Mental Health of Researchers: A Systematic Review

Salud mental de los investigadores: una revisión sistemática

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Abstract

Academic culture, which often prioritizes productivity and achievements over personal well-being, can lead to mental health problems. This study aimed to "detect mental health disorders among researchers." A documentary methodology was followed using the PRISMA Method, as well as a qualitative analysis (conducted with AtlasTi software). The findings reveal that researchers face numerous challenges that affect their mental health, such as institutional pressure, lack of resources, and job instability, which can lead to problems such as academic burnout syndrome (ABUS), stress, dissatisfaction, and mental and emotional exhaustion. Depression and anxiety have a significant impact on their personal and professional lives, with perceived stress being an influential factor in low personal fulfillment. Factors such as material incentives, a suitable organizational environment, and spiritual motivation can improve mental health, especially in mid-career researchers and those who work overtime. Burnout is a growing problem among young researchers, and the COVID-19 pandemic has exacerbated these issues, particularly among women and young people, underscoring the need for effective interventions to improve their well-being. The main contribution of this work is to highlight the need to intensify the inward focus of the academic community on a critical issue such as the mental health of researchers.

Key words: mental well-being, scientists, psychology, strategies, science

Resumen

La cultura académica, que a menudo valora la productividad y los logros por encima del bienestar personal, puede llevar a problemas de salud mental. En este trabajo se planteó como objetivo "detectar los desórdenes de salud mental que padecen los investigadores". Se siguió una metodología documental a través del Método PRISMA, así como un análisis cualitativo (realizado con el Software AtlasTi). Los hallazgos revelan que los investigadores enfrentan numerosos desafíos que afectan su salud mental, como la presión institucional, la falta de recursos y la inestabilidad laboral, lo que puede llevar a problemas como el síndrome de trabajo académico (SINATA), estrés, insatisfacción y agotamiento mental y emocional. La depresión y la ansiedad impactan significativamente en su vida personal y profesional, con el estrés percibido como un factor influyente en la baja realización personal. Factores como los incentivos materiales, un entorno organizacional adecuado y la motivación espiritual pueden mejorar la salud mental, especialmente en investigadores de mediana carrera y aquellos que trabajan horas extra. El burnout es un problema creciente entre los investigadores jóvenes, y la pandemia de COVID-19 ha exacerbado estos problemas, especialmente entre mujeres y jóvenes, subrayando la necesidad de intervenciones efectivas para mejorar su bienestar. Se considera que el principal aporte de este trabajo es poner sobre la mesa la necesidad de intensificar la mirada hacia adentro de la comunidad académica, en lo que se refiere a un problema neurálgico como la propia salud mental de los investigadores.

Palabras clave: salud mental, investigadores, psicología, estrategias, ciencia.

Introduction

Mental health symptoms or disorders encompass a wide range of conditions that affect people's emotional and psychological well-being. Among the most common are depression, anxiety, stress and burnout. Depression can manifest as persistent sadness, loss of interest in activities and fatigue, while anxiety is characterized by excessive worry and difficulty relaxing. Stress, on the other hand, can cause physical symptoms such as headaches and digestive problems, as well as affecting concentration and sleep. Burnout, especially relevant in work contexts, presents itself as extreme exhaustion and a feeling of ineffectiveness.

Researchers face unique challenges that can exacerbate these symptoms or mental health disorders. Pressure to publish, competition for funding, and job instability are significant contributors to stress and burnout. In addition, the solitary nature of much research can lead to feelings of isolation and loneliness. To address these challenges, it is crucial to implement effective strategies that promote mental well-being. These include promoting a healthy work-life balance, providing access to psychological support resources, and creating a collaborative and supportive work environment.

Strategies to address the mental health of researchers must be multifaceted and tailored to the specific needs of this group. Education and training in stress management and resilience techniques are critical. In addition, encouraging creative and relaxing activities, such as doodling, can be beneficial. Institutions can offer stress management workshops, mentoring programs, and foster a culture of openness where researchers feel comfortable sharing their concerns. Policies that ensure job stability and job recognition can also contribute significantly to improving the mental health of researchers.

Factors associated with the mental health of researchers include both demographic and attitudinal aspects. Youth, for example, has been identified as a risk factor, as younger researchers may be more predisposed to experience mental health problems due to job instability and academic pressure. Doctoral researchers (RDs) have been shown to report significantly higher levels of stress, and isolation is one of the strongest risk factors; female doctors are at increased risk of mental health problems; for example, in biomedical students, working more than 7 hours a day in research activities is associated with increased anxiety and depression. Global competition in education and high expectations in teaching, supervision, and research income generation negatively affect the mental health of academics. Also, poor sleep quality and poor general health are associated with higher stress and worse mental well-being (Hazell, *et al.*, 2020; Byrom, *et al.*, 2020; Urbina-Garcia, 2020; Li, *et al.*, 2022).

Methodology

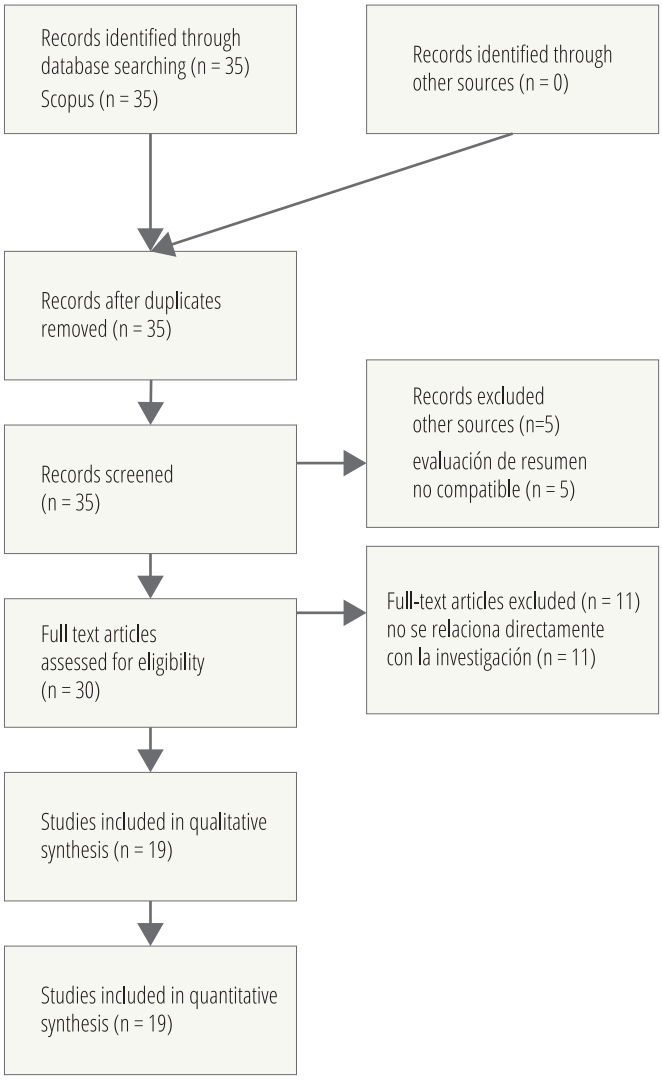
A documentary methodology was followed through the PRISMA Method, as well as a qualitative analysis (carried out with AtlasTi software) to unveil the categories on mental health that emerge in the studies.

Thirty-five records were initially identified through database searches (in this case, exclusively Scopus), with no duplicates to eliminate. Then, 5 articles were discarded after review of titles and abstracts for not meeting the established criteria. Subsequently, 30 articles were evaluated in full text, of which 11 were excluded because they did not address health disorders in researchers. Finally, 19 studies were included in both the qualitative and quantitative analysis, represent-

Table 1
Search chain

CHAIN
(TITLE ("mental health" OR "psychological well-being" OR stress OR anxiety OR depression OR burnout) AND TITLE ("research faculty" OR researchers OR "academic researchers" OR "university researchers")) AND PUBYEAR > 2019 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (OA , "all"))

Graphic 1
Screening



ing a rigorous selection in accordance with the systematic approach of the method.

Results

A) Analysis of the articles

Considering the assumptions that combine feelings of sadness in the work of researchers with the disappointment of obstacles in their path, the findings of interest obtained from the research located on the subject are presented. Herrera *et al.* (2019), for example, report that meeting the demands of educational institutions, as well as surviving in a war environment or facing insufficient resources to meet the basic needs that allow them to develop their academic work, generates in Mexican, Colombian, Chilean and Argentine teacher-researchers the suffering of SINATA (Academic Work Syndrome), along with stress, dissatisfaction, feelings of sadness, and mental and emotional exhaustion. Gao *et al.* (2023) agree with the perception that depression and anxiety have a significant impact on people's work and personal lives, so that research on the mental health of Chinese researchers demonstrated that they show symptoms of depression and anxiety, while perceived stress is an influential factor in low self-fulfillment. This is supported by Gu *et al.* (2022) who also assert that researchers face a higher risk of anxiety and depression than the common population, demonstrating that material incentives are factors for work-life balance, and that an adequate organizational environment, together with spiritual motivation have positive effects on mental health, understanding that these aspects were more effective in promoting mental health in mid-career researchers and those who work overtime, generating less likelihood of anxiety and depression, with the need to pay special attention to spiritual motivation.

Consistent with this, Boone *et al.*, (2022) highlight that burnout is considered a growing problem among younger researchers. Through a quantitative study, they demonstrated that a cynical profile is relatively high, which implies that they are vulnerable to the cynicism that comprises burnout, while confirming its impact on the work and life of these academics, considering that pressure emerged as the relevant predictor of exhaustion. To this, a study on local researchers facing a higher burden of violence and poor mental health is added, such as the first Sri Lankan study based on experiences, where intentional choices about communication, training, human resources, and consumables were highlighted, among other factors that strengthen the personal and professional capacities of these researchers, being necessary to obtain information about the violence and mental health that they face in contexts of high workload and few resources (Palfreyman *et al.*, 2022).

Another study on fostering research skills among young medical scientists to increase the level of medical research in Japan demonstrated that the characteristics of mentors are associated with a lower risk of psychological burnout among mentees (Takenoshita *et al.*, 2023).

On the other hand, Nash (2021) highlighted that casual and self-reported levels of depression and anxiety vary from researchers with low levels of distress in Toronto to those with diagnoses of depression and anxiety, while changes in developing doodles invite a reevaluation as an indicator of

states of distress, dysphoria, depression, and anxiety, so that variations in doodling could show modifications in internal states and help reduce burnout. In this context, Yan *et al.* (2024) express that urban green spaces (UGS) can benefit the mental health of researchers, whose findings specify that contact with nature and social interaction have a positive impact on mental health, relieving stress, although not in the long term, thus providing a natural-social perspective on ecosystem services to improve the well-being of researchers.

Similarly, another study highlights the prevalence of mental health problems and low well-being among UK researchers, with worse figures for women and non-binary individuals, non-heterosexual identities, maladaptive perfectionism, work addiction, and those in their fifth year of study, while resilience, adaptive perfectionism, social support, positive evaluations, and a positive work environment had the most positive impact (Milicev *et al.*, 2021).

In the academic realm, Hazell *et al.* (2020) emphasized that doctoral researchers face a significant challenge during their doctoral studies regarding their mental health, with a risk of developing mental health problems, which serves as a warning for universities to rethink training practices in order to understand the factors that explain the increase in anxiety and depression and to generate preventive measures.

Likewise, Berry *et al.* (2021) detailed that postgraduate researchers experience mental health problems that affect their doctoral studies with long-term effects, as it is shown that their mental health symptoms are predictable by demographic, occupational, psychological, social, and supervisory relationship factors. On the other hand, Hill *et al.* (2022) emphasize that working in academia involves encountering structural and organizational stressors detrimental to well-being, increasing psychological distress and poor mental health, determining that differences in "work demands" and "work-life balance" were lower among support staff, so that the association between psychosocial work stressors and psychological distress was significant, thus research support staff report experiencing fewer psychosocial stressors compared to postgraduate students, early or mid-career researchers, and senior researchers.

Wolniak and Szromek (2020) suggest that researchers' work involves high levels of stress, and in the case of Poles, in relation to subsequent academic titles and degrees, it is stated that irritation, nervousness, and aggression are observed in half of the researchers, as well as problems of depression, addiction, and psychosomatic disorders such as pain of unknown origin in the extremities and internal organs. On the other hand, regarding the topic framed in a critical context, it is found that after exploring the beliefs of young medical researchers (YMR) and the causes of their distress and burnout, before and during the financial crisis in Greece, these severe syndromes are highlighted when feeling susceptible during the crisis, facing barriers such as lack of time, money, and support (Sifaki-Pistolla, *et al.*, 2022).

In the case of the COVID-19 pandemic and given the fact that researchers also experienced changes in their roles, it could be verified that being female and young seems to be related to significant fears, while single researchers show high values of stress, depression, and anxiety in the area of medical and health sciences, which impacts their psychological well-being (Batista *et al.*, 2022). In this scenario, Rifin and Danaee (2022) determined that burnout is considered an influential factor in the intention to leave, on the part of medical researchers in Malaysia, with Burnout being a concern since most of the participating researchers experienced moderate or high burnout in contrast to their work performance.

Similarly, Marrinhas *et al.* (2023), when evaluating the experiences of burnout and technostress in university researcher-teachers during the pandemic, located moderate levels of exhaustion and technostress with influencing factors. Hence the interest of another study in addressing doctoral researchers and their mental health status before and during the pandemic, demonstrating less satisfaction with doctoral training and well-being, with high levels of exhaustion, depressive symptoms, and severe loneliness along with low satisfaction regarding doctoral training (Naumann *et al.*, 2022).

Likewise, Liu and Xie (2024) expressed that organizational support helped researchers at all stages of their career by reducing job burnout, while Meng *et al.* (2023), after investigating the interaction between physical literacy, resilience, and burnout among researchers who experienced a strict home quarantine during the COVID-19 pandemic in China, confirmed the significant correlation between physical literacy and psychological parameters. In sum, the referenced works delve into the fact that the mental health of researchers has been affected in recent years, not only in critical conditions such as the context of a pandemic or conflicts specific to each nation, but also from the experiences lived in the course of the exercise in the field of research, where challenges are also presented around this work, especially when pursuing fourth and fifth-level studies, managing, for example, depression, anxiety, among other negative emotions for their well-being.

b) Findings obtained with Atlas.ti processing

The following categories were revealed to group the findings: a) mental health symptoms or disorders; b) mental health symptoms or disorders; c) Challenges and strategies to address researchers' mental health; and d) Factors associated with mental health.

The results in Figure 1 (Table 2) show that burnout is the most frequent mental health symptom or disorder, with

Figure 1
Mental health symptoms or disorders

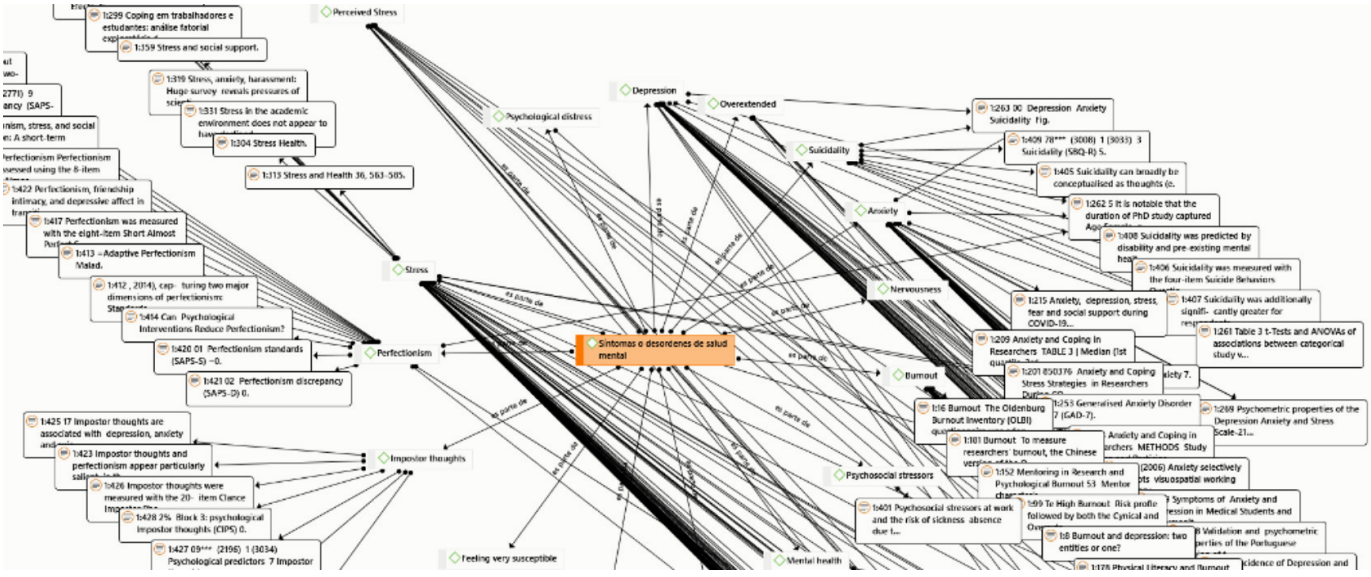


Tabla 2
Mental health symptoms or disorders

Category	Codes	Frequency
Mental health symptoms or disorders	Burnout	195
	Technostress	4
	Anxiety	79
	Depression	52
	Perceived Stress	12
	Stress	94
	Overextended	23
	Mental health	27
	Suicidal ideation	4
	Psychological distress	1
	Psychosocial stressors	1
	Nervousness	3
	Suicidality	8
	Perfectionism	16

Figure 2
Effects or consequences of mental health disorders

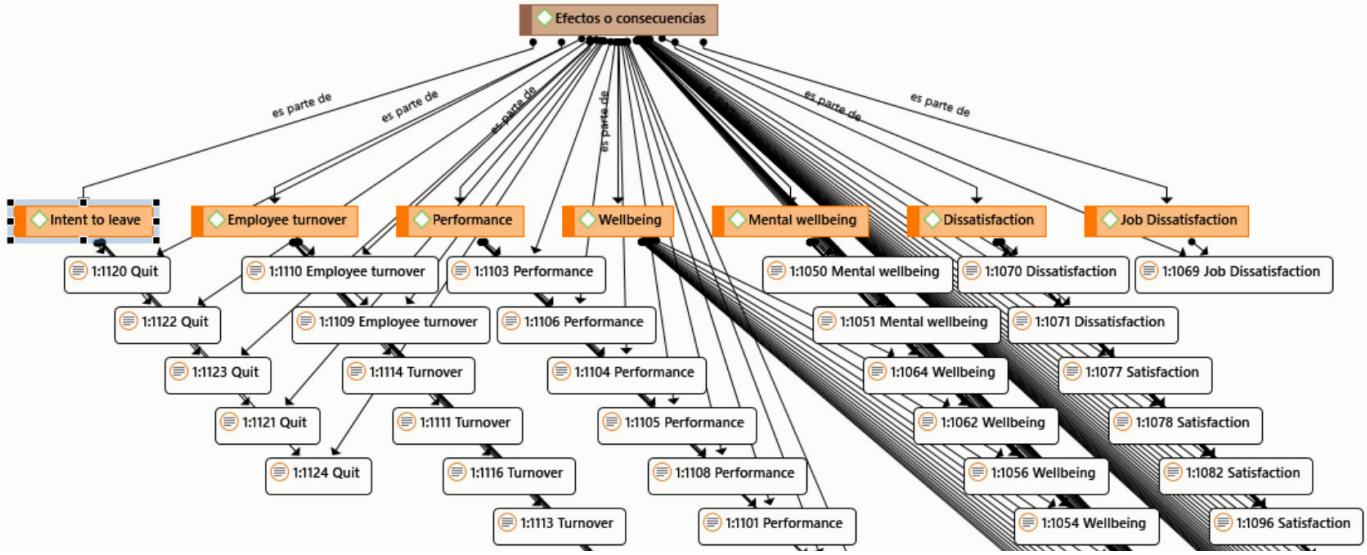


Tabla 3
Effects or consequences of mental health disorders

Category	Code	Frequency
Effects or consequences of mental health disorders	Mental wellbeing	19
	Wellbeing	17
	Job Dissatisfaction	1
	Dissatisfaction	31
	Performance	8
	Employee turnover	11
	Intent to leave	5

a frequency of 195 mentions. This suggests that extreme exhaustion is a significant problem in the studied population. This is followed by stress and anxiety, with 94 and 79 mentions respectively, indicating that these are also prevalent problems. Depression and perceived stress have frequencies of 52 and 12 mentions, respectively, highlighting the importance of addressing these mental health issues.

Other less frequent symptoms and disorders include overextended (23 mentions), general mental health (27 mentions), and perfectionism (16 mentions). Mentions of suicidal ideation and suicidality are less common, with 4 and 8 mentions respectively, but remain concerning. The least reported symptoms include technostress, nervousness, impostor thoughts, susceptibility, psychological distress, and psychosocial stressors, with frequencies ranging from 1 to 7 mentions. These results underscore the diversity and complexity of mental health problems in the analyzed population.

The results in Figure 2 (Table 3) indicate that dissatisfaction is the most common consequence of mental health disorders, with a frequency of 31 mentions. This suggests that mental health problems have a significant impact on individuals' overall satisfaction. Mental well-being and general well-being follow, with 19 and 17 mentions respectively, highlighting the importance of mental health in the perception of personal well-being. Employee turnover and performance are also affected, with 11 and 8 mentions respectively, indicating that mental health disorders can negatively influence job stability and productivity.

Figure 3
Challenges and strategies for addressing researchers' mental health

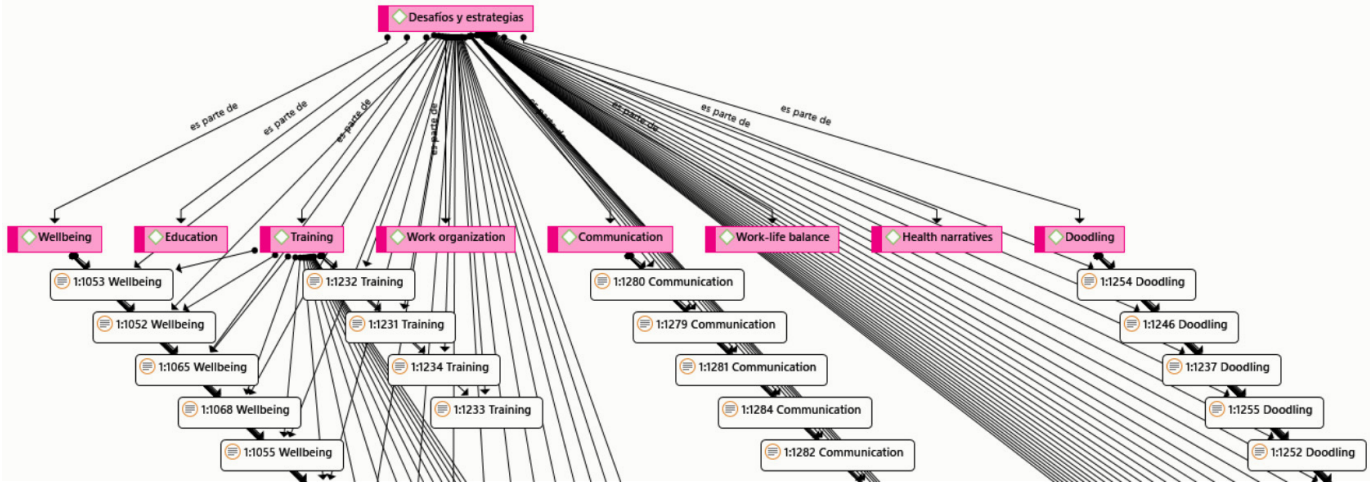


Tabla 4
Challenges and strategies for addressing researchers' mental health

Category	Code	Frequency
Challenges and strategies for addressing researchers' mental health	Mental wellbeing	19
	Education	84
	Training	21
	Wellbeing	17
	Doodling	28
	Health narratives	1
	Work organization	8
	Work-life balance	5

Other less frequent effects include the intention to leave the job (5 mentions) and job dissatisfaction (1 mention), suggesting that although less common, these effects still pose a risk to organizations. These results underscore the need to address mental health disorders not only from an individual perspective but also from an organizational one, to improve both personal well-being and job performance."

The results in Figure 3 (Table 4) show that education is the most frequently mentioned strategy to address the mental health of researchers, with a frequency of 84 mentions. This suggests that providing education on mental health and well-being is seen as a crucial tool to tackle these challenges. This is followed by the practice of doodling with 28 mentions, indicating that creative and relaxing activities can be effective in reducing stress. Training is also an important strategy, with 21 mentions, highlighting the need to equip researchers with stress management and resilience techniques.

Other strategies include general well-being (17 mentions), communication (10 mentions), and work organization (8 mentions), suggesting that improving work structure and environment can have a positive impact on mental health. Work-life balance (5 mentions) and health narratives (1 mention) are less frequent but still relevant. These results underscore the importance of a multifaceted approach to addressing the mental health of researchers, combining education, creative activities, and improvements in work organization and communication.

The results in Figure 4 (Table 5) indicate that being younger is the most frequently associated factor with mental health,

Figure 4
Factors associated to mental health

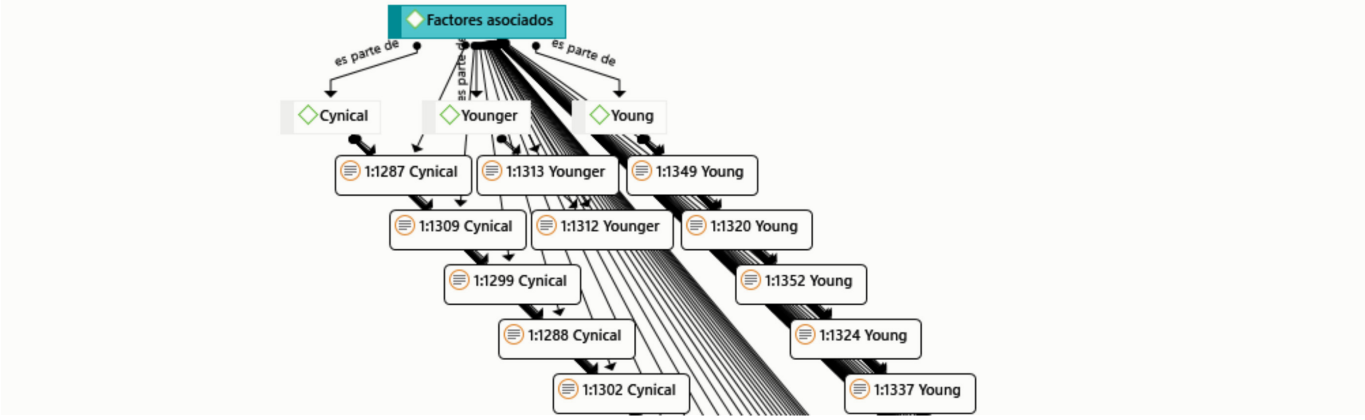


Table 5
Factors associated to mental health

Category	Code	Frequency
Challenges and strategies for addressing researchers' mental health	Mental wellbeing	19
	Education	84
	Training	21
	Wellbeing	17
	Doodling	28
	Health narratives	1
	Work organization	8
	Work-life balance	5

with a frequency of 44 mentions. This suggests that younger individuals may be more predisposed to experiencing mental health problems, possibly due to factors such as job instability, academic or professional pressure, and lack of experience in managing stress. The cynical category also shows a significant frequency of 25 mentions, which could indicate that a cynical attitude is related to poorer mental health, perhaps due to a negative view of the environment and interpersonal relationships.

On the other hand, the young category has a lower frequency, with only 2 mentions, which could reflect a difference in the perception or reporting of mental health problems among different age groups. These results underscore the importance of paying attention to demographic and attitudinal factors when addressing mental health, and suggest that interventions should be tailored to meet the specific needs of younger groups and those with cynical attitudes.

Conclusions

The main contribution of this work is considered to be bringing to the forefront the need to intensify the inward look within the academic community, regarding a neuralgic issue such as the mental health of researchers themselves. Studying the mental health of researchers provides a solid foundation for implementing more effective motivational strategies in academic institutions. By understanding the psychological factors that influence the well-being and performance of researchers, institutions can design healthier and more productive work environments. By identifying the main stressors, support needs, and obstacles faced by researchers, it is possible to develop programs and policies that promote work-life balance, reduce burnout, and foster creativity. In this way, the potential of each researcher can be optimized, and consequently, the academic advancement of the institution can be promoted.

Researchers face numerous challenges that affect their mental health, including institutional pressure, lack of resources, and job instability. These factors can lead to problems such as academic work syndrome (AWAS), stress, dissatisfaction, and mental and emotional exhaustion. Studies have shown that depression and anxiety have a significant impact on the personal and professional lives of researchers, with perceived stress being an influential factor in low personal fulfillment. Additionally, material incentives and a suitable organizational environment, along with spiritual motivation, can have positive effects on mental health, especially for mid-career researchers and those who work extra hours.

Burnout is a growing problem among younger researchers, with studies showing an elevated cynical profile and pressure as a relevant predictor of exhaustion. Researchers in high-demand, low-resource contexts, such as in Sri Lanka, face greater mental health challenges due to violence and lack of support. In Japan, it has been found that mentor characteristics can reduce the risk of psychological burnout in trainees. Additionally, the variability in levels of depression and anxiety among researchers from different regions and contexts underscores the need for personalized approaches to address these issues.

The prevalence of mental health problems is notable among UK researchers, especially among women, non-binary individuals, and those with non-heterosexual identities. Factors such as maladaptive perfectionism, work addiction, and lack of social support exacerbate these problems. In academia, doctoral and postdoctoral researchers face high levels of stress and mental health problems, with demographic, occupational, and supervisory factors influencing their symptoms. Differences in work demands and work-life balance also significantly affect researchers' well-being.

The COVID-19 pandemic has exacerbated mental health problems among researchers, especially among women and young people. Single researchers in the medical and health sciences have shown high levels of stress, depression, and anxiety. Burnout has been identified as an influential factor in the intention to leave the job, with many researchers experiencing moderate or high levels of burnout, which negatively affects their job performance. These findings underscore the need for effective interventions to improve the mental health and well-being of researchers in various contexts.

During the pandemic, university faculty researchers experienced moderate levels of burnout and technostress, influenced by various factors. Doctoral researchers showed less satisfaction with their training and well-being, along with high levels of exhaustion, depressive symptoms, and severe loneliness. Organizational support was highlighted as a key factor in reducing job burnout at all stages of the research career. Additionally, a significant correlation was found between physical literacy and psychological parameters in researchers who lived through strict quarantines. These studies underscore that the mental health of researchers has been affected not only by the pandemic and national conflicts but also by the challenges inherent in research work, especially at advanced levels of study, where depression and anxiety are common.

For future research, it is recommended to use other databases, follow up on studies addressing mental health disorders among researchers in different parts of the world, differentiating the focus based on the specific functions that most researchers must fulfill worldwide, such as being a young research assistant, project leader, organizer of scientific meetings, director of research institutes, and editor of scientific publications.

Authors contributions

Ángel Emiro Páez Moreno: conceptualization, analysis, curation, initial writing, final writing.
Felipe Anderson Ríos Incio: methodology, curation, supervision, validation, final writing.
Mariangélica Sánchez: analysis, curation, validation, final writing.

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