



Bibliometric Analysis of Studies on Academic Burnout in Students

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Abstract

Academic burnout is characterised by emotional exhaustion, depersonalisation, and diminished personal accomplishment amongst students. Despite its rising prominence in recent discussions, there remains a lack of systematic reviews encapsulating the extensive literature on academic burnout. This bibliometric study aims to systematically review the literature and determine trends in academic burnout research. A total of 805 studies on academic burnout were retrieved from the WoS database and 570 articles meeting the selection criteria were analysed. The distribution of articles was analysed based on categories, publication years, and originating countries. Additionally, pertinent topics, journals, authors, and patterns of global and local citations were examined. Our analysis revealed a notable increase in articles on academic burnout in recent years. Leading contributors in terms of publications include China, the USA, and Finland. Recently, themes such as "Covid-19", "depression", "resilience", "classroom enjoyment", and specific demographics like "medical students" and "working students" have been frequently associated with academic burnout research. This research reveals the multifaceted structure of academic burnout. As a result, educational professionals can incorporate the multifaceted structure resulting from this research into programs designed to reduce academic burnout.

Keywords

Student burnout, academic performance, academic success, burnout, burnout syndrome, systematic review

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Introduction

Burnout is a concept that has been extensively studied by researchers over the past half-century. The notion of "burnout" was first introduced by Bradley in 1969 and garnered significant interest among researchers, particularly following the seminal works of Freudenberger in 1974 and Maslach in 1976.

Drawing parallels to a fire slowly dimming or a candle nearing its end, the concept of burnout encompasses the emotional exhaustion and fatigue experienced by people (Schaufeli & Buunk, 2003). Burnout was initially described in the context of professionals, particularly those in healthcare and social services, who provide care as an intrinsic part of their roles. Over time, however, it has been recognised that burnout can affect individuals across various professions (Maslach & Jackson, 1981). In later studies, it was understood that professionals working in other sectors, especially those demanding deep interpersonal engagement, may also experience burnout (Maslach et al., 2001). Professionals in positions that do not require any service to others may also experience burnout due to the intense demands of their work (Schaufeli et al., 2009).

Burnout can be defined as a three-dimensional structure, including emotional exhaustion, depersonalisation, and reduced personal accomplishment (Maslach et al., 2001). Emotional exhaustion is considered the starting point of burnout syndrome, and is the most commonly studied dimension of burnout in the literature (Hill & Curran, 2015; Maslach & Jackson, 1984; Maslach et al., 2001; Sener, 2018). The term refers to the feeling of tiredness and emotional fatigue experienced by individuals in response to excessive psychological and emotional demands (Bali, 2021; Jackson et al., 1986). In an attempt to cope with emotional exhaustion, a sense of depersonalisation emerges (Hill & Curran, 2015). People experiencing depersonalisation exhibit negative feelings, thoughts, and behaviours toward the people they serve (Maslach & Jackson, 1981). The feeling of low personal accomplishment represents the self-evaluation dimension of burnout. Low accomplishment reflects the individual's perception of themselves as unsuccessful or inadequate in their job (Leiter & Maslach, 1988).

It should be noted, however, that burnout is not an experience exclusive to employees. It is well known that students are also susceptible to burnout due to the demands of their academic work, extracurricular activities, and social pressures (Lin & Huang, 2014; Salmela-Aro et al., 2009). Students may experience academic burnout when they feel overwhelmed and unable to cope with the demands of school or when they have a lack of control over their academic workload. Academic burnout can also be characterised by the three dimensions noted earlier, similar to the burnout syndrome of working professionals (Zhang et al., 2007). Emotional exhaustion in students refers to feelings of fatigue, lack of energy, and depletion of emotional resources, which can lead to a sense of being overwhelmed and unable to cope with academic demands. Depersonalisation involves a cynical or detached attitude towards school work, teachers, and peers, which can lead to feelings of alienation and disengagement. Reduced personal accomplishment refers to a

decline in feelings of competence and productivity in academic work, which can lead to a sense of failure and decreased motivation toward school-related work.

Academic burnout can be an important factor in students' academic life as it influences students' relationships with their school, teachers, and friends, and can also be a key factor for understanding a wide range of student behaviours (Lin & Huang, 2014). Academic burnout is associated with lower school engagement and academic achievement, and increased depressive symptoms among students (Fiorilli et al., 2017; Madigan & Curran, 2021). Furthermore, it can lead to higher absenteeism at school, lower motivation to do academic work, and a higher chance of school dropout (Meier & Schmeck, 1985). Studying the negative consequences of academic burnout has been the focus of several researchers (Drăghici & Cazan, 2022; May et al., 2015; Neumann et al., 1990; Rad et al., 2017).

Reviewing the existing literature in a specific field allows researchers to understand trends and identify gaps and opportunities for future research. Although extensive research has been carried out on burnout, existing systematic reviews and bibliometric analyses tend to focus on specific groups of individuals, such as surgeons, intensive care unit professionals, teaching staff, and medical students (Chuang et al., 2016; Dimou et. al, 2016; Gómez-Domínguez et. al, 2022; Ishak et al., 2013; Watts & Robertson, 2011). Despite the significant volume of research on burnout in students, no systematic reviews have been conducted focusing specifically on student populations. This study sought to address this literature gap through a systematic review of academic burnout, employing a visualized bibliometric analysis. Additionally, our findings aim to serve as a foundation for future burnout research by aggregating and synthesizing key data on the subject. In this context, the following research questions were investigated:

- RQ1. How have publication trends in academic burnout research evolved over time?
- RQ2. Which countries lead in the volume of publications related to academic burnout?
- RQ3. Who are the leading authors in academic burnout research?
- RQ4. In which journals are the majority of academic burnout studies published?
- RQ5. What keywords frequently appear in academic burnout research articles?

Method

Search Strategy

For this study, data were sourced from articles related to academic burnout indexed in the Web of Science (WoS) database. The search, conducted in March 2023, utilized an array of keywords including "School Burnout," "Student Burnout," "Academic Burnout," "Learning Burnout," and their respective variations, such as "Burn-out" and phrases like "Burnout Syndrome among Students." The selection of these keywords was informed by a thorough literature review and consultations with two experts in the field of student burnout. Given that the earliest article on school burnout in the WoS database is from 1984, the search spanned articles published between 1984 and 2023.

Inclusion and Exclusion Criteria

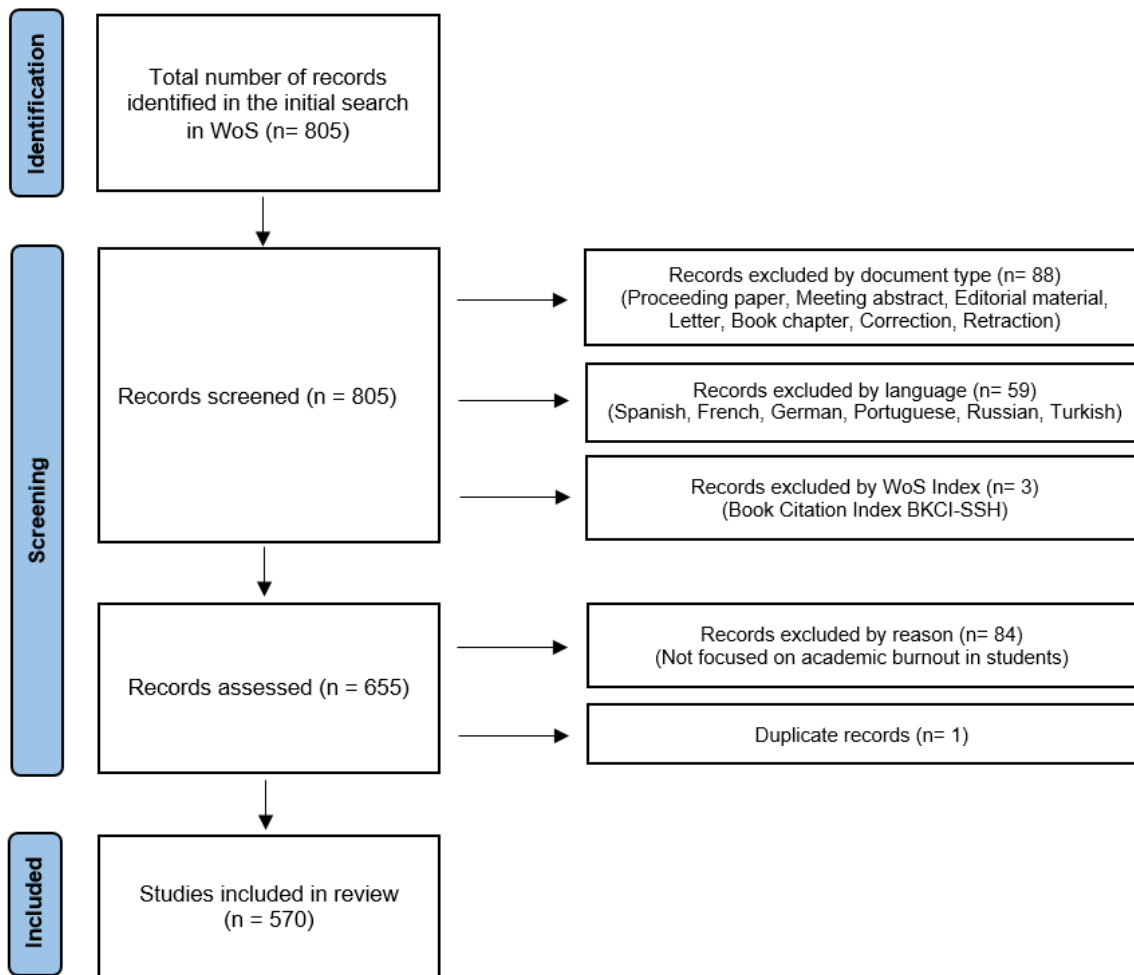
The study included publications on academic burnout spanning student populations from primary school through to higher education, while those studies not specifically addressing student

burnout, such as work or teacher burnout, were excluded. The search was conducted exclusively in English and focused on document types including articles, early access articles, and review articles. Other document types, such as proceeding papers, meeting abstracts, editorial materials, letters, book chapters, corrections, and retractions, were excluded. Furthermore, the scope was narrowed to articles indexed in SSCI, SCI, SCI-Expanded, and AHCI.

Data Screening and Extraction

We adopted the PRISMA approach for our literature search and selection of publications, ensuring transparent and accurate reporting of systematic reviews as outlined by Page et al. (2021). The data collection process is illustrated in Figure 1.

Figure 1. The process of data collection



The initial search, without filtering, yielded 805 publications. Article retrieval and data extraction were finalised on March 19, 2023, to circumvent database modifications and updates. First, using the document type filter, articles, early access articles, and review articles were selected, while other document types (n= 88), such as proceeding papers, meeting abstracts, editorial materials, etc., were excluded. English was designated as the publication language, filtering out publications

in other languages (n= 59). Lastly, only SSCI, ESCI, SCI-EXPANDED, and A&HCI were chosen in the WoS Index filter, eliminating publications in other indexes (n=3). Following these exclusions, 655 articles remained.

The remaining articles were first added to the Marked List section of WoS to easily keep track of articles. During data retrieval and selection, two researchers independently reviewed the titles and abstracts of articles based on the exclusion and inclusion criteria. Disagreements arose between the researchers for 19 of the 655 articles (inter-observer reliability 97.10%). In these instances, the full texts were examined, and a third researcher was consulted to reach a consensus.

Of the 655 publications reviewed, 54 were not directly focused on student burnout even though the participants were students. An additional 30 articles centered on work burnout within the academic setting (e.g., burnout in teachers, burnout in academics) but did not focus on student burnout. One article was identified as a duplicate record. After removing these 85 articles, a total of 570 articles remained.

The *Analyse Results* feature of the WoS database, along with the VOSviewer software (Grames et al., 2019) and HistCite software (Shah et al., 2020), were employed to analyze the data. The VOSviewer software was utilized to visually represent the trends in school burnout research over the years. HistCite was employed to display the number of articles by journal, author, and institution. Additionally, HistCite calculated quantitative indicators such as the Global Citation Score (GCS) and Local Citation Score (LCS). Among these indicators, LCS shows the number of times an article is referenced within a retrieved set of articles and GCS shows the number of times an article is referenced globally (Ullah et al., 2023).

Results

After reviewing the articles, 570 articles on academic burnout were included in the analysis. The articles and the citations within them were analysed based on WoS categories, publication year, publication country, academic level, article keywords, authors, and journals. The distribution of the articles according to WoS categories is depicted in Figure 2.

According to Figure 2, the majority of publications on academic burnout were in the categories of Education-Educational Research (n= 125; 21.93%), Psychology Multidisciplinary (n= 101; 17.72%), Psychology Educational (n= 66; 11.58%), Education Scientific Disciplines (n= 47; 8.25%), Public Environmental Occupational Health (n= 43; 7.54%), Psychology-Developmental (n= 38; 6.67%), Psychiatry (n= 36; 6.32%), and Medicine General Internal (n= 32; 5.61%). The top two categories for academic burnout in WoS were education and psychology.

According to Figure 3, the first article on academic burnout in the WoS database was published in 1984, and the first citation appeared in 1988. Between 2007 and 2022, both articles and citations on academic burnout increased significantly. The sharp drop in both articles and citations in 2023 reflects the date the articles for the current study were collected (March 2023). Given the ongoing trends in publications and citations, academic burnout is likely to remain a topic of interest for researchers in the near future.

Figure 2

Distribution of articles based on WoS categories

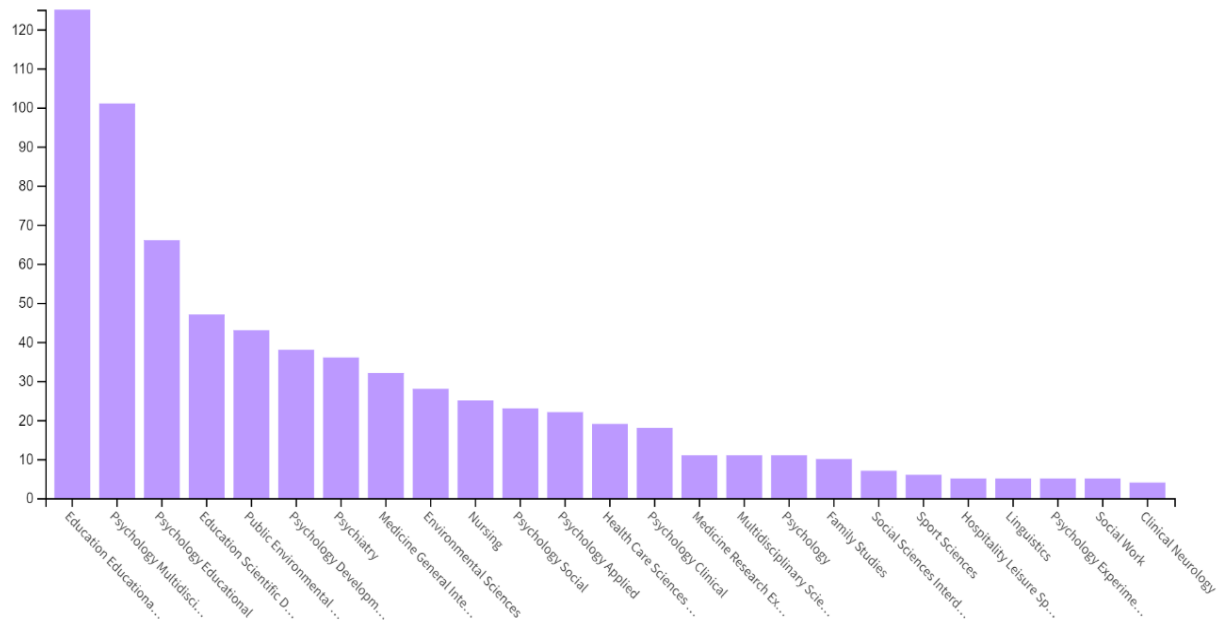
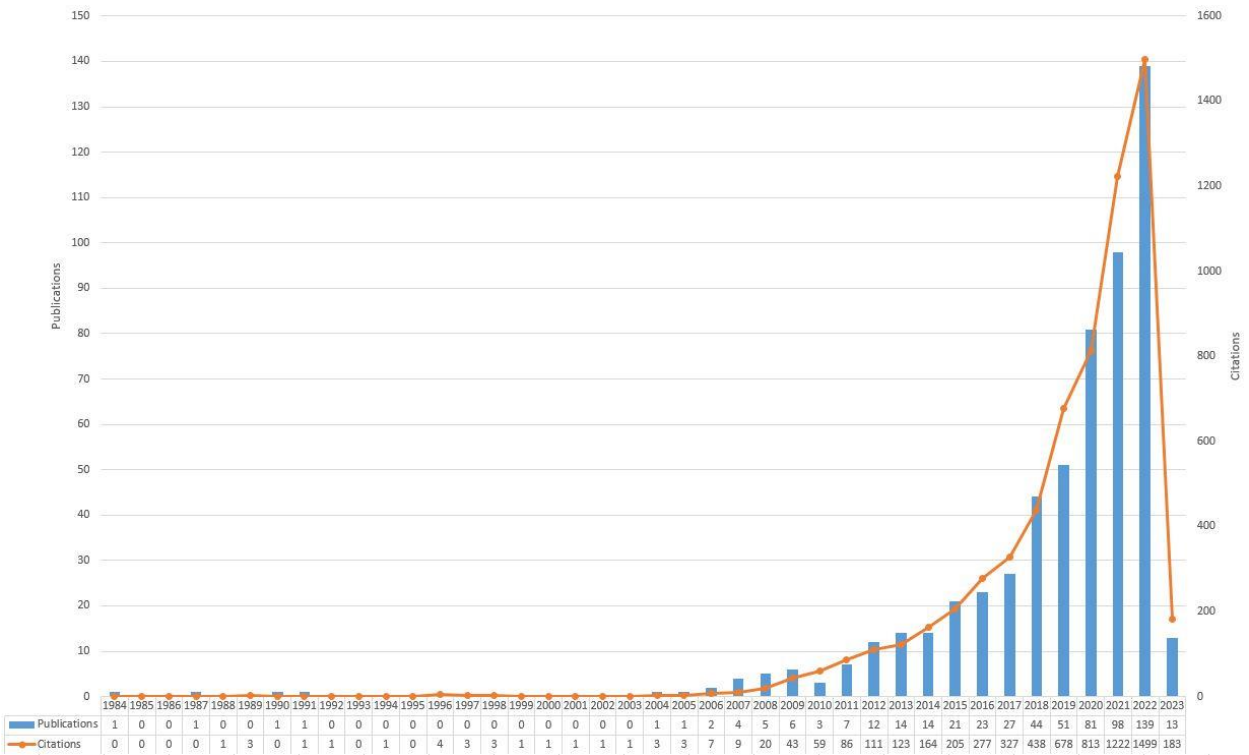


Figure 3

Distribution of articles and citations by year



Next, the number of articles published by country was analyzed. The countries with the most publications are China (n= 126; 22.11%), the USA (n= 109; 19.12%), Finland (n= 74; 12.98%), South Korea (n= 39; 6.84%), Iran (n= 33; 5.79%), Spain (n= 33; 5.79%), and Turkey (n= 26; 4.56%). Roughly half of the articles originate from just three countries (China, the USA, and Finland; 54.21%), while 39 countries contributed 2 or fewer articles each.

In the next step, the distribution of the articles regarding their focused academic levels was examined. According to Figure 5, more than half of the articles focused on academic burnout in university settings (n= 347). Following the university setting, research was conducted in upper secondary schools, lower secondary schools, and primary schools, respectively.

Bibliometric Technique / Co-Occurrence Analysis

Several analyses (e.g., co-authorship, co-occurrence, citation) are employed in mapping bibliometric data. Among these analyses, co-occurrence analysis aims to uncover the relationships by utilizing the shared networks between keywords in publications on a subject (Barberán et al., 2012). In this study, co-occurrence analysis was conducted to uncover the relationship between keywords in all 570 publications. As part of the analysis process, the minimum number of occurrences for a keyword was set to one to capture all potential relationships. The results of the co-occurrence analysis are depicted in Figure 6.

In Figure 6, the dimensions of the circles represent the frequency of the keyword's use and the colours indicate the publication years. Thus, the larger the circle, the more frequent the keyword's usage. Figure 6 shows that the terms “burnout” and “school burnout” were primarily used in earlier years, while “academic burnout” and “learning burnout” have been favored more by researchers in recent times. Furthermore, in recent years, the keywords "COVID-19", "resilience", "depression", "medical students", and "medical education" have emerged in conjunction with academic burnout, while the keywords “reliability”, “validity”, “big five personality traits”, and “ethics” have appeared in conjunction with academic burnout in former research. Additionally, despite their low frequency, the keywords of “classroom enjoyment”, “technostress”, and “peer victimization” have appeared in recent papers.

Figure 4

Distribution of articles by countries

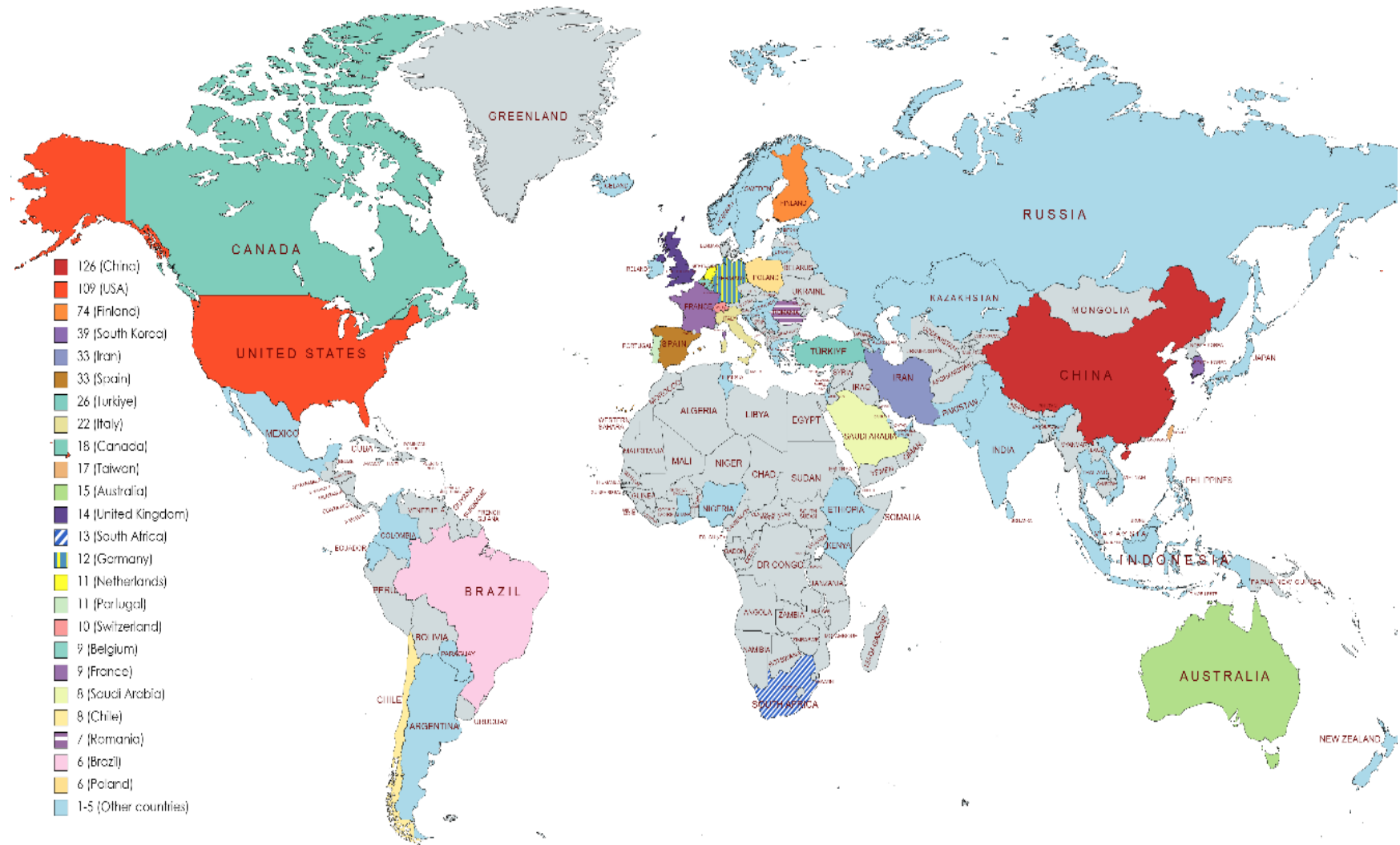
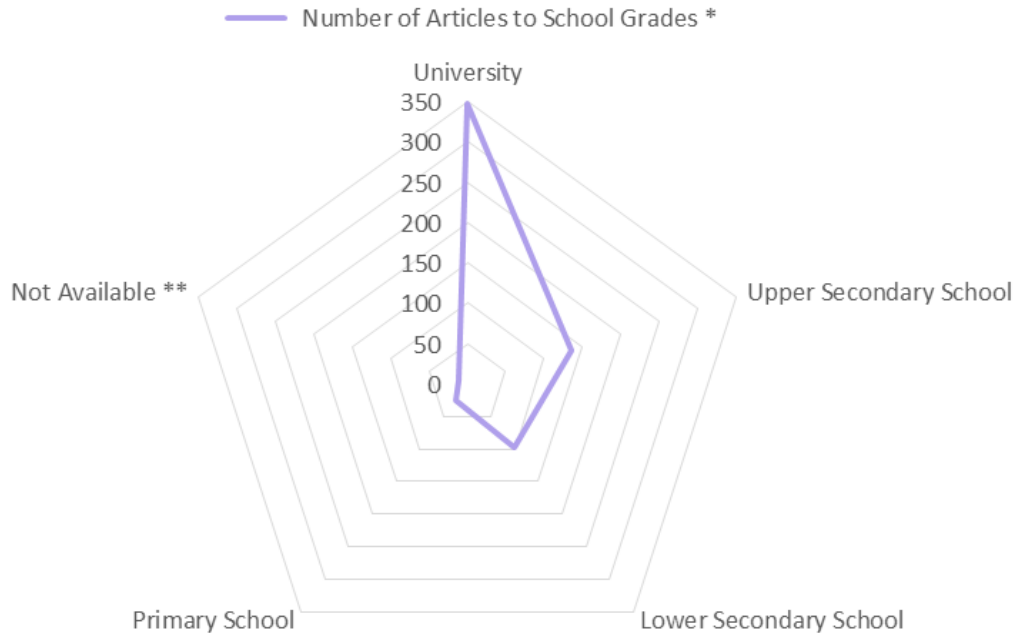


Figure 5

Distribution of articles to School Grades *

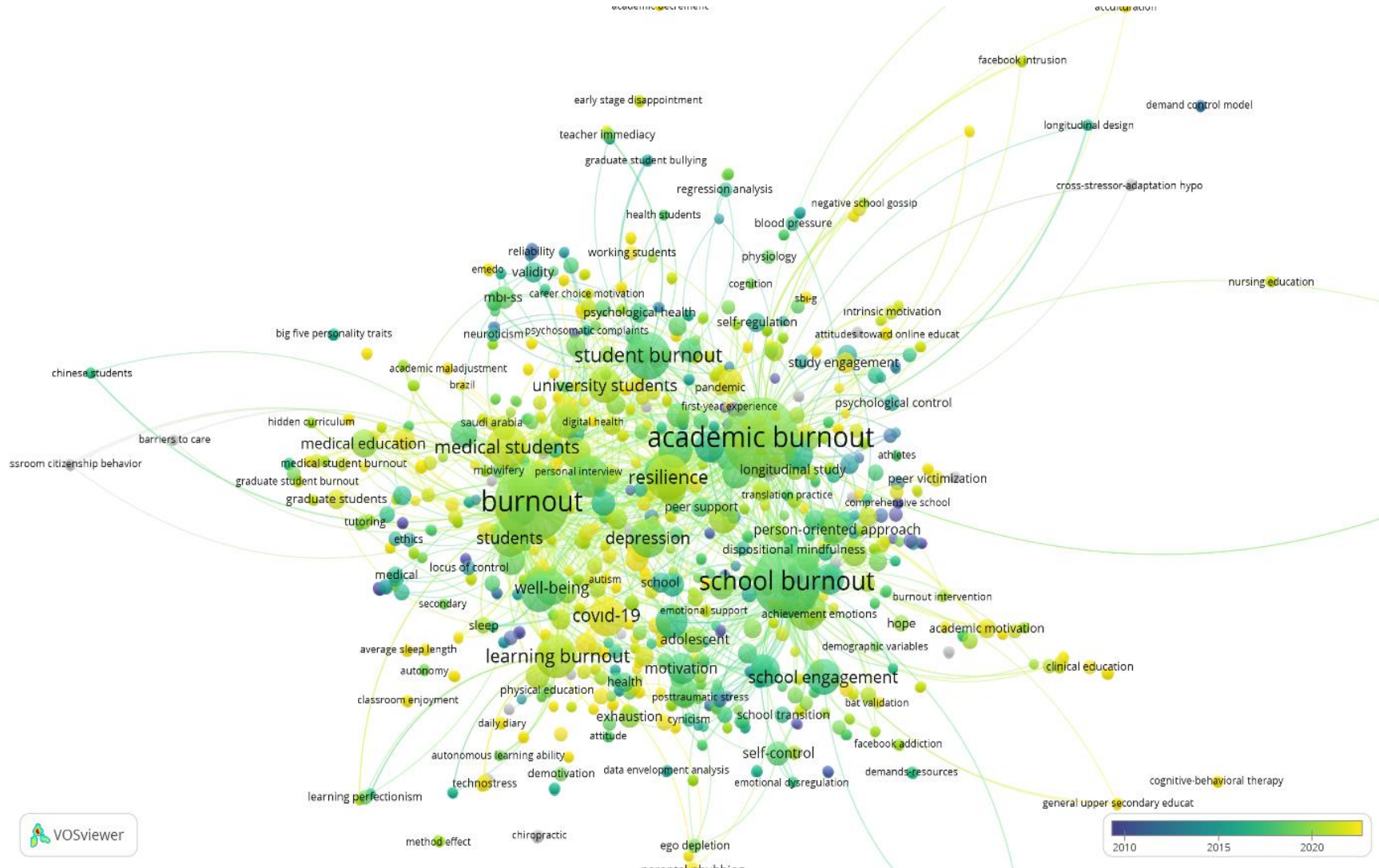


Note: * = The term “lower secondary school” is used to refer junior secondary or middle schools and the term “upper secondary school” to refer senior secondary or high schools as there are differences in school types in some countries.

** = The term “not available” refers to articles that have not specified the academic levels of students or any kind of review articles (systematic review, theoretical, meta-analysis etc.)

Figure 6

Networks between keywords in academic burnout articles



According to Table 1, 13 journals published 1% or more of the 570 articles each, while another 256 journals published fewer than 1% of articles on academic burnout. The journal "Frontiers in Psychology" published the highest number of articles on this topic. However, the journal with the highest local citation score (LCS) and global citation score (GCS) was "Learning and Individual Differences." Additionally, the journal with the highest GCS/Nb ratio was "Personality and Individual Differences," while the journal with the lowest GCS/Nb ratio was "Education and Science." Some journals displayed LCS values of zero, indicating that they did not receive any citations from other articles within this collection (i.e., among the 570 articles in this research).

Table 1

Journals by the number of publications and citations received (LCS and GCS)

Journal	Nb	%	LCS	GCS	GCS/Nb
Frontiers in Psychology	47	8.2	0	353	7.51
International Journal of Environmental Research and Public Health	23	4.0	0	246	10.70
Learning and Individual Differences	20	3.5	169	602	30.10
BMC Medical Education	15	2.6	0	132	8.80
Current Psychology	13	2.3	11	52	4.00
Personality and Individual Differences	12	2.1	134	410	34.17
Educational Psychology	9	1.6	23	178	19.78
Journal of Adolescence	9	1.6	24	200	22.22
Psychological Reports	8	1.4	18	86	10.75
Nurse Education Today	7	1.2	21	157	22.43
Education and Science	6	1.1	7	15	2.50
Psychology in the Schools	6	1.1	30	46	7.67
School Psychology International	6	1.1	18	42	7.00
256 journals	--	--	--	--	--

Note: Nb= Number of Articles; LCS= Local Citation Score; GCS= Global Citation Score.

As shown in Table 2, eight authors published at least nine articles on academic burnout, irrespective of author order, while 1,738 authors published eight or fewer articles. "Salmela-Aro, K." published the highest number of articles and had the highest h-index. Among the eight most prolific authors, the articles by "Salmela-Aro, K." boasted the highest LCS and GCS, whereas those by "Chang, E." had the lowest. Additionally, although "Kiuru, N." published fewer papers compared to other authors, her work received more citations, resulting in the highest GCS/Nb value.

Table 2*Authors with the highest number of publications.*

Author	Nb	%	h-index	Institution	LCS	GCS	GCS/Nb
Salmela-Aro, K.	43	7.5	54	University of Helsinki	309	2,503	58.21
Lee, S.M.	26	4.6	23	Korea University	227	384	14.77
Fincham, F.D.	11	1.9	9	Florida State University	89	216	19.64
Fiorilli, C.	10	1.8	16	Universita LUMSA	66	184	18.40
May, R.W.	10	1.8	15	Tallahassee Mem Hospital	89	214	21.40
Aunola, K.	9	1.6	42	University of Jyvaskyla	91	257	28.56
Chang, E.	9	1.6	4	Kangwon National University	26	81	9.00
Kiuru, N.	9	1.6	30	University of Jyvaskyla	82	841	93.44
1,738 Authors	--	--	--	--	--	--	--

Note: Nb= Number of Articles; %= Percent of Total Articles in Dataset; h-index= Total number of papers (N) that have N or more citations in WoS database; LCS= Local Citation Score; GCS= Global Citation Score.

Discussion

The purpose of this study was to provide a bibliometric analysis of the scientific literature on academic burnout in students. Data were collected from the Web of Science database to identify publications relevant to the topic, including cited references, keywords, and bibliographic details. The co-occurrence graph technique was also used to identify potential research areas. To our best knowledge, this is the first study to utilize bibliometric analysis to examine academic burnout in students.

How have publication trends in academic burnout research evolved over time?

First, most publications on academic burnout in students were published in the fields of Education-Educational Research, Psychology Multidisciplinary, Psychology Educational, and Education Scientific Disciplines. Enough research and theoretical support is provided by these four categories in order to establish this topic. The studies in these areas are followed by Public Environmental Occupational Health, Psychology-Developmental, Psychiatry, and Medicine General Internal. Today's education systems aim to enable students to increase their competence in multiple areas (Boateng et al., 2023; Mamatkulova, 2023), perhaps increasing the pressure on students and leading to burnout (Ghods et al., 2023). Although there is no comprehensive research investigating the increase in publications investigating burnout in students, the surge in research into these related fields might have been prompted by the high prevalence of academic burnout among students and its profound effects on mental health (Gerber et. al., 2015;

Vansoeterstede et al., 2023). Moreover, these domains are valuable for determining which aspects of a student's life are directly or indirectly influenced by burnout.

The findings indicated that publications and citations to publications have increased over the years, with 2022 being the year with the most publications. Moreover, it was observed that the number of studies increased between 2010 and 2022, and intensified after 2019. The World Health Organization (WHO) published a report, "Healthy Workplace: A Model for Action, in 2010", which aims to inform employers, workers, policymakers, and practitioners of ways to create and maintain a healthy work environment (WHO, 2010). It is possible that this report may have drawn attention to the concept of burnout. In addition to this, other research (e.g., Barragán Martín et al., 2020; de Oliveira, 2021) reported that the number of studies on burnout increased in 2013 shortly after American Psychiatry Association released the Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition) (DSM-5). It is feasible that the wide coverage of signs and symptoms associated with stress, especially in the work and work environment, led to an increase in studies on burnout after 2013 (American Psychiatric Association, 2013; Hoeboer et al., 2020). In addition to all of this, it is possible that the increase in the number of journals may also have triggered an increase in the number of published articles (Larsen & Von Ins, 2010).

After the release of an alpha version in May 2011 and a beta draft in May 2012, the ICD-11 (International Classification of Diseases 11th Revision) was officially released as a stable version on 18 June 2018 (Aymé et al., 2015; Gaebel et al., 2017). According to the ICD-11, burnout was recognized as a disease for the first time. The ICD-11's beta and alpha versions might have contributed to the surge in burnout research. Furthermore, following the outbreak of COVID-19 and subsequent lockdowns and restrictions, various aspects of people's lives, including the educational system, were impacted. This could have also contributed to the significant number of studies conducted post-2019.

Which countries lead in the volume of publications related to academic burnout?

In terms of location of published articles, three countries had the most publications: China, the United States, and Finland. These countries, institutions, and authors are also leaders in the field of academic burnout-related research among countries, institutions, and authors worldwide. The United States and China, two of the world's most populous nations with vast labor forces, are among the most competitive countries globally (Autor et al., 2013; Autor et al., 2016). In such competitive nations as the USA and China, the education systems are demanding, academic pressure is high, and students vie for academic success, heightening the risk of student burnout (Hammond, 2016). A cross-cultural comparison between Chinese and American students revealed a decline in motivational beliefs (e.g., mastery orientation) for both groups (Wang & Pomerantz, 2009). The significant volume of academic burnout research conducted in these countries might be linked to the high prevalence of academic burnout and diminished motivational beliefs among their students.

Who are the leading authors in academic burnout research?

The educational standards in Finland are high, and academics often conduct research addressing issues such as stress and burnout in order to maintain this high standard (Read et al., 2022; Tuominen-Soini & Salmela-Aro, 2014). Moreover, leading burnout researcher Salmela-Aro, K.

authored the highest number of studies originating from Finland. This may contribute to the increase of knowledge on this subject in the country and its inclusion in the literature.

In which journals are the majority of academic burnout studies published?

“Frontiers in Psychology” was found to have published the most articles (8.2%) among 269 journals (see Table 1). The journal with the highest GCS/Nb ratio was “Learning and Individual Differences”. On the other hand, “Education and Science” had the lowest score. Likewise, in a bibliometric analysis, Frontiers in Psychology and Public Health journals appeared to be the most frequently published journals on stress and burnout during the pandemic (Gómez-Domínguez et al., 2022). In research concerning burnout in nursing in Spain, "International Journal of Environmental Research and Public Health" emerged as the most productive journal (Barragán Martín et al., 2020). These results align with the findings of the current study. Moreover, interdisciplinary journals have consistently been at the forefront of burnout studies (Marín et al., 2013).

What keywords frequently appear in academic burnout research articles?

Finally, the authors' keywords suggested that studies of academic burnout in students remain of interest based on the co-occurrence of terms and novel topics. Working students, pandemic, COVID-19, technostress, digital health, attitudes toward online education, motor control, and classroom enjoyment are some concepts that have emerged from the network/relationship between keywords (see Figure 6). As a result of the COVID-19 pandemic and its aftermath, academic burnout studies among students were also affected (Sveinsdóttir et al., 2021; Zis et al., 2021). The use of technology and tools utilizing technology has been demonstrated in recent studies. This may be a consequence of the restrictions, isolation, and closures imposed during COVID-19.

Limitations and Future Research

The bibliometric analysis of this study, while thorough, comes with certain limitations. Primarily, our reliance on the WOS database limited our references to empirical studies and peer-reviewed articles, potentially overlooking significant research from other databases or grey literature such as conference proceedings, theses, and government reports. Additionally, while the literature review and consultation with field experts informed our keyword selection, emerging terms or less commonly used descriptors might have been missed. The study's language bias, focusing primarily on English articles, could also have excluded crucial insights from non-English research. Future endeavours in this domain might consider expanding their data sources, incorporating multilingual research, and being vigilant about the evolving nature of keywords and terminologies.

Although bibliometric analyses provide a general view of the research and trends, they cannot provide sufficient evidence to establish a causal relationship. It is important to note that while this study provides an overview of the number of academic burnout papers that have been published within a given geographical area, it does not provide a proportion of the total number of education studies papers published in that area over a given period of time. It is, therefore, difficult to establish a causal relationship based solely on the number of articles published in journals. Researchers may need to determine the total volume of research conducted in the regions and

highlight the significance of the subject of interest within this volume of research. For this reason, it is recommended that future studies adopt a methodology that can establish a causal relationship.

In this study, burnout was found to be a topic studied in various fields. In order to mitigate the effect of burnout on students, considering the multidimensional nature of burnout should be part of the development of educational systems and educational policies. To prevent burnout resulting from high standards that increase the pressure and expectations on students, balanced programs might be implemented, and a supportive environment might be established. Researchers should focus on interdisciplinary research that supports students incorporating education, psychology, and public health (see Figure 2) and strive to develop educational programs that can be implemented.

Conclusion

A bibliometric analysis was undertaken to evaluate research trends in academic burnout. Among all nations, China, the United States, and Finland emerged as the most prolific contributors. These countries also host numerous esteemed research institutions and scholars specialising in this area. Various factors have influenced both the volume and calibre of related works over the years. Insights from keyword relationships reveal a focus on concepts such as working students, the pandemic, COVID-19, technostress, digital health, attitudes towards online education, motor control, and classroom enjoyment. The breadth of disciplines addressing student burnout underscores the critical role of interdisciplinary research in this field. It is possible to use this research's results to prepare programs or curricula for students to gain the skills necessary to cope with burnout. Educators may also benefit from the results as they establish ties with leading networks and research institutions (see Table 2) in order to address the challenges associated with this phenomenon.

Conflict of Interest

The authors disclose that they have no actual or perceived conflicts of interest. The authors disclose that they have not received any funding for this manuscript beyond resourcing for academic time at their respective university. The authors have not used artificial intelligence in the ideation, design, or write-up of this research as per Crawford et al. (2023). The authors list the following CRediT contributions: Study conception/design; AK, OB, MS. Data collection; AK, OB, MS. Analysis; AK, OB; MS. Drafting of manuscript; KAA, AK, OB. Statistical expertise; MS, OB. Administrative/technical/material support; KAA. Review & editing; KAA. Supervision: KAA.

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