.1016/j.nedt.2019.01.014

Vasconcelos EMD, Trindade CO, Barbosa LR, Martino MMFD. Predictive factors of burnout syndrome in nursing students at a public university. Revista Da Escola De Enfermagem Da U S P. 2020; 54: e03564. https://doi.org/10.1590/S1980-220X2018044003564

Wang J, Bu L, Li Y, Song J, Li N. The mediating effect of academic engagement between psychological capital and academic burnout among nursing students during the COVID-19 pandemic: A cross-sectional study. Nurse Education Today. 2021; 102: 104938. https://doi.org/10.1016/j.nedt.2021.104938

Wang M, Guan H, Li Y, Xing C, Rui B. Academic burnout and professional self-concept of nursing students: A cross-sectional study. Nurse Education Today. 2019; 77: 27–31. https://doi.org/10.1016/j.nedt.2019.03.004

Wei H, Henderson D, Peery A, Andrews A. Nursing students' perceptions of faculty caring as a predictor of students' caring behaviors. International Journal for Human Caring. 2021; 25: 123–130. https://doi.org/10.20467/HumanCaring-D-20-00034

World Health Organization (WHO). Psycho-social risks and mental health in the health sector. 2024. Available at: https://www.who.int/tools/occupational-hazards-in-health-sector/psycho-social-risks-

mental-health (Accessed: 11 September 2024).

Xie C, Li L, Li Y. "Wheels stuck in the mud": A qualitative study of experiences of academic burnout in graduate nursing students. Nurse Education Today. 2024; 140: 106287. https://doi.org/10.1016/j.nedt.2024.106287

Yang Z, Zhang M, Guo Y, Wang R, Xie F. Burnout among Nurses: A Bibliometric Analysis of the Global Publications. Psychology Research and Behavior Management. 2024; 17: 1727–1739. https://doi.org/10.2147/PRBM.S458199