Review Article

Clinical Simulation in Nursing: A Bibliometric Analysis after Its Tenth Anniversary

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Abstract
Background: A single journal study of the journal *Clinical Simulation in Nursing* was performed after its tenth anniversary. Single journal studies aim to analyze journal bibliometric indicators to assess journal characteristics and history, as well as to support possible authors in deciding if the journal might be appropriate to publish their papers.
Methods: The corpus was harvested from the Scopus bibliographical database (Elsevier, Amsterdam, The Netherlands), using the search string *Clinical Simulation in Nursing* in the Source title field for the period 2006 till 2016 (inclusive). The bibliometric analysis was performed with Scopus built-in services and MS Excel 2007 (Microsoft, Rochester, NY). The thematic, chronological, cooperation, and hot topic analysis was performed on scientific landscapes induced by VOSviewer software version 1.6.5 (Leiden University, Leiden, The Netherlands). Sleeping Beauties were identified by our own software developed at the Faculty of Electrical Engineering and Computer Science, University of Maribor, Maribor, Slovenia.
Results: The volume of the literature production is increasing as are the yearly average number of pages, authors, references, interorganizational cooperation, and Impact Factor. The most productive country is the United States and also all top ten productive organizations are located there. The thematic analysis revealed six themes namely simulated clinical experience in health care, education, interprofessional simulation in teams, research in human patient simulation, simulation centers, and debriefing. Additionally, one Sleeping Beauty was identified. The hot topics seem to be experiential learning, self-efficacy, interprofessional education, and debriefing.
Conclusions: The research literature production is increasing, together with publication quality indicators, like yearly average number of pages, authors, and organizations. The thematic analysis showed that the Journal themes conform to the Aims and Scope of the Journal; however; some research gaps exist. Chronologically, the publication's content went from practice, through theory development to the use of the theory in simulation design.

Single journal studies have been performed for almost as long as general bibliometric studies. They, in general, deal with bibliometric analysis, citation analysis, content analyses, and other bibliometric aspects of a single journal in the manner to present the journal's characteristics and inform possible authors (Zainab, Anyi, & Anuar, 2009). Most single journals' studies are devoted to sciences and technology, medical sciences, library and information science, humanities, and the social sciences. The majority of analyzed journals are published in the Asian and African countries, followed by those from the United States and Europe. They are indexed by major databases, such as Web of Science (WoS), Scopus, or Medline (Anyi, Zainab, & Anuar, 2009).

Studies on single journals present various types of bibliometric measures like productivity of authors and their affiliations; author's gender, profession, and rank; degree of collaboration among authors, affiliations, and countries; analysis of subject content, keyword analysis, keyword co-occurrences, Impact Factor (Rao, Sharma, Devi, & Muralidhar, 2014), thematic analysis, Sleeping Beauties (SBs) (Blažun Vošner, Kokol, Bobek, & Železnik, 2016); and characteristics of Editorial Boards and citation analysis (Anyi et al., 2009). Some recent examples of single journal studies include the *Journal of Nursing Regulation* (Benton & Alexander, 2016), *Computers in Human Behavior* (Blažun Vošner, et al., 2016), *Journal of Clinical and Diagnostic Research* (Jain et al., 2015), and *Historical review* (Taşkın & Akça, 2016).

Clinical Simulation in Nursing (*CSN*) is a peer-reviewed international journal, which is published monthly in an online form. It is the official journal of the International Nursing Association for Clinical Simulation and Learning (Elsevier B.V., 2016a). The journal considers manuscripts dealing with topics like innovative teaching/learning strategies using simulation; guidelines, regulations, and legislative policies that impact simulation, leadership for simulation, simulation operations, and real-world practice; and academic uses of simulation for publication. According to the Thomson Reuters Journal Citation Reports, the *CSN* reached an Impact Factor of 1.360 in 2015. Journal's Source Normalized Impact per Paper Impact Factor (SNIP IF) is 1.037 (Elsevier B.V., 2016b).

The aim of this article is to analyze the journal's 10 years' publishing history. The analyses will focus on descriptive bibliometric measures, thematic analysis, co-authorship cooperation, and the identification of hot topics and SBs.

Key Points
- The *Clinical Simulation in Nursing* bibliometrics' quality indicators as well as productivity are showing a positive trend.
- Authors are affiliated mostly to the United States and US-located organizations.
- More than one-third of affiliated countries established a collaboration based on co-authorship.

Methods

The search was conducted on September 3, 2016, in the Scopus bibliographical database (Elsevier, Amsterdam, The Netherlands), using the search string *CSN* in the Source title field, for the period 2006 till 2016 (inclusive). For the descriptive and thematic analyses, the publications from the year 2016 were excluded, due to the fact that the year is not yet completed; therefore, the results for this year might be misleading. The hot topic identification was performed for the period 2014 to 2016 because we were interested in the most recent topics emerging in 2016.

To perform the descriptive bibliometric analysis (distribution of types of documents, most prolific and cited articles, organizations, and countries), we used the Scopus built-in analysis services. For the trends' analyses of *CSN* publication characteristics (average number of pages, references, authors, organizations, and citations per publication per year), we exported the publication meta-data to Excel 2007 (Microsoft, Rochester, NY) and calculated the averages with the Excel built-in text and statistical functions. Yearly *CSN* SNIP and ranks were obtained from the Sci-Mago Web page (Elsevier) (Scimago Lab, 2016).

To analyze different aspects of *CSN* literature production, we induced different scientific landscapes, as well as co-authors and co-occurrence networks, using VOSviewer software version 1.6.5 (Leiden University, Leiden, The Netherlands) (van Eck & Waltman, 2010). We analyzed publication titles and abstracts; however, we omitted general/common terms, such as introduction, argument, debate, author, scope, significance, baseline, and timestamps (e.g., month). The thematic analysis was based on the clustered scientific landscape, whereas terms were analyzed from the historical and citation context perspectives, using timeline and citation density–annotated scientific landscapes. We assessed the country cooperation on the basis of the country co-authorship network. To identify current hot topics, we decided to analyze author keywords appearing in publications published in 2014 and later. The identification was based on the average number of citations of a publication in which keywords appeared.

In addition, we also aimed to identify SBs (Van Raan, 2004). Each publication that was cited less than once on average in the period of at least the first five years after it was published and had more than three citations per year on average after awakening was identified as an SB. SBs were identified by our own software developed at the Faculty of Electrical Engineering and Computer Science, University of Maribor, Maribor, Slovenia.

Results and Discussion

In Figure 1, we present the dynamics of *CSN* literature production (solid line), whereas the dotted line is representing its trend. Altogether, there were 568 publication published in the *CSN* journal till September of 2016. Among them,