**MAIN PAPER**

**Key Messages**
**Implications for Policy**

* Based on 2008-2010 citations from two major gerontological nursing journals, identifies frequently cited journals in gerontological nursing.
* Results of this study add to the limited bibliometric studies in English-language gerontological nursing literature.
* Enhances librarians’ and researcher’s knowledge of where literature regarding nursing care of older adults is published.

**Implications for Practice**

* Journals represented in Zones 1 and 2 are potential publication venues for authors or other health care practitioners with expertise in gerontological nursing.
* The NAHRS Selected List of Nursing Journals and other journal-level bibliometrics such as SCImago Journal and Country Ranking (SJR) may be used to provide supplementary information about the impact of journals.
* Future research includes using a larger and current sample of journals.

**Introduction**

Gerontological nursing (also called geriatric nursing or gerontologic nursing) is a specialty in the broad fields of nursing and gerontology, and emerged as a nursing specialty after the 1950s1 focusing on the nursing of older adults. Older persons tend to be the largest consumers of health care services. Older adults comprise about 13% of the U.S. population, but are 40% of the costliest 1% in terms of health care spending, and 38% of the costliest 5%.2 Although calendar age is not the only contributing variable to health care spending, research in Europe, Canada, and the U.S. showed that generally, as more people reach a very high age, the percentage needing long-term care is expected to increase,3 and this will have a positive effect on health care expenditure.4,5

Thus, it is no surprise that scholarly publications in nursing are experiencing a remarkable pace of growth, especially research reported in peer-reviewed journals.6,7 Research production in gerontological nursing has also increased8,9 but at a more modest rate. To visualize how citation data in this nursing specialty has changed over time, a citation report, based on a keyword search (“gerontological nursing” OR “geriatric nursing”), was collected from the Web of Science Core Collection database from 1965 to 2015, retrieving 760 articles.10 Since the early 1990s, the trend in the number of published articles has been upward (2007 and 2014 being the two notable exceptions), mirroring the trend in annual citations (except for 2014) as shown in Figures 1 and 2. The peak “published items” year was 2009, with 60 articles, and the articles were cited nearly 280 times, suggesting that gerontological nursing continues to attract the attention of researchers.

Insert Figure 1.

Insert Figure 2.

While some existing sources such as *Magazines for Libraries*11and the *Master Guide to Authoritative Information Resources in the Health Sciences*12 provide annotated information of specialized journals, it has been noted that published English-language bibliometric studies conducted about the quality and impact of journals specializing in gerontological nursing are under-represented.13 The aim of this study is to inform librarians, nurses, and other health practitioners of the major journals in gerontological nursing. In addition, the tools used might provide aspiring authors unique angles about potential journals. Librarians can also use these tools to enhance collection development activities and bibliometric services at their institutions. It is not the goal of this exploratory analysis to assess the quality of gerontological nursing journals.

Using the NAHRS protocol (described below), the authors analyzed the data collected to identify core journals in the field. The results were then compared with a related unpublished bibliometric study14 and a retrospective historical review9 of gerontological nursing journals. As in the present study, Vieira14 also analyzed articles *GN* and *JGN* and followed the NAHRS protocol. In the second part of the study, using criteria based on journal metrics and recommended lists, a second list of major journals was created.

**Background**

In most disciplines, it is important for researchers to identify core journals and highly cited articles15, as well as to “map” or characterize the content of periodicals.16 This project integrated several bibliometric indicators to provide some degree of journal research impact. Bibliometrics is the broad term for the “use of mathematical and statistical methods to study and identify patterns in the usage of materials and services”17, and its techniques are fundamentally based on citation-based data. With the rapid proliferation of online citation-based research, more bibliometric studies are incorporating traditional (e.g. citation counts, journal Impact Factors or IFs) and alternative (also called altmetrics or alternative metrics) bibliometric indicators.18,19 Alternative bibliometrics track online activity (e.g. citation counts, page downloads) and are available in a variety of online media, including social media sites like Twitter.20

Though concerns about the validity and generalization of citation counts are well documented21,16, there is a consensus that bibliometric studies can set a framework for capturing perspectives, changing trends in the research journals, and identifying the individual impact of authors and universities in a particular field.21,22,23 Consequently, Oermann24 urged nursing authors to conduct more nursing bibliometric studies to better understand citation patterns across all types of nursing literature, while Smith25 recommended increased awareness of bibliometrics in nursing scholarship and research to help them demonstrate the significance of their research in a competitive funding environment. In addition, the present comparative review may help aspiring authors in exploring specialized and influential journals in gerontological nursing and, overall, help librarians who support authors in the journal selection process for article submission.

**Literature Review**Prior to the 1990s, few bibliometric studies were conducted on gerontological nursing; most of these were limited by language and/or geography.26,8,27-30 Holkup9 outlined major English-language gerontological nursing periodicals published in the twentieth century and noted that the 1980s saw the inception of the highest number of journals. Despite an increase in the number of nursing bibliometric studies in the last decade32 and the dominance of English-language journals in the fields of geriatrics and gerontology31, there are currently no published bibliometric studies for English-language journals in gerontological nursing.

Since the specialty of gerontological nursing has attracted scholars from core (e.g. nursing, geriatric medicine) or adjacent (e.g. gerontology, social work) fields, the literature tends to be multidisciplinary13 and many journals, as a result, are either specialized or biomedical journals. For example, in his compilation of geriatrics journals indexed in MEDLINE, Roberts32 noted the dispersion of these journals into several subspecialties.

**Journal-Level Bibliometric Indicators**

This study incorporated traditional journal bibliometrics, including two open access alternative bibliometrics: SCImago Journal Rank and Google Scholar Metrics. The following bibliometrics were incorporated into this study:

* *Citation counts* (citation numbers);
* *Journal Impact Factors (IFs)*: The “average number of times articles from the journal published in the past two years have been cited in the JCR year”33 is an online citation index which calculates the journal IF.
* *SCImago Journal and Country Ranking (SJR)*: One of the largest open access journal directories that derives data from Elsevier's Scopus database34, and ranks the data according to the SJR (SCImago Journal Rank) and other bibliometrics35;
* *Google Scholar Metrics*: Draws citations from diverse sources, such as repositories and displays 100 top-ranked journals in categories as well 20 top-ranked subcategories based on Google Scholar citation data.36

Despite their differences in scale and selective journal coverage37, SCImago Journal and Country Ranking (SJR) and Google Scholar Metrics were chosen because they provide top-ranked journal coverage within the relevant subcategories or subject areas of nursing, geriatric medicine and gerontology. When bibliometrics are applied as a collective group and multiple bibliometric indicators are used, they can complement each other and provide a more balanced view of journal evaluations despite concerns among the scientific community that metric indicators are complex (i.e impact is difficult to measure across disciplines, objective scores or benchmarks are not used, absence of standards and best practices).38,18 As suggested by Brown39, the authors combined several traditional with alternative bibliometrics to describe further the importance of these journals.21,38

**Nursing Journal Lists**

No subject-based extensive resource list for gerontological nursing has been reported in the literature.40 The following are two notable sources included in this study:

* *The NAHRS Selected List of Nursing Journals*: an open access list of key nursing journals which is updated periodically by NAHRS (Nursing and Allied Health Resources Section) of the Medical Library Association and includes unique journal information (e.g. acceptance rates, turnaround time, homepage links, number of peer reviewers). This list was developed to assist nurses and librarians in evaluating nursing and interdisciplinary journal titles and to identify publishing opportunities for nursing authors.41 Journals on the list must meet the following criteria: active status (currently published), peer-reviewed, text in English or bilingual English, indexed in MEDLINE or EBSCOhost’s Cumulative Index to Nursing and Allied Health (CINAHL) database and, if interdisciplinary in nature, highly cited by many nursing authors.42 Figure 3 shows the freely-available 2012 NAHRS list available via Google Drive. (For a full version, go to http://tinyurl.com/85oa5o6).

Insert Figure 3

* *Portal of Geriatrics Online Education (POGOe)*: free peer-reviewed repository of geriatric nursing curriculum materials including a selected list of geriatrics and gerontology journals.43 Included journals were either indexed in MEDLINE or included in *Ulrich’s Periodical Directory* (personal communication with the authors; see https://www.pogoe.org/litlinks/quick-links/journals).

**Research Questions**

This comparative review study attempted to answer these research questions:

1. What were the most frequently cited journals in articles published in 2008-2010 in *Geriatric Nursing* (*GN*) and the *Journal of Gerontological Nursing* (*JGN*)?

2. Among the most highly cited journals of 2008-2010, how did these journals compare with Vieira’s14 and Holkup’s9 reviews of gerontological nursing journals?

3. What are the benefits of journal ranking metrics, such as the Journal Impact Factor, SCImago Journal and Country Ranking (SJR) indicator, Google Scholar Metrics, and nursing lists (e.g. the 2012 NAHRS Selected List of Nursing Journals) in helping identify noteworthy journals?

**Methods**This comparative review study involved two parts. In part one, identifying highly cited and top-ranked journals in gerontological nursing was based in part on the methodology developed by the Medical Library Association’s Nursing and Allied Health Resources Section (NAHRS) Task Force.44 At least 18 studies in other nursing specialties45,25 and non-nursing fields46 followed the NAHRS protocol. The authors examined cited references across a three-year period (2008-2010) in two flagship journals of gerontological nursing, *Geriatric Nursing* (*GN*) and the *Journal of Gerontological Nursing* (*JGN*). Both journals are core journals in the Brandon-Hill list of nursing journals.47 In part two, the authors employed criteria using several bibliometric techniques (i.e. journal ranking measures and lists) to develop a list of highly cited English-language journals.

**Part One: NAHRS Protocol and Vieira’s Study**
**A. Data Collection and Analysis**

Following the NAHRS protocol44, the authors searched within the full-length journal articles (i.e. excluding letters and book reviews) in *GN* and *JGN* for the three-year span. Journal articles were examined using the CINAHL database. Cited references in these articles were populated into an Excel spreadsheet containing article characteristics (e.g. source journal, source year). The journal titles were extracted and ranked in order of decreasing citation numbers. The NAHRS protocol employs Bradford’s Law of Scattering to rank journals based on Zones. Zone 1 includes a small number of the most highly cited journals or core journals. Zone 2 includes journals that have had an average amount of citations, while Zone 3 includes journals that are seldom cited.44 To rank journals into zones, the list of cited references was divided by 3 (to group the journals into 3 zones) based on Bradford’s Law of Scattering. The cut-off points among the zones are not absolute and may shift slightly.48 The main tenet of the Bradford’s Law is that a small number of journals will contain the most citations (that is, Zones 1 and 2) in a particular field.44

1. **Comparison with Related Unpublished Study, 1996-1998**For comparison purposes, journals in Zones 1 and 2 were compared with Vieira’s findings.14

**Part Two: Generating a Journal List Using Bibliometric Indicators and Nursing Lists**

In addition to the journals identified in Zones 1 and 2, selective criteria for inclusion of bibliometric measures, including two nursing lists, provided another lens for the analysis of gerontological nursing publications by nursing researchers and academics.

1. **Using Bibliometric Indicators and Nursing Lists to Determine Newer Journals**

To examine gerontological nursing journals, inclusive of both highly cited, established journals (i.e. journals in Zones 1 and 2) and highly cited newer journals, multiple approaches were employed. Some of these methodologies are similar to those used by Hunt, Happell, Chan, and Cleary,49 who ranked journals by combining several bibliometric indicators (e.g. SCImago’s SJR and JCR’s impact factors). The authors analyzed journals meeting the following criteria:

* Journals in Zone 1 from the 2008-2010 study;
* Journals with the greatest percentage increase between the 1996-1998 studies and 2008-2010 to identify journals that received the highest increase in citation counts;
* Journals included with either of these subject classifications: “Medical Sciences – Nurses and Nursing” and “Gerontology and Geriatrics” in *Ulrich’s Periodicals Directory*.This criterion may help identify newer journals or journals not found in other lists or bibliometric sources;
* Journals included in SCImago Journal and Country Ranking (SJR);
* Journals included in Thomson Reuters’ JCR.

B. A new list of journals was identified via the steps above, and a specific criteria checklist was created for further analysis. The authors determined whether the following information was available for each journal: publication history, and whether each journal was included in Google Scholar Metrics and in existing lists (i.e. 2012 NAHRS Selected List of Nursing Journals and POGOe’s journal links).

1. The authors examined shifts in journal rankings and other growth patterns relative to journals published after or that emerged after the Holkup9 chronological analysis of gerontological nursing journals was published.

**Results**

**Cited Journals in Gerontological Nursing, 2008-2010 (Table 1)**

* 7,915 out of 9,879 citations (80%) were from journal articles while the remaining citations were from books (1,204, 12%), government documents (390, 4%), and miscellaneous (370, 3.7%).
* 3,175 (*GN*) and 4,740 (*JGN*) cited references, totaling 7,915 journal articles, were analyzed.
* Twenty-eight journals were identified in Zone 1 and 1,472 journals were identified in Zone 2. Each zone had approximately one-third of the total citations in accordance with Bradford’s Law.
* The top five most cited journals in Zone 1 were the *Journal of the American Geriatrics Society, Journal of Gerontological Nursing, The Gerontologist, Journal of the American Medical Association*, and the *Journal of Advanced Nursing.*

Insert Table 1
Insert Table 2

**Comparing Zones 1 and 2 Journals with Vieira’s Related Unpublished Study**

The authors observed that Vieira’s study14 reported significantly fewer Zone 1 and 2 journals (92) than the present study (1,500). Overall, there was some consistency between the top Zone 1 journals in the 1996-1998 and the 2008-2010 studies. Nine Zone 2 journals shifted from the 1996-1998 study to Zone 1 in the 2008-2010 study. The four journals with the greatest percentage increases in the span between the studies were *Age and Ageing, Neurology, Journals of Gerontology. Series B: Psychological Sciences and Social Sciences*, and *Dysphagia.*

**Combining Bibliometric Tools and Nursing Lists to Develop a Selective List (See Table 2)**

Table 2 consisted of twenty-three journals, six of them nursing journals, that met the criteria developed by the authors. Consistent with the breadth of disciplinary interests in gerontological nursing, nearly all journals were Zones 1 and 2 journals except for the *International Journal of Older People Nursing*. *GN* and *JGN* were not included on the list.

**Update of Holkup’s Review**

Several journals were launched, ceased publication, or changed their titles since Holkup’s paper (2001) was published. Nine of 29 journals Holkup listed in her paper9 were included in either Zones 1 or 2 of the present study. Gerontological nursing journals that began publishing after Holkup’s study included such specialized journals as the *American Journal of Geriatric Psychiatry*, *Archives of Psychiatric Nursing*, *Journal of Pain and Symptom Management*, and *Research in Gerontological Nursing*.

**Discussion**

Part One: NAHRS Protocol and Vieira’s Study
As expected, there was an increase in cited references in the source journals, *GN* and *JGN* published between 2008-2010. *The Journal of the American Geriatrics Society* received the most citations. Similar to other Zones 1 and 2 journals in the biomedical areas (e.g. *Annals of Internal Medicine*),this journal generally has received higher SJR and IF rankings compared to Zones 1 and 2 nursing journals (see Table 2).

As it is often the case,50,51 several established journals particularly non-nursing journals dominated the list of titles in Zones 1 and 2. Only fifteen nursing journals were listed. Moreover, the journals included were top-ranked biomedical journals (e.g. *New England Journal of Medicine*) and specialty journals (e.g. *Ageing and Mental Health, Neurology*). The many journals, especially in Zone 2 reflected the diversity and multidisciplinary of the field. Although American and British journals dominated Zones 1 and 2, one English-language international journal was identified in Zone 2: *Scandinavian Journal of Caring Sciences*.

Some of the journals included in the present study but not in Vieira’s were *The* *International Journal of Geriatric Psychiatry*, *Age and Ageing*, *Aging and Mental Health, Archives of Internal Medicine,* and the *Journal of Critical Nursing*. Vieira’s14 study had a larger number of missing citations counts.  This might be accounted for by a number of factors, including journal publication history (i.e. missing journals in Zones 1 and 2 had not been published during Vieira’s study). It is possible that the higher number of citations represented in Zones 1 and 2 in the 2008-2010 study might account for the peak of “published items” in gerontological nursing, which coincides with the period covering the study (Figure 1).

Part Two: Generating a Journal List Using Bibliometric Indicators and Nursing Lists

Table 2 provided ranking values and reported whether journals were included in the bibliometric journal rankings and specialized lists. This data, although limited, provided journal prestige information and augmented the journal outputs by providing the authors with additional English-language journals not reported elsewhere in the analysis. For example, SCImago Journal and Country Ranking (SJR) led to the identification of other peer-reviewed gerontological nursing journals not reported in Tables 1 or 2 (e.g. *International Journal of Ageing and Later Life, Palliative Care: Research and Treatment,* and *Perspectives: The Journal of the Canadian Gerontological Nursing Association*)*.* In addition,only one open access journal, *Gerokomos*, a non-English journal, was identified in *Ulrich’s Periodical Directory* and in SCImago.Given that most journals were highly cited, it was not surprising that journal IFs, SJRs, and Google Scholar Metrics were acquired. A strength of SJRs is its international and cross-subject coverage, and this evident for locating emerging and international journals (i.e. *International Journal of Older People Nursing*).

As eluded earlier, Zones 1 and 2 journals including the journals produced in Table 2 are not significantly different from each other. Similarly, by using a combination of tools and lists, librarians can draw on different aspects of journal information (e.g. subject-coverage) for collection development practices and in assisting authors with identifying potential journals for submission. Since the lists of journals must meet a criterion for inclusion, they could be useful in identifying publications for nursing (e.g. *The NAHRS Selected List of Nursing Journals,* POGOe’s Journals in Geriatrics and Gerontology). One drawback of consulting these lists is that they might not be up-to-date and therefore, lack comprehensive journal coverage. However, the authors urge librarians to inform aspiring nursing authors of these lists to help them in their research process. Nursing authors have many journal options to choose from as demonstrated by the scattering of core journals in Zones 1 and 2 and Table 2. But these nursing lists will likely include more peer-reviewed and respected journals that may not be included in Zone1 or Zone 2. These lists, namely NAHRS Selected List of Nursing Journals may be better suited for practicing nurse authors than for other researchers as these provide non-metric and quality information relevant to nursing.

**Study Limitations**

Even though the citation data is not relatively new, as Black52, Ming-yueh53, and the authors of the present study noted, most highly cited journals remain the same over time, and there is generally little change in the shift of journal rankings among these journals (e.g. as demonstrated in Viera’s study and the present study). Additionally, given that publication activity in gerontological nursing has grown (i.e. increased in citation), this data is relevant and of continued interest even beyond gerontological nursing researchers. The unconventional combination of methods used to create a list (see Table 2) might not be able to be replicated. However, it reaffirmed the high rankings of the journals, and it gave a snapshot of the journal’s inclusion (or lack of inclusion) in notable lists and rankings. Non-standardization of fields (e.g. title changes) and incomplete records are other common limitations for the customized approaches used in the analysis, as Black50 cautioned.

**Future Studies**

By adding more source journals, particularly top-ranked nursing journals (e.g. *Journal of Advanced Nursing*) and international nursing journals (e.g. *International Journal of Older People Nursing*), could repeat this study to comprise a larger sample of this diverse field. But adding top-ranked source journals adjacent to gerontological nursing (e.g. *Neurology*) may divert the core literature away from the field. Incorporating other emerging academic tools and peer networks such as the Social Science Research Network (SSRN), commercial altmetrics harvesting tools (e.g. PlumX), and new directories such as the International Academy of Nursing Editors (INANE) Directory of Nursing Journals might be worth exploring. In addition, examining further subject themes, authorship characteristics, as well as cross-database comparisons to identify databases with the coverage and scope will help address overlaps and gaps in cited reference searching.

**Conclusion**

This comparative review study identified major journals in gerontological nursing, an interdisciplinary nursing subspecialty. In part one, highly cited journals were identified in Zone 1 and 2 from 2008 to 2010. There was a slight shift in Zone 1 journals in comparison to Vieira’s related study, but overall, most journals remained in the same zone. Zone 2 journals were dispersed in a larger zone of 1,472 journals ranging from influential (highly cited) to lesser-known but newer peer-reviewed journals. In contrast to Holkup’s review of the literature, a growing number of respected biomedical and specialized journals were reported. The second part of the analysis also created a list of many Zones 1 and 2 journals involving bibliometric tools and lists, providing other means of comparisons. The journals presented in this study might be starting points as publishing avenues for individuals planning to submit manuscripts on gerontological nursing topics, and useful for collection development purposes.