ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Debriefing in Healthcare Simulation: A Bibliometric Analysis

Gul Sahin Karaduman[1] , **Tulay Basak**[1]

[1]University of Health Sciences Turkey, Gulhane Faculty of Nursing, Ankara, Turkey

ABSTRACT

Purpose: Debriefing facilitates the expression of actions and the rationale behind them, helps the students to correct their mistakes, and improves their knowledge and skills. This study aimed to provide a bibliometric analysis of the publications on debriefing and simulation that were indexed in the Scopus database.

Methods: The bibliometric analysis method was used to analyze relevant Scopus-indexed documents. The publications analyzed in the study were retrieved from the Scopus database using the keywords "debriefing" and "simulation". Bibliometric analysis was used to classify the articles according to country, journals, keywords, and other parameters.

Results: The search produced a total of 326 publications. The articles were mostly published in nursing journals. Thematic analysis of the keywords revealed six themes and 33 keywords. Nine of the ten most cited publications provided information about debriefing session standards.

Conclusion: The publications with the keywords debriefing and simulation appeared in 2004, and the annual increase in these publications indexed in the Scopus database indicated an increase in productivity. The publications mostly appeared in journals of nursing. The keywords used followed the publications' aim and content, mostly related to debriefing and nursing students. The most cited publications provided guiding information for conducting the process of debriefing.

Keywords: Bibliometric analysis; Debriefing; Healthcare; Simulation.

Gul SAHİN KARADUMAN
0000-0001-6723-8572

Tulay BASAK
0000-0001-5148-5034

ÖZET

Amaç: Çözümleme oturumu, eylemlerin ve ardındaki mantığının ifade edilmesini kolaylaştırırken öğrencilerin hatalarını düzeltmelerine, bilgi ve becerilerini geliştirmelerine yardımcı olur. Bu çalışma, Scopus veri tabanında indekslenen "çözümleme oturumu" ve "simülasyon" konusundaki yayınların bibliyometrik analiz yöntemi ile incelenmesini amaçlamıştır.

Yöntem: Scopus indeksli yayınların analizinde bibliyometrik analiz yöntemi kullanılmıştır. Çalışmada analiz edilen yayınlar, Scopus veri tabanından "debriefing" ve "simulation" anahtar kelimeleri kullanılarak elde edilmiştir. Makaleler; ülke, dergi, anahtar kelime ve diğer parametrelere göre bibliyometrik analiz yöntemi ile sınıflandırılmıştır.

Bulgular: Taramada toplam 326 yayın bulunmuştur. Makaleler çoğunlukla hemşirelik dergilerinde yayınlanmıştır. Anahtar kelimelerin tematik analizi, altı tema ve 33 anahtar kelime ortaya çıkarmıştır. En çok alıntı yapılan on yayından dokuzu çözümleme oturumu standartları hakkında bilgi sağlamaktadır.

Sonuç: Scopus veri tabanında indekslenen, "debrifing" ve "simulation" anahtar kelimelerini içeren yayınlar 2004 yılında ortaya çıktı ve yayınlardaki yıllık artış bu konudaki üretkenliğin arttığına işaret etmektedir. Yayınlar, çoğunlukla hemşirelik dergilerinde yer almıştır. Kullanılan anahtar kelimeler, yayınların amacına ve içeriğine uygundu, çoğunlukla çözümleme oturumu ve hemşirelik öğrencileriyle ilgiliydi. En çok alıntı yapılan yayınların ise, çözümleme oturumu sürecini yürütmek için yol gösterici bilgiler sağladığı sonucuna varılmaktadır.

Anahtar Sözcükler: Bibliyometrik analiz, Çözümleme oturumu, Sağlık bakımı, Simülasyon.

Simulation has been an essential auxiliary method in clinical practices in the education of various health professions since the 1950s. It has recently become a permanent method in contemporary health education and training (1). Studies on the effectiveness of simulation-based education in healthcare have found that this method improves the level of knowledge, clinical judgment, skill performance, and self-reflection in a controlled and safe environment (1,2).

The simulation is composed of three basic stages. The first stage, the prebriefing, is the orientation session implemented to increase student satisfaction and the effectiveness of the simulation method. This stage is followed by the simulation experience, during which the students observe a developing case or implement their skills. Finally, the debriefing stage includes an analytical discussion on students' performances in the scenario (1). This last stage is considered the most important element of a successful simulation experience since it provides room for facilitated reflection, group discussion, and guides to improve performance (1,3). Standards Committee of the "International Nursing Association for Clinical Simulation and Learning (INACSL)" states that a planned debriefing session is a must in all simulation-based education activities (4).

Existing studies on the effectiveness of debriefing sessions in the education of health professionals reported the positive effects of debriefing on the improvement of technical and nontechnical skills, including the evaluation of vital signs, cardiopulmonary resuscitation, task management, teamwork, and these studies are increasing (5). Considering the increase in the number of simulation studies in healthcare services, it may be difficult for the simulation trainers to get a general view of the methods and techniques used in the debriefing process (6). This difficulty shows the importance of and the need for bibliometric methods that analyze the direction of developments in a scientific field, demonstrate the dynamics and structure of the field, and reveal the most important studies using various filters (7).

Bibliometric analysis, an effective method of processing big data, is widely used to qualitatively evaluate developments in a specific scientific discipline and the academic impact of these developments. Bibliometric analysis is a field that evaluates a set of publications using quantitative methods (8). Bibliometric analysis also provides additional statistics on data such as author, organization, keywords, etc., and allows the provided indicators to be visualized in a network. It also integrates information to develop research areas on a specific topic or the entire field (9).

Studies that use bibliometric analysis in healthcare mostly deal with various issues, including sufficiency, technological advancements, journal analysis, and clinical simulation (10,11). However, no studies have been found specifically on debriefing in healthcare simulations analyzed with bibliometrics globally. Due to this reason, this study provides a bibliometric analysis of the publications on debriefing and simulation indexed in the Scopus database.

Research Questions

The study's purpose is to procure a bibliometric analysis of the publications on debriefing and simulation indexed in the Scopus database. The annual number of publications, journals that published these publications, keywords of the publications, country of publication, and the most cited ten publications were analyzed using bibliometric and thematic analysis.

The content of the publications was visualized using bibliometric mapping. The research questions included the following:

- What was the annual count of publications?

- In which journals were the articles published?

- What were the most frequently used keywords and the keywords that were used together?

- In which countries were the articles published?

- What were the most cited publications and their characteristics?

Materials and Methods

Type of the Research

Based on bibliometric literature analysis, this study had a descriptive design.

Sample of the Research

The publications on debriefing and simulation, indexed in the Scopus Database, were used for the research sampling.

Eligibility criteria

Publications that met the following criteria were included in the study:

- Original scientific articles or reviews

- Published in English.

- Used at least one of the simulation methods, including standardized patient, high-, medium- and low-fidelity simulation, and virtual reality methods.

- Conducted with the participation of health professionals and health sciences students, including medicine, dentistry, and nursing.

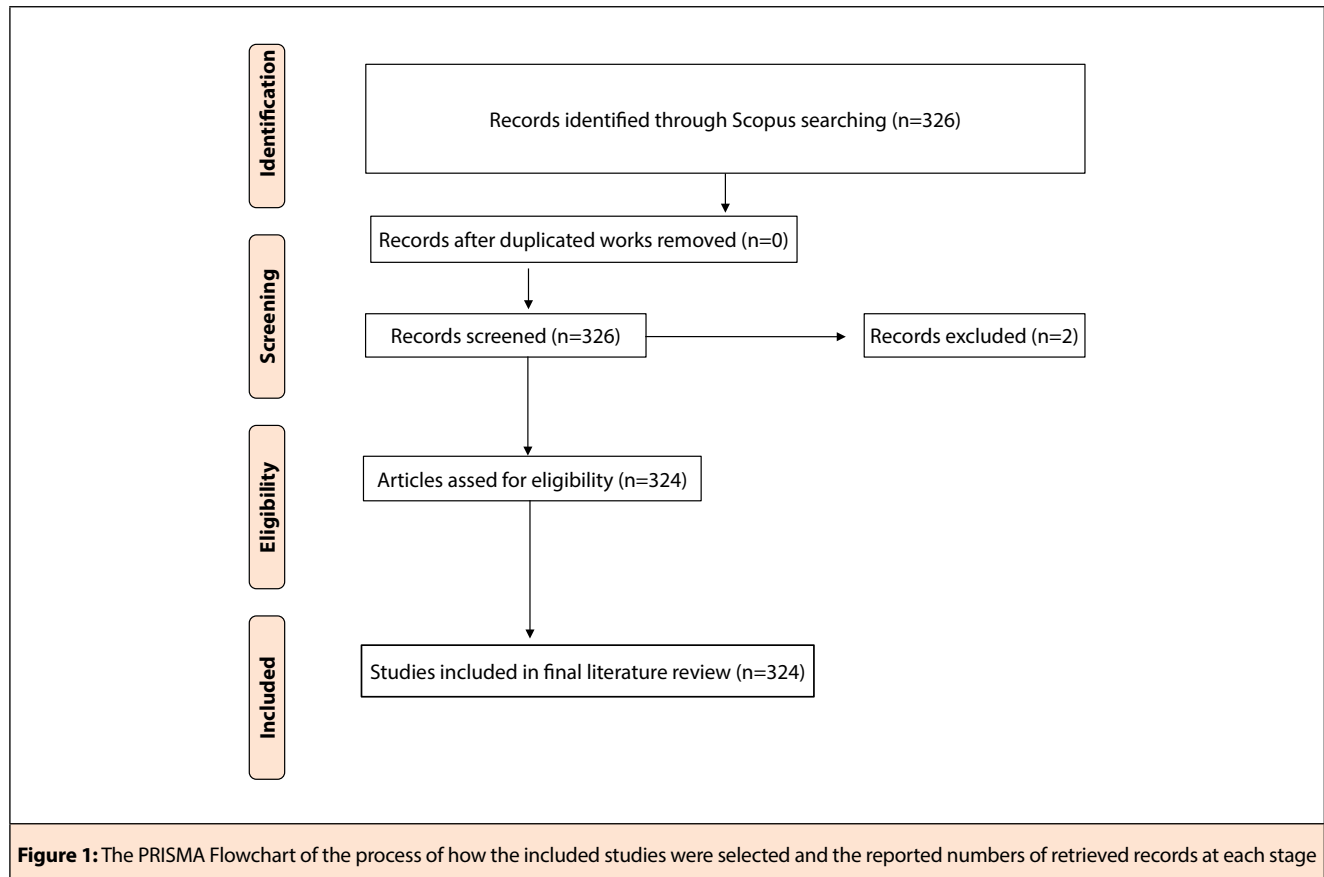The following publications were excluded from the analysis:

- Conducted on participants other than health professionals or the students of health sciences.

- Publications other than scientific articles and reviews, including conference papers, book chapters, and editorial materials.

- Publications on the fields of navigation and security, which were based on mathematical modeling or calculative simulations.

Search for Eligible Studies

The resource of literature was Scopus-indexed because Scopus claims "it indexes the largest selection of peer-reviewed literature simulations in the healthcare field" (https://www.elsevier.com/en-au/products/scopus). We first retrieved the publications indexed in the Scopus database as of March 24th, 2022. Bibliometric and thematic analyses were conducted for the retrieved articles using the VOSviewer Software Version 1.6.5 (12). The date range was not selected to include all articles published until this study was conducted. The search was performed with "debriefing" and "simulation" keywords combined with the Boolean operator. The search was limited to "article" or "review" publication types in English with no year limit. The authors chose the Nursing (#2901), Medicine (#2701), Health Professions (#3601), and Dentistry (#3501) Scopus subject areas in order not to include publications on the fields of mathematical modeling or calculative simulations (https://service.elsevier.com/app/answers/detail/a_id/15181/supporthub/scopus/).

This search strategy identified 326 articles. Two publications that did not meet the inclusion criteria were counted out. The study was finalized with 324 articles published between 2004 and 2022, and each publication's bibliometric details were exported from the Scopus database in the "scopus.csv" format. Figure 1. illustrates the PRISMA flowchart of the analyzed publications. References to these publications were not analyzed.

Figure 1: The PRISMA Flowchart of the process of how the included studies were selected and the reported numbers of retrieved records at each stage

Acıbadem Univ. Sağlık Bilim. Derg. 2025; 16 (2) 199-208

201

The articles obtained at the end of the search were screened as a citation overview in the Scopus database. Since the screened articles were published between 2004 and 2022, the time interval was selected as 2004-2022 and excluded the self-citations of all authors. The data of the obtained articles were sorted on descending citation count. The ten most cited articles are tabulated according to the data provided by the Scopus database.

Evaluation of the Data

The VOSviewer Software Version 1.6.5 (12) was used for bibliometric and thematic analysis. The SPSS Statistics Version 22.0 (IBM Corp., Armonk, NY, USA) was used for statistical analysis of the descriptive quantitative variables. Descriptive data were presented in numbers. The most cited ten publications were compiled with journal metrics extracted from the Scopus database. The presentation of the study results was made according to Preliminary guidelines for reporting bibliometric reviews of the biomedical literature (BIBLIO) (13).

Ethical Aspect of the Research

The institutional review board approval or informed consent was not required.

Results

We searched for the publications, which included the keywords "debriefing" and "simulation" and were indexed by the Scopus bibliographical database until March 24th, 2022. The annual number of publications, the journals in which the articles were published, keywords of the publications, country of publication, and the most cited ten publications were analyzed. We found 324 articles published between 2004 and 2022, which included the keywords "debriefing" and "simulation" and were conducted with the participation of health professionals or health science students. Analysis of the annual number of publications revealed a gradual increase until 2022. As Figure 2. illustrates, the number of publications in 2017 (n=41) first decreased in 2018 (n=25) and then increased in 2019 (n=30), 2020 (n=48), and 2021 (n=48). As of March 24th, five articles were published in 2022.
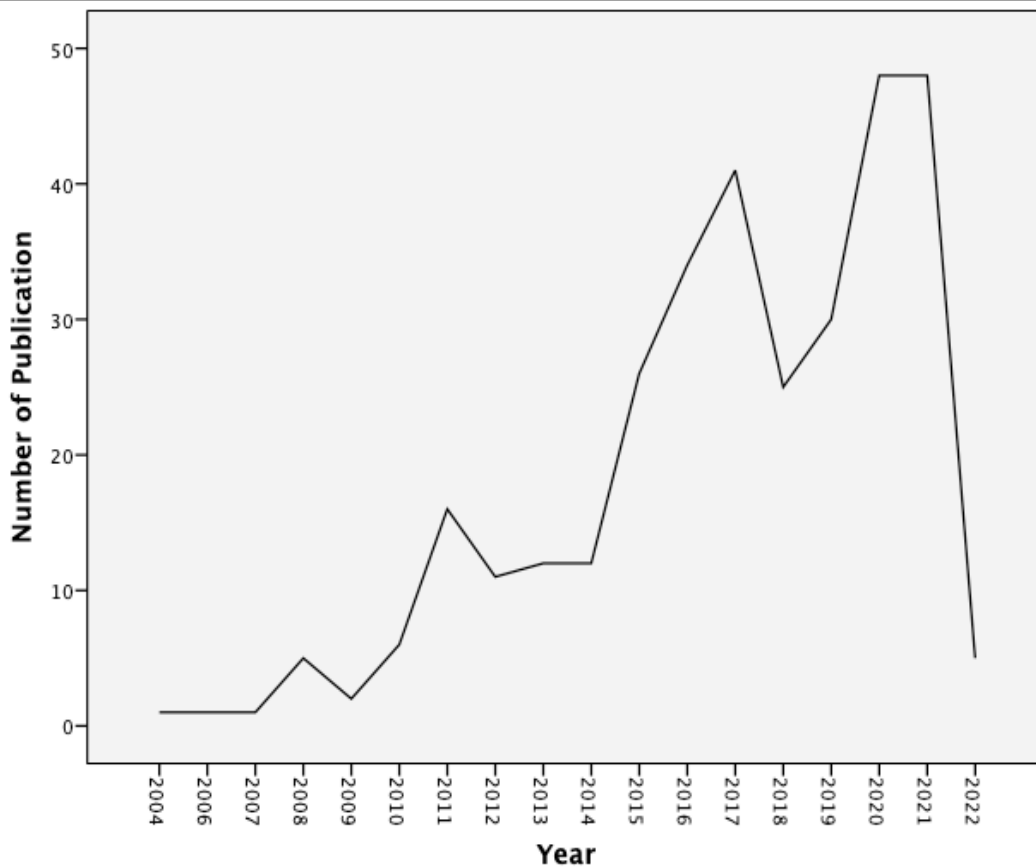

Figure 2: Publications by year with the keywords "debriefing" and "simulation" from 2004 to 2022 (n=324)

Figure 3: Distribution of publications by journals from 2004 to 2022
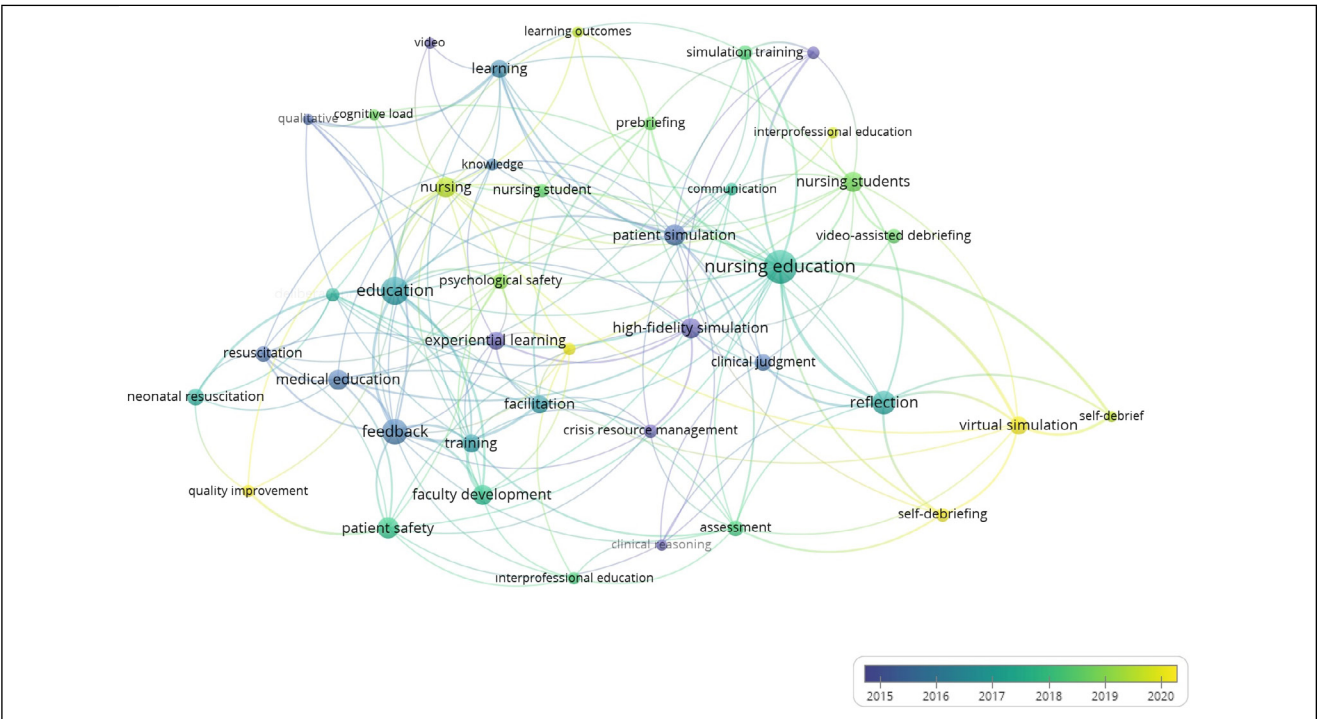

Figure 4: The clusters of keywords from 2013 to 2022.

Acıbadem Univ. Sağlık Bilim. Derg. 2025; 16 (2) 199-208

203

Figure 3. illustrates the articles that were published in which journals. The journals were "Clinical Simulation in Nursing" (n=75), "Simulation in Healthcare" (n=36), "Nurse Education Today" (n=18), "Nurse Education Perspectives" (n=16), "BMJ Simulation & Technology Enhanced Nursing" (n=12), "Nurse Education in Practice" (n=10), "Seminars in Perinatology" (n=8), "Nurse Educator" (n=7), "Journal of Surgical Education" (5), and "Nursing & Health Sciences" (n=3) respectively.

Figure 4. illustrates the clusters of 33 keywords that appeared at least six times in the 324 publications analyzed. In this analysis, to obtain the keywords with the highest incidence/frequency and relevance among the keywords, those with at least six or more frequencies were included. These keywords were classified into six groups using the VOSviewer software. The most frequently used ten keywords were "nursing education", "education", "feedback", "reflection", "patient simulation", "patient safety", "high-fidelity simulation", "nursing students",

"facilitation" and "learning" respectively between 2013 and 2022 years.

Table 1. presents the thematic analysis of the keywords and the themes and items revealed by the VOSviewer software. For each cluster, the most cited keywords by the authors were used to label the themes. The themes followed the aims and the content of the publications analyzed.

Data retrieved from the Scopus database were also used to determine the most productive countries. The analysis revealed that 324 publications were published in 50 different countries. Figure 5. illustrated the most productive 25 countries. The countries with more than ten publications were the United States (n=183), Canada (n=57), Australia (n=22), United Kingdom (n=18), South Korea (n=18), France (n=11) and Norway (n=10), respectively.
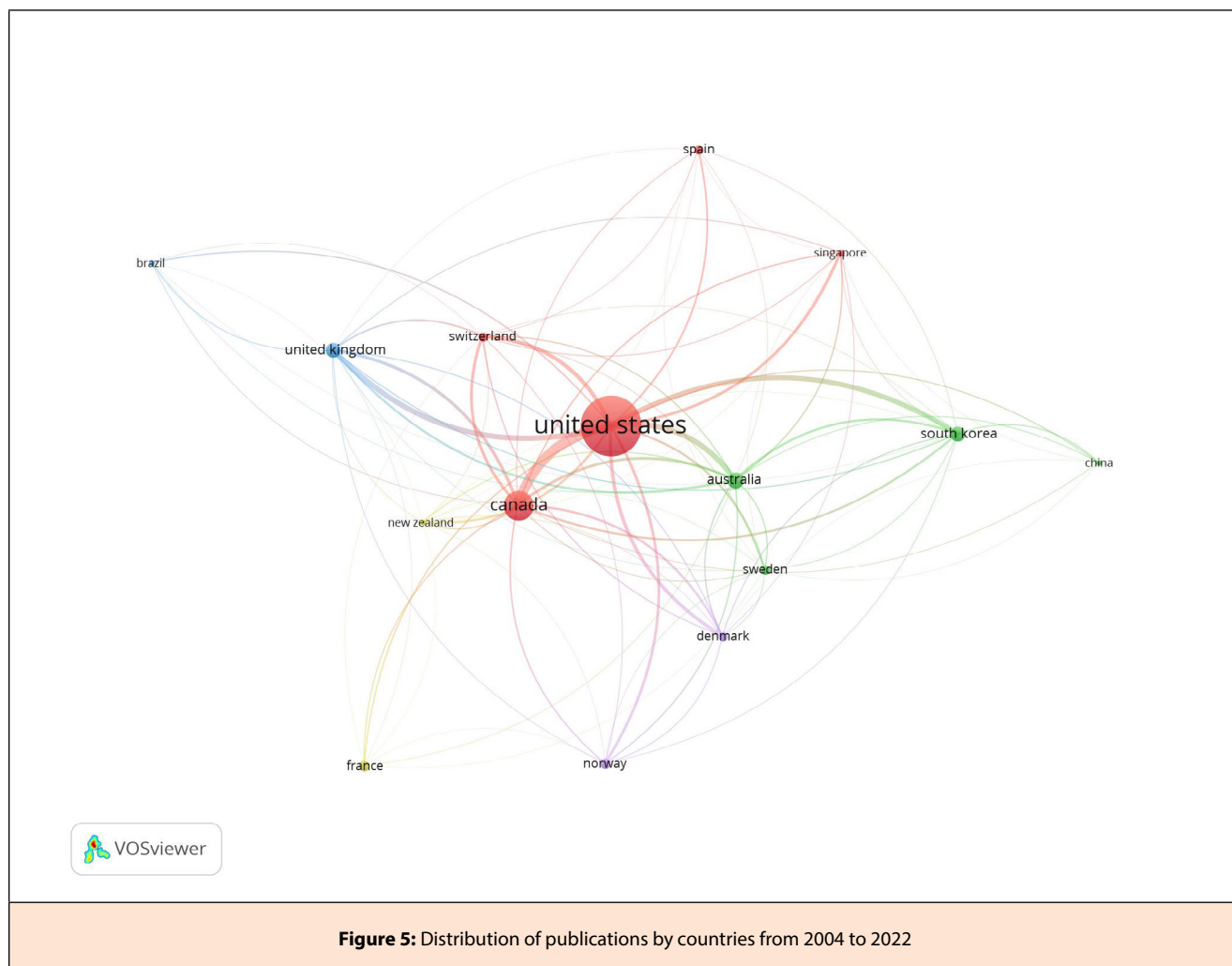

Figure 5: Distribution of publications by countries from 2004 to 2022

204

Acıbadem Univ. Sağlık Bilim. Derg. 2025; 16 (2) 199-208

Table 1. Thematic analysis of keywords	
Themes	**Representative keywords**
Debriefing (red)*	Communication, crisis resource management, debriefing, faculty development, feedback, interprofessional education, psychological safety, simulation-based education, training
Simulation (green)*	Deliberate practice, medical education, neonatal resuscitation, patient safety, quality improvement, resuscitation, simulation
Nursing education (dark blue)*	Assessment, learning nursing education, patient simulation, reflection, self-debriefing, virtual simulation
High-fidelity simulation (yellow)*	Clinical judgement, experimental learning, high-fidelity simulation, knowledge, nursing students, video-assisted debriefing
Facilitation (purple)*	Facilitation, prebriefing
Education (light blue)*	Education, nursing
The colors refer to the theme and keywords are the colors VOSviewer Software uses to visualize the clusters.	

Table 2. The ten most cited publications					
Rank	**Author and Year**	**Journal**	**Scopus Citation**	**Title**	**Description**
1	INACSL Standards Committee (2016)	Clinical Simulation in Nursing	314	INACSL Standards of Best Practice: Simulation^SM Simulation Design	Defines simulation design standards for effective simulation-based experience.
2	Rudolph J.W., Raemer D.B., Simon R. (2014).	Simulation in Healthcare	297	Establishing a Safe Container for Learning in Simulation: The Role of the Presimulation Briefing	Defines the role of the Presimulation briefing.
3	Eppich W., Cheng A. (2015)	Simulation in Healthcare	288	Promoting Excellence and Reflective Learning in Simulation (PEARLS) Development and Rationale for a Blended Approach to Health Care Simulation Debriefing	Describes the PEARLS model, a new framework for debriefing in healthcare.
4	Dreifuerst K.T. (2009)	Nursing Education Perspectives	262	The essentials of Debriefing in simulation learning: A concept analysis	Analyzes the concept of debriefing and defines its basic components.
5	Levet-Jones T. Lapkin S. (2014)	Nurse Education Today	201	A systematic review of the effectiveness of simulation debriefing in health professional education	Identifies, evaluates and synthesizes the best available evidence for the effectiveness of debriefing in simulation-based learning for healthcare professionals.
6	Sawyer T., Eppich W., Brett-Fleegler M., Grant V., Cheng A. (2016)	Simulation in Healthcare	196	More Than One Way to Debrief: A Critical Review of Healthcare Simulation Debriefing Methods	Examines the timing, facilitation, speech structures, and process elements used in debriefing for healthcare simulation.
7	Raemer D., Anderson M., Cheng A., Fanning R. (2011)	Simulation in Healthcare	167	Research regarding debriefing as part of the learning process	Reviews the current research on debriefing in simulation-based education and identifies future opportunities.
8	Brett-Fleegler M., Rudaoph J., Eppich W., Monuteaux M., Fleefler E., Cheng A., Simon R. (2012)	Simulation in Healthcare	148	Debriefing assessment for simulation in healthcare: Development and psychometric properties	Develops and evaluates the validity and reliability of an assessment tool, namely, Debriefing Assessment for Simulation in Healthcare (DASH).
9	Shinnick M.A., WOO M., Horwich T.B., Steadman R. (2011)	Clinical Simulation in Nursing	138	Debriefing: The Most Important Component in Simulation?	Conducts a quasi-experimental study on undergraduate nursing students to determine where more knowledge gains occur in a simulation experience.
10	Neil M.A., Wotton K. (2011)	Clinical Simulation in Nursing	135	High-Fidelity Simulation Debriefing in Nursing Education: A Literature Review	Analyzes the literature on the use of debriefing in nursing education and makes recommendations for further studies.

Table 2. presents the ten most cited publications retrieved from the Scopus database. The article entitled "INACSL Standards of Best Practice: Simulation^SM Simulation Design" (2016) was the most cited publication (14). Only one of the ten most cited articles was a semi-experimental study to evaluate the effectiveness of debriefing in nursing students. The remaining nine articles dealt with the important points to be considered while conducting the debriefing session.

Discussion

The study aimed to identify the features of the publications on debriefing and simulation in healthcare research. These publications indexed in the Scopus database were published from 2004 to 2022. Although the number of articles generally increased over time, the number of articles published in 2017 was more than those published in 2018. It is seen that similar results were obtained in the studies carried out (15,16). It is thought that this difference may be related to the publication of the article "INACSL Standards of Best Practice: Simulation^SM Simulation Design" in 2016, which is the primary resource used by the studies on simulation (14). INACSL provides best practices for simulation activities and advances simulation science as a teaching methodology, thereby promoting the use of simulation globally (15). The journal "Clinical Simulation in Nursing", which published this article, was also the journal in which most debriefing and simulation publications were published. The common point between the journals that published most articles on these subjects was their primary focus on simulation and education. Besides, although all studies on healthcare were included in the analysis, most journals on simulation and debriefing were related to the nursing field.

Keywords are condensed representations of the content of academic articles. Statistical analysis of the keywords may reveal the topics and the developmental dynamics in a scientific discipline. They supply information on how the scholars conceptualize their works and are crucial to monitoring scientific development (17). The main themes created from the co-occurrence of VOSviewer keywords characterize the literature's knowledge structure regarding debriefing and simulation. For this reason, it can be said that the four largest clusters represent the entire area. Within the context of our methodology, these keywords represented the publications on simulation and debriefing indexed in the Scopus database. Besides, most keywords were related to nursing education and

debriefing, and most publications were published in journals on nursing. These results supported each other.

The most frequently used keywords were "nursing education", "education", "feedback", "reflection", "patient simulation", "patient safety", "high-fidelity simulation", "nursing students", "facilitation" and "learning" in the 324 articles that were analyzed. In the ten year bibliometric analysis of the journal "Clinical Simulation in Nursing", debriefing was one of the most frequently encountered keywords (18). It is stated that debriefing includes three strategies or techniques, namely "feedback", "debriefing", and/or "guided reflection" (4). In this study, we included studies using the keywords debriefing and simulation. Therefore, we encountered more keywords related to debriefing. Nevertheless, the keywords obtained were found to be compatible with simulation studies carried out in nursing education. Thematic analysis of keywords confirms our thoughts. Based on this, it can be seen that the keywords obtained are related to nursing education, debriefing, and simulation.

The publications included in the bibliometric analysis were produced in 50 different countries. Most publications were produced in the USA, followed by Canada and Australia, and these findings were parallel to other studies on the bibliometric analysis of a different database (8,16). The predominant position of the USA in simulation studies may be related to the high costs of simulation-based education, which seems easier to access in the USA (19). Since the developed countries have the infrastructure necessary for simulation-based education; it is logical to expect a higher number of publications on simulation in these countries. Simulation-based education is more financed in developed countries due to its costs, which has led to more studies being conducted. As seen in Figure 3., journals such as "Clinical Simulation in Nursing," "Nurse Education Today," and "Simulation in Healthcare" were the major journals publishing articles and editorials on the application of simulation research. It would be logical to conclude that these journals are more likely to be potential journals that will publish important developments in this field, and therefore more publications on the subject will be made in the USA, Canada, and Australia countries (15).

The analysis of the ten most-cited publications revealed that these articles were published between 2009 and 2016. The most cited article was "INACSL Standards of Best Practice: Simulation^SM Simulation Design" on the standards for simulation design constituted by the INACSL Standards

Committee (14). The remaining most cited articles defined the standards for debriefing and evaluated the debriefing methods and the effectiveness of debriefing in healthcare simulations (20–28). Contrary to the general expectation of the relationship between the time of publication and citation rate, the most cited article was published relatively recently, in 2016, but received high citations in a relatively short time. Another study on the 100 most cited articles in healthcare simulation also found that the recently published articles had high citation rates (29). Only one of the ten most cited articles was a semi-experimental study that analyzed where the knowledge was acquired in the simulation experience. Dissemination of important research findings starts with publishing these findings in peer-reviewed journals but continues with the citation of the original article by following studies. The citation rate of a publication is considered an indicator of the importance of the publication (30). In our case, most publications could be used as guidelines to conduct the debriefing process. These studies are beneficial to direct implementation, facilitate decision-making, and advance the research. Due to this, the increasing visibility of these studies is not surprising as it indicates the field's maturation (29). High citation rates of the publications that provide guiding information on the debriefing process standards also indicate that more studies on debriefing are needed.

Health professionals, managers, and educators need to identify the most cited articles, the journals publishing these articles, the country of publication, and the most frequently used keywords. Identifying these issues may help further studies on professional practices, academic fields, or healthcare education to use up-to-date and high-quality information (8).

Limitations

Compared to other databases, the Scopus database included more journals on the subject of simulation. Nevertheless, the analysis of the publications indexed in a single database constituted a limitation of this study. The second limitation of this study was that only the publications on healthcare professionals were analyzed.

Conclusion

As seen from published studies, interest in simulation as an education and training method in healthcare has been increasing in recent years. Simulation-based education offers many benefits, including providing a

safe and controlled environment for students to practice their skills, as well as allowing for the inclusion of a wide variety of patient scenarios and contexts. Therefore, the use of simulation in healthcare education is becoming a necessity rather than an exception. However, the fact that the majority of publications are in developed countries reveals the need for financial support in developing countries. The resulting keywords show that the use of simulation is higher in nursing education than in other health-related departments. Additionally, the emergence of different keywords related to debriefing suggests that researchers are aware that it is an important part of simulation-based education. The literature on simulation-based education is expanding day by day. As more studies are conducted, additional analyses are recommended to better understand the relationship between research components.

Conflict of Interest

No conflict of interest has been declared by the authors.

Ethical Approval

Not applicable as this study used already published data.

Availability of Data and Material

Available.

Authors' Contributions

All authors have made substantial contributions to this article being submitted for publication. All authors critically reviewed the manuscript and approved the final form.

References

1. Garmaise-Yee J, Houston C, Johnson T, Sarmiento S. Virtual simulation debriefing in health professions education: a scoping review. JBI Evid Synth. 2022;

2. Hara K, Kuroki T, Fukuda M, Onita T, Kuroda H, Matsuura E, et al. Effects of Simulation-based Scrub Nurse Education for Novice Nurses in the Operating Room: A Longitudinal Study. Clin Simul Nurs. 2022 Jan 1;62:12–9.

3. Ing L, Cheng A, Lin Y. Debriefing for Simulation-Based Medical Education: A Survey From the International Network of Simulation-Based Pediatric Innovation, Research and Education. Simul Healthc [Internet]. 2022 Feb 1 [cited 2022 Apr 12];17(1):1–6. Available from: https://pubmed.ncbi.nlm.nih.gov/33428357/

4. Decker S, Alinier G, Crawford SB, Gordon RM, Jenkins D, Wilson C. Healthcare Simulation Standards of Best PracticeTM The Debriefing Process. Clin Simul Nurs. 2021 Sep 1;58:27–32.

5. Dufrene C, Young A. Successful debriefing - best methods to achieve positive learning outcomes: a literature review. Nurse Educ Today [Internet]. 2014 Mar [cited 2022 Apr 12];34(3):372–6. Available from: https://pubmed.ncbi.nlm.nih.gov/23890542/

6. Sawyer T, Eppich W, Brett-Fleegler M, Grant V, Cheng A. More Than One Way to Debrief: A Critical Review of Healthcare Simulation Debriefing Methods. Simul Healthc [Internet]. 2016 Jun 1 [cited 2022 Apr 12];11(3):209–17. Available from: https://pubmed.ncbi.nlm.nih.gov/27254527/

7. Özen Çınar İ. Bibliometric analysis of breast cancer research in the period 2009–2018. Int J Nurs Pract [Internet]. 2020 Jun 1 [cited 2022 Apr 12];26(3):e12845. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/ijn.12845

8. Giménez-Espert M del C, Prado-Gascó VJ. Bibliometric analysis of six nursing journals from the Web of Science, 2012-2017. J Adv Nurs [Internet]. 2019 Mar 1 [cited 2022 Apr 12];75(3):543–54. Available from: https://pubmed.ncbi.nlm.nih.gov/30289557/

9. Imani B, Zahra S, Mohammad M, Saberi K. A Bibliometric Analysis of International Journal of Nursing Studies (1963 – 2018). A Bibliometric Analysis of International Journal of Nursing Studies [Internet]. 2019 [cited 2024 Jul 23]; Available from: https://digitalcommons.unl.edu/libphilprac

10. Carter-Templeton H, Frazier RM, Wu L, H. Wyatt T. Robotics in Nursing: A Bibliometric Analysis. Journal of Nursing Scholarship [Internet]. 2018 Nov 1 [cited 2022 Apr 12];50(6):582–9. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/jnu.12399

11. Yanbing S, Ruifang Z, Chen W, Shifan H, Hua L, Zhiguang D. Bibliometric analysis of Journal of Nursing Management from 1993 to 2018. J Nurs Manag [Internet]. 2020 Mar 1 [cited 2022 Apr 12];28(2):317–31. Available from: https://pubmed.ncbi.nlm.nih.gov/31811671/

12. van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics [Internet]. 2010 Dec 31 [cited 2022 Apr 12];84(2):523–38. Available from: https://link.springer.com/article/10.1007/s11192-009-0146-3

13. Montazeri A, Mohammadi S, M.Hesari P, Ghaemi M, Riazi H, Sheikhi-Mobarakeh Z. Preliminary guideline for reporting bibliometric reviews of the biomedical literature (BIBLIO): a minimum requirements. Syst Rev [Internet]. 2023 Dec 1 [cited 2024 Jul 23];12(1):1–10. Available from: https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-023-02410-2

14. INACSL. INACSL Standards of Best Practice: SimulationSM Simulation Design. Clin Simul Nurs [Internet]. 2016 [cited 2020 May 21];12:S5–12. Available from: http://dx.doi.org//10.1016/j.ecns.2016.09.005

15. Wang Y, Li X, Liu Y, Shi B. Mapping the research hotspots and theme trends of simulation in nursing education: A bibliometric analysis from 2005 to 2019. Nurse Educ Today. 2022 Sep 1;116:105426.

16. Cant R, Ryan C, Kardong-Edgren S. Virtual simulation studies in nursing education: A bibliometric analysis of the top 100 cited studies, 2021. Nurse Educ Today. 2022 Jul 1;114:105385.

17. Zhu R, Liu M, Su Y, Meng X, Han S, Duan Z. A bibliometric analysis of publication of funded studies in nursing research from Web of Science, 2008-2018. J Adv Nurs [Internet]. 2021 Jan 1 [cited 2022 Apr 12];77(1):176–88. Available from: https://pubmed.ncbi.nlm.nih.gov/33119957/

18. Kokol P, Blažun Vošner H, Železnik D. Clinical Simulation in Nursing: A Bibliometric Analysis after Its Tenth Anniversary. Clin Simul Nurs [Internet]. 2017;13(4):161–7. Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013637452&doi=10.1016%2Fj.ecns.2016.11.007&partnerID=40&md5=d44e-837ac1c0988306968d27dcda767b

19. Maloney S, Haines T. Issues of cost-benefit and cost-effectiveness for simulation in health professions education. Advances in Simulation 2016 1:1 [Internet]. 2016 May 17 [cited 2022 Apr 12];1(1):1–6. Available from: https://advancesinsimulation.biomedcentral.com/articles/10.1186/s41077-016-0020-3

20. Rudolph JW, Raemer DB, Simon R. Establishing a safe container for learning in simulation: the role of the presimulation briefing. Simul Healthc [Internet]. 2014 Dec 20 [cited 2024 Nov 26];9(6):339–49. Available from: https://pubmed.ncbi.nlm.nih.gov/25188485/

21. Eppich W, Cheng A. Promoting Excellence and Reflective Learning in Simulation (PEARLS): development and rationale for a blended approach to health care simulation debriefing. Simul Healthc [Internet]. 2015 Apr 17 [cited 2024 Nov 26];10(2):106–15. Available from: https://pubmed.ncbi.nlm.nih.gov/25710312/

22. Dreifuerst KT. Using debriefing for meaningful learning to foster development of clinical reasoning in simulation. Journal of Nursing Education. 2012 Jun;51(6):326–33.

23. Levett-Jones T, Lapkin S. A systematic review of the effectiveness of simulation debriefing in health professional education. Nurse Educ Today [Internet]. 2014 [cited 2024 Nov 26];34(6). Available from: https://pubmed.ncbi.nlm.nih.gov/24169444/

24. Sawyer T, Eppich W, Brett-Fleegler M, Grant V, Cheng A. More Than One Way to Debrief: A Critical Review of Healthcare Simulation Debriefing Methods. Simul Healthc [Internet]. 2016 Jun 1 [cited 2024 Nov 26];11(3):209–17. Available from: https://pubmed.ncbi.nlm.nih.gov/27254527/

25. Raemer D, Anderson M, Cheng A, Fanning R, Nadkarni V, Savoldelli G. Research Regarding Debriefing as Part of the Learning Process. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2011 Aug;6(7):S52–7.

26. Neill MA, Wotton K. High-fidelity simulation debriefing in nursing education: a literature review. Clin Simul Nurs [Internet]. 2011 Sep [cited 2022 Apr 12];7(5):e161–8. Available from: https://researchnow.flinders.edu.au/en/publications/high-fidelity-simulation-debriefing-in-nursing-education-a-litera

27. Shinnick MA, Woo M, Horwich TB, Steadman R. Debriefing: The Most Important Component in Simulation? Clin Simul Nurs. 2011 May;7(3):e105–11.

28. Neill MA, Wotton K. High-Fidelity Simulation Debriefing in Nursing Education: A Literature Review. Clin Simul Nurs. 2011 Sep;7(5):e161–8.

29. Walsh C, Lydon S, Byrne D, Madden C, Fox S, O'Connor P. The 100 Most Cited Articles on Healthcare Simulation: A Bibliometric Review. Simul Healthc [Internet]. 2018 Jun 1 [cited 2022 Apr 12];13(3):211–20. Available from: https://pubmed.ncbi.nlm.nih.gov/29613918/

30. Kulkarni A V., Busse JW, Shams I. Characteristics Associated with Citation Rate of the Medical Literature. PLoS One [Internet]. 2007 May 2 [cited 2022 Apr 12];2(5):e403. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0000403

208

Acıbadem Univ. Sağlık Bilim. Derg. 2025; 16 (2) 199-208