Analysis Trends of Burnout Syndrome among Teachers: a Bibliometric Study

Análisis de la tendencia del Síndrome de Burnout en profesores: un estudio bibliométrico

Natália Cunha da Silva[1] https://orcid.org/0000-0002-9083-6244

José André Villas Boas Mello[1*] https://orcid.org/0000-0002-0628-9664

[1]Federal Center for Technological Education Celso Suckow da Fonseca. Rio de Janeiro, Brazil.

*Autor para la correspondencia: jose.mello@cefet-rj.br

ABSTRACT

Teachers are constantly exposed to high levels of stress that can affect their health mental and emotional. Furthermore, the teacher's workday never ends at the workplace. It requires preparation, planning, correction, among other activities that overload the worker that can affect their physical health. This article uses bibliometric analysis to present the studies of the incidence of burnout syndrome among teachers. The analysis was performed using the Scopus and Web of Science databases, in the period up to December 2021, aiming to search original and review articles in the English language regarding burnout in teachers professionals. The most productive period with regards to the number of publications was between 2019 and 2021. The total of 2073 articles contributed to the topic burnout among teachers, with an average of 12,05 citations per documents. The three most productive countries were Spain, with 290 frequencies, followed by the United States, with 197, and Brazil with 174.

RESUMEN

Los docentes están constantemente expuestos a altos niveles de estrés que pueden afectar su salud mental y emocional. Además, la jornada laboral del docente nunca termina en el lugar de trabajo. Requiere preparación, planificación, corrección, entre otras actividades, que sobrecargan al trabajador y puede afectar su salud física. Este artículo utilizó el análisis bibliométrico para presentar los estudios sobre la incidencia del Síndrome de Burnout entre los docentes. El análisis se realizó utilizando las bases de datos Scopus y Web of Science, en el período hasta diciembre de 2021, con el objetivo de buscar artículos originales y de revisión en idioma inglés sobre el desgaste profesional en docentes. El período más productivo en cuanto al número de publicaciones fue entre 2019 y 2021. El total de 2073 artículos contribuyeron al tema burnout entre docentes, con un promedio de 12,05 citas por documento. Los tres países más productivos fueron España, con 290 frecuencias, seguido de Estados Unidos, con 197, y Brasil con 174.

Palabras clave: síndrome de burnout, docentes, estudio bibliométrico.

Introduction

The burnout concept was first described in the 1970s and originally referred to a reaction on interpersonal job stressors.[1,2] The word burnout, of English origin, can be translated as "to burn yourself completely" and was created by the German Herbert Freudenberger in 1974.[3,4] At that time, he worked 12 hours a day and still performed care at night, until he fell into bed from the physical and mental exhaustion resulting from the insane workday. In a terminal stage a state of physical, emotional and mental exhaustion will occur from which it is hard to recover.[5]

One of the most prominent definitions describes burnout "as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with people".[6,7,8,9] Feelings of guilt have also been identified as a symptom of depression. Some studies have concluded that burnout and depression are not separate entities.[10] In 2020, with the COVID-19 pandemic, teachers faced new challenges. Classes, which were previously held in classrooms, now take place online. Teachers had to adapt to a new universe of digital planning in a short time, the workday became indefinite and stress increased significantly. Therefore, many teachers were diagnosed with burnout syndrome, needing to leave work, take medication, among other disorders. This fact can certainly be linked to the increase in the volume of publications on this topic since then.

As a way for identifying evidences and trends in studies on burnout in various branches of the labor market, researchers monitor and seek to understand the research in evolution and with greater repercussion,[11,12,13,14] so researchers can work on it and develop preventive strategies to overcome this problem. Thinking to contribute to the information science toward the theme, this article aims to make a bibliometric analysis to present a study of burnout syndrome incidence among teachers. The analysis was performed using the Scopus and Web of Science databases, in the period up to December 2021.

Bibliometric is the application of quantitative analysis and statistics to publications such as journal articles and their accompanying citation counts.[13] Analysis of the citation counts can reveal the most productive authors, countries, institutions, and journals within a particular research area.[15]

In actual days accelerated social transformations create new challenges to education and training systems.[16] In 2020, with the COVID-19 pandemic, teachers faced new challenges. Classes, which were previously held in classrooms, now take place online. Teachers had to adapt to a new universe of digital planning in a short time, the workday became indefinite, and stress increased significantly. Therefore, many teachers were diagnosed with burnout syndrome, needing to leave work, take medication, among other disorders. This fact can certainly be linked to the increase in the volume of publications on this topic since then.

The bibliometric study aims precisely this: to know and present how much science has advanced in relation to all parameters involving a given topic.[17,18,19] The study analyzes the volume of published productions, the main authors interested in the subject, main journals (where this knowledge is), among other important analyzes to facilitate the

understanding of the data of a given research. In addition to this introduction, which presents definitions of burnout, and the purpose of the article. The methodology, results, conclusion and references are presented below.

Methods

Study design

The principle of bibliometrics is to analyze scientific or technical activity through the quantitative study of publications and its main objective is the development of increasingly reliable indicators. The bibliometric analysis aimed to map and investigate the scientific production of burnout syndrome in teachers.

Study source

Scopus and Web of Science were the databases chosen for conducting the research and data collection. The choice was made due to the number of indexed journals and the wide coverage of international publications relevant to the topic.

Search strategy

The sample included all the articles of the databases, excluding 2022, using search terms in English combined through Boolean operators. The databases were used to retrieve the relevant publications using the following search string: (TITLE: "burnout syndrome" AND "teacher" OR "teachers").

Data collect

The study included original and review articles, covering some aspect of the burnout syndrome in teachers, in all languages. Excluding duplicate publications and the year 2022. After selecting studies relevant to the research, the data set for bibliometric analysis was formulated.

The flowchart presented in figure 1 indicates the steps in the selection process of articles used in the research. The process starts with a total of 2836 articles (2734 in Scopus and 102

on the Web of Science) were identified. After applying the exclusion criteria, 2,799 articles (2697 in Scopus and 102 in Web of Science) were recovered. An analysis of the documents was developed based on the reading of titles and abstracts, through the R software. Thus, 726 duplicate documents were excluded. At the end of the steps, this bibliometric review included 2073 studies to develop the analysis.
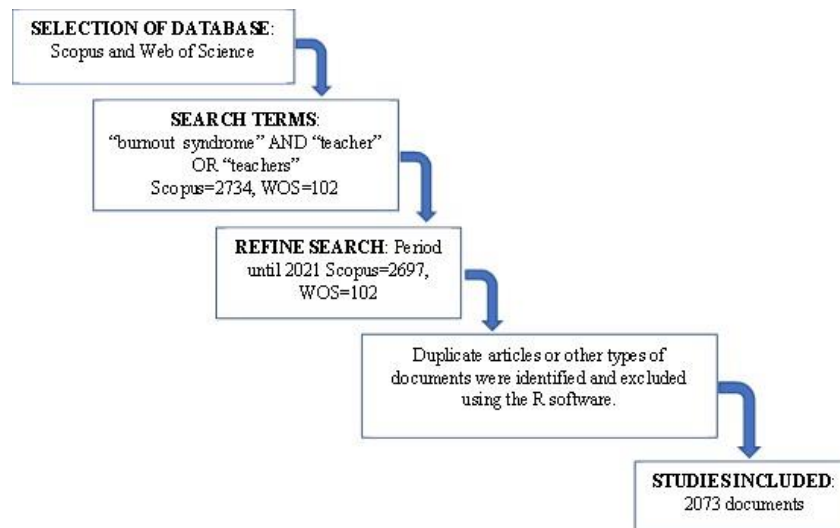

Fig. 1 – Bibliometric review sampling flowchart.

Bibliometric analysis

The collected data were exported to bibliometrix R-package. This one package offers tools that allow descriptive analysis, statistics, graphics and scientific mapping. Bibliometrics is a type of analysis based on the identification of all information contained in publications about a certain topic. Bibliometric methods aim to quantitatively evaluate a scientific production, allows the discovery emerging trends in articles and journals, making it possible to explore the knowledge determined theme from the analysis of the existing literature. This analysis can identify the institutions, authors, places and most impactful journals in a given area of knowledge, can identify citations patterns, and can identify research topics and research trends based on the literature as well.

Results

This study selected the following scientific indicators to analyze the documents:

- Volume and types of publication.

- Annual scientific production.

- Top 10 most relevant sources.

- Top 10 source impact.

- Top 10 most global cited publications.

- Authors' production over time.

- Scientific production by country.

- Top 10 most relevant institutions.

- Most cited country.

- Mapping of the 10 most frequent keywords of the authors and databases.

- Trending topics.

Main Information about Data

The research carried out until 2021 found the first published document related to the topic in 1999. The most recurrent type of document was article, 1761, about 85%. These documents showed a total of 110338 references and were published in 958 sources. The average citation per document in the period from 1999 to 2021 was 12.05, and they were written by 6904 authors, with an average of 0.3 documents per author. Below, in Table 1, the compilation of these data can be read.

Table 1 - Main information about the bibliometric study

Description	Results
Main information about data	
Timespan	1999:2021
Sources (journals, books, etc)	958
Documents	2073
Average years from publication	5.45
Average citations per documents	12.05
Average citations per year per doc	1.626
References	110338
Document types	
Article	1761
Book	15
Book chapter	51
Conference paper	46
Others	27
Proceedings paper	18
Review	155
Document contents	
Keywords plus (ID)	3507
Author's keywords (DE)	3709
Authors	
Authors	6904
Author appearances	8458
Authors of single-authored documents	183
Authors of multi-authored documents	6721
Authors collaboration	
Single-authored documents	196
Documents per author	0.3
Authors per document	3.33
Co-authors per documents	4.08
Collaboration index	3.58

Source: Authors.

Annual Scientific Production

Figure 2 shows the number of articles published per year until 2021. The first publications in the databases took place in 1999. In 2021, publications broke the 400-article mark, corresponding to the highest production in the analyzed period. The annual growth rate was exponential, especially in the last 3 years, with an increase from 2018 to 2019 of almost 100 articles. The number of publications per year remained below 100 publications until 2015, when considerable growth in the number of publications began. Between 2018 and 2021, the number of publications more than doubled.
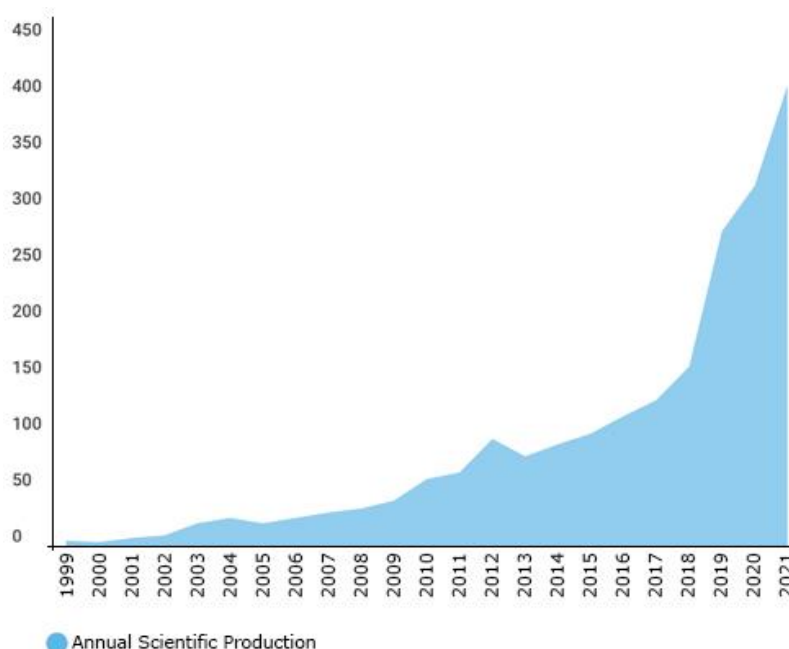

Fig. 2 – Number of published articles per year.

Top 10 Most Relevant Sources

The published articles retrieved gathered 958 different sources. Figure 3 shows the those that contributed the most with published documents. The number of publications that the top 10 journals produced was 330, representing 34.45% of the total publications until 2021. The three most productive sources were the "International Journal of Environmental Research and Public Health", with 112 articles published in the period from 1999-2021,

followed by "Frontiers in psychology" with 72 articles and the "Sustainability" with 26 articles.
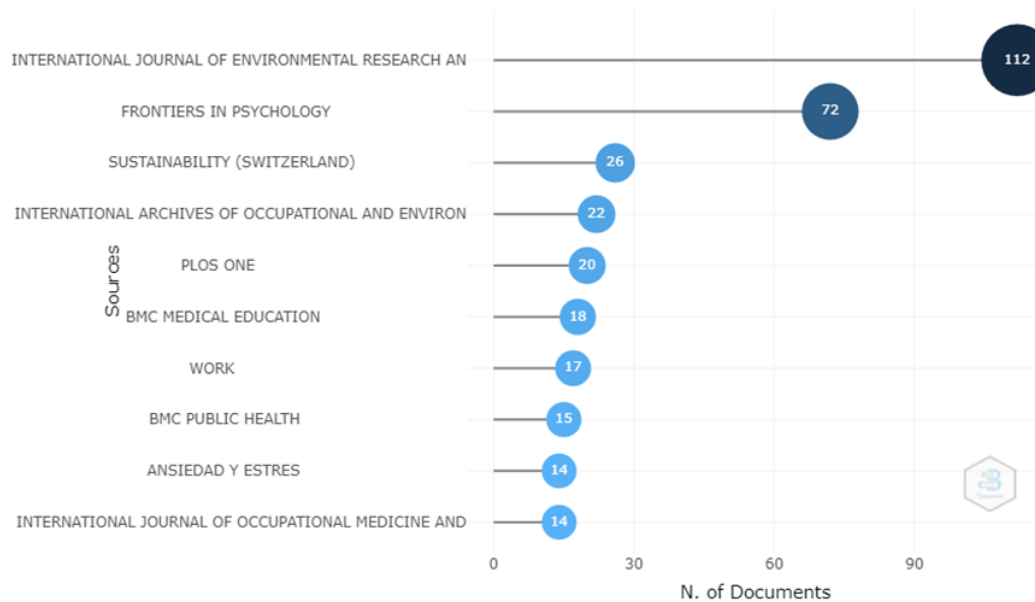

Fig. 3 – Top 10 most relevant sources.

Top 10 Source Impact

The average number of citations per document was 12,05. Table 2 presents the top 10 sources of impact, based on the number of quotes. As shown in the table, the three most cited sources were "Journal of Occupational Health psychology" (1187 documents), "Journal of Applied Psychology" (1140 documents) and "Frontiers in Psychology" (862 documents), with citations starting in 2017, 2007 and 2015, respectively.

Table 2 - Top 10 source impact

Element	Total Citations	PY_start (year that started)
Journal of occupational health Psychology	1187	2017
Journal of applied Psychology	1140	2007
Frontiers in Psychology	862	2015
International archives of occupational and environmental health	772	2005
International journal of environmental research and public health	650	2015

Jama - journal of the American Medical Association	522	2015
Patient education and counseling	373	2010
Bmc public health	365	2009
Clinical Psychology Review	343	2015
Social Psychology of Education	343	2003

Source: Authors.

Top 10 most global cited publications

This study investigated the global citation of publications. The global citation refers to the number of citations that an article received considering the entire database. Table 3 shows the top 10 most cited global publications. The three most cited arts globally received 1110, 944 and 522 citations, respectively. The first most cited article[20] was published on *J Occup Health Psychol*. The second most cited article[21] was published on *J Appl Psychol*. The third most cited publication[22] was published on JAMA.

Table 3 - Top 10 most global cited publications

First Author and Journal Name	Total Citations	TC per Year	Normalized TC
Bakker AB, 2017, *J Occup Health Psychol*	1110	185	56,4261
Podsakoff NP, 2007, *J Appl Psychol*	944	59	11,6543
Mata DA, 2015, *JAMA*	522	65,25	24,8816
Awa WL, 2010, *Patient Educ Couns*	373	28,6923	11,5559
Bianchi R, 2015, *Clin Psychol Rev*	343	42,875	16,3494
Schaufeli WB, 2004, *The Handb of Work and Health Psychol: second ed*	339	17,8421	6,179
Goodger K, 2007, *Sport Psychol*	250	15,625	3,0864
Rohleder N, 2014, *Psychosom med*	238	26,4444	15,9306
Hnsel A, 2010, *Neurosci biobehav rev*	238	18,3077	7,3735
Howard S, 2004, *Soc psychol educ*	231	12,1579	4,2104

Source: Authors.

Authors' Production Over Time

Figure 4 shows the production of the main authors over time. The size of the circle represents the number of articles, the darker the color of the circle, the more cited he went for a year. The first circle in the line means when the author started publishing on the analyzed topic. That is, the larger the circle, the greater the number of articles published by year by author. *Carlotto*[23] was the author who published the most in the period, but *Gil-Monte* and *Bianchi* are the ones who produced the most in 2021.
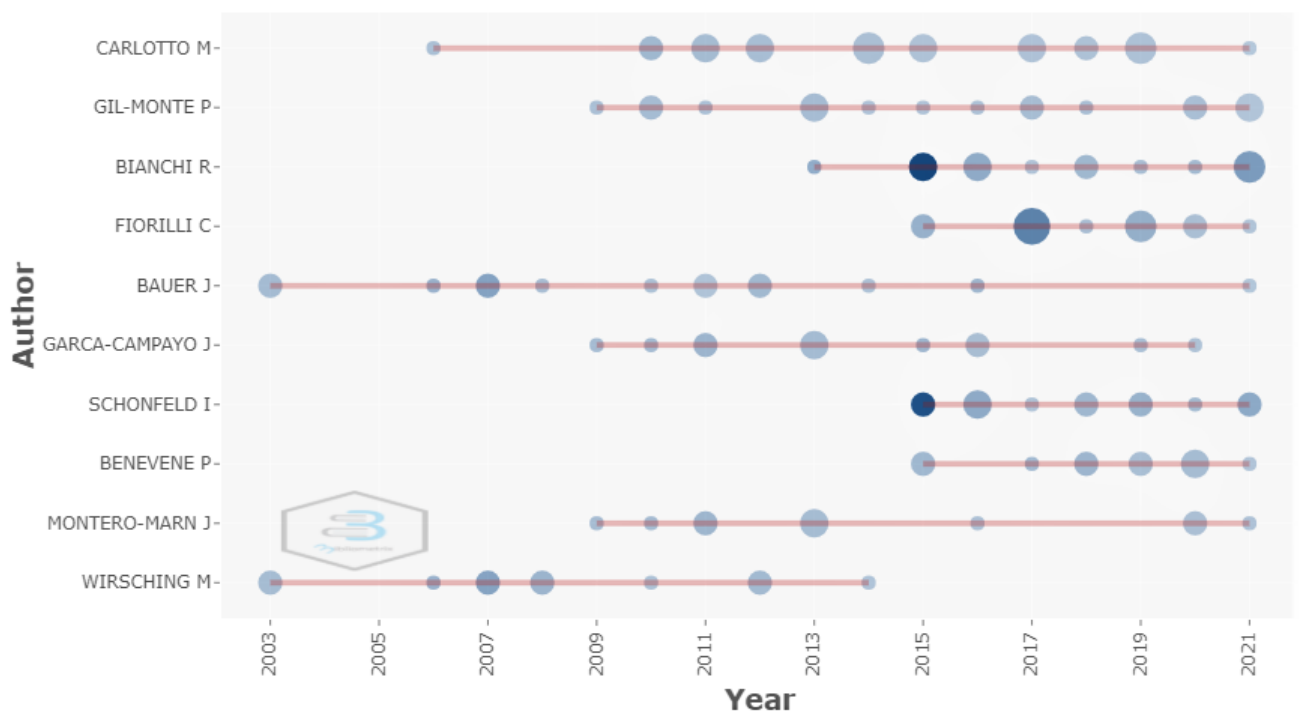

Fig. 4 – Top authors' production over time.

Scientific Production by Country

Figure 5 shows the scientific data production by country. The map was built using "Biblioshiny", from the bibliometric package. The stronger the shade of blue, the higher the productivity rate. The gray color represents that there are no articles related to the research question published in the region. The three most productive countries were Spain, with 290 frequencies, followed by the United States, with 197, and Brazil with 174.
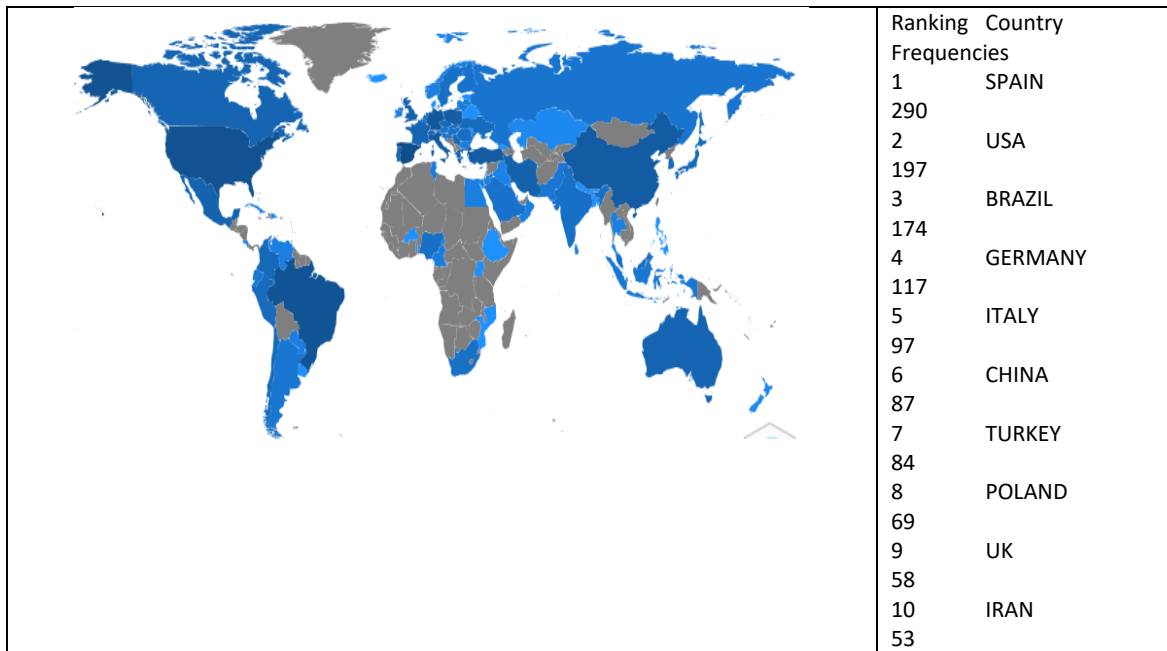
Ranking	Country Frequencies
1	SPAIN 290
2	USA 197
3	BRAZIL 174
4	GERMANY 117
5	ITALY 97
6	CHINA 87
7	TURKEY 84
8	POLAND 69
9	UK 58
10	IRAN 53

Fig. 5 - Scientific production by country.

Top 10 Most relevant institutions

Figure 6 lists the top 10 most relevant institutions. University of Zaragoza was the most relevant institution, with 35 publications, University of Valencia with 34, followed by University of Belgrade and University of Granada, with 28 documents. Five of the top ten most relevant institutions were in Spain.

Fig. 6 - Top 10 most relevant institutions.

Most cited country

Table 4 shows the 10 countries that contributed the most to the development of research on the topic. The three most cited countries were the United States of America (3995 citations), Spain (2797 citations) and the Netherlands (2319 citations). The number of citations in the USA corresponds to 24.31% of the citations in the 10 most cited countries.

Table 4 - Most cited countries

Ranking	Country	Total Citations	Ranking	Country	Total Citations
1	USA	3995	6	France	952
2	Spain	2797	7	China	917
3	Netherlands	2319	8	Italy	774
4	Germany	2218	9	United kingdom	684
5	Brazil	1115	10	Switzerland	662

Source: Authors.

Mapping of the 10 Most Frequent Author's keywords and Keywords Plus

Figure 7 shows the mapping of the 10 most frequent keywords of authors and databases. The keyword most used by the authors was "burnout" (966 occurrences), followed by "teachers" (183 occurrences) and "stress" (168 occurrences).
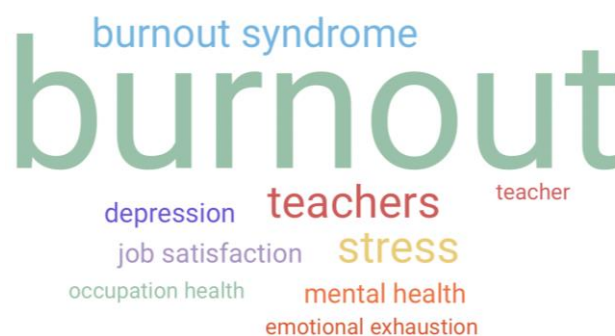

Fig. 7 – Author's keywords.

On the other hand, the keywords most frequently provided by the databases were "burnout" (1255 occurrences), followed by "female" and "male" (1044 and 1012 occurrences, respectively) and "adult" (957 occurrences). The purpose of the keywords is to reflect the

focus of the entire study carried out, in addition to pointing out trends in future related research. In this study, they provide the following ideas: stress, depression, burnout at work, job satisfaction, mental health, among others.

Trending topics

Figure 8 shows the trending topics from 2017 onwards when the term "burnout syndrome" first appeared. The size of the circle represents the frequency of the terms provided by the authors in the keywords, following the Biblioshiny (minimum frequency parameters of five words and five words per year). In 2018, "burnout" is the most expressive term according to the analysis. In 2021, it was possible identify the following terms: "COVID-19", "pandemic", "occupational burnout", "psychological distress" and "china". In March 2020, the beginning of the COVID-19 pandemic was declared.

The studies produced since then may reflect the impacts of this situation, considering that education professionals had their routines and working hours highly impacted by the home office. The COVID-19 pandemic has affected the education system in the world, which has led to a massive shift to online education, influencing everyone involved. Educational institutions did their best to transform curriculum into an online format, trying to minimize the negative impact of the rapid changes on the educational process and to ensure the success of teaching. Transforming all existing classes and meetings online simultaneously in literally a few days is a test of organizational agility and a challenge for all participants in the educational process.[24]

Fig. 8 – Author's keywords plus.

Based on pandemic days, figure 9, several studies indicate that some teachers developed fatigue, exhaustion and anguish in the face of so much uncertainty, novelty and demand.
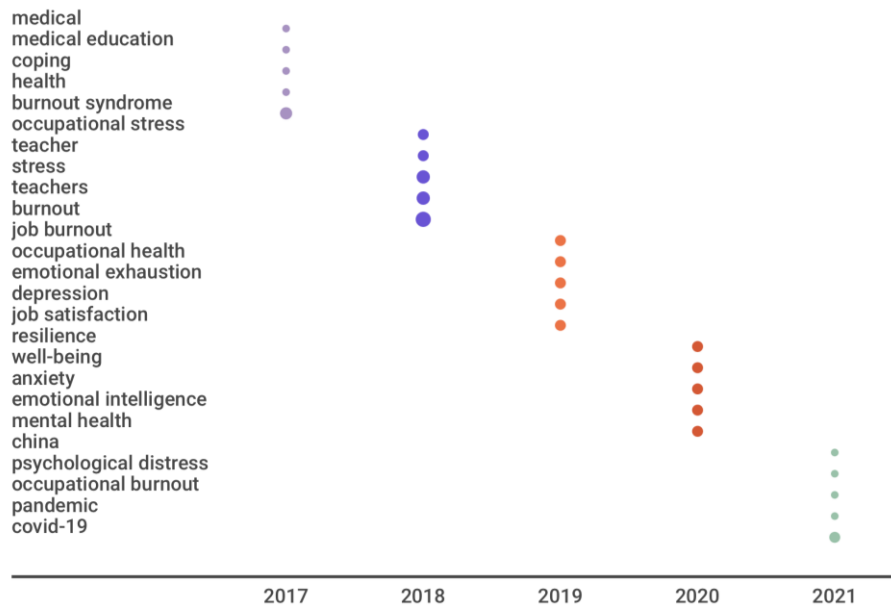

Fig. 9 – Trending topics.

The impact of the pandemic on the mental health of education professionals is a research gap where many authors found research opportunities, which justifies the growing number of publications in this period.

Discussion

For this study, all documents in the databases were counted using the search terms. After the articles obtained were verified based on the inclusion and exclusion criteria, 2073 articles were used to perform the bibliometric analysis. Among the publications retrieved for this study, 84.95% were articles. Regarding the research developed in the sample, some considerations can be observed and extracted. The first articles were published in 1999. The annual scientific production increased over the time analyzed (1999-2021), mainly in the last 3 years studied, between 2018 and 2021. In the latter, publications surpassed the mark of 400 articles. Therefore, it is clear that there is a concern in producing knowledge about the subject, considering that the burnout syndrome can influence the mental health of the education professional and, consequently, the quality of this teaching.

The published articles retrieved gathered 958 different sources. The number of publications that the top 10 journals produced was 330, representing 34.45% of the total publications until 2021. Among these, the three most productive sources were the "International Journal of Environmental Research and Public Health" from Switzerland, followed by "Frontiers in psychology" from Belgium and the "Sustainability" from Switzerland. In contrast, in order of importance, the five most productive countries were: Spain, USA, Brazil, Germany and Italy. The five most cited included USA, Spain, Holland, Germany and Brazil. In the bibliometric indicator of the ten most relevant institutions, five institutions were located in Spain. The University of Zaragoza, Spain, was the most productive affiliation, contributing 35 articles. The average number of citations per document was 12.05 by 2021. The most cited article[19] published on Journal of Occupational Health Psychology presented the job demands-resources (JD-R) model that provides evidence for the buffering role of various job resources on the impact of various job demands on burnout to promote employee well-being and effective organizational functioning.

The article with the highest number of citations in the databases (global) was published in 2017. In the challenging routine of teachers, they have to not only prepare and teach classes, but also correct work and activities, deal with conflicts, in addition to often taking work home and not having the proper recognition. Work activities, when pathogenic, can affect the body of workers, causing dysfunctions and biological injuries and psychic reactions (Ministério da Saúde do Brasil, 2001) with emphasis on the increase in work-related illnesses expressed through mental disorders, that can lead to the development of occupational diseases, such as Burnout Syndrome in teachers.

This syndrome is quite common among these professionals, as they are exposed to several risk factors, such as stress, long working hours and lack of professional recognition. Burnout syndrome is a complex problem and an important predictor in modern workplaces, substantially increasing its prevalence in recent years, especially with the covid 19. The pandemic caused by COVID-19 brought several changes to the lives of professionals, who had to adapt quickly to the home office. Professionals had to reorganize their workspaces and transfer work to the home environment.

The COVID-19 pandemic has brought a sense of urgency and adaptation for teachers. According to *Rodrigues*,[25] there are many challenges: technological support for students to monitor remote activities, standardization of actions and procedures, teacher training. In

addition, social isolation, fear and threat of the disease, living with the idea of death. Since then, the major concern has been the emotional instability of these professionals.

Studies carried out by *Carlotto*[30] show 5.6% of teachers with a high level of emotional exhaustion, 0.7% with depersonalization and 28.9% with low professional achievement. Although *Bouza* and others have recently impact articles,[26] *Carlotto* was the author who published the most in the studied period. The keywords most used by the authors was burnout (966 occurrences), teachers (183 occurrences); in addition to words that reflect the condition of these professionals as "stress", "depression" and emotional exhaustion". As of 2017, it was possible to observe the trend of studies addressing terms on keywords such as "burnout syndrome", "occupational burnout", "mental health", "job satisfaction", "depression" and "emotional exhaustion". And from 2020, new trends linked to the study will emerge, such as: "china", "pandemic" and "COVID-19". These terms demonstrate what could be developed in the study and future research trends. This analysis indicates a likely increase in the number of publications assessing the impact of the COVID-19 pandemic on teachers' mental health.

Conclusion

This study analyzes trends in research and scientific production on burnout syndrome among education professionals. Based on bibliometric indicators, the publications were investigated at a global level indexed in the Scopus and Web of Science databases. Research indicates that, although the first article was published in 1999, research on burnout syndrome has substantial growth from 2017. In the sample, there are few investigations that provide prevention strategies, which indicates the importance of developing specific studies on interventions that try to reduce stress and burnout in education professionals. Currently, COVID-19 appears as the most used term in research, demonstrating the possibility of developing studies that associate burnout with the pandemic.

The article makes possible to observe studies trends addressing terms on keywords such as "burnout syndrome", "occupational burnout", "mental health", "job satisfaction", "depression" and "emotional exhaustion". Also make possible discover that the researchers adopted the job demands-resources (JD-R) model to understand different health conditions

of Jobs. As a suggestion for future studies highlights the possibility of carrying out a systematic review that can identify critical factors of different professions on the return to face-to-face work after the pandemic days.

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Conflict of interests

Authors declare that they have no conflict of interest.

Author contributions

Conceptualization: Natália Cunha da Silva.

Data curation: Natália Cunha da Silva.

Formal analysis: Natália Cunha da Silva, José André Villas Boas de Mello.

Software: Natália Cunha da Silva.

Supervision: José André Villas Boas Mello.

Resources: Natália Cunha da Silva.

Research: Natália Cunha da Silva.

Methodology: Natália Cunha da Silva.

Writing – original draft: Natália Cunha da Silva, José André Villas Boas de Mello.

Writing – proofreading and editing: Natália Cunha da Silva, José André Villas Boas de Mello.