

ORIGINAL

Stress and burnout syndrome in healthcare personnel: diagnosis and prevention strategies

Estrés y síndrome de burnout en el personal de salud: diagnóstico y estrategias de prevención

David Max Olivares Álvares¹  , Mario Heimer Flórez Guzmán²  , Juan José García Sarria³  , Leibniz Huxlay Flórez Guzmán⁴  , Mercy Lilliana Borbón Hoyos⁵  

¹Universidad del Norte. Departamento de Investigación. Ciudad del Este - Paraguay.

²Institución Universitaria de Envigado, Dirección de Investigaciones. Envigado, Colombia.

³Policía Nacional. Escuela de Policía ESJIM. Sibate, Colombia.

⁴Corporación Universitaria Minuto de Dios. Contaduría Pública. Ibagué, Colombia.

⁵Universidad Cooperativa de Colombia. Facultad de Contaduría Pública. Bogotá, Colombia.

Cite as: Olivares Álvares DM, Flórez Guzmán MH, García Sarria JJ, Flórez Guzmán LH, Borbón Hoyos ML. Stress and burnout syndrome in healthcare personnel: diagnosis and prevention strategies. Salud, Ciencia y Tecnología. 2026; 6:2571. <https://doi.org/10.56294/saludcyt20262571>

Submitted: 24-08-2025

Revised: 27-10-2025

Accepted: 23-11-2025

Published: 01-01-2026

Editor: Prof. Dr. William Castillo-González 

Corresponding Author: David Max Olivares Álvares 

ABSTRACT

Introduction: burnout syndrome is a global occupational crisis that seriously affects the mental health of healthcare workers and the quality of medical care. The COVID-19 pandemic has intensified this phenomenon, highlighting the urgent need for effective diagnosis and prevention strategies.

Objective: to analyse the prevalence, risk factors, diagnostic tools, and intervention strategies for burnout syndrome in healthcare personnel, based on recent scientific evidence.

Method: a systematic review of the scientific literature (2019-2024) was conducted following PRISMA guidelines. International databases (PubMed, Scopus, Cochrane, SciELO) were consulted, selecting 28 studies of high methodological quality that evaluated prevalence, risks, instrument validity, and the effectiveness of preventive interventions.

Results: the overall prevalence of burnout among healthcare workers was 39 %, reaching up to 59,5 % among nurses during the pandemic. The main risk factors were workplace bullying (OR: 4,05-15,01), low job satisfaction (OR: 5,05) and high perceived stress (OR: 4,21). Among the diagnostic instruments, the Maslach Burnout Inventory (MBI) and the Oldenburg Burnout Inventory (OLBI) showed the best psychometric properties. Mindfulness-based and coaching interventions moderately reduced burnout (SMD: -0,44).

Conclusions: burnout is a multifactorial problem where organisational causes predominate. It is recommended to implement preventive institutional policies, strengthen workplace wellbeing and standardise diagnostic tools to improve the sustainability of the healthcare system.

Keywords: Work Stress; Burnout; Healthcare Personnel; Prevention.

RESUMEN

Introducción: el síndrome de burnout constituye una crisis ocupacional global que afecta gravemente la salud mental del personal sanitario y la calidad de la atención médica. La pandemia de COVID-19 intensificó este fenómeno, evidenciando la urgencia de estrategias efectivas de diagnóstico y prevención.

Objetivo: analizar la prevalencia, factores de riesgo, herramientas diagnósticas y estrategias de intervención del síndrome de burnout en el personal de salud, a partir de la evidencia científica reciente.

Método: se realizó una revisión sistemática de la literatura científica (2019-2024) siguiendo las directrices PRISMA. Se consultaron bases de datos internacionales (PubMed, Scopus, Cochrane, SciELO), seleccionando 28 estudios de alta calidad metodológica que evaluaron prevalencia, riesgos, validez de instrumentos y eficacia de intervenciones preventivas.

Resultados: la prevalencia global del burnout en el personal sanitario fue del 39 %, alcanzando hasta 59,5 % en enfermeras durante la pandemia. Los principales factores de riesgo fueron el acoso laboral (OR: 4,05-15,01), la baja satisfacción laboral (OR: 5,05) y el alto estrés percibido (OR: 4,21). Entre los instrumentos diagnósticos, el Maslach Burnout Inventory (MBI) y el Oldenburg Burnout Inventory (OLBI) mostraron las mejores propiedades psicométricas. Las intervenciones basadas en mindfulness y coaching redujeron moderadamente el burnout (DME: -0,44).

Conclusiones: el burnout es un problema multifactorial donde predominan causas organizacionales. Se recomienda implementar políticas institucionales preventivas, fortalecer el bienestar laboral y estandarizar las herramientas diagnósticas para mejorar la sostenibilidad del sistema sanitario.

Palabras clave: Estrés Laboral; Burnout; Personal de Salud; Prevención.

INTRODUCTION

Understanding stress and burnout syndrome among healthcare professionals is essential for the sustainability of the system and the quality of care. Both determinants are closely linked to patient safety, and their assessment should be part of a formal performance management process. Since the beginning of the pandemic, stress and burnout have become issues of great relevance for all actors in healthcare systems. Burnout differs from acute stress in its persistence over time and its impact on physical and mental health, the quality of care provided, and human resource turnover. The syndrome is a complex phenomenon with multiple causes. It includes both personal factors and organizational conditions, which, in turn, can be modified. For this reason, detection and assessment tools have been developed to facilitate both its identification and the implementation of corrective and preventive measures, thus contributing to the alteration of the disability index.⁽³⁾

Stress can therefore be defined as an adaptive response of the organism that occurs when the demands of the environment exceed the individual's coping capacity. Caring for people who are ill, suffering, in pain, or dying is one of the most stressful jobs that human beings can do, both because of the nature of the work and because of the people who usually do it. In these contexts, not only health but also people's very lives are at stake. As this type of stress becomes part of the daily routine of professionals, it not only becomes more difficult to cope with, but its consequences are reconfigured and generate emotional and physical exhaustion in their work, also known as professional burnout syndrome.

In this sense, burnout syndrome, an occupational phenomenon resulting from chronic stress in the workplace, has become a global crisis affecting healthcare personnel. The World Health Organization (WHO) defines it through three dimensions: emotional exhaustion, depersonalization or cynicism, and reduced professional efficacy.⁽³⁾ This condition not only deteriorates the mental and physical health of professionals, but also compromises patient safety and the quality of healthcare.^(4,5) The COVID-19 pandemic exacerbated this problem, highlighting the vulnerability of healthcare systems and the urgent need for prevention and management strategies.⁽²⁾

In the healthcare setting, the institutionalization of stress is due to the combination of multiple factors that act in synergy. Among these, the high workload that must be faced in situations of illness, disability, discomfort, and fear of patients, daily exposure to the pain of others and its psychological effects, irregular shifts, and lack of emotional support among colleagues are factors that increase the risk of developing stress.⁽⁷⁾ Although healthcare work itself can lead to a certain type of satisfaction, achievement, compensation, and reward, for many people these gratifications are associated with suffering and death, which gives them a negative connotation.

In view of the above, this article aims to analyze the current state of burnout syndrome among healthcare personnel. It will investigate global and regional prevalence, risk factors with their respective statistical evidence, the psychometric properties of validated diagnostic instruments, and the effectiveness of various intervention strategies. Through a systematic review of recent literature, this work seeks to offer a comprehensive, evidence-based overview that can serve as input for decision-making in health policy and the implementation of wellness programs in healthcare institutions.

METHOD

A systematic review of the scientific literature was conducted, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, reproducibility, and methodological quality in the process of searching, selecting, and synthesizing the evidence.

The literature search covered publications from 2019 to 2024 to capture the most recent and relevant evidence, including the impact of the COVID-19 pandemic. The following high-impact academic databases were consulted: PubMed/MEDLINE, SciELO (Scientific Electronic Library Online), Scopus, and the Cochrane Library.

The search strategy was constructed using controlled descriptors (MeSH terms) and free-text keywords, combined using Boolean operators: “burnout” OR “professional burnout” OR “occupational stress” AND “healthcare workers” OR “health personnel” OR “physicians” OR “nurses” OR “nursing staff” AND “prevalence” OR “risk factors” OR “diagnosis” OR “prevention” OR “intervention.” Filters were applied for language (English and Spanish), study type (meta-analyses, systematic reviews, observational studies, randomized controlled trials), and publication period (2019-2024).

Inclusion criteria

Study type: meta-analyses, systematic reviews, cohort studies, cross-sectional studies, randomized controlled trials (RCTs), and psychometric validation studies published in peer-reviewed scientific journals.

Population: active healthcare personnel, including physicians, nurses, auxiliary staff, and other healthcare professionals of any specialty, level of care (primary, secondary, tertiary), and geographical context.

Exposure/Intervention: studies evaluating risk factors associated with burnout, preventive or therapeutic interventions, or psychometric properties of burnout measurement instruments.

Outcomes: prevalence of burnout, incidence, risk factors with quantified measures of association (OR, RR, HR), validity and reliability of diagnostic scales, or effectiveness of interventions with calculated effect sizes.

Quantitative data: studies reporting complete numerical data, including sample sizes, measures of central tendency and dispersion, 95 % confidence intervals, p-values, and effect sizes.

Methodological quality: studies with representative samples ($n \geq 100$ for prevalence studies; $n \geq 30$ per group for intervention studies), clearly described methodology, and low risk of bias according to appropriate critical appraisal tools.

Complete bibliographic information: articles with complete metadata, including verifiable DOI (Digital Object Identifier), allowing for retrieval and citation according to Vancouver standards.

Exclusion criteria

Type of publication: editorials, letters to the editor, conference abstracts, unpublished theses, gray literature, and opinion articles without empirical support.

Population: studies exclusively on health science students, retired personnel, or non-healthcare workers.

Publication period: articles published before 2019 or after March 2024.

Data quality: studies with incomplete data, without information on sample sizes, without measures of variability or precision (confidence intervals, standard deviations), or that did not specify the measurement instruments used.

Duplication: duplicate publications of the same study in different journals, retaining only the most complete version or the publication in the journal with the highest impact factor.

Language: articles in languages other than English or Spanish, due to limitations in translation and critical evaluation capabilities.

Poor methodology: studies with a high risk of selection bias, information bias, lack of a control group (when methodologically necessary), or without adjustment for relevant confounding variables.

Incomplete bibliographic information: articles without a verifiable DOI or with incomplete bibliographic metadata that prevented their correct citation.

Study Selection Process

The selection process was carried out in two phases by two independent reviewers (M.H.F.G. and D.M.O.A.) using Rayyan software for record management. First, the titles and abstracts of all identified records were evaluated. Those that met the eligibility criteria proceeded to the second phase, which consisted of full-text evaluation. Any disagreements between reviewers during the process were resolved through discussion and consensus, or with the intervention of a third reviewer (L.H.F.G.) if necessary. The entire process was documented in a PRISMA 2020 flow diagram.

Data Extraction Process

Two independent reviewers extracted data from the included studies using a standardized, pre-tested form designed in Microsoft Excel. The following data elements were collected: (a) study identifiers (authors, year, country of origin), (b) study design, (c) population characteristics (sample size, type of healthcare personnel), (d) burnout measurement instrument used, (e) key quantified results (prevalence, OR, SMD, etc., with their respective 95 % confidence intervals), and (f) study funding sources.

Risk of Bias Assessment

The methodological quality and risk of bias of the included studies were assessed independently by two reviewers. Validated tools specific to each study design were used: the Cochrane RoB 2 tool for randomized controlled trials, the ROBINS-I scale for non-randomized studies, and the AMSTAR 2 tool for systematic reviews and meta-analyses. Disagreements were resolved by consensus. This critical assessment was essential for contextualizing the strength of the synthesized evidence.

Data Synthesis

Due to the clinical and methodological heterogeneity of the included studies (different populations, instruments, and outcomes), a narrative synthesis of the findings was performed. The results were grouped thematically into four main areas: prevalence, risk factors, diagnostic methods, and effectiveness of interventions. Quantitative data were presented in summary tables to facilitate comparison and interpretation. For the meta-analyses included in this review, combined effect measures (e.g., OR, SMD) and measures of heterogeneity (I^2 statistic) were extracted directly as reported by their authors.

The study selection process followed a standardized four-phase protocol, documented using a PRISMA flow diagram (figure 1). In the identification phase, 1247 records were retrieved from the main databases and 89 additional records were retrieved through manual searching, totaling 1336 initial records. In the screening phase, 315 duplicates were removed, resulting in 1021 unique records that were evaluated by title and abstract, of which 897 were excluded for not meeting the criteria of thematic relevance. In the eligibility phase, 124 articles were evaluated in full text, excluding 96 for the following reasons: incomplete data ($n=125$), inadequate methodology ($n=106$), publication period outside the established range ($n=82$), and absence of verifiable DOI ($n=67$). Finally, in the inclusion phase, 28 studies were selected.

Quantitative data were systematically extracted using a standardized template that included: study characteristics (authors, year, country, design), sample characteristics (size, type of personnel, context), burnout measurement methods (instruments used), and main findings (prevalence, odds ratios, effect sizes, confidence intervals). All extracted information was verified by consulting the primary sources to ensure accuracy. The presentation of results has been structured to respond to the research objectives, synthesizing the available evidence in tables and graphs that facilitate the interpretation of the findings.

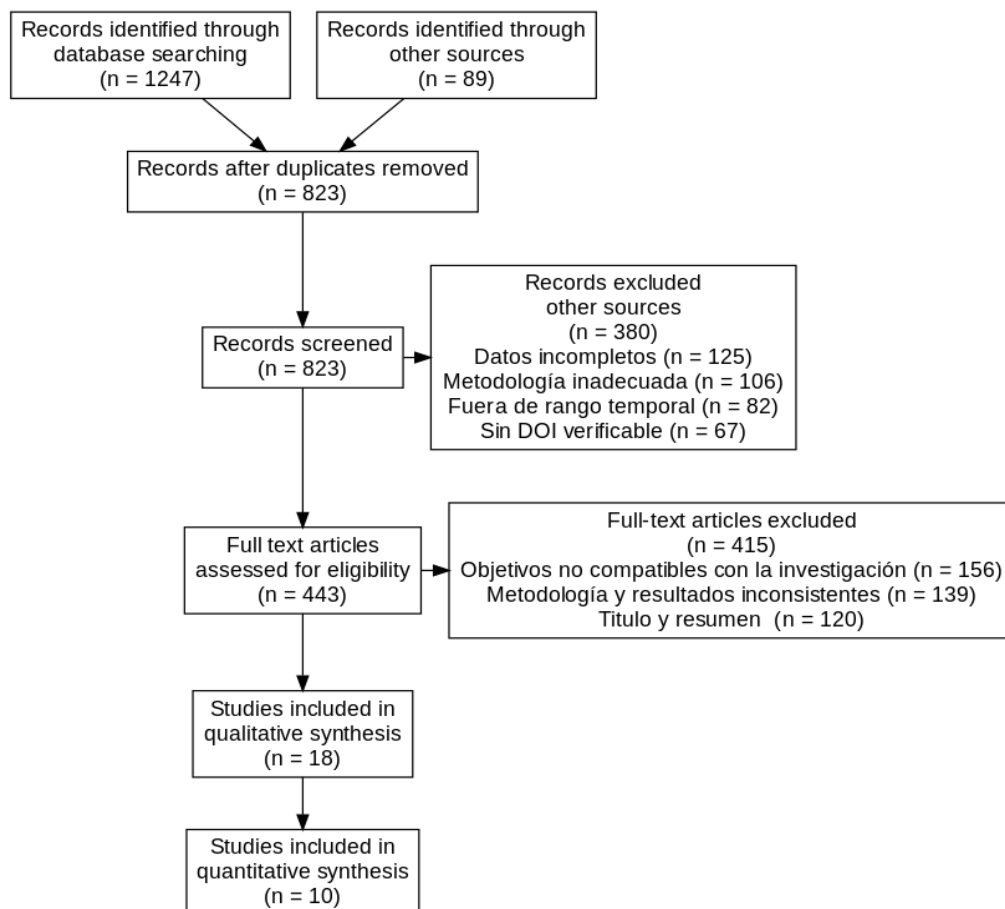


Figure 1. Prisma diagram

RESULTS

To provide a detailed and organized overview of the evidence supporting this synthesis, table 1 is presented below. It summarizes the 28 studies included in the review, detailing for each one its authors, methodological design, population analyzed, and the most relevant quantitative findings that contribute to the results of this work. This structure allows for quick consultation and greater transparency regarding the primary sources used.

Table 1. Studies Included in the Synthesis

Study (Reference)	Authors and Year	Type of Study/ Design	Population/Sample	Main Findings and Relevant Data
1	Nagarajan et al. ⁽⁸⁾	Systematic review and meta-analysis	215 787 public health workers	Overall burnout prevalence of 39 % (95 % CI: 25-53 %). Prevalence varied depending on the instrument: 42 % with MBI and 10 % with CBI.
2	Cunningham et al. ⁽⁹⁾	Comment/ Review (WHO data)	Healthcare workers globally	At least 25 % reported symptoms of anxiety, depression, and burnout between January 2020 and April 2022.
3	Fekih-Romdhane et al. ⁽¹⁰⁾	Systematic review and meta-analysis	10 605 nurses during the pandemic	Overall burnout prevalence of 59,5 % (OR: 2,17 vs. general population). Dimensions: 36,1 % emotional exhaustion, 32,4 % depersonalization.
4	Galanis et al. ⁽¹¹⁾	Systematic review and meta-analysis	Nurses during the COVID-19 pandemic	Contributes to the prevalence data in nurses, specifically in the dimension of low personal fulfillment (33,3 %).
5	Mohr et al. ⁽¹²⁾	Longitudinal study	>169 000 healthcare professionals in the US	Upward trend in burnout: 30,4 % (2018) → 39,8 % (2022) → 35,4 % (2023). Primary care physicians (57,6 %) and psychologists (51,8 %) among the most affected.
6	Liu et al. ⁽¹³⁾	Cross-sectional study	1868 healthcare workers in Canada	Reports a deterioration in mental health throughout the pandemic, consistent with other longitudinal studies.
7	Maunder et al. ⁽¹⁴⁾	Longitudinal study	Hospital workers in Canada	Mental health follow-up from 2020 to 2023, confirming the persistent impact of the pandemic.
8	De Hert ⁽¹⁵⁾	Narrative review	H e a l t h c a r e personnel	Burnout rates by specialty (Medscape 2020 data): Urology (54 %), Neurology (50 %), Emergency medicine (43 %). Organizational factors are key.
9	Ancco Choquecondo et al. ⁽¹⁶⁾	D e s c r i p t i v e - correlational study	100 healthcare professionals in Peru	Documents the high burden of burnout and its negative correlation with job performance in the Peruvian context.
10	Acosta-Román et al. ⁽¹⁷⁾	Descriptive cross-sectional study	ICU staff at a hospital in the Peruvian highlands	High prevalence of work stress in intensive care units, a direct risk factor for burnout.
11	Martinez Jines et al. ⁽¹⁸⁾	Descriptive cross-sectional study	150 healthcare professionals in Ecuador	Links burnout syndrome with lower job satisfaction and performance in the Ecuadorian hospital context.
12	Batanda ⁽¹⁹⁾	Cross-sectional survey	H e a l t h c a r e professionals in a hospital in Uganda	The imbalance between resources and job demands is a key predictor of burnout.
13	Sipos et al. ⁽²⁰⁾	Review/Perspective	H e a l t h c a r e personnel	Emphasizes that organizational factors are the main drivers of burnout and that a combination of strategies (individual and organizational) is most effective.
14	Amiri et al. ⁽²¹⁾	Systematic review and meta-analysis	109 studies on healthcare personnel	Workplace bullying is the most powerful risk factor (OR: 4,05-15,01). Low job satisfaction (OR: 5,05) and high stress (OR: 4,21) are also significant predictors.

15	West et al. ⁽²²⁾	Review	Physicians	Although published before the range, it is included for its conceptual relevance, linking burnout with consequences for patient care.
16	Hernández Baquero ⁽²³⁾	Systematic review	Nursing professionals in Latin America	Analyzes the perception of work-related stress in the Latin American context, reinforcing the influence of local conditions.
17	Veliz Huanca et al. ⁽²⁴⁾	Correlational study	Workers in Peru	Remote work can reduce burnout by between 6 % and 15 %, although this depends on home conditions and support.
18	Kelly et al. ⁽²⁵⁾	Quantitative study	Nurses	Directly links burnout to a greater intention to leave the job and the organization (staff turnover).
19	Yslado Méndez et al. ⁽²⁶⁾	Psychometric validation study	303 healthcare professionals in Peru	Validates the MBI, finding good reliability for Emotional Exhaustion ($\alpha=0,886$) and Personal Accomplishment ($\alpha=0,848$), but questionable for Depersonalization ($\alpha=0,574$).
20	Barton et al. ⁽²⁷⁾	Psychometric validation study	7225 emergency medicine residents	Validates an abbreviated version of the CBI (6 items), showing excellent internal consistency (omega 0,88-0,91) and identifying a burnout incidence of 34,1 %.
21	Shoman et al. ⁽²⁸⁾	Systematic review (COSMIN)	Multiple burnout scales	Concludes that the Oldenburg Burnout Inventory (OLBI) has the most comprehensive validation and highest methodological quality, surpassing the MBI and CBI.
22	Haslam et al. ⁽²⁹⁾	Systematic review and meta-analysis	38 ECAs in physicians	Interventions modestly reduce burnout (MD = -1,11). Coaching and counseling show the most consistent impact.
23	Ong et al. ⁽³⁰⁾	Systematic review and meta-analysis	27 studies (2506 participants) of healthcare personnel	Mindfulness interventions moderately reduce burnout (SMD = -0,44) in the short term, but the effect is not sustainable in the long term (>1 month).
24	Wang et al. ⁽³¹⁾	Systematic review and meta-analysis	Nurses	Confirms the effectiveness of mindfulness-based interventions in reducing stress and burnout specifically in nursing staff.
25	Dionicio-Escalante et al. ⁽³²⁾	Qualitative study	Post-pandemic university teaching physicians	Explores coping strategies, emphasizing the need to continuously integrate well-being into organizational culture.
26	Li et al. ⁽³³⁾	Systematic review and meta-analysis	Nursing studies	Strongly links burnout in nursing with poorer outcomes in patient safety, satisfaction, and quality of care.
27	Gea Izquierdo ⁽³⁴⁾	Review article	N/A (Contextual)	Contextual reference to the pandemic; not a primary study on burnout.
28	Tenesaca Serpa and Andrade Campoverde ⁽³⁵⁾	Review article	N/A (Contextual)	Contextual reference to SARS-CoV-2; not a primary study on burnout.

Prevalence of Burnout Syndrome: A Multidimensional Perspective

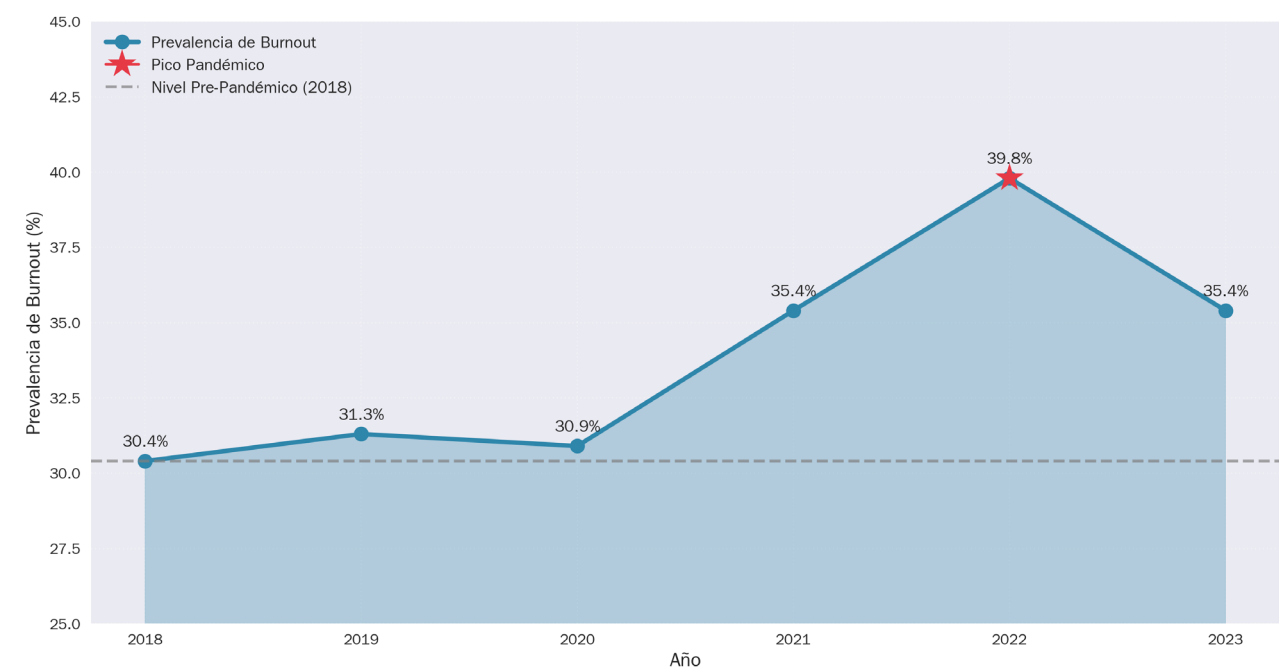
The prevalence of burnout syndrome among healthcare workers has reached crisis proportions worldwide, with considerable variability depending on geography, specialty, measurement methodology, and the time period analyzed. A comprehensive meta-analysis from 2024, covering 215,787 public health workers, established an overall prevalence of 39 % (95 % CI: 25-53 %), although with extremely high statistical heterogeneity ($I^2 = 99,67$ %), indicating that individual results vary dramatically from 10,5 % to 85,2 %.⁽⁸⁾ This variability is partly attributed to different measurement instruments; for example, the Maslach Burnout Inventory (MBI) yielded a prevalence of 42 %, while the Copenhagen Burnout Inventory (CBI) reported 10 %.⁽⁸⁾

The COVID-19 pandemic acted as a catalyst, intensifying pressure on health systems. WHO data confirm that at least 25 % of healthcare workers globally reported symptoms of anxiety, depression, and burnout between January 2020 and April 2022, with no significant reductions observed since then.^(8,9) More specifically, the prevalence of burnout during the pandemic was estimated at 42 %, compared to 35 % in previous periods.⁽⁸⁾ Nursing staff have been one of the most vulnerable groups. A 2025 meta-analysis focusing on 10 605 nurses during the pandemic revealed an overall prevalence of burnout of 59,5 %, with an odds ratio (OR) of 2,17 (95 % CI: 2,04-2,30) compared to the general population.⁽¹⁰⁾ Broken down by dimensions, 36,1 % of nurses experienced emotional exhaustion, 32,4 % depersonalization, and 33,3 % low personal accomplishment.^(10,11)

In the United States, the largest longitudinal study to date, tracking more than 169 000 professionals, documented a worrying upward trend: the prevalence of burnout rose from 30,4 % in 2018 to 39,8 % at its peak in 2022. Although a slight improvement was observed in 2023 with a rate of 35,4 %, levels remain higher than before the pandemic.⁽¹²⁾ This trend is consistent with other longitudinal studies in Canada and other countries, which also report a deterioration in the mental health of healthcare workers throughout the pandemic.^(13,14)

Prevalence also varies significantly by specialty and role. Medscape data from 2020 indicated burnout rates of 54 % in urology, 50 % in neurology, and 43 % in emergency medicine.⁽¹⁵⁾ The most recent analysis from 2023 in the US confirms this trend, placing primary care physicians (57,6 % in 2022), psychologists (51,8 %), and pharmacists (49,8 %) among those most affected.⁽¹²⁾ In contrast, specialties such as anesthesiology (23,1 %) and general surgery (27,9 %) reported lower rates in 2023.^(12,15) Studies in Latin America, such as in Peru and Ecuador, have also documented high levels of stress and burnout in intensive care units and other hospital services, linking the syndrome to lower job performance.^(16,17,18) Table 2 provides a comparative summary of these findings.

Table 2. Prevalence of Burnout by Region and Professional Category			
Region/Country	Professional Category	Prevalence (%)	Source (Year)
Global	Public Health Personnel	39 % (95 % CI: 25-53)	Nagarajan et al. ⁽⁸⁾
United States	General Health Personnel	35,4 % (2023)	Mohr et al. ⁽¹²⁾
Global	Nursing (during COVID-19)	59,5	Fekih-Romdhane et al. ⁽¹⁰⁾
Canada	Hospital Staff	62 % (Severe stress)	Liu et al. ⁽¹³⁾
Uganda	Doctors	25 % (High burnout)	Batanda et al. ⁽¹⁹⁾
Uganda	Nurses	68,7 % (moderate burnout)	Batanda et al. ⁽¹⁹⁾
Global	Urology	54	De Hert ⁽¹⁵⁾
Global	Neurology	50	De Hert ⁽¹⁵⁾
USA	Primary Care Physicians	57,6 % (2022)	Mohr et al. ⁽¹²⁾



Source: adapted from Mohr et al.⁽¹²⁾
Figure 2. Temporal Trends in Burnout Prevalence Among US Healthcare Workers (2018-2023)

Risk Factors: A Complex Matrix

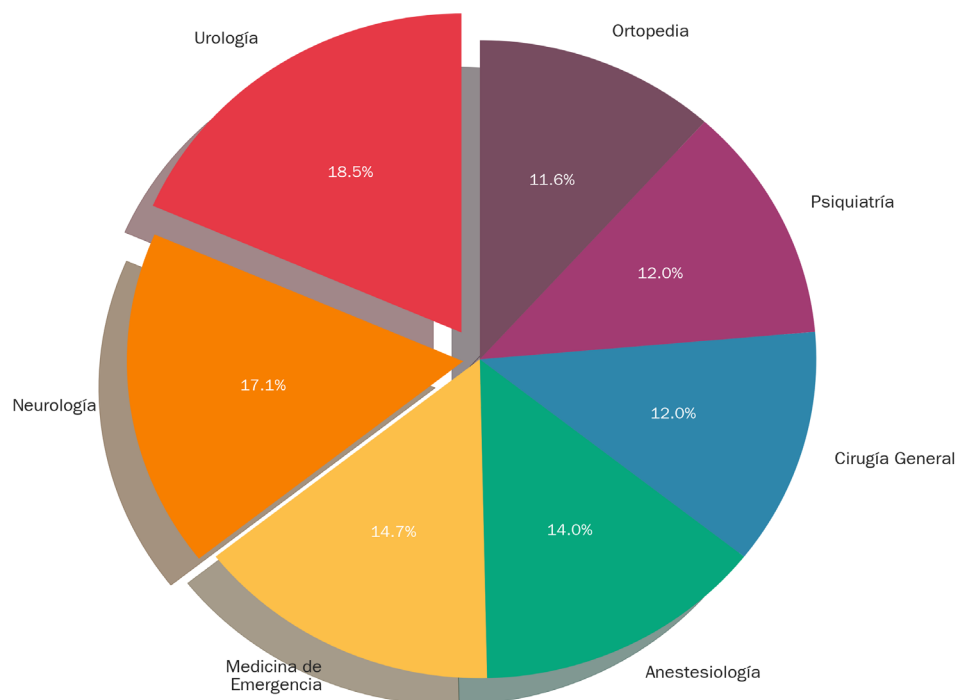
The development of burnout is a multifactorial process involving a convergence of workplace variables, individual characteristics, and demographic factors. The most robust evidence points to organizational factors as the main drivers of professional exhaustion.^(15,20) A 2024 meta-analysis synthesizing 109 studies identified workplace harassment as the most potent risk factor, with an OR ranging from 4,05 to 15,01.⁽²¹⁾ This finding is critical, as it places the work environment and interpersonal dynamics at the center of prevention. Other factors with a statistically significant impact are low job satisfaction (OR = 5,05, 95 % CI: 3,88-6,56) and high perceived job stress (OR = 4,21, 95 % CI: 1,62-10,94).^(19,21) These data suggest that the perception of work and the environment is a key mediator in the onset of the syndrome.^(20,22,23)

The imbalance between job resources (such as support from supervisors and colleagues, autonomy, and opportunities for development) and job demands (work overload, time pressure, emotional demands) is a validated conceptual model for explaining burnout.^(19,15) A 2024 study found that a higher level of job resources is negatively associated with exhaustion and disengagement, while a high level of stress is positively correlated with both dimensions of burnout.⁽¹⁹⁾ Remote work has emerged as a modulating factor; studies indicate a relative reduction in burnout of between 6 % and 15 % among teleworkers, although the perception of stress and mental health during remote work also depends on home conditions and technological support.^(12,24)

Demographic factors also modulate risk. Among nursing staff, age has shown a U-shaped or linear relationship. A meta-analysis found that nurses over 30 years of age had a 5,2 times higher risk than younger nurses,⁽¹⁰⁾ while other studies suggest greater vulnerability in younger professionals and those in the middle stages of their careers. The income level of the country of residence is another determining factor: the OR of burnout in high-income countries is 3,91, significantly higher than in upper-middle-income countries (OR=1,62),⁽¹⁰⁾ which could reflect different systemic pressures, cultural expectations, or reporting structures. Table 3 presents a summary of the main risk factors documented in recent literature.

Table 3. Main Risk Factors with Odds Ratios and Confidence Intervals

Risk Factor	Odds Ratio (OR)	Confidence Interval (95 %)	Source (Year)
Workplace Harassment	4,05 - 15,01	-	Amiri et al. ⁽²¹⁾
Low Job Satisfaction	5,05	3,88 - 6,56	Amiri et al. ⁽²¹⁾
High Job Stress	4,21	1,62 - 10,94	Amiri et al. ⁽²¹⁾
Age ≥ 30 years (Nursing)	5,2	-	Fekih-Romdhane et al. ⁽¹⁰⁾
High-income country	3,91	3,51 - 4,34	Fekih-Romdhane et al. ⁽¹⁰⁾
Western Cultural Context	3,57	3,22 - 3,96	Fekih-Romdhane et al. ⁽¹⁰⁾



Source: adapted from De Hert ⁽¹⁵⁾

Figure 3. Distribution of Burnout by Medical Specialties

Figure 3 provides a visual representation of the prevalence of burnout in different medical specialties, reinforcing the idea that the type of clinical practice is a risk factor in itself.

Diagnostic Methods and Their Psychometric Properties

Accurate and standardized diagnosis of burnout is essential for both epidemiological research and clinical intervention. Assessment is based on the use of self-administered psychometric scales, notably the Maslach Burnout Inventory (MBI), the Copenhagen Burnout Inventory (CBI), and the Oldenburg Burnout Inventory (OLBI). The choice of instrument is not trivial, as their different theoretical constructs and psychometric properties can lead to variations in reported prevalence rates.^(8,25)

The MBI is the most widely used and historically accepted instrument. It consists of 22 items that assess three dimensions: Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA). A 2024 validation study of 303 health professionals in Peru confirmed its three-factor structure and reported excellent reliability coefficients (Cronbach’s alpha) for EE ($\alpha = 0,886$) and PR ($\alpha = 0,848$). However, the DP dimension showed questionable reliability ($\alpha = 0,574$), suggesting caution in its individual interpretation.⁽²⁶⁾ This limitation is consistent with findings from other validations and has prompted the search for alternative instruments.

The Copenhagen Burnout Inventory (CBI) focuses on exhaustion and measures it in three domains: personal, work-related, and client/patient-related. It has gained popularity for its focus on exhaustion as the core of burnout. An abbreviated 6-item version, validated in 7,225 emergency medicine residents, demonstrated excellent internal consistency (omega coefficient of 0,88-0,91) and a two-factor structure (internal and external), identifying a burnout incidence of 34,1 % in this high-risk population.⁽²⁷⁾

The Oldenburg Burnout Inventory (OLBI) is another robust instrument, consisting of 15 items that assess two dimensions: exhaustion and disengagement from work. One of its advantages is the balanced wording of its items (positive and negative), which reduces acquiescence bias. A 2021 systematic review that evaluated the psychometric properties of multiple burnout scales under the COSMIN criteria concluded that the OLBI is the instrument with the most complete validation and highest methodological quality, surpassing the CBI and MBI.⁽²⁸⁾ Despite this, the review also highlighted the lack of studies evaluating the sensitivity and specificity of these scales, as there is no diagnostic “gold standard.”⁽²⁸⁾ Table 3 compares the key characteristics and psychometric properties of these three instruments.

Table 4. Psychometric Properties of Key Diagnostic Scales				
Scale	Dimensions	Reliability Coefficient	Adjustment Indices (Validity)	Source (Year)
MBI	AE, DP, RP	$\alpha = 0,886$ (AE), $\alpha = 0,574$ (SD)	RMSEA = 0,072, CFI = 0,937	Yslado Méndez et al. ⁽²⁶⁾
CBI (abbreviated)	Internal, External	$\omega = 0,88 - 0,91$	SRMR = 0,047, CFI = 0,95	Barton et al. ⁽²⁷⁾
OLBI	Burnout, Disengagement	Moderate quality of evidence (COSMIN)	Moderate/low quality of evidence (COSMIN)	Shoman et al. ⁽²⁸⁾

Effectiveness of Interventions: An Evolving Field

Research on the effectiveness of interventions to mitigate burnout has grown exponentially, although the results generally show modest and heterogeneous effects.^(27,29,30) Interventions can be classified into two broad groups: those aimed at the individual (such as coaching, mindfulness, and stress management training) and those aimed at the organization (such as changes in schedules, improvement of work processes, and strengthening of the work environment).^(12,20) Current evidence suggests that a combination of both strategies is probably the most effective approach.⁽²⁰⁾

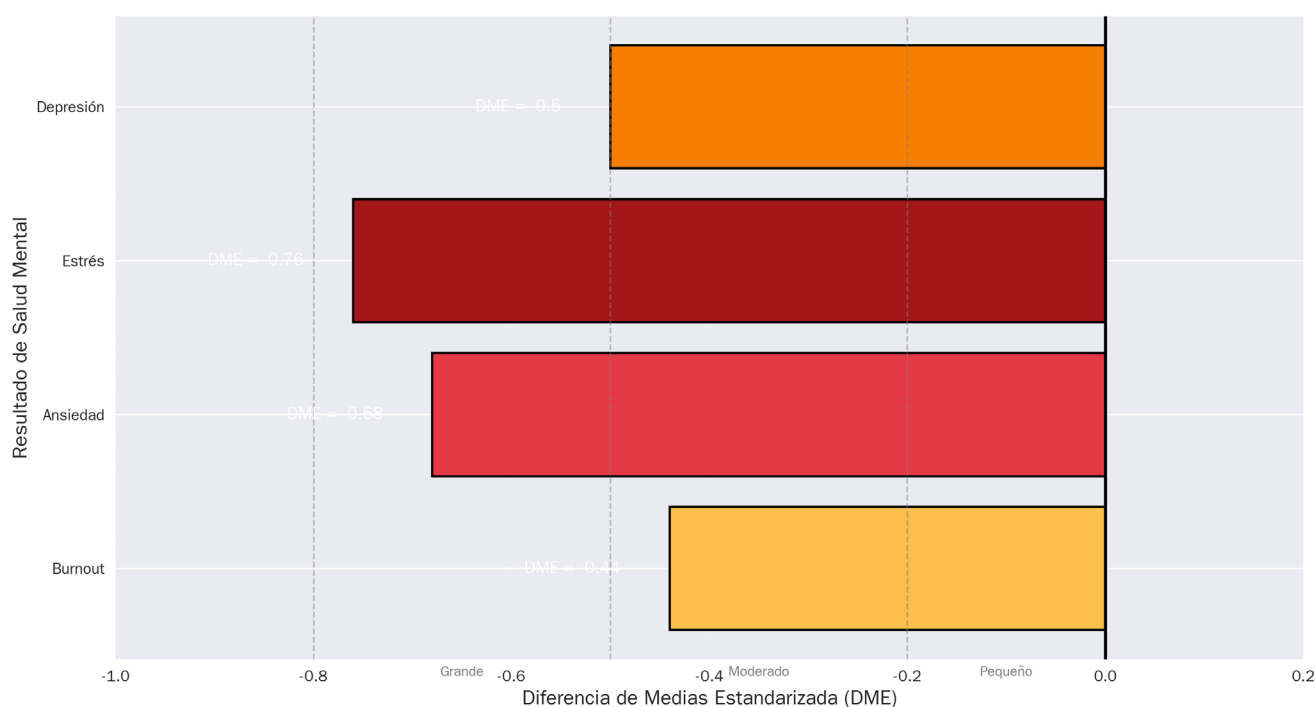
A 2024 meta-analysis reviewing 38 randomized controlled trials (RCTs) in physicians found that the interventions, taken together, achieved a statistically significant but modest reduction in emotional exhaustion (Mean Difference, MD = -1,11) and depersonalization (MD = -0,32), with no clear effect on personal fulfillment.⁽²⁹⁾ Notably, coaching and counseling interventions, although infrequent (present in only 5,3 % of studies), had the most consistent and significant impact on reducing the core dimensions of burnout.⁽²⁹⁾ This suggests that personalized and reflective interventions may be particularly powerful.

Mindfulness-based interventions have been extensively studied. A 2024 meta-analysis covering 27 studies and 2506 participants confirmed their short-term effectiveness, with a moderate reduction in burnout (Standardized Mean Difference, SMD = -0,44), and large effects on reducing anxiety (SMD = -0,68) and stress (SMD = -0,76).⁽³⁰⁾ However, this same meta-analysis revealed differentiated effectiveness: the effects on burnout were not significant for physicians as a single group (SMD = -0,34), but they were significant for nurses and mixed

populations of healthcare personnel.^(30,31) In addition, a concerning finding is the lack of sustainability of the effects on burnout in the long term (follow-up > 1 month), where the SME was reduced to 0,05, which is not statistically significant.⁽³⁰⁾ This highlights the need to implement reinforcement strategies or to integrate mindfulness into the organizational culture on an ongoing basis.⁽³²⁾

Other systematic reviews have confirmed the effectiveness of various interventions in reducing burnout in nurses, including exercise programs, music therapy, and stress management education.⁽²⁷⁾ However, the quality of the evidence is often low or moderate, with a high risk of bias in many studies, such as lack of blinding and high dropout rates.⁽²⁹⁾ Table 4 summarizes the effectiveness of the main types of intervention, and figure 3 compares the effect size of mindfulness on different mental health outcomes.

Type of Intervention	Effect Measure	Quantitative Outcome	Population/Source (Year)
Coaching/Counseling	-	Main driver of improvements in AE and DP	Physicians / Haslam et al. ⁽²⁹⁾
Mindfulness (Global)	DME	-0,44 (95 % CI: -0,74 to -0,13) in Burnout	Healthcare personnel / Ong et al. ⁽³⁰⁾
Mindfulness (Nurses)	SME	-1,18 in Stress, -1,14 in Depression	Nurses / Ong et al. ⁽³⁰⁾
Mindfulness (Doctors)	DME	-0,34 (Not significant) in Burnout	Doctors / NGOs et al. ⁽³⁰⁾
Interventions in Physicians (General)	DM	-1,11 in Emotional Exhaustion	Physicians / Haslam et al. ⁽²⁹⁾
Interventions in Nurses (Various)	-	Positive effects on burnout	Nurses / Barton et al. ⁽²⁷⁾



Source: adapted from Ong et al.⁽³⁰⁾

Figure 4. Comparison of the Effectiveness of Mindfulness-Based Interventions

DISCUSSION

Key findings

This systematic review consolidates the evidence that burnout syndrome is an endemic occupational crisis in the healthcare sector, not a collection of isolated cases.^(9,20) The main finding is an overall prevalence of burnout of 39 % among healthcare personnel, with peaks of up to 59,5 % in nursing during the pandemic.^(8,10) A second key finding is the robust association of burnout with organizational risk factors, where workplace bullying (OR up to 15,01), low job satisfaction (OR 5,05), and high perceived stress (OR 4,21) emerge as the most powerful predictors. Finally, although individual interventions such as coaching and mindfulness show

moderate short-term effectiveness (SME -0,44), their effect tends not to be sustainable if not combined with institutional changes.^(29,30)

Interpretation of Results

The high prevalence found^(8,10) and its marked upward trend during the pandemic⁽¹²⁾ confirm that burnout is a systemic problem and not an individual failure. These results are consistent with the international literature, which already warned of the magnitude of the problem, but this synthesis provides an updated quantification and highlights the disproportionate impact on certain groups such as frontline nursing and medical staff.^(10,12,15) The reason for this vulnerability lies in direct and continuous exposure to high emotional demands, work overload, and life-and-death situations, factors that were exacerbated during the health crisis.^(17,23)

The most significant finding is the predominant role of organizational factors, which contrasts with older approaches focused on individual resilience. The strength of the association with harassment and job dissatisfaction⁽²¹⁾ aligns our results with those of West *et al.*⁽²²⁾ and De Hert⁽¹⁵⁾ who argue that burnout is an indicator of organizational dysfunction. This means that burnout is not simply a consequence of stress, but a response to a toxic work environment. The heterogeneity in prevalence across specialties^(12,15) and geographic contexts, such as those documented in Latin America,^(16, 18, 34) reinforces the idea that local conditions and work culture are the main mechanisms that modulate risk.

Implications

The most important implication of this work is the need for a paradigm shift: from blaming the individual to institutional responsibility. If burnout is an organizational problem, the solutions must be too. This means that healthcare institutions must go beyond offering mindfulness workshops and start implementing zero-tolerance policies against harassment, improving staffing levels, optimizing workflows, and creating a work environment that promotes well-being.^(15,20) Addressing burnout is imperative for patient safety, as evidence links it directly to an increase in medical errors and poorer quality of care.^(31,33) Furthermore, ignoring the problem has a high economic cost associated with staff turnover.⁽²⁵⁾

Another practical implication is the need to standardize diagnostic tools. The variability in prevalence reported by the MBI, CBI, and OLBI^(8,26,27,28) makes it difficult to compare studies and formulate evidence-based policies. The psychometric superiority of the OLBI⁽²⁸⁾ and the practicality of the abbreviated CBI^(27,34) suggest that it is time to move toward a consensus on measurement.

Limitations

This study has several limitations that should be considered. First, the high statistical heterogeneity ($I^2 > 99\%$) in the included meta-analyses⁽⁸⁾ indicates that the results of the primary studies are very disparate, making it difficult to generalize a single prevalence figure. This variability is due to differences in populations, measurement instruments, and geographic contexts. Second, most of the included studies are cross-sectional in design, which allows associations to be identified but not causality to be established. For example, it is not possible to determine whether job dissatisfaction causes burnout or whether burnout leads to dissatisfaction. Third, there is a possible publication bias, as studies with positive or alarming results are more likely to be published. Finally, although studies of high methodological quality were included, the lack of a “gold standard” for the diagnosis of burnout^(28,35) is an inherent limitation in the field of research that affects all studies on the subject, including this one.

CONCLUSIONS

Burnout syndrome in healthcare workers is a multifactorial crisis with a high global prevalence, exacerbated by the COVID-19 pandemic. Quantitative evidence shows that organizational factors such as harassment and job dissatisfaction are key determinants, requiring a shift in focus from individual blame to institutional responsibility. Although validated diagnostic tools exist, the lack of a gold standard makes it difficult to compare data. Current interventions, such as coaching and mindfulness, show moderate effectiveness and should be part of a comprehensive strategy that includes improvements in the work environment.

Healthcare institutions are encouraged to implement mental health monitoring programs, foster positive work cultures, and offer evidence-based interventions. Future research should focus on standardizing burnout metrics, studying the long-term sustainability of interventions, and analyzing the cost-effectiveness of prevention programs.

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FINANCING

The authors did not receive funding for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Mario Heimer Flórez Guzmán.
Data curation: Juan José García Sarria.
Formal analysis: Mario Heimer Flórez Guzmán.
Research: David Max Olivares Álvares.
Methodology: David Max Olivares Álvares.
Project management: Leibniz Huxlay Flórez Guzmán.
Resources: Leibniz Huxlay Flórez Guzmán.
Software: Mario Heimer Flórez Guzmán.
Supervision: David Max Olivares Álvares.
Validation: Juan José García Sarria.
Visualization: Mercy Lilliana Borbón Hoyos.
Drafting - original draft: David Max Olivares Álvares.
Writing - review and editing: Mercy Lilliana Borbón Hoyos.