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Interventions and Educational Contexts to Address Academic Burnout in Health Sciences Students: A Systematic Review.

Intervenciones y contextos formativos para prevenir o reducir el burnout académico en estudiantes de ciencias de la salud: revisión sistemática.

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Summary

Introduction: Academic burnout in health sciences students has become a growing concern in the university setting, affecting well-being, performance, and professional development. **Objective:** To explore and synthesize the interventions implemented to prevent or reduce academic burnout in health sciences university students, as described in the international literature. **Methodology:** A systematic review was conducted, following the guidelines of the Joanna Briggs Institute (JBI), in the PubMed, Scopus, Web of Science (WoS), ERIC, PsycINFO, and Virtual Health Library (VHL) databases. Intervention studies targeting academic burnout as the primary outcome or associated outcomes, such as perceived stress, psychological well-being, mindfulness, resilience, self-compassion, self-efficacy, and academic engagement, were included. To ensure transparency and traceability in the study selection process, the PRISMA guidelines were followed, applying predefined inclusion and exclusion criteria. **Results:** 2,597 records were identified, and 13 studies were included in the final analysis. The most frequent interventions were programs based on mindfulness or stress reduction (MBSR), emotion regulation, resilience, study skills, digital acceptance and commitment therapy (ACT), peer support, and institutional strategies focused on belonging and engagement (academic commitment). Results were more consistent in reducing associated outcomes, such as perceived stress and improving well-being, mindfulness, resilience, self-compassion, and academic commitment; however, the direct effect on academic burnout was heterogeneous. **Conclusion:** The reviewed interventions show promising results for improving outcomes associated with academic burnout, although evidence on their direct reduction remains limited. It is recommended to implement multicomponent, sustainable, and curriculum-integrated strategies, along with future studies of greater methodological rigor and longitudinal follow-up.

Keywords: Academic burnout, health sciences students, educational intervention, systematic review.

Resumen

Introducción: El burnout académico en estudiantes de ciencias de la salud se ha convertido en una preocupación creciente en el ámbito universitario, lo que afecta el bienestar, el rendimiento y la formación profesional. **Objetivo**: Explorar y sintetizar las intervenciones implementadas para prevenir o reducir el burnout académico en estudiantes universitarios de ciencias de la salud, descritas en la literatura internacional. **Metodología**: Se realizó una revisión sistemática, siguiendo las directrices del Joanna Briggs Institute (JBI), en las bases de datos PubMed, Scopus, Web of Science (WoS), ERIC, PsycINFO y Biblioteca Virtual en Salud (BVS). Se incluyeron estudios de intervención dirigidos al burnout académico como desenlace principal o desenlaces asociados, como estrés

percibido, bienestar psicológico, mindfulness, resiliencia, autocompasión, autoeficacia y compromiso académico. Para garantizar la transparencia y trazabilidad del proceso de selección de los estudios, se siguieron las directrices PRISMA, aplicando criterios de inclusión y exclusión previamente definidos. **Resultados:** Se identificaron 2.597 registros y se incluyeron 13 estudios para el análisis final. Las intervenciones más frecuentes correspondieron a programas basados en mindfulness o en reducción de estrés (MBSR), regulación emocional, resiliencia, habilidades de estudio, terapia de aceptación y compromiso digital (ACT), apoyo entre pares y estrategias institucionales orientadas a pertenencia y engagement (compromiso académico). Los resultados fueron más consistentes en la reducción de estos desenlaces asociados, tales como estrés percibido y la mejora del bienestar, mindfulness, resiliencia, autocompasión y compromiso académico; sin embargo, el efecto directo sobre el burnout académico fue heterogéneo. **Conclusión:** Las intervenciones revisadas muestran resultados prometedores para mejorar desenlaces asociados al burnout académico, aunque la evidencia sobre su reducción directa sigue siendo limitada. Se recomienda implementar estrategias multicomponente, sostenibles e integradas al currículo, junto con estudios futuros de mayor rigor metodológico y seguimiento longitudinal.

Palabras clave: Burnout académico, estudiantes del área de la salud, intervención educativa, revisión sistemática.

1. Introduction

Academic burnout is a syndrome that emerges during the learning process and manifests as emotional exhaustion, cynicism and low accomplishment/efficacy, associated with sustained academic pressure and workload (1). This conceptualization is consistent with its measurement using instruments employed in university populations; the Maslach Burnout Inventory–Student Survey (MBI SS) operationalizes the construct through the dimensions of exhaustion, cynicism, and efficacy, allowing for standardized measurement of the magnitude of the problem in students (2). In health sciences, burnout is a growing problem in medical education and is often characterized by these same dimensions, with direct implications for well-being and academic performance (3). Consequently, academic burnout is configured as an educational and mental health problem that requires preventive and institutional approaches within professional training.

In this context, some studies have shown that the overall prevalence of burnout among medical students reaches approximately one-third of the student body (4). Furthermore, it has been reported that academic burnout in medicine is strongly linked to perceived stress and that its dimensions can vary according to academic progress, with increases at critical points in the academic journey (5). A global prevalence of burnout has also been reported among nursing students, particularly a high burden of emotional exhaustion, suggesting that burnout appears early and can accompany the entire training trajectory (6). Taken together, these findings reinforce the magnitude of the problem and support the need to implement interventions.

Regarding interventions aimed at reducing academic burnout in health sciences students, favorable evidence has been reported for mindfulness-based programs (7) and for psychological/educational interventions (8). However, globally, while promising interventions exist, there is still no solid consensus on which strategies yield the most consistent results specifically in health sciences students. nor about which components are essential to sustain effects over time. In the medical field, it has been noted that mindfulness interventions can reduce burnout in medical students, although with frequent limitations related to heterogeneity between programs, limited sample sizes, and variability in instruments and follow-ups (7). Complementarily, other authors have pointed out that, although interventions tend to reduce student burnout, the results vary according to the study design, the type of intervention, and the symptom assessed, highlighting greater consistency of evidence when it comes from randomized controlled trials (RCTs), particularly in mindfulness-based interventions (8).

In Latin America and Chile, the gap is wider due to the scarcity of systematic reviews focused on health sciences students that integrate comparators, modality (face-to-face/digital), and curricular feasibility. While local evidence exists from a self-care/mindfulness program for medical students, the challenge remains to consolidate replicable and scalable evidence across different institutions and disciplines (9). Based on the above, given the heterogeneity of approaches and the lack of consensus on which interventions report the most consistent results and could be replicated in health sciences training, a systematic review synthesizing the available evidence is justified. This study aims to identify and synthesize the interventions reported to prevent or reduce academic burnout in undergraduate health sciences students.

2. Methods

A systematic review was conducted to synthesize interventions for addressing academic burnout in university health sciences students, following the methodological guidelines of the Joanna Briggs Institute (JBI), in accordance with the JBI Manual for Evidence Synthesis (10), to ensure rigor, traceability, and consistency at all stages of the review. The research question was formulated using the acronym PIO, defining the population as health sciences students; the intervention as programs for the prevention/reduction of academic burnout; the primary outcome as levels of academic burnout and its dimensions of exhaustion, academic depersonalization, and academic efficacy; and the secondary outcomes as psychological well-being, mindfulness, perceived stress, resilience, academic engagement, self-compassion, and emotional regulation. This structure allows for the precise and focused delimitation of review questions (11). Based on this formulation, the following research question was established: What interventions and strategies have been reported in the scientific literature to address academic burnout in university students of health sciences?

The literature was identified through a comprehensive search of six international databases: PubMed/MEDLINE, Scopus, Web of Science, ERIC, PsycINFO, and the Virtual Health Library (VHL). To standardize and validate search terms, MeSH and DeCS controlled vocabularies were used, combined with the Boolean operators OR and AND. Subsequently, specific search strategies were developed for each database. Eligibility criteria were defined to ensure the relevance and quality of the synthesized evidence. Primary studies published between January 2015 and January 2025 were included. The literature search and selection process were conducted between August and December 2025. Studies published in Spanish, English, or Portuguese and conducted with undergraduate health sciences students were also considered. Primary studies were eligible, even if they were not classic experimental or quasi-experimental trials, provided they implemented an educational, psychological, digital, or institutional intervention, strategy, or program aimed at preventing, reducing, or addressing academic burnout or associated outcomes. Implementation or post-intervention evaluation studies were also included, as long as they described an applied strategy and reported results related to academic burnout or associated outcomes, such as stress, well-being, academic engagement, emotional regulation, self-compassion, or academic self-efficacy. Quantitative, qualitative, or mixed-methods studies were accepted. Excluded were systematic reviews, narrative reviews, meta-analyses, letters to the editor, editorials, protocols, commentaries, and grey literature; studies in non-university populations or in students outside the health sciences; research unrelated to the academic environment; articles without full-text access; and duplicate publications. Although the main objective of the review was to focus on interventions aimed at preventing or reducing academic burnout, studies that assessed outcomes closely related to this phenomenon, such as perceived stress, psychological well-being, mindfulness, self-compassion, self-efficacy and academic commitment, were also included, provided that the interventions were developed in the training context of health science students.

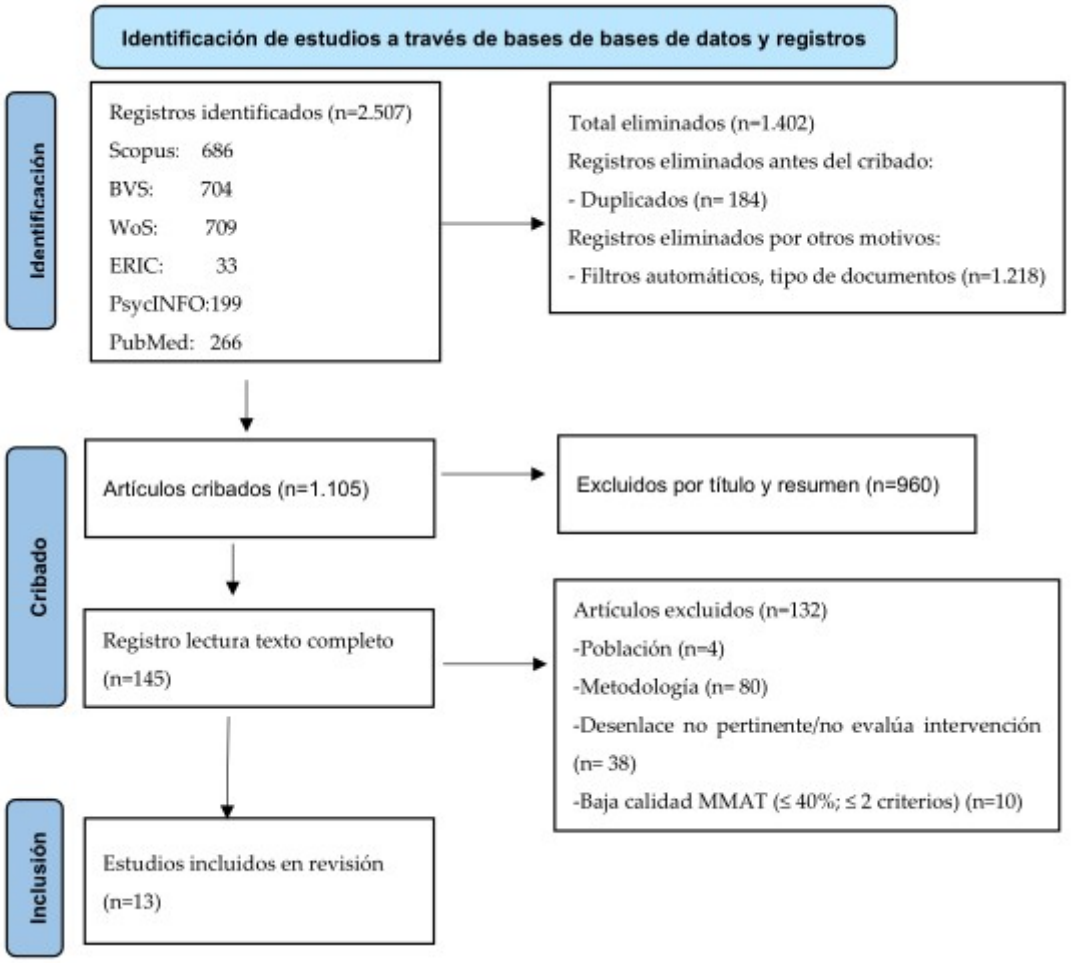

Figura 1. Prisma 2000 Flowchart Diagram.

To ensure transparency and reproducibility, the study selection process was reported according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (12), as shown in Figure 1. Two reviewers independently selected the studies. Discrepancies were resolved by consensus. Subsequently, the same reviewers extracted the data using standardized matrices, cross-checking them to ensure consistency in data recording. These matrices allowed for the systematization of relevant bibliographic and methodological variables for each study: author(s), original title, year of publication, journal and quartile, indexing database, URL, keywords, country or location of study, study objectives, methodology, main results, and conclusions. This structure facilitated the comparative organization of the findings and supported a narrative synthesis. oriented towards answering the research question.

Due to the heterogeneity of designs, interventions, and instruments, a structured narrative synthesis was conducted. For the purposes of this review, "interventions with favorable outcomes" were defined as those strategies that reported at least one of the following criteria: significant reduction in burnout; improvement in relevant secondary outcomes such as perceived stress, psychological well-being, mindfulness, self-compassion, self-efficacy, and academic engagement; student acceptability; program adherence; and a favorable perception of usefulness. Given the heterogeneity of designs, durations, instruments, and outcomes assessed, this classification does not imply definitive causal efficacy, but rather the presence of favorable results within the methodological framework of each study.

To reduce the risk of narrative bias, the interpretation of the findings was systematically compared with the data extracted from each study, considering design, sample size, direction of the reported effect, outcomes assessed, statistical significance when available, methodological quality according to MMAT, OCEBM level of evidence, and risk of bias according to RoB 2 or ROBINS I. Furthermore, the studies were grouped by type of intervention and by outcome assessed, explicitly distinguishing between academic burnout as the primary outcome and secondary or associated outcomes, such as perceived stress, psychological well-being, mindfulness, resilience, self-compassion, self-efficacy, and academic engagement. This strategy aimed to prevent the narrative synthesis from overinterpreting isolated favorable results and allowed the findings to be weighted according to the methodological rigor of each study.

The overall methodological quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) (13), taking into account the heterogeneity of qualitative, quantitative, and mixed-methods designs. An operational categorization, previously defined by the research team, was used for interpretation, based on the number of criteria met: 5 criteria = high methodological quality; 3–4 criteria = moderate quality; 1–2 criteria = low methodological quality; and 0 criteria = very low or poor quality. This categorization served as a guiding criterion to describe the quality of the studies and support the interpretation of the findings. Low methodological quality was defined as the exclusion threshold; therefore, studies scoring 40% or lower, equivalent to two or fewer criteria met on the MMAT, were excluded at the full-text stage for failing to meet minimum quality criteria. This percentage conversion was used solely for internal descriptive support and not as an official score for the instrument. Additionally, the risk of bias was assessed using the Cochrane group's RoB 2 for randomized clinical trials (14), and ROBINS I (Risk of Bias In Non-randomized Studies of Interventions)(15) only in non-randomized studies, whose quantitative component allowed for the assessment of the effect of an intervention. ROBINS I was not applied to qualitative, descriptive, retrospective studies, or those focused primarily on acceptability, satisfaction, or implementation, since these designs do not allow for a direct estimation of the risk of bias associated with the causal effect of an intervention.

Additionally, the level of scientific evidence for the included studies was determined using the Oxford Centre for Evidence Based Medicine classification (16). This assessment allowed for the interpretation of the findings considering not only the reported effect, but also the robustness of the supporting design, and was integrated together with the methodological quality (MMAT) and the risk of bias (RoB 2/ROBINS I) in the comparative matrix (Table 1).

The protocol for this review was not previously registered in PROSPERO or OSF. However, the research question, eligibility criteria, databases, overall search strategy, selection process, data extraction, and critical appraisal methods were defined before the final analysis of the included studies. As this was a literature review based on published sources, approval from an institutional ethics committee was not required.

3. Results

A total of 2,597 records were identified by searching six databases. Finally, 13 studies met eligibility criteria and were included in the synthesis (17 29) (Table 1).

Table 1. Comparative synthesis of the design, methodological quality and bias assessment of the included studies.

Author, Ref	Design	Population	Quality methodological (MMAT)	Level of evidence OCEBM	Risk of bias / (tool according to design)	Quartile according to SJR
Ramírez García, 17	Mixed	Students of Nursing	Moderate	4	ROBINS I: Critical	Journal of Professional Nursing Q1
Pandey Bista, 18	Qualitative	Students of Nursing	Moderate	5		Journal of Nepal Health Research Council/Q3
Kakoschke, 19	Quantitative pre-post without control	Medical Students	Moderate	4	ROBINS I: Critical	PLoS One Q1
Beanlands, 20	Mixed (single pre-post group)	Students of Nursing	Moderate	4	ROBINS I: Critic	Nurse Education Today/ Q1
Aherne, 21	Mixed	Medical Students	Moderate	4		BMC Medical Education / Q1
Chust, 22	Quantitative quasi experimental	Students of Nursing	Moderate	3	ROBINS I: Serious	Electronic Journal of Research in Educational Psychology /Q3
Ditton, 23	Quantitative ECA	Medical Students	High	2	RoB 2: Some concerns	JMIR Mental Health /Q1
De Vibe, 24	Quantitative ECA	Medical and psychology students	High	2	RoB 2: Some concerns	PLoS One Q1
Mugford, 25	Retrospective observation	Medical students	Moderate	4		Family Medicine Q2
Kuhlmann, 26	Quantitative ECA	Medical Students	High	2	RoB 2: Some concerns	BMC Medical Education /Q1
Puranitee, 27	Mixed	Medical Students	Moderate	5		BMC Medical Education /Q1
Gold, 28	Quantitative quasi experimental	Medical Students	Moderate	3	ROBINS I: Serious	Mindfulness Q1
Rong, 29	Quantitative ECA	Medical Students	Moderate	2	RoB 2: Some concerns	BMC Medical Education /Q1

Note. ROBINS I criteria: Low/moderate/serious/critical. ROBINS I was applied to non-randomized intervention studies with a quantitative evaluative component, as well as to the quantitative evaluative component of mixed-methods studies. It was not applied to qualitative, retrospective, or acceptability/implementation-focused studies without direct estimation of the intervention effect.

The evidence included comes primarily from studies conducted in various countries, including Canada, Nepal, Australia, Ireland, Spain, England, Norway, the United States, Germany, Thailand, and China. Studies involving medical students predominate, followed by studies involving nursing students and one study that includes both medical and psychology students. Regarding methodological design, quantitative intervention studies predominate, mainly randomized controlled trials (RCTs), along with quasi-experimental studies, pre-post designs without a control group, mixed-methods studies, and one qualitative study associated with a mindfulness intervention

According to the level of evidence (OCEBM), RCTs were classified at higher levels (level 2); quasi-experimental studies were concentrated at level 3. Mixed-methods, qualitative, and observational studies are mainly classified at levels 4 and 5. As for methodological quality (MMAT), a moderate rating predominated. The highest-rated studies are primarily RCTs, classified as high quality. When integrating the risk of bias, the RCTs were assessed with RoB 2, showing in all cases "some concerns", suggesting potentially useful results, but with limitations and interpretive caution. In contrast, the non-randomized studies were assessed using ROBINS I, with a critical or serious risk classification, so the overall certainty requires caution. Finally, most articles were published in Q1 journals, with a smaller proportion in Q2 and Q3. This reflects the indexing of the studies in journals with varying levels of scientific visibility. Consequently, this secondary indicator was not used as the primary criterion for the certainty of the evidence.

Table 2 shows that the interventions are grouped into mindfulness/MBSR strategies, emotion regulation, autogenic training, study skills, digital ACT, resilience, institutional belonging, and mental well-being and empathy. Overall, the most frequent facilitators are related to flexible access, small groups, peer support, curricular integration, student participation, personalized support, a safe environment, trained facilitators, and the use of practical strategies applicable to the academic context. Regarding barriers, these are mainly linked to lack of time, heavy academic workload, fluctuating schedules, low adherence, dropout during follow-up, and limited effects on some outcomes. With respect to the teacher/trainer role, the results are linked to peer training, clinical or psychological supervision, specialized facilitation, curricular integration, creation of safe environments, institutional support, and professional modeling through clinical narratives or group reflection.

Finally, the implementation recommendations focus on maintaining small groups, reinforcing adherence, integrating interventions into the curriculum, encouraging voluntary participation, ensuring competent facilitators, combining digital tools with human support, incorporating reinforcement sessions, and promoting institutional strategies for belonging, self-care, emotional regulation, and early professional reflection. To guide the practical application of these findings, Table 3 was developed, summarizing recommendations for the design of future educational strategies aimed at reducing academic burnout in health sciences students.

According to the evidence found, interventions focused on improving stress, well-being, mindfulness, academic engagement, self-compassion, resilience, empathy, and quality of life were identified, some with limited effects on burnout as the primary outcome. Educational implications are geared towards incorporating these strategies as part of the training process, whether through transversal competencies of self-regulation, peer support, strengthening of emotional skills, academic coaching, resilience, self-care, clinical communication, and the creation of safe institutional environments. At the university level, recommendations focus on institutionalizing support programs, creating safe spaces, integrating micro-practices or curricular modules, strengthening mentorship, safeguarding technical support for digital interventions, and ensuring continuity through follow-up or reinforcement sessions. Regarding recommendations for faculty, the evidence highlights functions associated with training, supervision, modeling self-care, academic guidance, constructive feedback, practice support, promotion of psychological safety, and reflective facilitation in clinical and academic contexts.

4. Discussion

Academic burnout among health sciences students represents a significant problem for medical and health education due to its impact on students' psychological well-being and academic performance in a highly demanding educational context. From a theoretical perspective, the findings can be interpreted using the academic demands-resources model, derived from the Job Demands-Resources approach (30) and applied to higher education. This framework posits that student well-being depends on the balance between academic demands—curricular load, assessments, clinical requirements, and performance pressure—and available resources, such as faculty support, autonomy, a sense of belonging, peer support, coping strategies, and personal resources. Following this logic, the identified interventions could reduce perceived demands or strengthen personal and institutional resources, which helps explain why strategies integrated into the curriculum, supported by trained faculty or facilitators, and tailored to the academic context tend to show greater acceptability and better results in terms of stress, well-being, and academic engagement. This interpretation is consistent with published studies that link burnout and academic stress with academic workload, curricular demands, coping and conditions of the educational environment (31-32).

Regarding the findings, this review identified 13 intervention studies aimed at preventing, reducing, or addressing academic burnout or closely related outcomes, such as perceived stress, well-being, mindfulness, resilience, self-compassion, academic engagement, empathy, and academic self-efficacy. The included studies were heterogeneous in design, population, duration, implementation modality, and measurement instruments, which warranted a structured narrative synthesis. To explicitly address methodological heterogeneity, the interpretation of the results was structured around four axes: type of intervention, outcome assessed, methodological rigor, and implementation context. Thus, interventions were grouped by primary focus, findings were interpreted by differentiating academic burnout as a multidimensional construct from its secondary outcomes, and the strength of each outcome was weighted according to design, methodological quality, level of evidence, and risk of bias. Furthermore, implementation conditions such as modality, duration, adherence, faculty support, curricular integration, and institutional resources were considered. This strategy allowed for a cautious interpretation of the findings and avoided definitive conclusions about the overall reduction of burnout when the available evidence is heterogeneous and, in several cases, focused on associated outcomes.

The main finding of this review was that available interventions show more consistent and favorable results on secondary outcomes, especially perceived stress, psychological well-being, dispositional mindfulness, coping, resilience, self-compassion, and academic engagement, while the effect on burnout as a multidimensional construct was more variable. This pattern is relevant because it suggests that many interventions initially act on regulatory mechanisms, such as coping, emotional self-regulation, psychological flexibility, or perceived support—that is, before addressing overall burnout. This finding should be interpreted with caution, given that improvements in secondary or proximal outcomes, such as perceived stress, psychological well-being, mindfulness, resilience, self-compassion, or academic engagement, do not necessarily equate to a direct reduction in overall academic burnout. Academic burnout is a multidimensional construct, generally expressed through emotional exhaustion, cynicism or academic depersonalization, and low self-efficacy or personal accomplishment. This dimensional distinction has been reported in Chilean university students, where burnout was assessed using differentiated subscales of emotional exhaustion, depersonalization, and personal accomplishment (31). Likewise, secondary outcomes, such as academic stress, should be interpreted as related phenomena, but not equivalent to burnout. Studies published in the Spanish Journal of Medical Education have evaluated academic stress in nursing students and reviewed interventions to mitigate it in medical students, reinforcing the need to differentiate stress, well-being, and burnout as analytically distinct outcomes (32-33). Consequently, the results of this review should not be interpreted as definitive evidence of efficacy regarding

burnout, but rather as a favorable signal, primarily concerning related outcomes. The transfer of these findings to multidimensional burnout requires studies with greater scientific rigor, specific measurement by dimension, and longitudinal follow-up.

The methodological heterogeneity observed also limits the generalizability of the findings. Differences between studies in design, sample size, population, academic program, country, intervention duration, implementation modality, measurement instruments, and outcomes assessed prevent us from assuming that the observed effects can be uniformly extrapolated to all health sciences students. Therefore, the results should be interpreted as guiding evidence regarding potentially useful interventions, but not as a generalizable estimate of effectiveness. This caution is especially relevant because some studies assessed academic burnout as the primary outcome, while others measured related outcomes, such as stress, well-being, mindfulness, resilience, self-compassion, self-efficacy, or academic engagement. Consequently, throughout this review, the term academic burnout is reserved for the main construct and its dimensions, while stress, well-being, mindfulness, resilience, self-compassion, self-efficacy, empathy, and academic engagement are interpreted as secondary outcomes or related mechanisms.

These results are consistent with the review by Wang et al., who reported that mindfulness-based interventions can reduce academic burnout in medical students, although with variability depending on the dimension assessed and the characteristics of the studies (7). Similarly, Hathaisaard et al. concluded that mindfulness interventions reduce subjective stress in medical students in the short and long term, but that the effect on burnout remains less conclusive (34). This agreement supports one of the central findings of the present review: interventions appear more consistent in modifying stress and well-being than in reducing all dimensions of burnout. Likewise, Madigan et al., in a systematic review of interventions to reduce burnout in students, observed that various educational and psychological strategies, especially those based on mindfulness or psychological therapies, can show favorable results on burnout and student well-being. However, the authors emphasized that the magnitude and consistency of these effects vary according to methodological design, type of intervention, outcome assessed, and quality of the available evidence (8). This finding is consistent with the present review, where randomized clinical trials showed a higher level of evidence, but were still classified with "some concerns" in RoB 2, which requires interpretive caution.

Another relevant finding was that the interventions were not limited to mindfulness. Strategies for emotion regulation, autogenic training, study skills, digital ACT, resilience, institutional belonging, clinical communication, and empathy were also identified. This diversity broadens the traditional perspective focused exclusively on individual self-care and allows us to understand academic burnout as a phenomenon influenced by personal, pedagogical, and institutional factors. Along these lines, Tang et al., in a systematic review with meta-analysis, found that interventions targeting academic burnout can show favorable results, especially when they are of sufficient duration and have integrated components (35).

The clinical and educational relevance of these findings lies in the fact that academic burnout in health sciences students not only affects individual well-being but also professional development, academic engagement, retention in their studies, and preparation for demanding clinical settings. Early intervention can help strengthen coping mechanisms, self-care, emotional regulation, and resilience before students fully enter the workforce. Furthermore, institutional interventions focused on fostering a sense of belonging, academic commitment, and psychological safety suggest that burnout prevention should not rely solely on the student but also on curriculum design, teaching culture, and educational conditions.

This review also shows that implementation is a critical component. The most acceptable interventions were characterized by trained facilitators, safe spaces, peer support, flexible access,

curricular integration, and follow-up. In contrast, the main barriers were lack of time, academic workload, fluctuating schedules, low adherence, dropout during follow-up, and limited effects on burnout. These findings are consistent with reviews of stress management interventions for university students, which have indicated that effectiveness depends not only on the content of the intervention but also on its feasibility, adherence, and suitability to the academic context (36).

However, the transfer of these interventions to Spanish-speaking and Latin American contexts should be interpreted with caution, given that most of the included studies were conducted in international settings with potentially different curricular conditions, institutional resources, facilitator availability, and educational cultures. Therefore, the local implementation of programs based on mindfulness/MBSR, emotional regulation, peer support, digital ACT, or institutional belonging strategies should not be assumed to be directly replicable without prior processes of cultural adaptation, feasibility assessment, and curricular adjustment. Some authors have shown that burnout and academic stress in health sciences students are related to curricular demands, academic workload, coping resources, and conditions of the learning environment (31). Likewise, evidence on interventions to mitigate academic stress in medical students suggests that their effectiveness depends on their adaptation to the educational context, their acceptability, and the sustainability of their implementation (33). Consequently, these recommendations should be understood as potentially transferable, but not automatically generalizable, guidelines, and require local piloting, student and teacher participation, analysis of workload, and evaluation with culturally relevant instruments.

From an applied transfer perspective, the recommendations summarized in Table 3 can guide the implementation of preventive strategies in Latin American universities if they are articulated at three levels. At the institutional level, it is necessary to ensure protected time, administrative support, trained facilitators, student well-being spaces, and monitoring mechanisms. At the curricular level, interventions should be progressively incorporated through micro-practices, self-regulation modules, peer support, mentoring, and academic support strategies, avoiding isolated activities. At the faculty level, it is crucial to strengthen constructive feedback, psychological safety, early detection of overload, and timely referral to institutional support. This approach allows the recommendations in Table 3 to move beyond a general extrapolation of international evidence and translate into concrete implementation conditions, especially relevant for Latin American contexts where academic workload, available resources, and curriculum approval processes can affect the sustainability of interventions.

Furthermore, the implementation of these recommendations in Spanish-speaking universities must consider institutional and regulatory barriers, such as heavy course loads, rigid curricula, approval by committees or governing bodies, the availability of trained facilitators, institutional resources, and alignment with graduate profiles, learning outcomes, and accreditation criteria (33, 37-38). Therefore, interventions aimed at preventing or reducing academic burnout should not be added as extracurricular activities that increase the student workload, but rather progressively integrated into the curriculum, with institutional support, protected time slots, feasibility assessments, and monitoring mechanisms.

In the Latin American context, the feasibility of implementing these recommendations also depends on current curricular and quality assurance frameworks. Accreditation systems typically require coherence between graduate profiles, learning outcomes, curricula, institutional resources, and continuous improvement mechanisms. Therefore, interventions aimed at preventing academic burnout should not be incorporated as isolated extracurricular activities, but rather as strategies aligned with transversal competencies of self-care, self-regulation, student well-being, professionalism, and safety in clinical training. In Chile, for example, undergraduate accreditation criteria consider the graduate profile and curriculum as key evaluation axes (37), while regional

systems such as ARCU SUR seek to publicly guarantee the academic and scientific quality of undergraduate programs in the region (38). Consequently, the sustainability of these strategies will depend on their formal integration into the curriculum, the availability of institutional resources, and their incorporation into evaluation, monitoring, and continuous improvement processes.

Limitations

Among the limitations of this review, the absence of a meta-analysis is acknowledged, due to the clinical and methodological heterogeneity of the included studies. Although the narrative synthesis allowed for the integration of heterogeneous evidence, the diversity of designs, populations, interventions, instruments, and outcomes limits direct comparability between studies and reduces the possibility of estimating causal effects attributable to a specific intervention. Therefore, the conclusions were weighted according to study design, the direction of results, available statistical significance, methodological quality, level of evidence, and risk of bias; consequently, the findings should be interpreted as signals of benefit or association, but not as causal estimates equivalent to a meta-analysis.

Second, the instruments used to measure burnout and associated outcomes were diverse, which limits direct comparability. Although several studies used internationally recognized instruments, their application in Latin American contexts requires considering the availability of validated versions, cultural adaptations, or local psychometric evidence. For academic burnout, the Maslach Burnout Inventory Student Survey (MBI SS) has been studied psychometrically in Chilean and Spanish university populations and has been used with Chilean health sciences students (31-32). For academic stress, the SISCO questionnaire has been used with nursing students in Spanish-speaking populations (32). Likewise, there is regional data for related constructs, such as academic engagement, academic self-efficacy, and self-compassion, although their validity may vary depending on the country, academic program, and student population (39)(40). Therefore, future research should prioritize instruments with local validation or conduct formal processes of cultural adaptation, validity, reliability, and invariance before comparing results between institutions or countries.

Third, variability in duration, dosage, delivery method, and follow-up limits the estimation of sustained effects. Fourth, there is potential publication bias, as studies with favorable results may be overrepresented. Fifth, the language restriction to Spanish, English, and Portuguese may have excluded relevant evidence in other languages. Sixth, some non-randomized studies presented a critical risk of bias according to ROBINS I; therefore, their findings should be interpreted with caution and were considered primarily as exploratory evidence. Furthermore, the lack of prior registration of the protocol in PROSPERO or OSF constitutes a limitation on external transparency, as it prevents public verification of possible methodological modifications during the review process. To mitigate this limitation, the research question, eligibility criteria, databases consulted, selection process, data extraction, methodological assessment, and synthesis strategy used were explicitly described.

Future research should prioritize randomized controlled trials and pragmatic multicenter studies with sufficient sample sizes, longitudinal follow-up, active comparators, and implementation evaluation. It is also necessary to identify which specific components, such as mindfulness, emotion regulation, peer support, resilience, mentoring, study skills, or curricular changes, have the greatest impact on each dimension of burnout. Furthermore, it would be advisable to incorporate analyses of dose-response, adherence, cost-effectiveness, acceptability, implementation fidelity, and transferability to Latin American contexts, where evidence remains limited.

In summary, this review shows that interventions targeting health sciences students have promising results, particularly in reducing stress and improving well-being, although evidence on the direct reduction of academic burnout remains inconsistent. Burnout prevention requires

multicomponent, sustainable, and contextualized strategies that integrate individual, faculty, and institutional actions.

5. Conclusions

- This systematic review identified 13 intervention studies aimed at preventing, reducing, or addressing academic burnout in health sciences students. From a dimensional perspective, the reviewed interventions appear to primarily address academic exhaustion by reducing perceived stress and improving psychological well-being, mindfulness, emotional regulation, resilience, and self-compassion. To a lesser extent, strategies such as belonging, peer support, mentoring, and engagement may influence academic cynicism or disengagement, while interventions focused on study skills, self-efficacy, professional reflection, and faculty support may promote academic effectiveness. However, the direct effect on burnout as a multidimensional construct remains heterogeneous; therefore, these findings should not be interpreted as conclusive evidence of an overall reduction in burnout.
- The findings demonstrate that addressing academic burnout should not focus exclusively on individual self-care strategies, but also on curricular, relational, and institutional components. In this context, elements such as safe learning environments, faculty support, peer mentoring, flexible access, curricular integration, and longitudinal follow-up emerge as relevant factors for the implementation and sustainability of interventions.
- However, the available evidence remains limited by methodological heterogeneity, variability in instruments, and the small number of randomized controlled trials. Therefore, future research should prioritize multicenter designs, longitudinal follow-up, and implementation evaluation to strengthen the existing evidence and promote the development of contextualized interventions that can be transferred to different health sciences training settings.

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6. References.

1. Liu Z, Xie Y, Sun Z, Liu D, Yin H, Shi L. Factors associated with academic burnout and its prevalence among university students: a cross sectional study. *BMC Med Educ.* **2023,** 23(1), 317. https://doi.org/10.1186/s12909-023-04316-y

2. López Gómez E, González Fernández R, Khampirat B. Psychometric study of the Maslach Burnout Inventory Student Survey on Thai university students. *Sci Rep.* **2025,** 15(1), 1802. https://doi.org/10.1038/s41598-024-84829-8

3. Boone A, Menouni A, Korachi IB, Nejjari C, Khalis M, Jaafari S El, et al. Burnout and predictive factors among medical students: a cross sectional survey. *BMC Med Educ.* **2024,** 24(1), 812. https://doi.org/10.1186/s12909-024-05792-6

4. Almutairi H, Alsubaiei A, Abduljawad S, Alshatti A, Fekih Romdhane F, Husni M, et al. Prevalence of burnout in medical students: a systematic review and meta-analysis. *Int J Soc Psychiatry.* **2022,** 68(6), 1157–1170. https://doi.org/10.1177/00207640221106691

5. Kilic R, Nasello JA, Melchior V, Triffaux JM. Academic burnout among medical students: respective importance of risk and protective factors. *PublicHealth.* **2021,** 198, 187–195. https://doi.org/10.1016/j.puhe.2021.07.025
6. 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 Educ Practice.* **2023,** 72, 103753. https://doi.org/10.1016/j.nepr.2023.103753
7. Wang Z, Wu P, Hou Y, Guo J, Lin C. The effects of mindfulness based interventions on alleviating academic burnout in medical students: a systematic review and meta analysis. *BMC Public Health.* **2024,** 24(1), 1414. https://doi.org/10.1186/s12889-024-18938-4
8. Madigan DJ, Kim LE, Glandorf HL. Interventions to reduce burnout in students: a systematic review and meta analysis. *Eur J Psychol Educ.* **2023,** 39(2), 931–957. https://doi.org/10.1007/s10212-023-00731-3
9. Zúñiga D, Torres Sahli M, Nitsche P, Echeverría G, Pedrals N, Grassi B, et al. Reduced burnout and higher mindfulness in medical students after a self care program during the COVID-19 pandemic. *Rev Med Chil.* **2021,** 149(6), 846–855. https://doi.org/10.4067/s0034-98872021000600846
10. Aromataris E, Lockwood C, Porritt K, Pilla B, Jordan Z, editors. JBI Manual for Evidence Synthesis. Adelaide: Joanna Briggs Institute; **2020.** https://jbi-global-wiki.refined.site/space/MANUAL
11. Sánchez Martín M, Pedreño Plana M, Ponce Gea AI, Navarro Mateu F. And, at first, it was the research question… The PICO, PECO, SPIDER and FINER. *Espiral Cuad Profr.* **2023,** 16(32), 126–136. https://doi.org/10.25115/ecp.v16i32.9102
12. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ.* **2021,** 372, n71. https://doi.org/10.1136/bmj.n71
13. Hong QN, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, et al. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Educ Inf.* **2018,** 34(4), 285–291. https://doi.org/10.3233/EFI-180221
14. Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, et al. RoB 2: a revised Cochrane risk-of-bias tool for randomized trials. *BMJ.* **2019,** 366, l4898. https://doi.org/10.1136/bmj.l4898
15. Sterne JA, Hernán MA, Reeves BC, Savović J, Berkman ND, Viswanathan M, et al. ROBINS I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ.* **2016,** 355, i4919. https://doi.org/10.1136/bmj.i4919
16. Oxford Center for Evidence Based Medicine. The Oxford 2011 Levels of evidence. Oxford: University of Oxford; 2011. https://www.cebm.ox.ac.uk/resources/levels-of-evidence/ocebm-levels-of-evidence
17. Ramirez Garcia MP, Leclerc Loiselle J, Genest C, Paradis Gagné E, Larue C, Poitras Crête M, et al. peer led group intervention based on relaxation (soRELAX) to improve well-being and mental health in nursing students: a mixed method pilot study. *J Prof Nurs.* **2025,** 57, 8–18. https://doi.org/10.1016/j.profnurs.2024.12.010
18. Pandey Bista A, Adhikari J, Shah BK, Poudel K, Kc B, Pandey A. Experience of mindfulness meditations based on stress reduction among undergraduate nursing students, Chitwan, Nepal. *J Nepal Health Res Counc.* **2024,** 21(3), 439–444. https://doi.org/10.33314/jnhrc.v21i3.4578
19. Kakoschke N, Hassed C, Chambers R, Lee K. The importance of formal versus informal mindfulness practice for enhancing psychological well-being and study engagement in a medical student cohort with a 5 week mindfulness based lifestyle program. *PLoS One.* **2021,** 16(10), e0258999. https://doi.org/10.1371/journal.pone.0258999
20. Beanlands H, McCay E, Fredericks S, Newman K, Rose D, Santa Mina E, et al. Decreasing stress and supporting emotional well-being among senior nursing students: a pilot test of an evidence based intervention. *Nurse Educ Today.* **2019,** 76, 222–227. https://doi.org/10.1016/j.nedt.2019.02.009
21. Aherne D, Farrant K, Hickey L, Hickey E, McGrath L, McGrath D. Mindfulness based stress reduction for medical students: optimizing student satisfaction and engagement. *BMC Med Educ.* **2016,** 16(1), 209. https://doi.org/10.1186/s12909-016-0728-8

22. Chust Hernández P, López González E, Senent Sánchez JM. Intervention in study skills on stress and academic self-efficacy in newly admitted university students. *Electron J Res Educ Psychol.* **2024,** 22(64), 533–558. https://doi.org/10.25115/ejrep.v22i64.9580
23. Ditton E, Knott B, Hodyl N, Horton G, Oldmeadow C, et al. Evaluation of an App delivered psychological flexibility skill training intervention for medical student burnout and well-being: randomized controlled trial. *JMIR Ment Health.* **2023,** 10, e42566. https://doi.org/10.2196/42566
24. De Vibe M, Solhaug I, Rosenvinge JH, Tyssen R, Hanley A, Garland E. Six year positive effects of a mindfulness based intervention on mindfulness, coping and well-being in medical and psychology students: results from a randomized controlled trial. *PLoS One.* **2018,** 13(4), e0196053. https://doi.org/10.1371/journal.pone.0196053
25. Mugford H, O'Connor C, Danelson K, Popoli D. Medical students' perceptions and retention of skills from active resilience training. *Fam Med.* **2022,** 54(3), 213–215. https://doi.org/10.22454/fammed.2022.462706
26. Kuhlmann SM, Huss M, Bürger A, Hammerle F. Coping with stress in medical students: results of a randomized controlled trial using a mindfulness based stress prevention training (MediMind) in Germany. *BMC Med Educ.* **2016,** 16, 316. https://doi.org/10.1186/s12909-016-0833-8
27. Puranitee P, Kaewpila W, Heeneman S, van Mook WNKA, Busari JO. Promoting a sense of belonging, engagement, and collegiality to reduce burnout: a mixed methods study among undergraduate medical students in a non-Western, Asian context. *BMC Med Educ.* **2022,** 22, 327. https://doi.org/10.1186/s12909-022-03380-0
28. Oró P, Esquerda M, Mas B, Viñas J, Yuguero O, Pifarré J. Effectiveness of a mindfulness based program on perceived stress, psychopathological symptomatology and burnout in medical students. *Mindfulness (NY).* **2021,** 12(5), 1138–1147. https://doi.org/10.1007/s12671-020-01582-5
29. Rong R, Chen W, Dai Z, Gu J, Chen W, Zhou Y, et al. Improvement of the management of mental well-being and empathy in Chinese medical students: a randomized controlled study. *BMC Med Educ.* **2021,** 21,378. https://doi.org/10.1186/s12909-021-02813-6
30. Bakker AB, Mostert K. Study Demands–Resources Theory: Understanding Student Well Being in Higher Education. *Educ Psychol* Rev. **2024,** 36(3), 92. https://psycnet.apa.org/doi/10.1007/s10648-024-09940-8
31. Rivera PM, Sepúlveda DR, Alarcón GT, Ibáñez NP. Burnout syndrome in dental students during the return to in-person classes. *Rev Esp de Edu Med.* **2023,** 4(3). https://doi.org/10.6018/edumed.582211
32. Cruz Carabajal D, Ortigoza A, Canova Barrios CJ. Academic stress in nursing students. *Rev Esp Edu Med.* **2024,** 5(2). https://doi.org/10.6018/edumed.598841
33. Lavado Toro NA, Inzunza Carrasco S, Lillo Miranda B, Jerez Yáñez OM. Evaluation of interventions to mitigate academic stress in medical students: a systematic review. *Rev Esp Edu Med.* **2025,** 6(1). https://doi.org/10.6018/edumed.633961
34. Hathaisaard C, Wannarit K, Pattanaseri K. Mindfulness based interventions reducing and preventing stress and burnout in medical students: a systematic review and meta analysis. *Asian J Psychiatr.* **2022,** 69, 102997. https://doi.org/10.1016/j.ajp.2021.102997
35. Tang L, Zhang F, Yin R, Fan Z. Effect of interventions on learning burnout: a systematic review and meta analysis. *Front Psychol.* **2021,** 12, 645662. https://doi.org/10.3389/fpsyg.2021.645662
36. Amanvermez Y, Rahmadiana M, Karyotaki E, de Wit L, Ebert DD, Kessler RC, et al. Stress management interventions for college students: a systematic review and meta analysis. *Clin Psychol Sci Pract.* **2023,** 30(4), 423-444. https://psycnet.apa.org/doi/10.1111/cpsp.12342
37. National Accreditation Commission. Evaluation Criteria for Undergraduate Programs and Degrees. Santiago: CNA Chile. https://tinyurl.com/23k4yum9
38. ARCU SUR System. Regional accreditation of university programs in MERCOSUR. https://www.arcusur.org/?page_id=298
39. Latorre MLA. Psychometric properties of the Utrecht Work Engagement Scale Student (UWES-S 17) in Mexican students. *Rev Investig Cienc Educ.* **2024,** 8(33), 880-892. https://doi.org/10.33996/revistahorizontes.v8i33.770

40. Hechenleitner Carvallo MI, Jerez Salinas AA, Pérez Villalobos CE. Academic self-efficacy in health sciences students at a traditional Chilean university. *Rev Med Chil.* **2019,** 147(7), 914–921. https://doi.org/10.4067/S0034-98872019000700914

Table 2. Interventions with favorable findings in academic burnout or associated outcomes: barriers, facilitators, teacher role and recommendations for their implementation.

Intervention / Article	Facilitators / Success Factors	Barriers	Role of the teacher / Trainer	Recommendations for implementation/ replicability
Peer-guided autogenic training (soRELAX) (Ramírez García et al.)	Flexible, small groups, peer support. Online format and fixed schedule facilitated attendance and sharing of experiences.	Lack of time and fluctuating schedules; difficulty integrating practice into the daily routine; decrease in practice after completing sessions.	Professors/researchers trained peers and standardized the intervention with a manual; validation was performed by the psychologist responsible for the program.	It is recommended to consider small groups; reinforce adherence and integrate the practice into the student routine.
Mindfulness/MBSR (Qualitative study) (Pandey Bista et al.)	Student participation and perception of emotional well-being after the intervention.	It requires sustained adherence and personal time.	Certified facilitators should guide the practices.	Consideration could be given to integrating these programs into student welfare initiatives.
Mindfulness "lifestyle program" (Kakoschke et al.)	Integrated curriculum implementation; combination of formal and informal practice; reflective journals.	Need for consistency in daily practice.	Expert facilitators in mindfulness.	It is recommended to favor strategies that encourage informal mindfulness practice and brief daily practice.
DBT Skill Group (emotional regulation skills) (Beanlands et al.)	High student satisfaction; need for curricular time for peer support.	Academic and personal demands interfere with participation; only those who can attend participate.	Active role of nursing educators to incorporate support spaces and articulate intervention with curriculum.	It is recommended to explore alternative modalities (technology/app); evaluate effectiveness and integration into the curriculum.
Mindfulness/MBSR	Motivation and perception of	Obligation, schedules	Facilitators trained in	It is recommended to

curriculum (self-care course) (Aherne et al.)	need; safe environment; trained facilitators and clinical supervision.	and low motivation, cognitive/physical difficulties.	mindfulness under the supervision of an experienced clinical psychologist.	avoid imposing the activity, promote voluntary participation, and ensure tutors and a safe environment.
Study skills programs (Chust Hernandez)	Personalized support and practical workshops.	High academic workload.	The teacher must fulfill a dual role: as an academic guide and a coach.	It is recommended to implement it in the academic curriculum early on, during the first few years.
ACT Digital (Ditton et al.)	Intervention with flexible access and digital personalization; privacy and data protection.	Variable adherence, which limits inferences about direct reduction of burnout.	Institutional coordination (schools) for indirect supervision through a digital platform.	Digital tools could be complemented with human support to increase academic engagement.
Longitudinal MBSR (De Vibe et al.)	Longitudinal follow-up, reinforcement sessions, and a combination of formal and informal practices.	Low adherence to formal practice.	Trained facilitators and reinforcement sessions.	Follow-up through reinforcement sessions and a combination of formal and informal practices is recommended.
Active Resilience Training (Mugford et al.)	Perceives useful, frequent use of practical skills applied to the academic context.	Low utilization of some techniques and possible variability in adherence.	Joint participation of teachers and students.	Consideration could be given to incorporating resilience applied to the clinical context.
MediMind (Mindfulness-based prevention) (Kuhlmann et al.)	Good acceptance and stress reduction.	High dropout rate during follow-up.	Facilitators specializing in stress prevention.	It is suggested to strengthen strategies to maintain adherence.
Institutional intervention of	Meaningful teacher-student interactions; safe environment	Overload/conflicting schedules that	Teachers play a key role in creating a safe environment,	It is recommended to consider strengthening

belonging and engagement (Puranitee et al.)	and collegiality.	undermine belonging; limited access to support (quotas/spaces).	teaching, and meaningful tasks.	institutional belonging strategies and collaborative learning.
MBSR adapted + MBCT (Oró et al.)	Reduction of stress and psychological symptoms.	Limited effect on academic burnout despite secondary psychological benefits.	A specialized psychologist led the intervention.	The integration of self-care and emotional regulation programs could be considered.
Mental well-being and empathy (Rong et al.)	Real clinical narratives and group reflection.	Little effect on self-efficacy.	Clinical physicians acted as facilitators and role models.	Consideration could be given to incorporating clinical communication and early professional reflection.

Table 3. Recommendations for the implementation of future educational strategies aimed at reducing academic burnout.

Intervention and central finding	Educational implications	Recommendation to university level	Recommendation at the teaching level	Recommendations for future research
Peer-guided relaxation (soRELAX/autogenic training): improves well-being, reduces stress, and alleviates emotional symptoms. Adherence declines after sessions end.	Peer-led strategies can to support well-being if they have structure and accompaniment.	Institutionalize peer programs (selection, training, supervision), ensure protected time and reinforcement and follow-up (booster).	Train and supervise peers; standardize sessions with manual; reinforce routines of practice and follow-up	It is recommended to consider institutionalizing peer and facilitator programs. experts.

Mindfulness/ MBSR Qualitative: Favorable perception of well-being, serenity and emotional regulation.	It can promote self-care and emotional management from the subjective experience of student	Integrating mindfulness into student wellness programs, with protected areas.	To guide structured practices and encourage participation.	It is recommended to perform mixed or quantitative studies that evaluate effects on burnout and stress
Curricular Mindfulness (lifestyle program): Improves stress, well-being, engagement and mindfulness.	Integrate self-regulation skills as a cross-cutting competence, not as isolated activity.	Include micro-practices in regular modules; schedule avoiding critical weeks; monitor participation with indicators simple pre-post.	Promote informal practice in study, clinical, and daily life; Provide feedback on experiences without judgment; maintain measurement periodic.	Multicenter studies are recommended; evaluate practice formal versus informal and replicability by career.
DBT SG (emotional regulation skills): Improves stress, mindfulness, resilience and self-compassion in clinical/academic settings.	Emotional skills can strengthen resources for coping with demands clinical and academic.	Create curricular/co-curricular spaces for emotional regulation; offer technological alternatives when time is a barrier.	Facilitate applied practice to real-life situations; coordinate realistic household chores; participation monitoring.	Controlled trials with larger samples are recommended; compare formats (face-to-face vs. digital) and evaluate the effect on burnout and performance.
Mindfulness/MBSR (self-care): Favorable perception of well-being, serenity and emotional regulation, greater acceptability when it is optional and in a safe environment.	Mandatory compliance can affect satisfaction and student adherence.	Offer optional or hybrid routes (optional with incentives); adjust the workload; provide certified tutors and suitable spaces.	Model self-care, create a non-punitive environment, adapt internships with academic workload, and encourage participation.	It is recommended to compare formats (optional vs. mandatory), identify subgroups that benefit, and evaluate cost-effectiveness/scale.

Skills program Study: Reduces academic stress and improves self-efficacy.	Burnout can also be addressed from academic factors, and not only from academic ones. psychological factors.	Implement early support in the first year, with workshops and individual counseling.	Act as an academic guide and coach in organization, study and exam preparation.	It is recommended to assess the impact on burnout, performance, and academic permanence.
ACT digital via applications (app): Improves psychological flexibility; stress and well-being; limited effects on primary burnout.	Digital interventions are scalable, but depend on adherence and institutional support.	Integrate applications into institutional platforms; safeguard privacy and provide technical support.	Support initial use, conduct brief follow-up, and reinforce adherence.	It is recommended to evaluate the integration of applications into institutional platforms, adherence and dose-response.
Longitudinal MBSR: Sustained effect on mindfulness, coping, and well-being.	Brief interventions can have an impact prolonged if they incorporate reinforcements.	Maintain reinforcement sessions and longitudinal follow-up.	Strengthen formal practices and informal during training.	Evaluation is recommended long-term maintenance and adherence mechanisms.
Active Resilience Training: High perceived usefulness and frequent use of skills.	Resilience can be taught as a skill applied to the clinical context.	Incorporating resilience into vocational training and student well-being.	Facilitate reflection, guided discussion, and practical application.	Evaluation is recommended through controlled designs and objective outcomes.
MediMind: Good acceptance, but high dropout rate in follow-up.	Stress prevention requires sustainable adherence strategies.	Design programs with follow-up, reminders, and ongoing support.	Promote sustained participation and detect dropout early.	It is recommended to incorporate strategies to reduce dropout and assess long-term effects.

Academic belonging/commitment/collegiality (institutional intervention): Safe climate, meaningful tasks and constructive feedback.	Preventing burnout requires changes in culture and training environment.	Consider adjusting curricula and Strengthening support resources. Strengthening mentoring with real capacity, protected time, and institutional support.	Generate constructive feedback, psychological safety, and meaningful tasks.	It is recommended to consider curriculum adjustments, strengthening mentoring programs and timely access to support student.
MBSR + MBCT: Reduces stress and psychological symptoms, but has a limited effect on burnout.	Psychological well-being does not always translate into direct reduction of burnout.	Integrate self-care and emotional regulation as complementary support.	Promote reflective practice and adaptation to academic workload.	It is recommended to assess which components have an impact. specifically in burnout.
Mental well-being and empathy: Improves empathy, quality of life and depression; partial effect on burnout.	Clinical narratives and professional reflection can strengthen well-being and vocational sense.	Incorporate modules on communication, empathy, and error handling.	Acting as a clinical role model, reflective facilitator, and guide professional.	It is recommended to consider the incorporation of communication, empathy and modules error handling.