RESEARCH ARTICLE

A BIBLIOMETRIC ANALYSIS OF THE PHILIPPINE JOURNAL OF NURSING FOR 1966 - 2017

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Abstract

The PJN has served its purpose as a venue for both Filipino and foreign nurses to publish their original articles, reflection, commentaries, and other scholarly written works on the key areas: nursing practice and nursing education. Marking its 51st year, the aim of this study was to conduct a bibliometric analysis and report publication trends of PJN for the period of 1966–2017. VOSviewer® analyzed the bibliometric characteristics of PJN using the corpus extracted from the Scopus® bibliographical database. There were 724 published documents. Among them, there were 606 original articles, 43 editorials, 22 reviews, 21 conference papers, 18 short surveys, 10 notes, and 4 letters. VOSviewer® facilitated the cluster analyses without the need to have an in-depth knowledge of clustering techniques and without requiring advanced computer skills. From this, the auto-generated themes were reviewed along with the PJN 's aims/objectives such as "nursing," "human," 'health' "primary health care," 'nurses' "nursing education," and healthcare "organizations" that are apparent during the publication period between the1970s to 2010s. Various researchers both in the academic and service institutions published their works in PJN that emulate vital communication patterns in the specific fields that the journal embodies. For this reason, the authors should be instructed to list their affiliations with proper accreditation to ensure accurate publication accurate author citation history, co-authorship citations, and other bibliometric indicators. The PJN will continue to support all the researchers in the local and international community to achieve one common goal – to advance and sustain the culture of scholarship in nursing.

Keywords: Bibliometric analysis, Philippine Journal of Nursing, PJN, Philippines

Introduction

Bibliometric analysis (BA) is a form of infographics that evaluates trends in publications, academic output, changes in the research topics, and course development of a discipline found in various written communication using quantitative and statistical methods. The term *bibliometrics* was first coined by Pritchard (1969) as an approach to examine the actual performance and development of journals; to measure the relationship between people with other disciplines; and to assess the publication trends over multiple years – (Železnik, Blažun Vošner, & Kokol, 2017). The bibliometric analysis also highlights the published scientific knowledge within the discipline, addresses the status quo, and specifies the development trends intended for future research direction. Also, through this approach, the scientific community from various disciplines have strengthened their foundational, authoritative, scientific, and expert knowledge that intensifies the visibility of their various published works to further facilitate communication patterns and

collaboration in the specific fields that journal embodies –(Železnik et al., 2017).

To facilitate the conduct of bibliometric analysis, the Leiden University in Netherlands developed the VOSviewer® software to visualize the results of bibliometric networks of a specific journal (van Eck & Waltman, 2013). This computer program uses a bibliographic mapping and clustering technique to develop map networks describing the number of publications, authors, or journals based on a citation, co-citation, or bibliographic coupling of keywords based on a co-occurrence network (Waltman, van Eck, & Noyons, 2010). van Eck, Waltman, Dekker, and van den Berg (2010) added that VOSviewer® could also handle the corpus of bibliometric characteristics for further analysis.

Due to the importance of research conceptualization, dissemination, utilization, and translation, the use of bibliometric

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analysis in nursing has spurted in the past recent years. For instance, journals were assessed: Journal of Advanced Nursing (1975-2015) –(Železnik et al., 2017) and Clinical Simulation in Nursing (2006-2016) (Kokol, Blažun Vošner, & Železnik, 2017). Such approach also mapped the knowledge utilization literature in nursing (1994-2004) (Scott et al., 2010), research utilization (1972- 2001)(Estabrooks, Winther, & Derksen, 2004), and nurse's contribution to literature '(Goode et al., 2013). Moreover, a country-specific assessment report was also conducted: the visibility of nursing research in Latin America (1959-2005)(Mendoza-Parra, Paravic-Klijn, Muñoz-Muñoz, Barriga, & Jiménez-Contreras, 2009), three regions of China (1999 to 2008) (Peng & Hui, 2011), Turkey (1994-2003) – (Ergul, Ardahan, Temel, & Yıldırım, 2010), and Taiwan (1991-2004) (Huang, Ho, & Chuang, 2006). For this reason, this bibliometric analysis is the first of its kind to report the trends in the publication of PJN from 1966 to 2017.

The Philippine Journal of Nursing (PJN) is an international peer-reviewed journal that focuses on nursing practice and nursing education. It is the official publication of the Philippines Nurses Association. The journal serves as a gateway for both Filipino and foreign nurses in publishing their original articles, reflection, commentaries, policies and standards, and other scholarly works. The PJN invites all nurses from local and international communities for a mutual exchange of ideas that will further strengthen professional socialization, networking, and linkage. To date, the PJN is indexed in two large bibliographical databases: Western Pacific Region Index Medicus (WPRIM) and Scopus®. Through this, it builds a culture of scholarship and commitment to a well-founded international collaboration in nursing research reconnecting the tripartite pillars of nursing – practice, education, and research.

The PJN will mark its 51st years and has proven its credence in the dissemination of original works of nurses and the published manuscripts herald the knowledge produced through research. Moving the nursing profession into the postmodern and beyond requires an interwoven professional commitment in the conceptualization of research, dissemination, translation, and utilization and the PJN will continue to respond to the clarion call for strengthening the culture of scholarship.

Methodology

A bibliometric analysis was used to retrieve the information sources published in the PJN from 1966 to 2017. This study was conducted on 1 October 2017 using the Scopus® bibliographical database with a keyword search such as 'Philippine Journal of Nursing' in the source title field from 1966–2017 (inclusive). We extracted all the available articles, pages, references, authors, and affiliations. We exported the names of the authors, abstracts, keywords, editors, and references) in CSV into Excel (Microsoft, USA). We also used a reference manager to have a back-up of the extracted corpus

We exported files in Excel and were double-checked independently (CP/MN/GA/PV) for possible inconsistent and inaccurate information. Excel was used because of the available basic statistical functions. Frequency counts in graphs were used to show the distribution of the document types, research production per year, number of publication by the author, author institutional affiliation, and country of origin.

We used VOSviewer® version 1.6.6 to generate different scientific landscapes and networks. Key terms were generated through network visualization of total link strengths of labels among the common key words common found in the documents published in PJN (van Eck & Waltman, 2014). The total strength of the co-occurrence links with other keywords was automatically calculated and generated. Those keywords with the most significant link strength were selected. We presented a distance-based approach to describe the relatedness of each node through the identified co-occurrence in the type and unit of analysis where all keywords were counted as shown in Figure 6 and Figure 7.

We omitted general terms such as president, message, editorial, report, common statistical research, and time stamps. We also used the timeline-based approach as it is assumed that each node can be linked to a specific timeline and relatedness of nodes, as shown in Figure 8. Results were presented using network maps through graphs as recommended by van Eck and Waltman (2014).

Results

Trends of Research Production

Results indicate a total of 724 were published in PJN. Among them, there were 606 original articles that comprised of 83.7% followed by Editorial (*n* = 43; 5.9%); Review (*n* = 22; 3.0%); Conference Paper (*n* = 21; 2.9%); Short Survey (*n* = 18; 2.5%); Note (*n* = 10; 1.4%); and Letter (*n* = 4; 0.6%). Figure 1 shows the count distribution of document types.

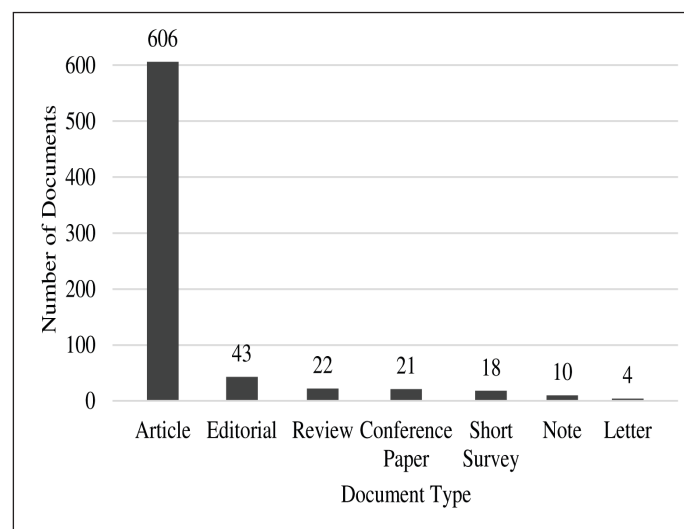*Figure 1*. Document types published in PJN 1966-2017

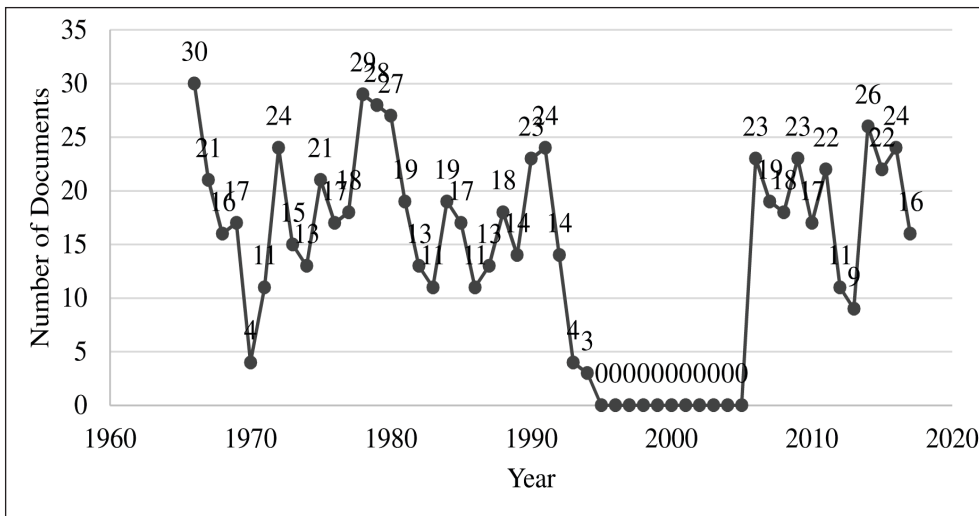**Figure 2.** Number of documents published in PJN 1966-2017

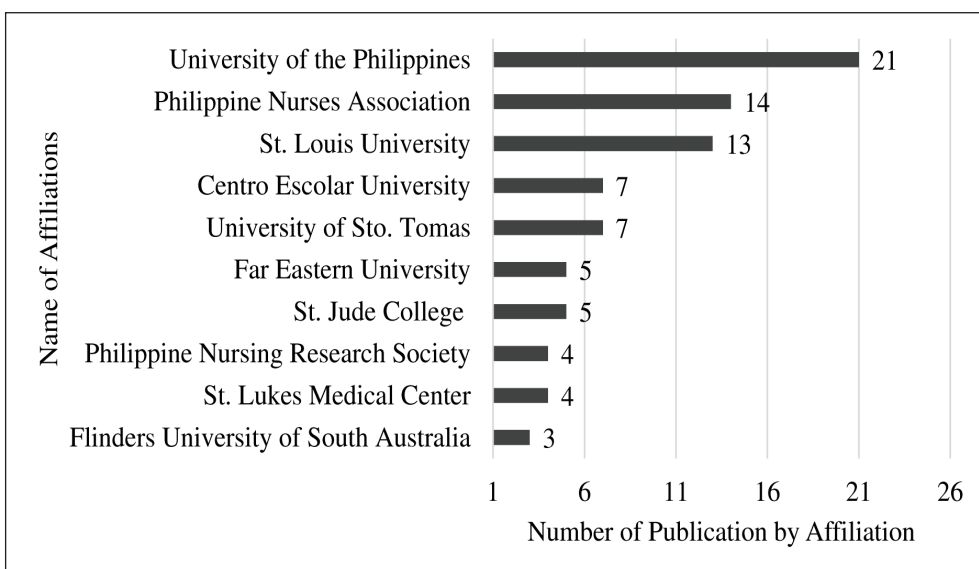Figure 2 shows the specified number of production in PJN. In 1966, there were 30 documents published. The number of published documents fluctuated between 1970 (n = 4) and 1971 (n = 11). The beginning of 1972, twenty-four (24) documents were published but showed fluctuations between 1973 and 1977. During 1979, it almost reached the number of documents when it was first released (n = 29). There was a continued effort in the publication in 1980 (n = 27) but dwindled in 1994 (n = 3). From 1996 to 2006, the online issues of PJN have not circulated that may contribute to a substantial decline during the data analysis.

Beginning 2006, there were twenty-three documents (23). Between 2007 to 2017, the publication ranged from nine (9) to twenty-four (24).

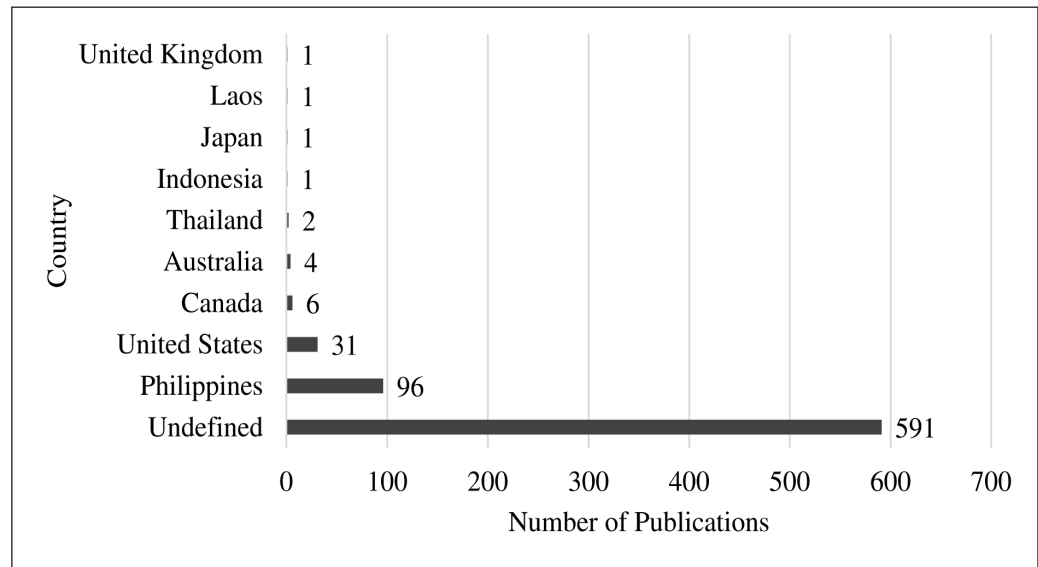**Figure 3.** Number of Publications by Author in PJN 1966-2017

Figure 3 shows the author number of publication for the period of 1996–2017. Findings revealed authors from various institutions published their works that ranged from 1 to 20. Castro-Palaganas, E. authored the most number of publication (n = 20) followed by Quesada, M.L. (n = 18) and Ruiz, C.B. (n = 15). Other authors include Nolasco, E.M., Sotejo, J.V., Isaac-Saño, F., Ortin, E.L., Aragon, L.M., Buenafe, S.A., Laurente C.M, and Samaco-Paquiz, L.P.G.

Figure 4. Number of Published Documents in PJN 1966-2017 by Author Affiliation in PJN

Figure 4 shows the distribution of the author by affiliation. Other significant results indicate University of the Philippines Systems (n = 21), Centro Escolar University System (n = 7), St. Louis University System (n = 13), Philippine Nurses Association (n = 14) ranked the topmost affiliations among authors. Also, the University of Sto. Tomas and Hospital (n = 7), St. Jude College

and Hospital (*n* = 5), Philippine Nursing Research Society (*n* = 4), St. Luke's Medical Center (*n* = 4), and Flinders University Australia (*n* = 3) were also noted.

Figure 5 shows the country of origin of authors. The Scopus analysis revealed a five hundred ninety-one (591) document from undefined origins, whereas ninety-six (96) authors from the Philippines. On the other hand, thirty-one (31) from the United States of America, six (6) from Canada, four (4) from Australia, and two (2) from Thailand. There were also from other neighboring countries, including Thailand, Indonesia, Japan, and Laos. Authors from the United Kingdom was also identified.

Key Terms Associated with Publication in PJN

Figure 6 shows the network visualization of total link strengths of labels among key terms common among the documents published in PJN. Of the 785 keywords, one hundred fifty-nine (159) documents meet the threshold having a minimum number of occurrence (*n* = 5). The keywords with the most significant link strength were selected and used for cluster analysis based on the terms that occurred in the article abstracts. Results revealed "Philippines" as a label to cover other themes like "nursing," "human," 'health' "primary health care," 'nurses' "nursing education," and healthcare "organizations."

Figure 5. Number of Publications by Country in PJN 1966-2017

Figure 6. Network visualization showing the total link strength of labels among key terms (co-occurrence > 100)
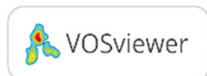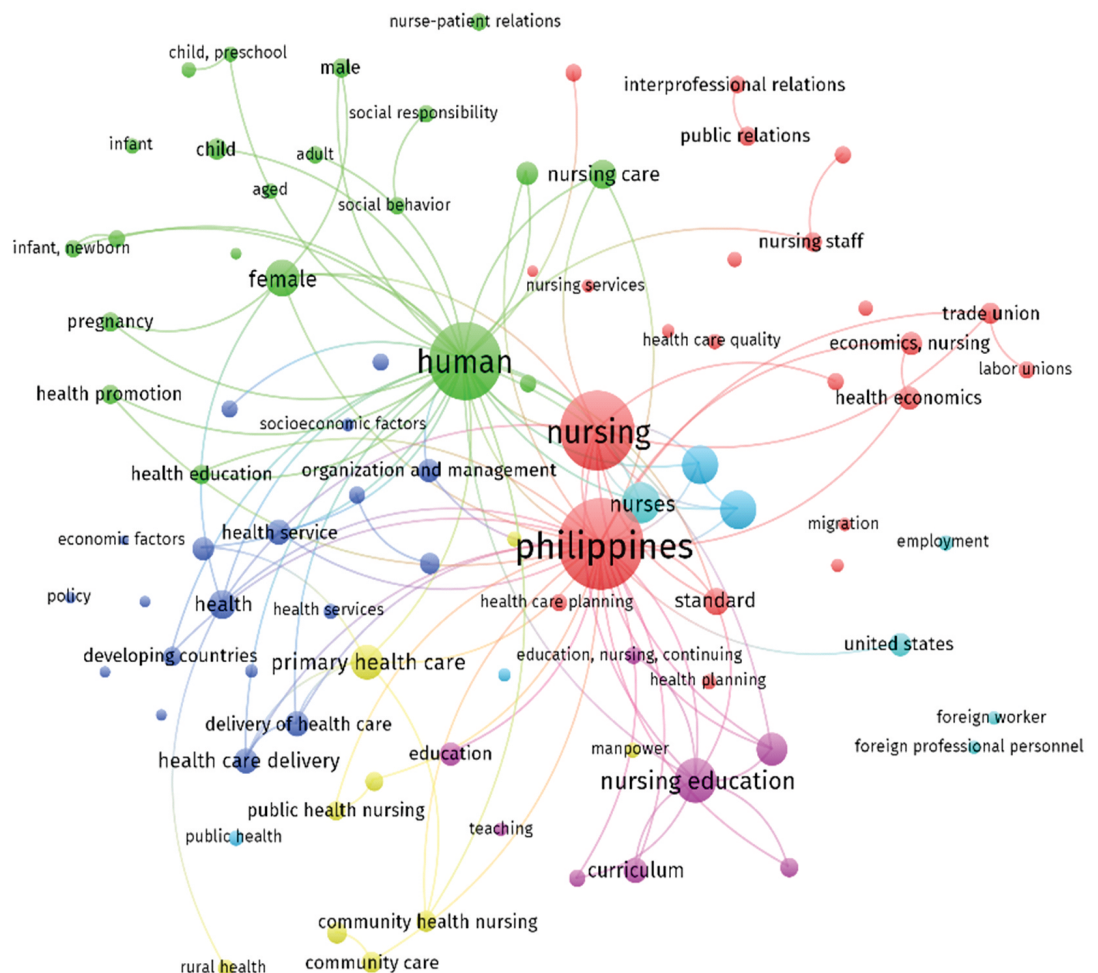
VOSviewer

Table 1 shows the representative terms associated with each main cluster theme while Figure 1 shows the relatedness of each node.

The corpus of documents was further analyzed using a density visualization as shown in Figure 7. Results showed the associated themes in a cluster color representation. For instance, the theme "nursing" (Cluster 1 *Red*), "human" (Cluster 2 *Green*), "health" (Cluster 3 *Dark Blue*), "primary health care", (Cluster 4 Yellow), "nurse" (Cluster 5 Light Blue), "nursing education" (Cluster *Pink*) and Healthcare organizations (Cluster 7 *Sky Blue*).

We also analyzed the derived cluster themes against the year of publication. Between the 1970s to 1980s signaled a focus on nursing education (e.g., standards), nursing service (e.g., trade union), health (e.g., female, nursing care). These themes continued to be prominent until the year 2000. Figure 8 shows the association link of key terms in the year of publication.

Table 1. Thematic Analysis

Cluster No./Color	Themes	Representative Terms
	Philippines	Nursing, Human, Health, Nurses, Primary Health Care, and Nursing Education
Cluster 1 Red	Nursing	Nursing services, nursing staff, health economics, nursing economics, health planning, health care quality, standards, public relations, and trade union and labor unions, etc.
Cluster 2 Green	Human	Social behaviors, social responsibility, health education, health promotion, nurse-patient relations, nursing care, infant, child, newborn, pre, school, adolescent, adult, aged, pregnancy, female and male, etc.
Cluster 3 Dark Blue	Health	Developing countries, socioeconomic factors health service, policy, healthcare delivery, delivery of health care, organization and management, health care planning, World Health Organization, International Council of Nurses, etc.
Cluster 4 Yellow	Primary Healthcare	Public health nursing, Community health nursing, community care, rural health, public health service, and manpower, etc.
Cluster 5 Light Blue	Nurses	The United States, employment, foreign worker, and foreign professional personnel, etc.
Cluster 6 Pink	Nursing Education	Curriculum, teaching, education, and continuing nursing education, etc.
Cluster 7 Sky Blue	Healthcare organizations	Nursing societies, public health, and leadership.

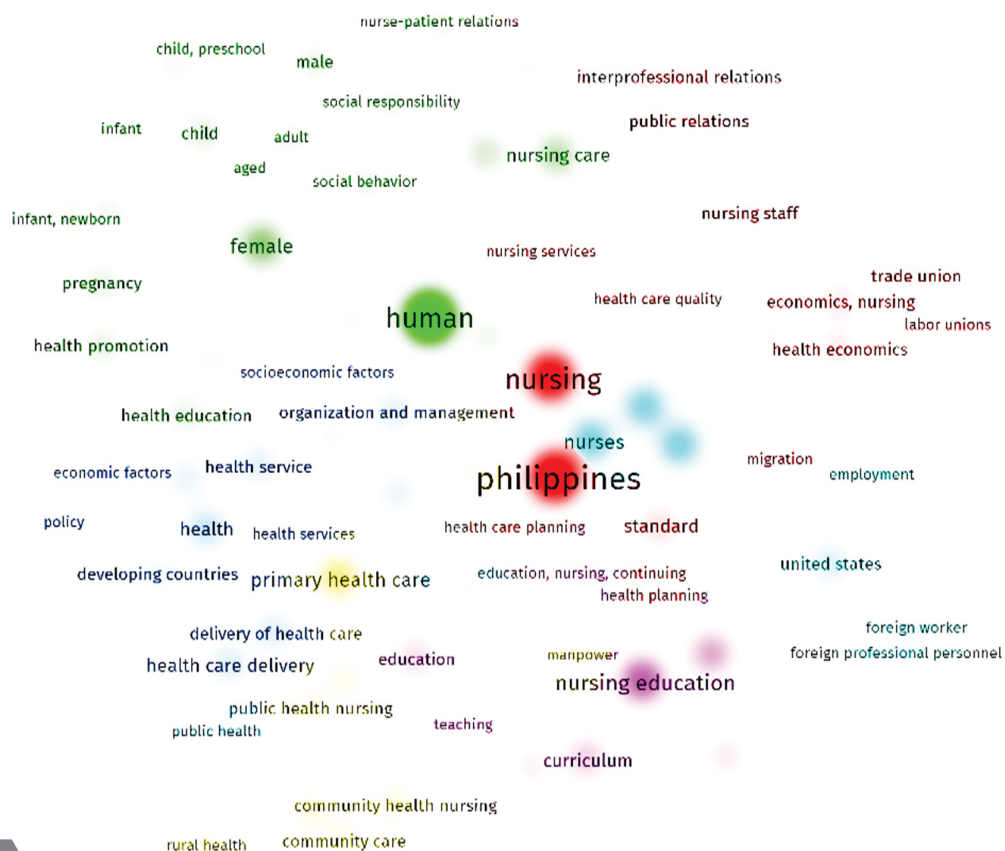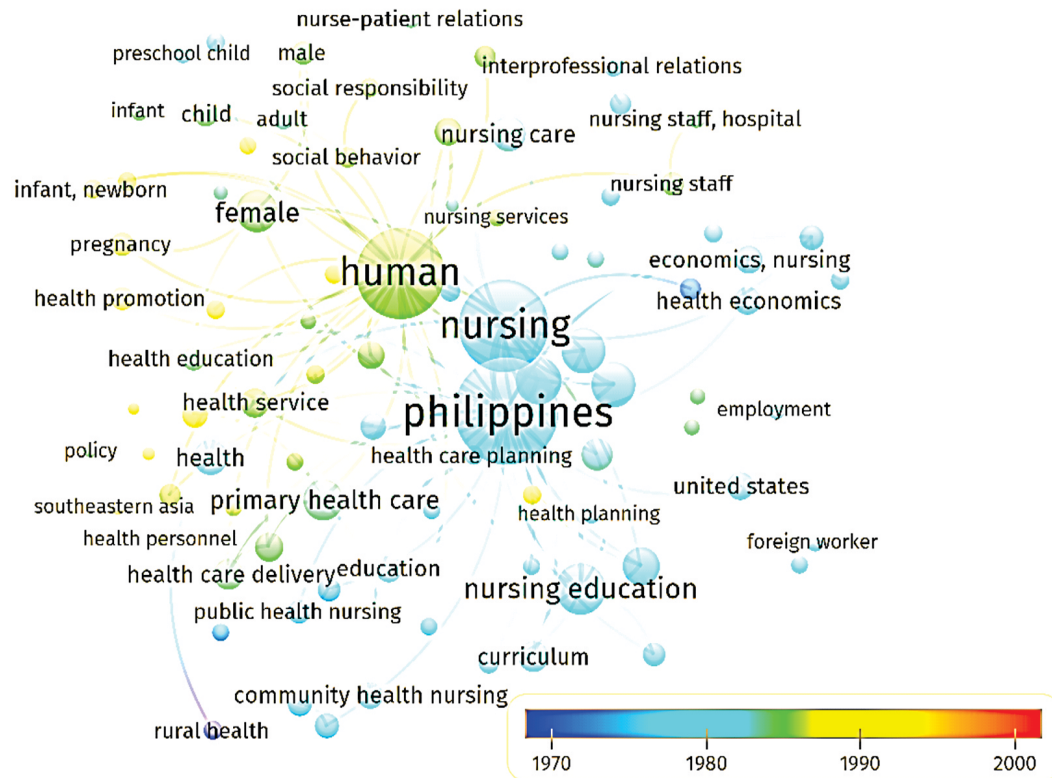*Figure 7*. Density visualization showing the links of labels to key terms

Figure 8. Time-line based showing the association of key terms in the year of publication

Discussion

This study analyzed the bibliometric characteristics of PJN from 1966 to 2017 owing to document types, trends of research production including the number of authors published the document, country of origin, and prominent key terms associated with publication. PJN from its inception in 1966 was having only 30 maximum documents published; it has grown up to 724 until November 2017. Original articles accounted for 606, followed by other documents including, editorial, review, conference paper, short survey, notes, and letters.

Our findings have the same results with the bibliometric analysis of Clinical Simulation in Nursing 2006–2016 (Kokol et al., 2017) and Journal Advanced of Nursing 1976–2015 – (Železnik et al., 2017). Other studies yielded the same results specifically in the review of nursing research papers of 1994 – 2003 in Turkey – (Ergul et al., 2010) nursing research in three regions in China (Peng & Hui, 2011) and the visibility of nursing research in Latin America 1959–2009 (Mendoza-Parra et al., 2009).

The trends in research publication in PJN have shown a considerable rise and fall according to the number of documents published from 1966 to 2017. Similarly, this was observed by – Polit and Beck (2009) in their study to compare the characteristics of nursing research conducted in different countries. Their findings revealed that high-quality research was funded, thus increased in the demands for further publication. In this regard, our findings may be implicated that between 1966 to 2006, there was less funding support for scientific investigations among nurses.

Our results also revealed that there was a surge in publication between 2007 and 2017 which was associated with a new editorial board headed by Erlinda Castro-Palaganas, PhD, RN, a former President of the Philippine Nursing Research Society (PNRS). Castro-Palaganas had twenty published documents followed by two other Filipino authors: Quesada, M.L. (published works: 1979–2011) and Ruiz, C.B. (published written works: 1966–1977).

Also, the baccalaureate, master's, practice-focused doctoral programs, and research-focused doctoral programs encourage the graduates to publish their works to enhance the health and healthcare of individuals, families, populations, and communities (American Association of Colleges of Nursing, 2006). Another reason for the continuous rise in the number of publication that should be noted is due to the demands of the higher education institutions to emulate faculty research productivity (Etcuban et al., 2016; Quimbo & Sulabo, 2014).

Moreover, academic institutions like the University of the Philippines System and St. Louis University Systems were consistent with their written works in PJN. It can be inferred the

nursing organizations like the Philippine Nurses Association and associated departments also published in this journal.

Thematic Analysis

The VOSviewer® able to carry out sophisticated cluster analyses without the need to have an in-depth knowledge of clustering techniques and without requiring advanced computer skills (Eck & Waltman, 2017; van Eck & Waltman, 2014). Seven themes were automatically generated using the VOSviewer® and reflected the aims/objectives of the PJN.

Philippines. The PJN has been the official publication of the Philippine Nurses Association from the time of its inception. The auto-generated clustering and mapping analysis, the Philippines as a keyword appeared frequently. This theme explains that the country within the parlance of nursing continues to nurture and cultivate the value for scientific inquiry and scholarly works imperative to address the growing demands for professional, foundational, and authoritative credence. The works published in PJN attested on how nursing in the Philippines strengthens its image and status as a profession and practice grounded in science and art where all are more committed towards a sustained scholarship through publication in PJN. Also, for this reason, nurses continue to be catalysts in transforming healthcare. Nursing education and service are working in partnership to bridge the theory-practice gap and becoming interwoven with research to fortify the culture of the scholarship of the discipline (Anquillano-Carsola & Castro-Palaganas, 2016; Santos, 2015). *How can nursing in the Philippines survive the challenges of postmodern and beyond?*

Nursing. This theme describes the inclusion of nurses within the organization. Hospital as a system comprises of different interrelated systems. The nursing service co-exists with others through collaborative and collegial partnerships in achieving patient-centered care, professional accountability, and shared governance. However, the ever-changing state of the Philippine healthcare and the associated socio-economic and political quandaries lead to lesser job security, shortage of personnel related to turnover, job dissatisfaction, and work demands. The security blanket that nurses would have is through unionization to voice out and uphold equal opportunities in various healthcare organizations. Nurses can build a multidisciplinary and interprofessional web of relations to address issues concerning their work. Interprofessional and public relations can be a bridge reconnecting the minds and hearts of nurses and their organizations to develop more strategic healthcare planning through involvement. *How do nurses withstand the turbulent times affecting their professional status?*

Human. In the language of nursing, caring is commonly spoken. It is a cadence that unifies the mutual bonds between the nurse and patients through nurse-patient relations grounded in caring communion. Central to this is the provision of care that is individualized, holistic, and embodied. Nurses do not choose who will be cared for; it is an inherent practice to embrace the diverse patient population, including their significant others. This theme emerged because of the foci on the care from 'womb to tomb.' Nurses care for the infants, newborn, child, adult, aged, and other high–risk groups. Nurses should continue to embrace health promotion through health education. Through this approach, nurses can identify the knowledge deficit of a diverse patient population. (De Leon & De Leon, 2017; Garma & Kuan, 2017). *What will happen if nurses cease to care?*

Health. This theme addresses an interplay between health and nursing. There is a clarion call for 'Health for All,' and yet the vision remains sluggish because of the insurmountable challenges: health inequalities, disparities, and social injustices. Nurses should be at the forefront in addressing those through lobbying and advocacy mobility. Nurses have the nurturing capacity to influence the government and other agencies through collective efforts for a better health care planning. Nurses who are in direct involvement with patients, family, and community understand how effective services are delivered and implemented at a point–of –care (Nolasco, 2011; Quesada, 2011; Vargas, 2008). *Does power inherent to nursing?*

Primary Health Care. This theme encompasses the roles of nurses in primary health care. Nurses can practice in the community where they provide community health or public health services. They facilitate and ignite self–reliance, and independence within the community and focus on the health promotion, illness prevention, curative, restoration, and rehabilitation tenets of nursing responsibility. The primary health care is a reconnecting bridge between health services and equality. Nurses can facilitate the attainment of accessible, affordable, attainable, and quality health care services through an embodied community-building and capacity-building legworks (Vargas, 2008). *Where are we now in terms of primary health care?*

Nurses. This theme describes the migration of Filipino nurses to developed countries seeking for higher-paying opportunities. Many factors can be associated: family, future economic gains, and security. However, fewer studies conducted owing to the cross-cultural adaptation among Filipino educated nurses that predisposes them to workplace incivility, and misguided acculturation (Sredl, Parrone, Donabauer, & Miller, 2006; Waldo, 2016). The ASEAN integration waves its hands to provide opportunities for nurses where neighboring countries are the receiving hosts for further employment (Añonuevo, 2011; Tuazon, 2011). *However, what is the level of certainty that these countries offer our nurses?*

Nursing Education. There has been a transcendental change in the nursing curriculum. From general nursing to four-year BSN, Associate in Health Sciences Program to competency-based, and newly instituted outcomes-based has proven that the

educative needs of the students are changing (Manarang & Cuevas, 2017). More often, the nursing education should also embrace institutionalization of enhancing technological competency as caring to develop heightened clinical decision–making skills (Martinez, 2016). Institutions should also continue to develop a quality audit of licensure outcomes (Soriano, 2016). *To what extent do these curricular changes offer quality graduate outcomes?*

Healthcare Organizations. This theme explores the roles of healthcare organizations and societies to improve the practice, education, and research in nursing. Various healthcare organizations are in partnerships with other institutions, including academia, in providing real-world learning experiences. On the other note, many institutions serve as training centers to enhance the competence and update nurses on the current trends in healthcare. In a similar vein, there are many specialized nursing organizations in the country to date, including Philippine Nurses Association, Philippine Nursing Research Society, Association for Nursing Administrators, Deans, among others. Thus, both healthcare organizations and other nursing societies should continue to be the arms of the profession through teamwork (Lumacad & Llanes, 2015). There is also a program instituted by the University of the Philippines on the return service obligation that would strengthen the nexus in nursing practice, education, and research through shared leadership and public health concern (Magsambol, 2015). *However, who should be responsible?*

Strengths and Limitations

This study was the first of its kind using a bibliometric method that analyzed the trends in the publication in the PJN for the period of 1966-2017. In its infancy stage of indexing in Scopus® bibliographical database, it made more accessible for the retrieval of the entire documents under review. This study also has limitations. The PJN is a newly indexed journal in Scopus®, and the citation counts, field weighted impact, outputs in top percentiles, H-index, and the journal impact factor was not further analyzed. The analysis of individual country like the Philippines did not allow us to perform international comparisons. Thus, we limited the analysis of the document types and trends in research production.

Conclusion

This bibliometric analysis is the first of its kind to report the trends in the publication of PJN from 1966 to 2017 and provided an impetus to heighten the involvement of scholars from various settings, including the academe, clinical, and community to advance practice, education, and research. Through this approach, it has identified essential journal features including themes, citation patterns, institutional affiliations of the authors, and prolific authors who contributed to its long withstanding history as an instrument of scholarship and scholarliness

between and among members of the nursing community both local and international. Furthermore, this bibliometric analysis contributed to addressing other areas, concepts, or phenomenon of interest within the parlance of nursing for possible collaboration with all other researchers across the globe and for future research direction

Recommendations

For future bibliometric analysis, it is essential for the PJN to instruct the authors to list their affiliations with proper accreditation. Extracted data also require accurate and consistent information on the specific department of the author affiliation. Some other databases can be used in the conduct of bibliometric analysis and bibliometric mapping such as Web of Science, CINHAL, Medline, PubMed, Embase, SocIndex, PsychInfo, among others to have accurate author citation history, co-authorship citations, and other bibliometric indicators. Other software can be used aside from VOSviewer® depending on the purpose of the researchers.

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