

The Journal of Nursing Regulation at Age 6: A Bibliographic Analysis

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Introduction: Bibliometric analysis is a technique that can be used to understand the structure and content of a scientific domain. **Aim:** The aim of this study is to analyze the scientific content of the articles contained in the first 6 years of the *Journal of Nursing Regulation*. **Method:** Data were extracted using Scopus to identify the bibliographic information related to all peer-reviewed articles. The articles were then imported into VOSviewer where a co-word analysis was completed. **Results:** Six themes were identified: conduct, simulation, delegation and supervision, public protection, transition to practice, and patient safety and regulatory culture. Nine other areas were suggested for further work. North American authors dominated the articles, and several articles were identified as being highly cited. **Conclusions:** A bibliometric analysis of the content provided valuable insights into the issues addressed, the popularity of certain topics, and the success of a number of authors. The analysis also identified areas for further study.

Keywords: Bibliometrics, conduct, delegation and supervision, patient safety, public protection, regulation, regulatory culture, simulation, social network analysis, transition to practice

The primary aims of the *Journal of Nursing Regulation* (JNR) are to build the body of knowledge in nursing regulation and serve as a conduit for its dissemination across the United States and globally. The journal not only serves nurse regulators but also provides much-needed information to regulatory stakeholders, including nurse educators, practitioners, researchers, and policy makers.

The journal has the following core goals:

- To officially establish the science of nursing regulation
- To disseminate data from rigorous scientific studies to support policy making
- To provide a platform for innovation in regulation
- To introduce new technologies, strategies, and perspectives in nursing regulation.

We believe that JNR, which just passed its sixth-year milestone, has made important strides towards these goals and has provided an important platform for nurse regulators and those interested in regulatory scholarship to communicate research. We hope that it has had an impact in pursuing excellence in regulatory practice and in building the science of nursing regulation. However, we know that belief and hope are not enough and that they are certainly poorly aligned with the core aims of the journal and the value and mission of the National Council of State Boards of Nursing (NCSBN). As researchers in the field of regulatory science, we need to consider the impact of the journal. To this end, we have subjected the content of the journal to a bibliometric analysis.

Using Bibliometric Analysis

The aim of the study is to undertake a bibliometric analysis of the articles published in the first 6 years of the journal as indexed in the Scopus bibliographic database to identify the themes covered and their impact on scholarship.

Bibliographic measurement can be used to assess a number of issues. It can examine the state of the science in a particular domain, identify the components or aspects of investigation regarding a specific theme, or assess the contribution that an individual scholar or institution is making to the scholarly literature (De Bellis, 2009). In addition, it has been used to assess the contribution that a particular journal is making to the scientific literature, and that is the focus of this article. While this technique has been used in a wide range of other areas of science, such as palaeobotany (Saravanan & Dominic, 2014) and scientometrics (Ravikumar, Agrahari, & Singh, 2015), its application to nursing journals is relatively new (Hunt, Happell, Chan, & Cleary, 2012; Hunt, Watson, Jackson, & Cleary, 2012; Lozano-Leon, Gomez-Fernandez, Romero-Indiano, & Peral-Belchoir, 2010; Smith, 2010; Wiles, Olds, & Williams, 2013).

Smith (2010) examined a range of nursing journals during a 32-year period, and Wiles, Olds, and Williams (2013) examined nursing and allied health journals during a 25-year period. The approach taken by Lozano-Leon, Gomez-Fernandez, Romero-Indiano, and Peral-Belchoir (2010) and Hunt, Watson, Jackson, & Cleary (2012) was far more focused; they examined the output of a single journal. Lozano-Leon et al. (2010) analyzed the content of the *Revista de la Sociedad Espanola de Enfermeria Nefrologica*, and

Hunt, Watson, et al. (2012) considered 34 years of the *Journal of Advanced Nursing*. Thus, the design of the current study in relation to a single nursing journal is not unique, even though the technique has not been widely used for nursing journals. Perhaps this is not surprising; as Smith and Hazelton (2011) noted, bibliometrics is increasingly used across a wide range of disciplines, but nursing lags behind. Indeed, they noted more generally that bibliometrics was inadequately addressed during research methods courses for nursing programs (Smith & Hazelton, 2011).

We performed a bibliometric analysis on *JNR* and provide a summary that examines its strengths and potential for growth and development in the following areas:

- Scholarship. How expansive is *JNR*'s content? Have we cast a wide net with the ability to share a breadth of regulatory knowledge? What have been the strengths in this domain and which areas need further development?
- Citations. How often are journal articles cited by authors outside *JNR*? Is the content recognized as important by other authors, and is it relevant and applicable enough to be cited in parallel articles?
- Country of origin of authors. Are we meeting our goal to gather and disseminate knowledge globally? What are the countries of origin of *JNR*'s authors?

Method

The information needed to conduct a bibliographic analysis can be extracted from several databases. Evaluation of the strengths and weaknesses of the various databases has been published elsewhere (De Groote & Raszewski, 2012; Falagas, Pitsoumi, Malietzis, & Papas, 2008). Based on this evaluation and the ease of importing the data into the analysis and mapping software VOSviewer, we selected the Scopus (Elsevier Ltd.) database. Scopus has excellent coverage of a wide range of peer-reviewed journals, including *JNR*. VOSviewer is a specialist, free-to-download-and-use, analytical and mapping package developed by van Eck and Waltman (2014) at the University of Leiden. The package, along with information on its development, capabilities, and use, can be obtained at www.vosviewer.com/.

Extracting the Data

A simple search was conducted to identify all articles published during the first 6 years of publication of *JNR* by setting the journal title as the search term in the data field entitled "source." Then, the retrieved articles were reviewed to ensure accuracy; that is, to ensure that articles from other journals had not been coded erroneously. No errors were found. We also manually cross-checked the retrieved articles with the Contents pages of *JNR* issues to ensure that no articles had been missed. Again, no errors were identified. All articles were then selected and exported in the file format required by VOSviewer, the CSV (comma separated values) file format.

Importing and Analyzing the Data

VOSviewer enables the user to easily import and analyze data using several approaches. The step-by-step process of importing the file and selecting the various analytical techniques is not provided in detail in this article because it has been well covered by the developers of the package in their user guide and their published works (van Eck & Waltman, 2014, 2015).

VOSviewer generates a bibliographic map consisting of nodes (circles) that represent the variables of interest and edges (links) that connect the nodes, representing relationships that have been identified between the various variables of interest. The nodes vary in size, representing the frequency with which the variables are displayed. The larger the node, the more occurrences of the variable of interest are in the dataset. The edges also vary in thickness, illustrating the strength of the relationship. The thicker the edge, the stronger the relationship is.

The mapping package uses a modified version of multi-dimensional scaling to position the nodes on the screen or page. Nodes that are similar are located near each other. Depending on the analysis being used, the color of the nodes can indicate a frequency of occurrence, the average year of publication, or a cluster to which the variable of interest belongs.

In this study, an examination of the countries in which authors are located was conducted. In addition, three specific analytical techniques were used relating to co-word occurrence: cluster analysis, average citation impact, and average year of publication.

Co-word or co-occurrence analysis is a technique that scans the titles and abstracts of the article to identify frequently occurring themes. Words that routinely occur with great frequency in the English language such as prepositions are excluded; the software VOSviewer looks for nouns and noun clauses. Words that occur with frequency and in a particular pattern are clustered together.

Identifying Themes and Gaps

After the co-occurrence maps were generated, we both independently examined the maps, isolated the overlapping themes by drawing ellipses around the color-defined clusters, and produced a descriptive interpretation of the content. Based on our extensive knowledge of the subject, we also developed a list of topics that appeared to be missing. We shared our interpretations with each other and discussed them until an agreed-upon description of the various features of the map content and structure was reached.

Results

Scholarship

Because of space limitations, only the thematic cluster map generated from a co-word analysis of the content of the titles and abstracts is included in this article. (See Figure 1.) A full-color version of Figure 1—as well as three other full-color figures

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