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A Bibliometric Analysis of International Journal of Nursing Studies (1963-2018)

Behzad Imani

Assistant Professor, Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran

E-mail: behzadiman@yahoo.com

Seyedeh Zahra Mirezati

Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran

E-mail: z.mirezati69@gmail.com

Mohammad Karim Saberi

Assistant Professor, Department of Medical Library and Information Sciences, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran

Corresponding Author: mohamadsaberi@gmail.com

Abstract

Purpose- This study set to present a general overview of the *International Journal of Nursing Studies (IJNS)* from 1963 to 2018 using bibliometric indicators to assess its performance.

Design/methodology/approach- This study is a bibliometric analysis. The articles of the *IJNS* were analyzed. Scopus database was used for collecting articles. Excel software was used to analyze the process of publishing journal articles, identify top countries, institutes, and authors and extract highly cited articles in the journal. The visualization of the keywords in the articles published in the journal was done using the VOSviewer software.

Findings- The results of the bibliometric analysis showed that the United Kingdom with 966 papers, King's College London with 130 papers and Bergman R with 25 papers were the most productive and influential countries, universities, and authors contributing to the *IJNS*. The paper of Keeney S. (2001), entitled "A critical review of the Delphi technique as a research methodology for nursing", was the most highly cited article in the *IJNS* from the beginning of 1963 to the end of 2018. The clustering of published keywords suggests that psychometric and nursing care issues are emerging journal clusters added to the journal in the last two decades.

Conclusion- The evolution process of the *IJNS* is positive and growing. This Journal has attracted much attention from researchers and authors around the world as a pioneer and leading journalist in the field of nursing.

Originality/value- This is the first comprehensive study offering a bibliometric overview of the leading trends of the *IJNS* over its history.

Keywords: bibliometric analysis, visualization, highly cited papers, keywords co-occurrence map

What is already known about the topic?

- We presented a general overview of the journal over its lifetime using bibliometric indicators.
- We identified key contributing countries, institutions, authors, as well as trends in research topics.
- We clustered the overexposed keywords of the articles published in the journal using the conjugate technique.

What this paper adds?

- In the first 20 years of the journal (1963-1982), nurses' education was the most important Journal cluster.
- In the second 20 years of the Journal (1983-2002), Nurses' attitudes became the best Journal cluster.
- In the last two decades of Journal (2003-2018), psychometric and nursing care issues were added to previous clusters.

Introduction

The International Journal of Nursing Studies (IJNS) is one of the most prestigious and influential nursing journals in the world. This journal provides a background for health services research, organization, management, and research methods related to nursing, midwifery, and other health-related professions. The IJNS has been publishing nursing articles since 1963. This journal is indexed in international databases such as PubMed, Medline, Thomson Reuters Scopus, CINAHL, and BNI (British Nursing Index). This journal has an Impact Factor of 3.570. The IJNS ranks first among nursing journals. More than 50 years have passed since the publication of this international journal (IJNS, 2019).

Scientific journals have a larger audience because of the rapid dissemination of information compared to other information carriers (Saber, 2009). These journals play an important role in the transmission of new scientific information (Mohseni, 2002). The increasing number of scientific journals and the widespread use of the scientific community have made the evaluation of scientific journals an important issue (Mirhaghjoo-Langroodi, 2013).

Bibliometric analysis is one of the methods of evaluation of scientific journals. The term bibliometric was first coined by Pritchard in 1969. Bibliometric is a field that evaluates a set of publications using quantitative methods (Senel and Demir, 2018; Xu, Yu and Wang, 2018).

Bibliometric analysis is the application of mathematical and statistical methods to explain the status of scientific publications (Lundberg, 2006). Today, bibliometric study has become a truly unique field of research (Glanzel, 2003) and is being used for various analyses such as the development of journals.

The bibliometric analysis serves as a tool for determining the status of research in a particular field, trends, and possible gaps in knowledge in that field and plays an important role in management and decision making in science and technology (Romanelli et al., 2018). The bibliometric analysis mainly provides the possibility of developing analytical methods and bibliographic indicators from statistical criteria and is a tool that manages records of publications, citations, patent documents, reports, etc. (Goncalves et al., 2019). The bibliometric analysis also provides additional statistics on data including author, affiliation, and keywords (Xinhan et al., 2018). In addition, it integrates information in order to

develop research fields in a particular subject or in the entire field (Doulani, 2018). The bibliometric analysis provides visualization of the provided indicators in a network. In addition, a bibliometric analysis is a method that can be used to understand the structure and content of a scientific domain (Fahimnia, Sarkis, and Davarzani., 2015).

Annually, hundreds of thousands of scientific and research articles are published in journals around the world. Published articles in scientific journals are more attractive to researchers due to their novelty, the introduction of the latest research, critiques, the diversity of content, the presentation of language, and the expression of speech more readily (Erfanmanesh and Nojavan., 2016). Therefore, the evaluation of scientific activities in turn is one of the most important factors that, while examining the status quo, as an honest observer, monitors the strengths and weaknesses of the knowledge production process and alerts the editors and organizers of publications to post-publication events and the extent to which media are influenced by the management (Doulani, Husseini-Nassab and Niknafs, 2010; Rashidi et al., 2016).

In the nursing field, bibliometric analysis and maps have been used to analyze the production of some journals but not for the comparison of different journals (Giménez-Espert and Prado-Gascó, 2019). One of the most essential sciences in the field of health research is nursing knowledge. Nurses are the forefront of health, prevention, care, and treatment for patients. Therefore, it is essential that nurses get acquainted with the latest findings and scientific research achievements in order to fulfill their professional duties. Although there are many studies in the citation analysis of scientific papers in various disciplines and fields, limited studies have been conducted on the content analysis of journal articles and bibliography studies in the field of nursing. Therefore, this study helps nurses to get acquainted with scholarly scholars and authoritative subjects in the International Journal of Nursing Studies and examines their research topics with a broader view.

This study is a descriptive retrospective study of the theoretical-methodological framework of bibliography (Idczak, 2007). In this bibliometric study, the articles of the International Journal of Nursing Studies have been analyzed. The purpose of this analysis was to assist nurses with journal and database selection, provide end-users of the literature with guidelines for selecting databases to search, and recommend additional titles to database producers.

Literature review

Bibliometric analysis is widely used in the analysis of various journals such as Journal of Pakistan Medical Association (Ibrahim, and Jan, 2015), Genetics Journal (Telis et al, 2016), European Journal of Operational Research (Laengle et al., 2017), Journal of School Health (Zhang et al, 2017), Journal of Advanced Nursing (Železnik, Blažun Vošner & Kokol., 2017), International Journal of Intelligent Systems (Merigo et al., 2017), Information Sciences (Yu et al., 2017), Journal of Infection and Public Health (Krauskopf, 2018), International Journal of Computer Integrated Manufacturing (Laengle et al, 2018), Journal of Knowledge Management (Gaviria-Marin, Merigo, and Popa, 2018), International Journal of Machine Learning and Cybernetics (Xu et al., 2018), Journal of Religion and Health (Senel and Demir, 2018), International Journal of Fuzzy Systems (Tang et al., 2018), Journal of Travel & Tourism Marketing (Mulet-Forteza et al., 2019), Journal of Artificial Societies and Social Simulation (Mokhtari, Roumiyani and Saberi, 2019), Journal of Business-to-Business Marketing (Valenzuela-Fernandez et al, 2019), Library Philosophy and Practice (Saberi, Barkhan and Hamzehei, 2019), and International Journal of Hospitality Management (Cunill et al, 2019). Following is a list of bibliometric studies.

Latefa Ali Dardas et al. (2018) in a study entitled “Nursing Research in the Arab Region: A Bibliometric Analysis” surveyed journals from 22 West Asian countries with a population of 422 million. The results of this bibliometric study showed that Arab nursing research is a nascent but growing field that is growing both in scope and impact in the Arab region and globally.

Manvendra Janmajaya et al. (2018), in a study entitled “A Scientometric Study of Neurocomputing Publications (1992–2018): An Aerial Overview of Intrinsic Structure” published in the Journal of Publications, showed that the journal neurocomputing plays an important role in shaping academic research since its inception. The results of this study showed that neurocomputing has discovered and developed trends in the field of soft computing.

Engin, Enel, and Emre Demir (2018), in a study entitled “Bibliometric and Scientometric Analysis of Articles Published in the Journal of Religion and Health between 1975 and 2016”, concluded that spiritual/religious beliefs and medical practices have an additional role in combating disease in improving patients' health. Their results showed that there have been few published bibliometric studies on spiritual/religious beliefs and medical practices.

Ming Tang et al. (2018), in their study entitled “Ten Years of Sustainability (2009 to 2018): A Bibliometric Overview”, showed that the number of publications on sustainability was increasing. China, the US, and South Korea are the most active countries regarding sustainability. Chinese and Korean institutions have a significant impact on sustainability. The keywords "sustainability", "management", and "China" are the mostly used keywords in SUS publications. “Community” has the strongest citation burst. “Risk”, “environmental impact”, and “challenge” are the nearest citation bursts.

Ming Tang, Huchang Liao, and Shun-Feng Su (2018), in their study entitled “A Bibliometric Overview and Visualization of the International Journal of Fuzzy Systems between 2007 and 2017” published in the journal Int. J. Fuzzy Syst, pointed that IJFS publications and citations have made good progress in the past two years. Most of the IJFS publications have been cited by China and the University of Barcelona.

Methodology

This study is a bibliometric analysis. Bibliometric study is a collection of quantitative methods for analyzing scientific literature using bibliographic data. Bibliometric analysis can be used for comprehensive analysis of journals, scientific fields, and countries. In this bibliometric study, the articles of the *International Journal of Nursing Studies* were analyzed. Scopus database was used for collecting articles. The research steps were as follows:

First, all the documentation published in the journal were extracted. Second, the study period was limited to 1963 to 2018, and the 2019 documentations were excluded since the articles in 2019 were not complete yet. Third, reviews, editorials, notes, errata, letters, and short surveys were excluded. Fourth, articles published in the *International Journal of Nursing Studies* during the years 1963 through 2018, which contained 3203 articles, were extracted. In the fifth step, Excel software was used to analyze the process of publishing journal articles, identify the best countries, institutes, and authors, and extract the most prominent articles in the journal. In the last step, the visualization of the mapping of keywords in the articles published in the journal was done using the VOSviewer software.

Findings

The publication process in the journal

As shown in Fig 1, the process of publication of the article in the *International Journal of Nursing Studies* is ascending ($R^2 = 0.7632$). According to the Scopus database, from the beginning of 1963 until the end of 2018, 3203 articles were published in the journal. The number of journal articles was eight articles in 1963 and reached 122 articles in 2018. In addition, the results indicated that 2018 has the most articles and 1963 has the fewest number of articles.

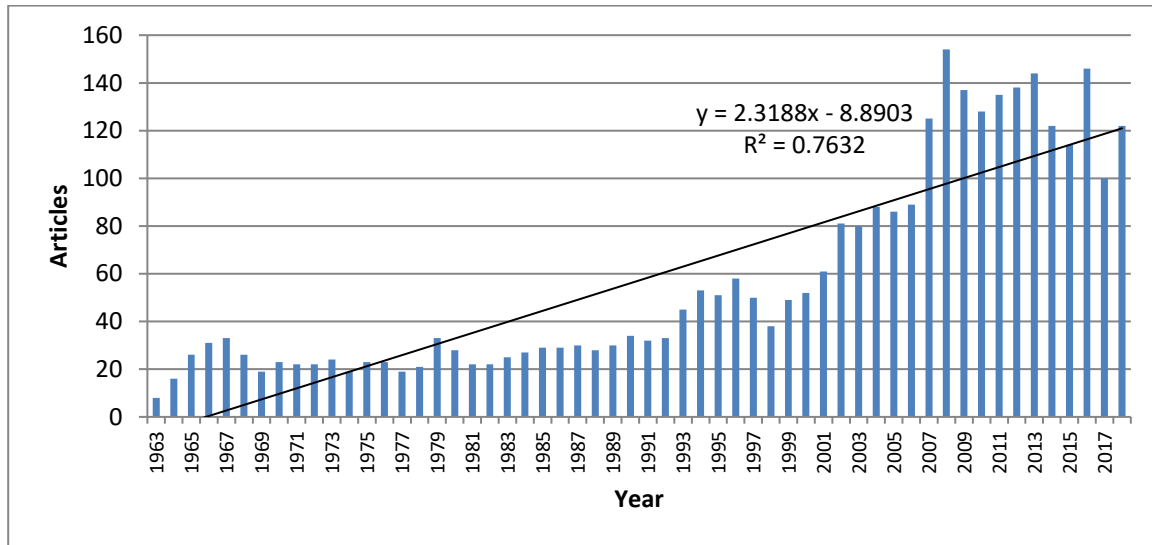


Fig 1: Publication process from 1963-2018

Contributing countries in publishing articles

The authors of more than 80 countries contributed to the publication of journal articles. Table 1 shows the top 20 countries in the publication of the *International Journal of Nursing Studies*. United Kingdom researchers had the largest participation in the publication of journal articles. They published 30.16 percent of the articles. United States authors rank second with 20.39 percent of articles. Third place belongs to Australian researchers who published 9.65% of the articles. In total, about 60% of the articles in the *International Journal of Nursing Studies* were written by authors and researchers from United Kingdom, the United States, and Australia. The countries of Canada, Taiwan, the Netherlands, Sweden, South Korea, Hong Kong, Belgium, Germany, China, Finland, Norway, Israel, Ireland, Spain, Japan, Switzerland, New Zealand, and Italy are in the next ranks.

Table 1: Top contributing countries in the Journal

| Country | Articles | % of 3203 | Rank |
|----------------|----------|-----------|------|
| United Kingdom | 966 | 30.16 | 1 |
| United States | 653 | 20.39 | 2 |
| Australia | 309 | 9.65 | 3 |
| Canada | 234 | 7.31 | 4 |
| Taiwan | 205 | 6.40 | 5 |
| Netherlands | 189 | 5.90 | 6 |
| Sweden | 177 | 5.53 | 7 |
| South Korea | 94 | 2.93 | 8 |
| Hong Kong | 86 | 2.68 | 9 |
| Belgium | 83 | 2.59 | 10 |
| Germany | 70 | 2.19 | 11 |
| China | 68 | 2.12 | 12 |
| Finland | 68 | 2.12 | 12 |
| Norway | 63 | 1.97 | 13 |
| Israel | 50 | 1.56 | 14 |
| Ireland | 47 | 1.47 | 15 |
| Spain | 45 | 1.40 | 16 |
| Japan | 42 | 1.31 | 17 |
| Switzerland | 39 | 1.22 | 18 |
| New Zealand | 36 | 1.12 | 19 |
| Italy | 32 | 1.00 | 20 |

Top institutions/universities participating in the publication of articles

An analysis of the organizational affiliation of the 3203 published articles in the journal could be interesting. As shown in Table 2, King's College London, with 130 papers, is the best contributor to the publication of articles. University of Manchester and Maastricht University ranked the second and third with 79 and 64 papers, respectively. The findings in Table 2 indicate that most institutions are from the United Kingdom. United Kingdom institutes are among the top 10 leading publishers of journal articles.

Table 2: Top institutions/universities contributors in the Journal

| Institution | Articles | Country | % of 3203 | Rank |
|--|----------|----------------|-----------|------|
| King's College London | 130 | United Kingdom | 4.06 | 1 |
| University of Manchester | 79 | United Kingdom | 2.47 | 2 |
| Maastricht University | 64 | Netherlands | 2.00 | 3 |
| University of California, San Francisco | 54 | United States | 1.69 | 4 |
| Chinese University of Hong Kong | 46 | Hong Kong | 1.44 | 5 |
| Karolinska Institutet | 46 | Sweden | 1.44 | 5 |
| KU Leuven | 46 | Belgium | 1.44 | 5 |
| Ulster University | 45 | United Kingdom | 1.40 | 6 |
| University of Southampton | 43 | United Kingdom | 1.34 | 7 |
| University of Toronto | 37 | Canada | 1.16 | 8 |
| Lunds Universitet | 37 | Sweden | 1.16 | 8 |
| University of Sheffield | 36 | United Kingdom | 1.12 | 9 |
| University of Surrey | 36 | United Kingdom | 1.12 | 9 |
| University of Alberta | 36 | Canada | 1.12 | 9 |
| Radboud University Nijmegen Medical Centre | 35 | Netherlands | 1.09 | 10 |
| Griffith University | 35 | Australia | 1.09 | 10 |

Contributing authors in publishing articles

Figure 2 shows the most active and most influential contributing authors in the publication of the articles of the *International Journal of Nursing Studies*. Twenty eight authors published 10 or more articles in the journal. Bergman, R, with publication of 25 articles, is the most prolific writer and is ranked first. Hallberg, I.R with publication of 18 papers and Wilson-Barnett, J, with publication of 17 papers are ranked the second and third, respectively, and are the most active journal articles writers.

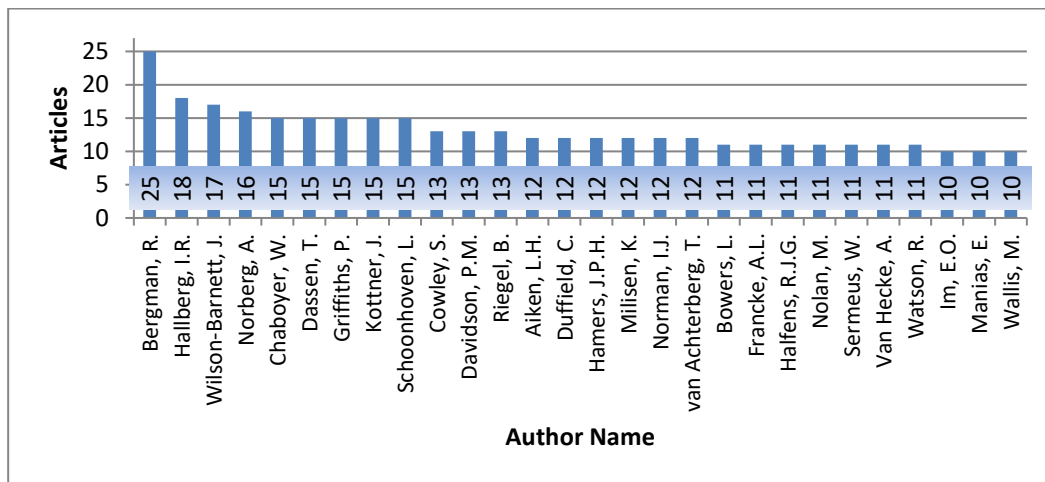


Fig 2: Top Contributing authors in the Journal

Most-cited articles published in the Journal

To assess the impact of journal articles, the most-cited articles of the journal were identified. Table 3 presents the most-cited articles published in the journal *International Journal of Nursing Studies*.

Table 3: Characteristics of the most-cited articles in the journal

| First Author | Title | Year | Volume | Issue | Pages | Times cited | Rank |
|---------------------|--|-------------|---------------|--------------|--------------|--------------------|-------------|
| Keeney S. | A critical review of the Delphi technique as a research methodology for nursing | 2001 | 38 | 2 | 195-200 | 448 | 1 |
| Kim K., | Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey | 2006 | 43 | 2 | 185-192 | 366 | 2 |
| Dennis C.-L. | Peer support within a health care context: A concept analysis, | 2003 | 40 | 3 | 321-332 | 362 | 3 |
| Lu H. | Job satisfaction among nurses: A literature review | 2005 | 42 | 2 | 211-227 | 351 | 4 |
| Craig P. | Developing and evaluating complex interventions: The new Medical Research Council guidance | 2013 | 50 | 5 | 587-592 | 300 | 5 |
| Rafferty A.M. | Outcomes of variation in hospital nurse staffing in English hospitals: Cross-sectional analysis of survey data and discharge records | 2007 | 44 | 2 | 175-182 | 299 | 6 |
| Xyrichis A. | What fosters or prevents interprofessional teamworking in primary and community care? A literature review | 2008 | 45 | 1 | 140-153 | 253 | 7 |
| Piko B.F. | Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: A questionnaire survey | 2006 | 43 | 3 | 311-318 | 247 | 8 |
| Pace R. | Testing the reliability and efficiency of the pilot Mixed Methods Appraisal Tool (MMAT) for systematic mixed studies review | 2012 | 49 | 1 | 47-53 | 245 | 9 |
| Ream E., | Fatigue: A concept analysis | 1996 | 33 | 5 | 519-529 | 245 | 9 |
| Polit D.F., | Generalization in quantitative and qualitative research: Myths and strategies | 2010 | 47 | 11 | 1451-1458 | 227 | 10 |
| Moons P., | Critique on the conceptualisation of quality of life: A review and evaluation of different conceptual approaches | 2006 | 43 | 7 | 891-901 | 218 | 11 |
| Aiken L.H., | Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe | 2013 | 50 | 2 | 143-153 | 210 | 12 |
| Kottner J., | Guidelines for Reporting Reliability and Agreement Studies (GRRAS) were proposed | 2011 | 48 | 6 | 661-671 | 210 | 12 |
| Dowling M., | From Husserl to van Manen. A review of different phenomenological approaches | 2007 | 44 | 1 | 131-142 | 192 | 13 |
| Nelson A., | Development and evaluation of a multifaceted ergonomics program to prevent injuries associated with patient handling tasks | 2006 | 43 | 6 | 717-733 | 178 | 14 |
| Camerino D., | Work-related factors and violence among nursing staff in the European NEXT study: A longitudinal cohort study | 2008 | 45 | 1 | 35-50 | 174 | 15 |
| Defloor T., | The effect of various combinations of turning and pressure reducing devices on the incidence of pressure ulcers | 2005 | 42 | 1 | 37-46 | 161 | 16 |
| Tzeng H.-M., | The influence of nurses' working motivation and job satisfaction on intention to quit: An empirical investigation in Taiwan | 2002 | 39 | 8 | 867-878 | 160 | 17 |
| Hagquist C., | Using the Rasch model in nursing research: An introduction and illustrative example | 2009 | 46 | 3 | 380-393 | 159 | 18 |
| Squires A. | ,"Methodological challenges in cross-language qualitative research: A research review" | 2009 | 46 | 2 | 277-287 | 156 | 19 |
| Duffield C., | The Delphi technique: a comparison of results obtained using two expert panels | 1993 | 30 | 3 | 227-237 | 156 | 19 |
| Jourdain G., | Job demands-resources, burnout and intention to leave the nursing profession: A questionnaire survey | 2010 | 47 | 6 | 709-722 | 143 | 20 |

As shown in Table 3, the article "A Critical Review of the Delphi Technique as a Research Methodology for Nursing" with 448 received citations is the most-cited article in the Journal of the *International Journal of Nursing Studies* from the beginning of 1963 to the end of 2018. In this article, the Delphi technique in nursing with a critical approach has been studied. This article was published in 2001 by Keeney, S. The title of the second most-cited article of the Journal is "Internet Addiction in Korean Adolescents and its Relation to Depression and Suicidal Ideation: A Questionnaire Survey". The article has received 366 citations and was published by Kim, K. in 2006. The third most-cited article of the journal "Peer Support in a Health Care Context: A Concept Analysis" was published in 2003 by Dennis C.-L. and received 362 citations.

Mapping the keywords of articles published in the journal

One of the important sections in the articles is the keywords. In bibliometric studies, keyword analysis is performed using the co-occurrence technique. Using the VOS viewer software, the mapping of the keywords of the articles published in the journal *International Journal of Nursing Studies* was drawn up. Fig 3 shows the map of the top keywords of the first 20 years of the journal (1963-1982).

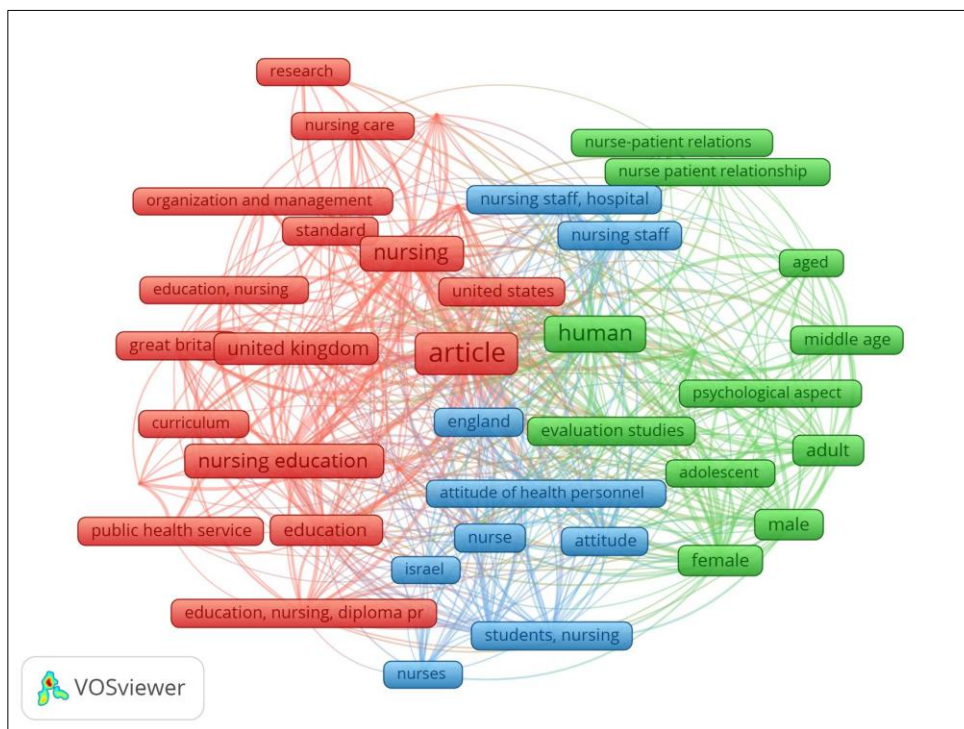


Fig 3: Co-occurrence map of the keywords of Journal Articles in the First 20 Years of the journal (1963-1982)

As shown in Figure 3, the most frequent keywords of the first 20 years of the journal (1963-1982) were placed in three clusters. The first cluster was red; the second cluster was green, and the third cluster was blue in the map. Nursing education, education, and education nursing are the most important keywords in the first cluster. This cluster can be called nursing education. In the second cluster, keywords like human, adult, male, female, aged, and middle-aged are present. The second cluster is

devoted to demographic characteristics. The third cluster in the map includes the nursing staff, nurse, attitude, and attitude of health personnel. This cluster belongs to nurses' attitudes.

The top keywords of the second 20-year of the journal (1983-2002) are presented in Fig 4. The second 20-year map, like the first 20 years, consists of three red (first), green (second), and blue (third) clusters, but there are some variations in the keywords. As shown in Fig 4, in the second 20 years, nursing education is not among the main three major clusters of the journal. The attitude of nurses has become the best journal cluster (first cluster). The second cluster is assigned to nursing, nursing assessment, and nurse-patient relationship. In the third cluster, the keywords are adult, male, female, aged, and middle-aged; these keywords were in the first 20 years in the second cluster.

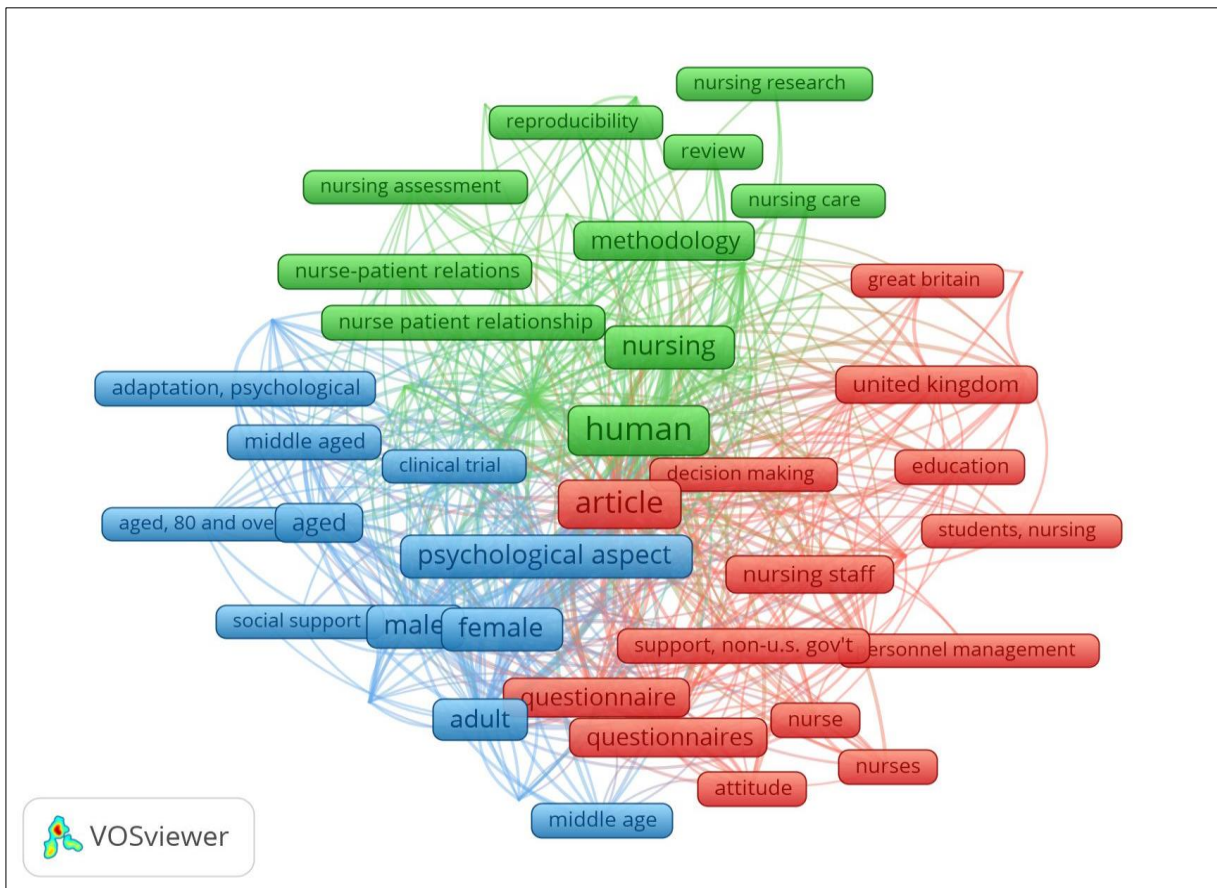


Fig 4: Co-occurrence map of the keywords of Journal Articles in the 20 Years of the Journal (1983-2002)

Figure 5 shows the most frequent keywords of the past 16 years (2003-2018). The top keywords' map consists of four clusters. The first cluster is red; the second cluster is green; the third cluster is blue, and the fourth cluster is yellow in the map. Fig 5 also shows that the 16-year-old keywords of the journal became more diverse and more specialized than before. For example, nursing education and attitude of nurses who were separated into two clusters in the preceding periods were placed in one cluster (first cluster). It is worth noting that in the first period, nursing education and in the second period nurses' attitude was the best cluster but in the third period, these clusters were combined and converted to the first cluster.

The second cluster, in addition to the keywords human, adult, male, female, aged, and middle-aged, has demographic characteristics and is a clinical trial, a randomized controlled trial, and a controlled study. In addition, two new clusters were also added. The third cluster contains these keywords: nursing staff, nurses, job satisfaction, and cross-sectional studies. The last cluster based on the 16-year-old keywords of the journal (2003-2018) is shown in Fig 5. In the fourth cluster, in addition to psychometric properties, there are other keywords, such as validation study and analysis of variance.

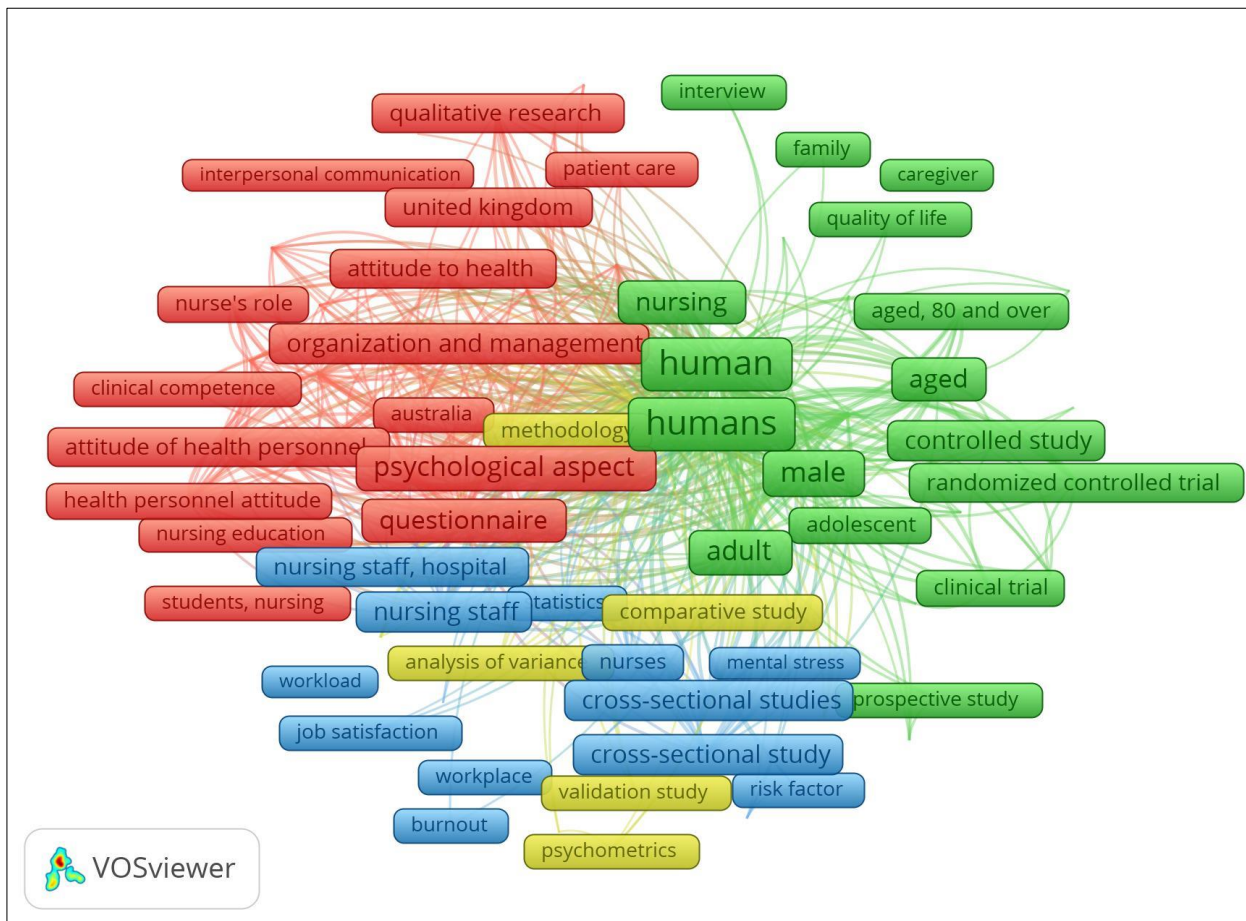


Fig 5: Co-occurrence map of the keywords of Journal Articles in the Recent 16 Years (2003-2018)

Discussion

Academic journals are undoubtedly one of the important processes of knowledge sharing. In other words, academic journals are like a university in which research findings are discussed (Van Raan, 2003). Scientific journals have more audiences due to the variety and rapid dissemination of information, compared with other information sources (Taram & Douhani, 2015). In fact, the expanding number of scientific journals and the widespread acceptance of researchers have made the evaluation and analysis of scientific journals an important and essential issue. One of the methods for assessing scientific journals is bibliometric analysis (Tang et al., 2018). In this bibliometric study, the articles of the *International Journal of Nursing Studies* were analyzed.

The results revealed that the publication process of the article is in the ascendant journal. The result is a very high level of nurse community acceptance. The journal is based on IF Quartile and CiteScore Quartile in the first quarter and is among the top nursing journals in the world. The survey of the most productive countries, universities, and authors in the journal suggested that United Kingdom, King's College London, and Bergman, R. are, respectively, the most active country, university, and author in the *International Journal of Nursing Studies*. It is worth noting that the authors and universities of more than 80 countries contributed to the publication of journal articles. This volume of participation reflects the high credibility of the journal and the desire of researchers around the world to publish an article in the journal. Usually, the evaluation of the impact of articles in a journal is examined through citations received from articles in that journal. The review of the articles showed that 20 journal articles received a total of 5460 citations. These citations suggest the impact of journal articles in the nursing community. Visualization of over-the-top keywords is well illustrated by the evolution and focus of the journal. In the first 20 years of the journal (1963-1982), the focus of the journal articles was on nursing education. In the second 20 years of the journal (1983-2002), the focus of published articles on nurses' attitudes changed. Finally, in the past two decades (2003-2018), psychometric and occupational issues of nurses were added to previous clusters as emerging areas of articles published in the journal.

Conclusion

This study was conducted with the goal of a comprehensive bibliometric review of a pioneering journal of nursing in the world entitled "*International Journal of Nursing Studies*" and presented a general perspective on journal performance during the years 1963 - 2018. The trend of publication, citation, and growth of the journal was ascending. During this long period, the journal has been able to become a leading pioneer journal in the field of nursing with a positive and growing trend and attract a lot of attention from researchers and authors around the world. We hope that the results of the current bibliometric study and visualization benefit all nursing researchers and journalists.

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Conflict of interest

The authors declare no conflict of interest in this study.

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