

Burnout among Nurses: A Bibliometric Analysis of the Global Publications

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Objective: To investigate the current situation, trending subjects, and future directions in the field of burnout among nurses, and to serve as a resource for researchers conducting related research.

Methods: The bibliometric analysis was carried out using R package “bibliometrix”, bibliometric online analysis platform (<https://bibliometric.com/>) and VOSviewer (1.6.18).

Results: The leading countries that had a significant impact on this field were the USA and China. University of Pennsylvania was the most influential institution. Journal of Nursing Management was the top productive journal. Critical care, oncology care, acute care, and infectious disease care were more likely to lead to symptoms of burnout among nurses. “Mental health”, “job satisfaction”, “stress”, and “COVID-19” were the current hot topics in this field.

Conclusion: Our study not only provides a thorough outline to assist researchers in understanding the leading countries, institutions, journals, and potential collaborators, but it also examines the current and upcoming trends in this field and inspires researchers to select research directions.

Keywords: burnout, nurse, mental health, COVID-19, hotspots, trends

Introduction

Registered nurses represent 59% of health professionals and are the largest occupational group among frontline healthcare workers worldwide, according to World Health Organization statistics.¹ As the backbone of the health system, however, nurses often suffer from mental health issues that come with a stressful work environment and long working hours.^{2,3} Suffering from mental health issues not only affects nurses' health, but also directly contributes to their burnout.⁴ Reduced personal accomplishment, emotional exhaustion, losing a positive outlook toward clients, or depersonalization are all signs of burnout.⁵ Therefore, the emergence of burnout has a decidedly negative impact on the workforce and quality of healthcare, including workforce turnover, increased medical errors, and decreased patient satisfaction.^{6–8} Therefore, there is an urgent need for well-established mechanisms to manage burnout among nurses so that these workforces can be resilient and improve well-being and efficiency at work.⁹

Although burnout among nurses is increasingly recognized as a serious threat to patient safety¹⁰ and standard of care,¹¹ and has attracted the attention of health administrators, comprehensive bibliometric studies measuring and analyzing global scientific publications are still lacking. A bibliometric analysis of global publications in the field of nurse burnout may provide insights into the current state of the field to help guide future nursing management and promote high-quality research.¹² Therefore, to provide a comprehensive overview of research trends in burnout among nurses, highlight the contributions of leading countries, leading institutions, and authoritative scholars, and provide insight into potential future collaborations and research directions, we carried out the present study.

Materials and Methods

Data Source

The search was conducted in Web of Science on publications from January 1, 2003 to December 31, 2022, with a retrieval date of March 24, 2023. The retrieval strategy was as follows: TS = (nurse OR nurses OR nursing) AND TS = (burnout OR burn-out OR burn out). There were no limitations with respect to the language, and type of documents were limited to article. The included literature was checked manually by two authors independently.

Data Acquisition

Full records and cited references of the obtained publications were downloaded in BibTex or txt formats for further analysis. Moreover, information on the publications, including title, abstract, key words, country, author, institution, source, count of citations, cited references, and the 2021 IF of the top 10 core journals as well as the H-index of the top 10 most productive authors were recorded. Data extraction was conducted by two independent researchers.

Bibliometric Analysis

Bibliometric analysis was performed by R package “bibliometrix”¹³ in R software (4.2.2), bibliometric online analysis platform (<https://bibliometric.com/>) and VOSviewer (1.6.18). In the present study, publication trends, author collaborative networks, institutional collaborative networks, and journal publication trends were constructed using R package “bibliometrix”. The National collaborative networks were analyzed using R package “bibliometrix” and Bibliometric online analysis platform (<https://bibliometric.com/>). Furthermore, co-occurrence of keywords and co-citation relationship of references were analyzed using VOSviewer.

Results

Analysis of Publications

Annual publications on burnout among nurses are presented in [Figure 1A](#). Overall, the number of annual publications has shown a steady upward trend, from 24 in 2003 to 807 in 2022. In the last five years, publications in this area have shown a dramatic increase. The polynomial model fitting ([Figure 1B](#)) ($R^2 = 0.9064$) predicted that the number of publications is expected to rise further in the future. Similarly, the number of citations of publications also showed a steady increasing trend, from 4 in 2003 to 23,514 in 2022. Collectively, these findings suggest that research on burnout among nurses is a popular research focus and enters a stage of rapid development.

Analysis of Countries/Regions

A total of 110 countries spanning North America, Europe, Asia, Oceania, and South America were found to be involved in burnout among nurses, showing global collaboration trends ([Figure 2A](#)). Research in this field has been concentrated in developed countries, with the largest number of studies in North American and European countries. And China, as the world's top economy, was also extensively involved in this area of research. The top three countries in terms of the number of publications were the USA, China, and Australia. The USA was the most frequently cited country, and England was the country with the highest average citations ([Table 1](#)). The USA and China constituted the most important multi-center cooperation network in this field ([Figure 2B](#)).

Analysis of Affiliations

A total of 5915 affiliations were involved in research on burnout among nurses. As shown in [Table 2](#), University of Pennsylvania had the largest number of publications, followed by University of California System, and Harvard University. The University of Pennsylvania was the most frequently cited institution, followed by Western University (University of Western Ontario), and University of Toronto. Notably, the top 10 most prolific institutions are concentrated in North America and Europe. Furthermore, the University of Pennsylvania and University of Toronto constituted the most important multi-center cooperation network in this field ([Figure 3](#)).

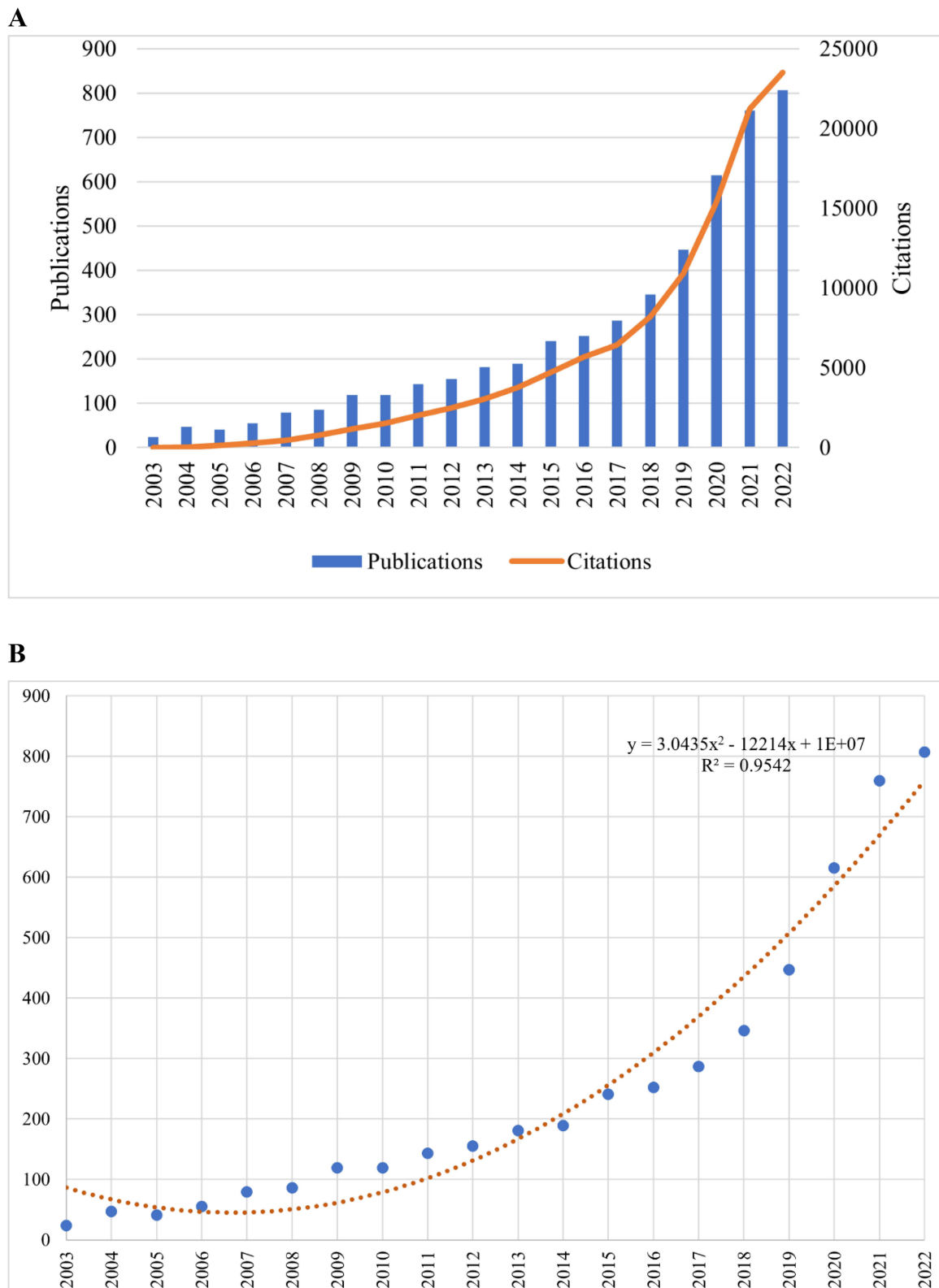


Figure 1 (A) Times cited and publications over time. (B) Curve fitting of the of the annual growth trend of publications.

A



B

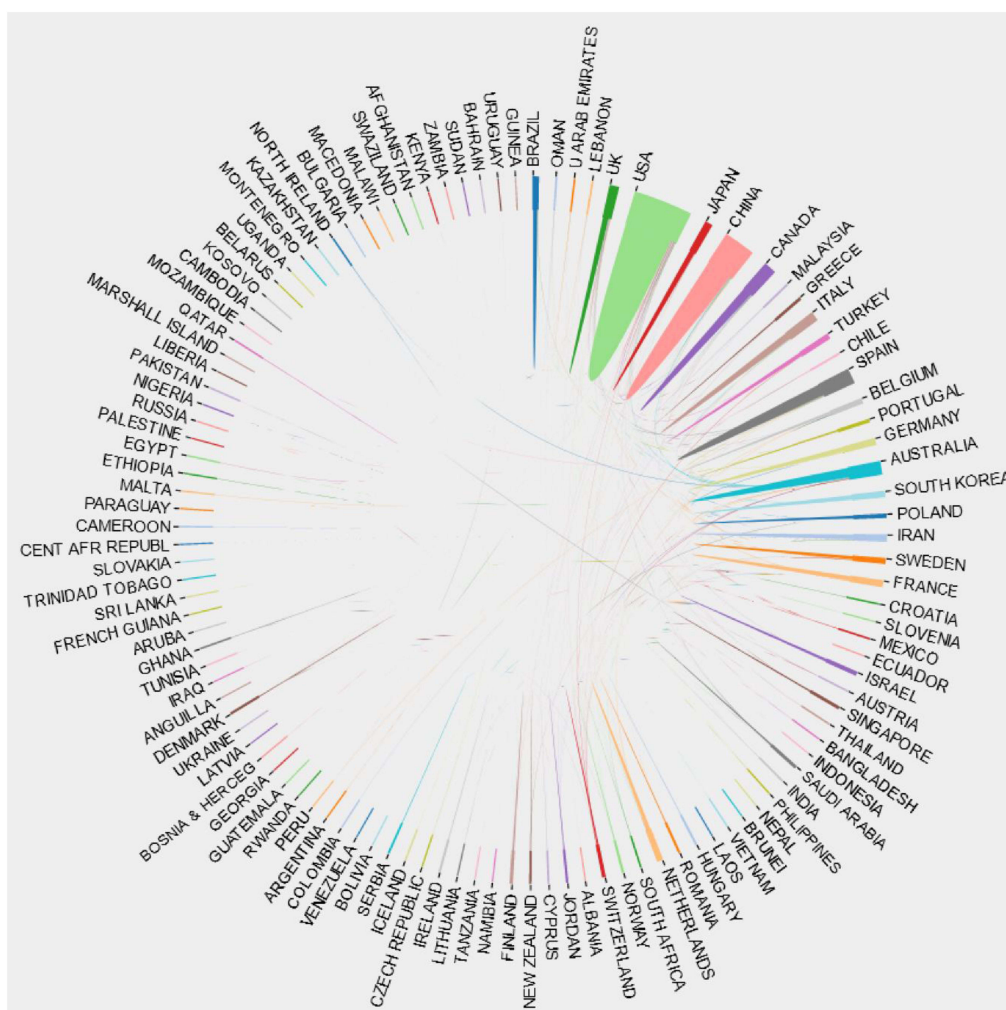


Figure 2 (A) The collaboration network shown on the world map, which was constructed via R package “bibliometrix” in R software. **(B)** Intercountry cooperation network, which was constructed via Bibliometric online analysis platform (<https://bibliometric.com/>).

Notes: The different colors of arcs represent different countries/regions, and the larger the arc area, the wider the international cooperation of the country/region. The line thickness between countries/regions reflects the intensity of the closeness.

Table 1 The Top 10 Productive Countries/Regions

Ranking	Country/Region	Publications	% of (4993)	Total Citations	Average Citations
1	USA	1396	27.96	38,583	27.64
2	China	511	10.23	10,252	20.06
3	Australia	357	7.15	8660	24.26
4	Canada	307	6.15	13,024	42.42
5	Spain	286	5.67	7186	25.13
6	England	262	5.25	7975	30.44
7	Italy	209	4.19	4765	22.80
8	Korea	177	3.54	2918	16.49
9	Turkey	177	3.54	2795	15.79
10	Germany	168	3.36	5317	31.65

Table 2 The Top 10 Productive Affiliations

Ranking	Affiliation	Country	Publications	Total Citations	Average Citations
1	University of Pennsylvania	USA	108	7986	73.94
2	University of California System	USA	107	2386	22.30
3	Harvard University	USA	86	1798	20.91
4	University of Toronto	Canada	79	4323	54.72
5	University of London	England	59	2591	43.92
6	Udise French Research University	France	58	3116	53.72
7	US Department of Veterans Affairs	USA	54	1348	24.96
8	Western University (University of Western Ontario)	Canada	54	4498	83.30
9	Karolinska Institutet	Sweden	54	1847	34.85
10	Veterans Health Administration (VHA)	USA	53	1218	23.42

Analysis of Authors

A total of 17,294 authors contributed to research on burnout among nurses. As shown in Table 3, Aiken LH had the largest number of publications, followed by Laschinger HKS, and Wang L. Aiken LH was the most frequently cited author, followed by Sloane DM, and Laschinger HKS. Furthermore, Aiken LH was the author with the highest average citations, and H-index. Notably, the top 10 most prolific authors are concentrated in North America, China, and Europe. Furthermore, Aiken LH and Wang L constituted the most important multi-center cooperation network in this field (Figure 4).

Analysis of Journals

A total of 709 journals were involved in research on burnout among nurses. As shown in Table 4, Journal of Nursing Management had the largest number of publications, followed by International Journal of Environmental Research and Public Health and Journal of Advanced Nursing. The International Journal of Nursing Studies was the most frequently cited journal, followed by Journal of Advanced Nursing and Journal of Nursing Management. Furthermore, the International Journal of Nursing Studies was the journal with the highest average citations, and IF. Additionally, the number of annual publications of the top five most active journals showed a steady upward trend (Figure 5).

Analysis of Co-Cited References

The number of cited references was as high as 107,886, so the minimum number of references cited was set to 100 to ensure their quality, and 35 articles¹⁴⁻⁴⁸ were finally chosen for co-citation analysis. As shown in Figure 6, cluster 1 (in red) primarily centered on the prevalence and influencing factors of burnout among nurses; cluster 2 (in green) centered on the measurement tools for assessing burnout; cluster 3 (in blue) centered on the impact of burnout on medical care.

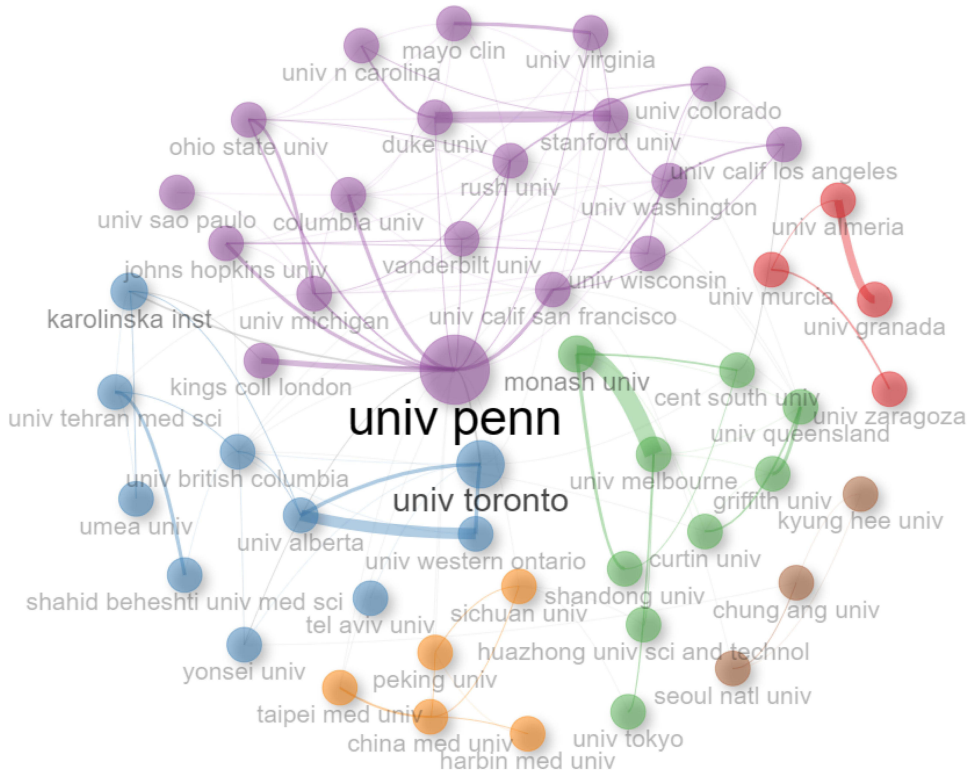


Figure 3 Collaboration between affiliations.
Notes: Each circle represents an affiliation, and the larger the circle, the wider the cooperative relationship. Affiliations with frequent cooperative relationships are clustered into plates of the same color. The line thickness between affiliations reflects the intensity of the closeness.

Analysis of Hotspots and Trends in Research

The six clusters formed by VOSviewer were composed of keywords that appeared more than 20 times. Cluster 1 (in red) and cluster 5 (in purple) centered on critical care, oncology care, long-term care; cluster 2 (in green), cluster 3 (in blue), cluster 6 (in light blue), and cluster 7 (in orange) centered on emotional mental health of nurse; cluster 4 (in yellow) centered on quality of life of nurses (Figure 7A). The most frequently occurring keywords after excluding nurse and burnout were “mental health”, “job satisfaction”, “stress”, and “covid-19”. Furthermore, “COVID-19” and “dpandemic” were the hot topics that have emerged recently (Figure 7B).

Table 3 The Top 10 Productive Authors

Ranking	Author	Country	Publications	Total Citations	Average Citations	H-Index
1	Aiken LH	USA	47	5432	115.57	29
2	Laschinger HKS	Canada	35	3411	97.46	29
3	Wang L	China	25	1003	40.12	17
4	Sloane DM	USA	23	3432	149.22	17
5	Li J	China	19	104	5.47	6
6	McHugh MD	USA	19	1161	61.11	12
7	Perez-fuentes MD	Spain	19	275	14.47	7
8	Van Bogaert P	Belgium	19	1244	65.47	16
9	Wang J	China	18	622	34.56	10
10	Jurado MDM	Spain	17	265	15.59	7

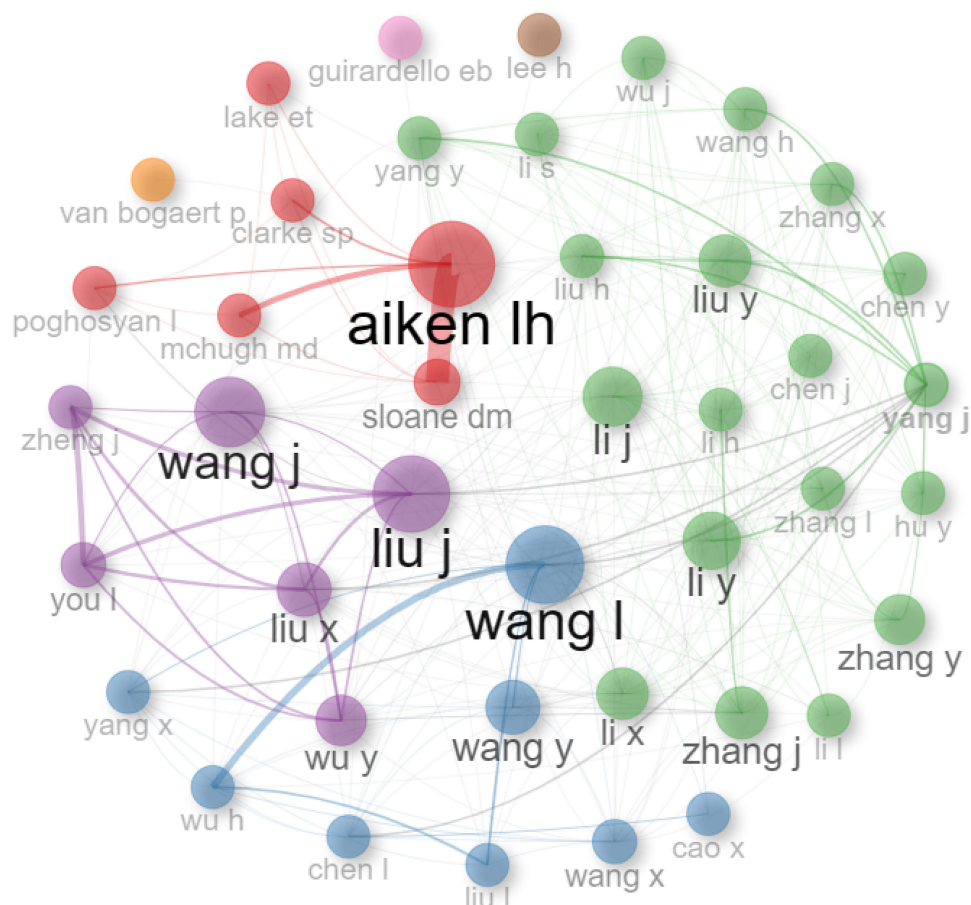


Figure 4 Collaboration between authors.

Notes: Each circle represents an author, and the larger the circle, the wider the cooperative relationship. Authors with frequent cooperative relationships are clustered into plates of the same color. The line thickness between the authors reflects the intensity of the closeness.

Discussion

One of the most significant issues in the medical field is burnout. Research on this syndrome in nurses, in particular, is of particular interest. With the recognition of this syndrome as an occupational disease, there are more and more reports of burnout in academic journals. The recent rise in production may be a reaction to the syndrome's widespread prevalence in nursing.⁴⁹ This study revealed a steady increase in the number of publications, indicating that the issue of burnout

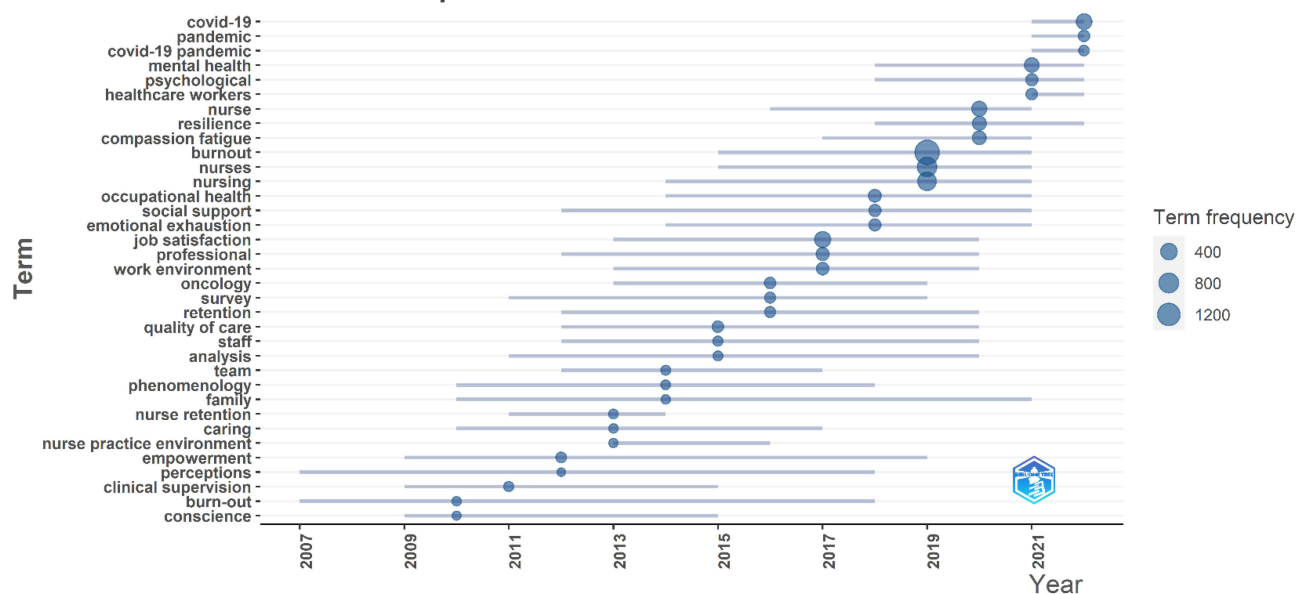
Table 4 The Top 10 Most Active Journals

Ranking	Journal	Publications	Total Citations	Average Citations	2021 IF
1	Journal of Nursing Management	297	8043	27.08	4.680
2	International Journal of Environmental Research and Public Health	233	2892	12.41	4.614
3	Journal of Advanced Nursing	213	9135	42.89	3.057
4	Journal of Clinical Nursing	146	4023	27.55	4.423
5	International Journal of Nursing Studies	142	9658	68.01	6.612
6	PLoS One	107	2471	23.09	3.752
7	Journal of Nursing Administration	96	2475	25.78	1.806
8	Nursing Ethics	68	1543	22.69	3.344
9	BMC Nursing	67	504	7.52	3.189
10	BMJ Open	67	1523	22.73	3.007



Notes: Cluster 1 (in red), cluster 2 (in green), cluster 3 (in blue), cluster 4 (in yellow). The lines between the circles represent the co-citation relationship. The thickness and number of connections between the nodes indicate the strength of links between references.

Trend Topics



Notes: Cluster 1 (in red), cluster 2 (in green), cluster 3 (in blue), cluster 4, cluster 5 (in purple), cluster 6 (in light blue), cluster 7 (in orange). The node size reflects the co-occurrence frequencies and the link indicates the co-occurrence relationship. The thickness of the link is proportional to the number of times two keywords co-occur. The blue bars indicate that the keywords have been published and the red bars indicate citation burstness.

among nurses is of interest to the international scientific community. In 2019, there was a significant increase in interest in burnout among nurses, which marked the turning point. Notably, COVID-19 was first reported in 2019 and its pandemic character caused worldwide panic.^{50,51} The most research on burnout among nurses has come from the USA and China. Five of the top 10 institutions in terms of publications resided in the USA. Furthermore, six of the top 10 authors in terms of publications came from the USA or China. These findings suggest that the USA and China are the leading countries in this field. Furthermore, the USA and China constituted the most important multi-center cooperation network in this field. Collaboration allows researchers to exchange information and expertise, which is essential for the advancement of the discipline. Therefore, closer collaborative networks of more countries, organizations and authors may help breakthroughs in this field. Most articles in this field were published in *Journal of Nursing Management*, indicating that it is by far the most popular journal and that more future research on burnout among nurses could be considered for publication in this journal. Analysis of co-cited references revealed that the prevalence and influencing factors of burnout among nurses, the measurement tools for assessing burnout, and the impact of burnout on medical care form the basis of research in this field. Keyword cluster analysis revealed that critical care, oncology care, long-term care, emotional mental health of nurses, quality of life of nurses were currently the key research directions in this field. Additionally, “mental health”, “job satisfaction”, “stress”, and “covid-19” were the current hot topics in this field. Furthermore, “COVID-19” and “dpandemic” were the hot topics that have emerged recently.

Nurses appear to be more vulnerable to burnout because of their constant, multifaceted exposure to patients, suffering, death, and lack of support from healthcare administrators.⁵² The development of burnout is driven by environmental triggers, which are associated with personal factors (emotional exhaustion, compassion fatigue, moral distress, stress, and personality) and external factors (hospital environment and working conditions).⁵³ The emergence of burnout directly affects nurses’ mental, physical, and behavioral health, reducing their quality of life. More seriously, the safety and productivity of nursing staff is diminished, affecting the quality of patient care and contributing to turnover rates and nurse shortages in the clinic.^{54,55} Notably, the COVID-19 pandemic had adverse psychological consequences for most nurses, and the prevalence of burnout was able to grow rapidly.⁵⁶ Anxiety of getting sick, isolation periods, social distancing, and fear of the future all contributed to the burnout among nurses during the COVID-19 pandemic.^{57,58}

Identifying and reducing burnout symptoms in nurses is a current challenge in nursing management. Preventing and eliminating the negative consequences of burnout among nurses is essential to avoid emotional exhaustion, increased irritability, and reduced job satisfaction, thereby affecting job reference and quality of care.⁵⁹ In their professional obligations, managers must adopt a leadership style that promotes nurses’ motivation, ensures a safe work environment, respects and listens to nurses, consciously builds teamwork with nurses, and enhances education to motivate nurses to acquire knowledge and skills.⁶⁰ In their relationships with patients and colleagues, managers must target their understanding of their employees’ psychological profiles and individualize interventions to prevent and/or manage the appearance of symptoms of burnout.⁶¹ Meditation and positive spiritual coping are among the most powerful tools for dealing with the daily stresses of care in acute and critical care settings.⁵³ Complementary and alternative therapies^{62–64} can also be considered to improve the daily symptoms of stress. For managers, the active introduction and promotion of proven emotion management methods should be given sufficient attention.

The present study can provide some insight into the trends and hot spots in the field of burnout among nurses. However, some limitations must be acknowledged. First, due to limitations of the software used to analyze the data, only literature from the Web of Science was collected, while publications from other databases were not included, which may have resulted in the omission of some key hotspot information. Second, the limitation of using time and article type as inclusion criteria, and the exclusion of some types of publications in other formats and studies from 2023 may have led to the omission of some influential studies.

Conclusion

Although burnout among nurses has gained increasing attention in the nursing field, studies on the management of this occupational syndrome remain lacking. More international and cross-disciplinary cooperation is required to foster development in this field because the majority of the high-contributing institutions and authors were from high-income nations. Our study not only provides a thorough outline to assist researchers in understanding the leading countries,

institutions, journals, and potential collaborators, but it also examines the current and upcoming trends in this field and inspires researchers to select research directions.

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Disclosure

The authors report no conflicts of interest in this work.

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