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Impact factor evolution of nursing research journals: 2009 to 2014

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ABSTRACT

Background: The use of bibliometric indicators (impact factor [IF], impact index, h-index, etc.) is now believed to be a fundamental measure of the quality of scientific research output. In this context, the presence of scientific nursing journals in international databases and the factors influencing their impact ratings is being widely analyzed.

Purpose: The aim of this study was to analyze the presence of scientific nursing journals in international databases and track the changes in their IF.

Methods: A secondary analysis was carried out on data for the years 2009 to 2014 held in the JCR database (subject category: nursing). Additionally, the presence of scientific nursing journals in Medline, CINAHL, Scopus, and SJR was analyzed.

Discussion: During the period studied, the number of journals indexed in the JCR under the nursing subject category increased from 70 in 2009 (mean IF: 0.99, standard deviation: 0.53) to 115 in 2014 (mean IF: 1.04, standard deviation: 0.42), of which only 70 were listed for the full six years. Although mean IF showed an upward trend throughout this time, no statistically significant differences were found in the variations to this figure.

Conclusion: Although IF and other bibliometric indicators have their limitations, it is nonetheless true that bibliometry is now the most widely used tool for evaluating scientific output in all disciplines, including nursing, highlighting the importance of being familiar with how they are calculated and their significance when deciding the journal or journals in which to publish the results of our research. That said, it is also necessary to consider other possible alternative ways of assessing the quality and impact of scientific contributions.

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Introduction

Bibliometrics (especially the study of who has cited what) has now become a fundamental aspect of modern academic scholarship throughout the world (Smith & Hazelton, 2011). One important reason for this is the use of bibliometric indicators (impact factor [IF], impact index, h-index, etc.) to assess scientific research output, especially that of university faculty. Indeed, the assessment of scientists and investigators through their published work has probably been one of the most widely debated issues in science policy over the last 10 years (Scimago & Citas, 2006).

Given the importance of citation-based research and the fact that the bibliometric assessment of research utility will continue for a long time, the nursing profession clearly needs to expand its research literature and have more journals included in the appropriate databases. One major issue for the contemporary scholar of nursing is being able to disseminate information in an increasingly competitive market (Smith, 2010). Although nursing scientists have many options regarding where to publish, choosing a publication venue is rarely a clear-cut decision (Lewallen & Crane, 2010). Although many factors influence the choice of journal, IF is one of the most valued by nurses in academic settings.

Subsequently the bibliometric indicators of the Journal Citation Report and the Scimago Journal Rank (SJR) are described, and how journals are positioned in relation with those indicators.

Web of Science—JCR

The most widely used bibliometric tool for assessing a journal's quality is currently the JCR by Thomson Reuters (Crookes, Reis, & Jones, 2010; Oermann, 2012). The JCR selects over 10,000 of the leading international scientific publications in a wide variety of disciplines, classifying them into three basic areas, each with its own database: the Arts and Humanities Citation Index, Science Citation Index (SCI), and Social Sciences Citation Index (SSCI). The JCR itself offers a number of different bibliometric indices of a journal's impact (IF, immediacy index, cited half life, and journal ranking) (Reuters, 2011). In order for a scientific journal to be included in the ISI database, it has to pass a selection process based on a variety of criteria relating to timeliness, editorial content, international focus, and citation analysis (Testa, 2001).

E. Garfield was the first person to refer to measuring the impact of scientific publications as a way of classifying and assessing the large number of scientific journals in print (Garfield, 1972). The method was originally devised to enable scientists and librarians to map the network of journals, and the development of particular issues, throughout the various disciplines, rather than as an index of their quality (Crookes et al., 2010). A journal's IF is calculated by dividing the number of citations received by the total number of citable articles published by the same journal over the same period of time (Testa, 2010). However, citation analysis, the SCI, SSCI databases, and the IF itself suffer from a number of shortcomings that seriously call their validity into questions when they are used to evaluate scientific activity, a subject that has been widely discussed in the scientific literature (Aleixandre-Benavent, Valderrama-Zurián, & González-Alca, 2007).

The stand-alone use of the IF may lead to bias when evaluating a journal because IFs can increase as a result of self-citation (either by authors or by a given journal) or in the case of journals that focus on the publication of review articles or limit their scope to fields of knowledge that generate the greatest interest, among other tactics (Crookes et al., 2010).

Scopus—SJR

Scopus is a database developed by the Dutch scientific publishing house Elsevier that indexes the contents of 22,000 scientific journals, books, conferences, and patents. It was created in 2004 as a direct competitor to Thompson's Web of Science (WOS) and is currently the largest referential database in its field. It differentiates itself from its competitors by giving wider coverage to content from non-English speaking countries and a better balance between the Sciences and the Social Sciences, one of the aspects for which the ISI has received most criticism. It also provides a number of different bibliometric indicators (Scimago journal rank, source normalized impact per paper, impact per publication, and h-index).

SJR is the equivalent of the WOS IF, from which it differs in that it uses a three-year citation window and applies a weighting based on a title's prestige: citations from some journals count for more than those from others, depending on the number of citations received. In contrast to WOS, Scopus applies the h-index not only to authors but also to journals and countries (Scimago, 2015).

The median IF of nursing category is lower than the median IF of other disciplines such as Medicine or Psychology. That does not mean that nursing professionals publish in journals with lower quality. Rather, reasons for this include the comparative scarcity of funding for such journals; the fact that nurses tend to not only read but also submit their articles to generalist journals (Oermann, 2012); and the fact that the lower number of nurses with doctoral degrees affects the discipline's ability to generate and use high-impact science (Potempa, Redman, & Anderson, 2008). There are also many other reasons—for example, funding for nursing research, quality of nursing research, and the fact that until recently there were few nursing journals with IFs—and thus top nursing scientists preferred to submit their best papers to journals in other disciplines with IFs, perpetuating a "vicious cycle."

Furthermore, although there has been a substantial increase in bibliometric measures addressed in the literature, there is less information for nurse scientists on scientist rankings, which also rely on bibliometric statistics (Fitzpatrick & Madigan, 2013). As a result, bibliometric studies of the nursing literature are needed if we want to better understand citation patterns across all types of nursing literature and how they influence nursing journal IFs (Oermann, 2012).

Therefore, the purpose of this study was to analyze the presence of scientific nursing journals in international databases and track the changes in their IF during the years 2009 to 2014.

Methods

A secondary analysis was carried out on data for the years 2009 to 2014 held in the JCR database. All the journals appearing under the subject category *Nursing* in Science Editions were selected and their mean IF calculated for each of the years in which they appear in the JCR. A repeated measures analysis of variance procedure was performed to evaluate the variations in the IF of the different journals over the six-year period in question, using SPSS Statistics for Windows, version 19.0. IF values of the 70 journals that remained in JCR for the whole period were used. The analysis was done by selecting the procedure "General Linear Model—Repeated Measures." "IF" was the dependent variable, and "years" was defined as a factor with six levels (years 2009–2014). As our data violated the assumption of sphericity (Mauchly's test), we used the Greenhouse–Geisser correction.

The presence of nursing journals in the SCI category was compared with that of those in the SSCI spell this out category, as was their presence in Medline, CINAHL, Scopus, and SJR. Among the journals included in the SSCI, we depicted those journals included in databases as Medline, CINHAL, and Scopus; furthermore, their own SJR is also indicated.

Findings

Table 1 contains the IF of journals in the subject category *Nursing* appearing in JCR between the years 2009 and 2014, ranked in descending IF order for the last year in this period. The SJR for 2015 is also included, as is the quartile for each journal in the nursing category and their presence in SSCI, Scopus, CINAHL, and Medline.

Looking at alternative ways of measuring a journal's quality, when IF as reported in JCR is compared with SJR for the 10 top-ranked nursing journals by IF in 2014, only 6 appear in the leading positions in the SJR ranking, the first-ranking journal being the same in both cases (*International Journal of Nursing Studies*).

The country of publication of each journal is also shown. The number of journals indexed in JCR under the nursing category increased during the period in question from 70 in 2009 (mean IF: 0.99, standard deviation: 0.53) to 115 in 2014 (mean IF: 1.04, standard deviation: 0.42), which was an increase of 64.3%. Analysis of the country of publication of the journals revealed that the great majority were published in English-speaking countries (80.2%), especially the United States (64.7%). None of the nursing journals published in Spain appear on the list. However, the list does include some journals published in Spanish-speaking countries.

There exists a slow but progressive increase in the average IF of the 70 journals as a whole indexed in JCR who kept their presence during the whole six years studied (from $M = 0.99$ in 2009 to $M = 1.12$ in 2014, a total increase of 13%) depicted in Figure 1. Although the mean IF over the period in question shows an upward trend, no statistically significant differences were found when the variation was analyzed (Greenhouse–Geisser estadistic—*df*: 3,3, *F*: 1.941, $p = .118$).

Discussion and Recommendations

Nursing journals are located in JCR in both the Social Science Citation Index ($n = 109$) and the Science Citation Index ($n = 111$) (the journals "*J Am Acad Nurse Prac*" and "*J Am Assoc Nurse Prac*" appearing in the former but not in the latter). The reason is that nursing has traditionally been considered by many authors as a psychosocial rather than a biological health science (Isabel Orts Cortés, Richart Martínez, & Cabrero García, 2002). With regard to the country of publication, most of the journals listed are from the United States (64.7%). One reason may be that many nursing education programs in US were moved into universities more than 50 years ago, and almost all are now located in universities. The first PhD degrees were awarded to nurses about that same time period. In Europe, nursing education programs remain both inside and outside (i.e., hospital-based programs) of universities because of a lack of harmonization. How the location of a nursing faculty affects their scholarship deserves a deeper analysis. In Spain, nursing has only recognized the education requirement as an university degree for the past 40 years, though doctorate studies were not initiated until 1999. All these may be the reason of the short evolution of nursing research and scholarship in our country.

Out of the 8,674 journals included in the SCI of the WOS, 116 belong to the nursing area. The efforts of some editors, such as Margaret Freda and others who belonged to the International Academy of Nurse Editors, and the receptivity of the staff at Thomson have both contributed to the increase in representation of nursing journals in JCR (Freda, 2006; Ketefian & Freda, 2009). This percentage has also grown in other databases as Medline (248 nursing journals out of a total of

Table 1 – IF of Nursing Journals in JCR (2009–2014), SJR, and Their Presence in Scopus, CINHAL, and Medline

Title	Scimago		JCR (SCI)												Other Databases			Country
	2015		2014		2013		2012		2011		2010		2009		2014	2015			
	SJR	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	SSCI	Scopus	CINAHL	Medline	
International Journal of Nursing Studies	1.17	Q1	2.90	1	2.25	1	2.08	1	2.18	1	2.10	1	1.91	1	Yes	Yes	Yes	Yes	England
Oncology Nursing Forum	0.69		2.79	1	2.83	1	2.39	1	2.51	1	1.78	1	1.91	1	Yes	Yes	Yes	Yes	US
Worldviews on Evidence-Based Nursing	0.90	Q1	2.38	1	2.32	1	1.35	1	1.24	1	1.43	1	1.94	1	Yes	Yes	Yes	Yes	US
American Journal of Critical Care	0.78		2.12	1	1.60	1	1.41	1	1.66	1	1.59	1	1.66	1	No	Yes	Yes	Yes	US
Journal of Cardiovascular Nursing	0.59		2.05	1	1.81	1	1.47	1	1.43	1	1.44	1	1.53	1	Yes	Yes	Yes	Yes	US
Journal of Human Lactation			1.99	1	1.98	1	1.64	1	1.15	2	1.33	1	1.01	2	No	No	Yes	Yes	US
Cancer Nursing	0.76		1.97	1	1.93	1	1.82	1	1.79	1	2.07	1	1.88	1	Yes	Yes	Yes	Yes	US
International Journal of Mental Health Nursing	1.03		1.95	1	2.01	1	1.29	2	1.07	2	1.43	1			Yes	Yes	Yes	Yes	Australia
European Journal of Cardiovascular Nursing	0.63		1.88	1	1.83	1	2.04	1	1.71	1	1.35	1			Yes	Yes	Yes	Yes	England
Journal of Advanced Nursing	0.84	Q1	1.74	1	1.69	1	1.53	1	1.48	1	1.54	1	1.52	1	Yes	Yes	Yes	Yes	England
Journal of Nursing Scholarship	0.93	Q1	1.64	1	1.77	1	1.61	1	1.49	1	1.39	1	1.46	1	Yes	Yes	Yes	Yes	US
Nursing Outlook	0.52	Q1	1.59	1	1.83	1	2.36	1	1.52	1	1.65	1	1.54	1	Yes	Yes	Yes	Yes	US
Midwifery	0.67		1.57	1	1.71	1	1.12	2	1.78	1	1.28	2	1.16	2	Yes	Yes	Yes	Yes	England
Women and Birth	0.54		1.57	1	1.70	1									Yes	Yes	Yes	Yes	The Netherlands
European Journal of Cancer Care			1.56	1	1.76	1	1.31	1							Yes	No	Yes	Yes	England
Australian Critical Care	0.49		1.56	1	1.27	2	0.95	2	0.97	2					Yes	Yes	Yes	Yes	Australia
Critical Care Nurse	0.37		1.56	1	1.07	2	0.90	2	1.08	2	0.93	2	1.03	2	Yes	Yes	Yes	Yes	US
Pain Management Nursing	0.64		1.53	1	1.79	1	1.70	1	1.15	2	1.04	2	1.31	1	Yes	Yes	Yes	Yes	US
Journal of Nursing Management	0.99		1.50	1	1.14	2	1.45	1	1.18	2	1.45	1			Yes	Yes	Yes	Yes	England
Journal of Pediatric Health Care			1.44	1	1.97	1	1.76	1	1.66	1	0.94	2			Yes	No	Yes	Yes	US
Nursing Inquiry	0.58	Q1	1.44	1	1.05	2	1.03	2			0.90	2	0.69	4	Yes	Yes	Yes	Yes	England
Biological Research for Nursing	0.45		1.43	1	1.34	2	1.85	1	1.28	1	0.97	2	0.93	3	No	Yes	Yes	Yes	US
European Journal of Oncology Nursing	0.66		1.43	1	1.79	1	1.69	1	1.41	1	1.15	2	1.13	2	Yes	Yes	Yes	Yes	US
Journal of Nursing Care Quality	0.55	Q1	1.39	1	1.09	2	0.77	3	1.19	2	1.26	2	0.94	2	Yes	Yes	Yes	Yes	US
Nurse Education Today	0.73	Q1	1.36	1	1.46	1	1.22	2	1.24	1	1.11	2	0.91	3	Yes	Yes	Yes	Yes	Scotland
Nursing Research	0.62	Q1	1.36	1	1.50	1	1.56	1	1.40	1	1.79	1	1.80	1	Yes	Yes	Yes	Yes	US
Journal of Family Nursing	0.48		1.34	1	1.57	1	1.07	2	0.96	2	1.69	1	1.25	1	Yes	Yes	Yes	Yes	England
American Journal of Nursing	0.25	Q3	1.30	1	1.32	2	1.39	1	1.12	2	1.01	2	0.69	4	Yes	Yes	Yes	Yes	US
Heart & Lung			1.29	2	1.32	2	1.40	1	1.32	1	1.51	1	1.04	2	No	No	Yes	Yes	US
Clinical Nursing Research	0.37		1.28	2	0.87	3	0.86	3	0.88	3					Yes	Yes	Yes	Yes	US
Journal of the Association of Nurses in AIDS Care	0.13	Q4	1.27	2	1.29	2	1.03	2	1.09	2	1.00	2	0.96	2	Yes	Yes	No	Yes	US
Journal of Nursing Administration	0.70		1.27	2	1.37	1	1.33	1	1.42	1	1.50	1	1.15	2	Yes	Yes	Yes	Yes	US
Research in Nursing & Health	0.58	Q1	1.27	2	1.16	2	2.18	1	1.71	1	1.74	1	1.51	1	Yes	Yes	Yes	Yes	US
Birth-issues in Perinatal Care			1.26	2	2.05	1	2.93	1	2.18	1	1.82	1	1.92	1	Yes	No	Yes	No	US
Journal of Clinical Nursing	0.65	Q1	1.26	2	1.23	2	1.32	1	1.12	2	1.23	2	1.19	1	Yes	Yes	Yes	Yes	England

(*continued on next page*)

Table 1 – (*Continued*)

Title	Scimago		JCR (SCI)												Other Databases			Country
	2015		2014		2013		2012		2011		2010		2009		2014	2015			
	SJR	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	SSCI	Scopus	CINAHL	Medline	
Nursing Ethics	0.69		1.25	2	1.09	2	1.21	2	0.82	3	1.09	2	1.08	2	Yes	Yes	Yes	Yes	England
Australian Journal of Rural Health			1.23	2	1.34	2	1.55	1	1.00	2	1.07	2	0.79	3	Yes	No	Yes	Yes	Australia
Geriatric Nursing	0.28		1.20	2	0.92	2	0.88	2	0.84	3	1.05	2	0.79	3	Yes	Yes	Yes	Yes	US
Journal of Wound Ostomy and Continence Nursing	0.57		1.18	2	1.00	2	0.93	2	1.14	2	1.30	1	1.17	2	Yes	Yes	Yes	Yes	US
Collegian	0.56	Q1	1.18	2	0.84	3	0.73	3	0.90	2	0.82	3			Yes	Yes	Yes	Yes	The Netherlands
Rehabilitation Nursing	0.25	Q3	1.15	2	0.85	3	0.78	3	0.55	4	0.62	4	0.67	4	Yes	Yes	Yes	Yes	US
Journal of Tissue Viability			1.13	2	1.81	1	1.18	2							Yes	No	Yes	Yes	England
Advances in Neonatal Care			1.12	2											Yes	No	Yes	No	US
Journal of School Nursing	0.57	Q1	1.11	2	1.01	2	0.69	3	0.91	2	0.72	3			Yes	Yes	Yes	Yes	US
Advances in Skin & Wound Care	0.38		1.11	2	1.63	1	1.50	1	1.44	1					Yes	Yes	Yes	Yes	US
Journal of Perinatal & Neonatal Nursing	0.35		1.10	2	1.01	2	0.81	3	1.36	1	1.00	2	0.82	3	Yes	Yes	Yes	Yes	US
Journal of Midwifery & Women's Health	0.42		1.07	2	1.04	2	1.25	2	1.16	2	1.05	2	1.13	2	Yes	Yes	Yes	Yes	US
Nursing & Health Sciences	0.48	Q1	1.04	2	0.85	3	0.71	3	0.68	4	0.57	4	0.82	3	Yes	Yes	Yes	Yes	Japan
Western Journal of Nursing Research	0.46	Q1	1.03	2	1.38	1	1.13	2	1.19	2	1.14	2	1.09	2	Yes	Yes	Yes	Yes	US
Journal of Obstetric Gynecologic and Neonatal Nursing	0.47		1.02	2	1.20	2									Yes	Yes	Yes	Yes	US
Journal of the American Academy of Nurse Practitioners	0.36	Q2	1.02	2	0.87	3	0.71	3	0.82	3	0.91	2	0.91	3	Yes	Yes	Yes	Yes	US
Journal of Gerontological Nursing	0.31		1.02	2	0.62	4	0.81	3	0.78	3	0.76	3	0.82	3	Yes	Yes	Yes	Yes	US
Journal of Pediatric Nursing-Nursing Care of Children & Families	0.37		1.01	2	0.92	2	0.79	3							Yes	Yes	No	Yes	US
Asian Nursing Research	0.22	Q3	1.00	2	0.42	4	0.44	4	0.07	4	0.13	4			Yes	Yes	No	Yes	South Korea
Clinical Nurse Specialist	0.21		0.99	2	0.90	3	1.16	2	0.81	3	0.58	4	0.74	3	Yes	Yes	Yes	Yes	US
Journal of the American Psychiatric Nurses Association	0.34		0.98	3											Yes	Yes	Yes	Yes	US
Journal of Nursing Research			0.97	3	0.84	3	0.58	4	0.69	4					Yes	No	Yes	Yes	Taiwan
International Nursing Review	0.55	Q1	0.95	3	0.74	3	0.94	2	1.04	2	0.59	4	0.69	4	Yes	Yes	Yes	Yes	Switzerland
Journal of Professional Nursing	0.68	Q1	0.95	3	0.88	3	0.68	3	0.89	3	0.97	2	0.76	3	Yes	Yes	Yes	Yes	US
Journal of Perianesthesia Nursing	0.23		0.94	3	0.89	3	1.13	2	0.71	3					Yes	Yes	Yes	Yes	US
Journal for Specialists in Pediatric Nursing	0.46		0.92		1.05	2	0.78	3	0.83	3	0.90	2	0.50	4	Yes	Yes	Yes	Yes	US
Clinical Journal of Oncology Nursing	0.31		0.91	3	0.95	2	0.91	2	0.73	3	1.21	2			Yes	Yes	Yes	Yes	US
Journal of Nursing Education	0.69	Q1	0.91	3	0.76	3	1.13	2	0.86	3	0.79	3	0.87	3	Yes	Yes	Yes	Yes	US
Journal of Pediatric Oncology Nursing	0.46		0.90	3	0.87	3	1.04	2	0.70	3	0.90	2	1.03	2	Yes	Yes	Yes	Yes	US

MCN—The American Journal of Maternal–Child Nursing	0.34		0.90	3	0.84	3	0.90	2	1.12	2	0.94	2	0.79	3	Yes	Yes	Yes	Yes	US
Journal of Child Health Care	0.58		0.88	3	0.97	2	0.77	3	0.75	3	0.67	3			Yes	Yes	Yes	Yes	England
Archives of Psychiatric Nursing	0.43		0.85	3	1.03	2	0.92	2	0.92	2	0.98	2	0.90	3	Yes	Yes	Yes	Yes	US
Journal of Psychiatric and Mental Health Nursing	0.48		0.84	3	0.98	2	0.80	3	0.80	3	1.03	2	1.06	2	Yes	Yes	Yes	Yes	England
Nursing Philosophy	0.44		0.83	3	0.64	4	0.88	3	0.84	3	1.27	2			Yes	Yes	Yes	Yes	England
Public Health Nursing	0.44	Q2	0.83	3	0.89	3	0.78	3	0.72	3	0.87	2	0.81	3	Yes	Yes	Yes	Yes	US
Advances in Nursing Science	0.38	Q2	0.83	3	0.87	3	0.82	3	0.97	2	1.41	1	1.41	1	Yes	Yes	Yes	Yes	US
Journal of Neuroscience Nursing	0.30		0.82	3	0.91	3	0.76	3	0.81	3	0.78	3			Yes	Yes	Yes	Yes	US
Nursing Economics	0.42		0.80	3					0.84	3	1.12	2	0.80	3	Yes	Yes	Yes	Yes	US
Journal of Emergency Nursing	0.26		0.79	3	1.13	2	0.80	3	0.50	4	0.43	4	0.36	4	Yes	Yes	No	Yes	US
CIN—Computers Informatics Nursing	0.41		0.76	3	0.81	3	0.82	3	0.83	3	0.96	2	0.95	2	Yes	Yes	Yes	Yes	US
Nursing Clinics of North America	0.30	Q3	0.74	3	0.59	4	0.43	4	0.52	4	0.66	3	0.63	4	Yes	Yes	Yes	Yes	US
Applied Nursing Research	0.45	Q2	0.73	3	1.14	2	0.93	2	1.22	1	1.11	2	0.87	3	Yes	Yes	Yes	Yes	US
Journal of Psychosocial Nursing and Mental Health Services	0.25		0.72	3	0.87	3	0.83	3	0.48	4	0.53	4	0.71	3	Yes	Yes	Yes	Yes	US
Nurse Educator	0.35		0.72	3	0.67	3	0.56	4	0.82	3	0.68	3	0.49	4	Yes	Yes	Yes	Yes	US
Nursing Science Quarterly	0.37	Q2	0.71	3	0.48	4							1.22	1	Yes	Yes	Yes	Yes	US
International Emergency Nursing	0.42		0.70	3	0.72	3									Yes	Yes	Yes	Yes	England
Gastroenterology Nursing	0.22		0.69	3	0.56	4	0.88	2	0.71	3	0.55	4	0.47	4	Yes	Yes	Yes	Yes	US
Journal of Transcultural Nursing	0.36	Q2	0.66	3	0.83	3	0.51	4	0.93	2	0.71	3	0.95	2	Yes	Yes	Yes	Yes	US
Perspectives in Psychiatric Care	0.30		0.65	4	0.71	3	1.04	2	1.30	1	1.14	2	1.00	2	Yes	Yes	Yes	Yes	US
Contemporary Nurse	0.31	Q2	0.65	4	0.65	3	0.44	4	0.67	4	0.44	4	0.50	4	Yes	Yes	Yes	Yes	Australia
Nursing in Critical Care	0.13		0.65	4	0.87	3	0.95	2	1.08	2					Yes	Yes	Yes	Yes	England
Research in Gerontological Nursing	0.24		0.64	4	0.61	4	0.66	3	0.74	3					Yes	Yes	Yes	Yes	US
Holistic Nursing Practice	0.25		0.62	4	0.52	4	0.34	4	0.53	4					Yes	Yes	Yes	Yes	US
Nephrology Nursing Journal	0.21		0.62	4	0.77	3									Yes	Yes	Yes	Yes	US
International Journal of Nursing Practice	0.37	Q2	0.60	4	0.54	4	0.88	2	0.72	3	0.79	3			Yes	Yes	Yes	Yes	Australia
Workplace Health & Safety[*]	0.23		0.56	4	0.61	4	0.86	3	0.51	4	0.56	4			Yes	Yes	Yes	Yes	US
Workplace Health & Safety[*]	0.23	Q3	0.56	4	0.66	3									Yes	Yes	Yes	Yes	US
Orthopaedic Nursing	0.21		0.56	4	0.60	4	0.69	3	0.47	4	0.30	4	0.57	4	Yes	Yes	Yes	Yes	US
Revista Latino-Americana de Enfermagem	0.36	Q2	0.53	4			0.54	4	0.63	4	0.86	3	0.61	4	Yes	Yes	Yes	Yes	Brazil
Journal of Continuing Education in Nursing	0.32		0.52	4	0.60	4	0.71	3	1.05	2	1.04	2			Yes	Yes	Yes	Yes	US
Critical Care Nursing Clinics of North America	0.17		0.49	4	0.43	4	0.37	4							Yes	Yes	Yes	Yes	US
Journal of Community Health Nursing	0.23		0.46	4	0.65	4	0.63	4	0.78	3	0.66	4	0.56		Yes	Yes	Yes	Yes	US
Journal of Addictions Nursing	0.20		0.45	4	0.34	4	0.31	4	0.53	4	0.26	4	0.17	4	Yes	Yes	Yes	Yes	England
Revista da Escola de Enfermagem da USP	0.31	Q2	0.45	4	0.50	4	0.39	4	0.38	4	0.46	4	0.39	4	Yes	Yes	Yes	Yes	Brazil
Journal of Hospice & Palliative Nursing	0.31		0.44	4	0.48	4	0.73	3	0.38	4					Yes	Yes	Yes	Yes	US

(*continued on next page*)

Table 1 – (*Continued*)

Title	Scimago		JCR (SCI)												Other Databases			Country
	2015		2014		2013		2012		2011		2010		2009		2014	2015			
	SJR	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	IF	Q	SSCI	Scopus	CINAHL	Medline	
International Journal of Nursing Knowledge	0.24		0.40	4	0.29	4									Yes	Yes	Yes	Yes	US
Japan Journal of Nursing Science	0.19		0.39	4	0.49	4									Yes	Yes	Yes	Yes	Japan
Journal of Korean Academy of Nursing	0.22	Q3	0.38	4	0.36	4	0.29	4	0.35	4	0.33	4			Yes	Yes	Yes	Yes	South Korea
Research and Theory for Nursing Practice	0.26		0.36	4	0.61	4	0.61	4							Yes	Yes	Yes	Yes	US
Assistenza Infermieristica e Ricerca	0.20	Q3	0.32	4	0.06	4	0.40	4	3.55	4	0.14	4	0.21	4	Yes	Yes	Yes	Yes	Italy
Acta Paulista de Enfermagem	0.28		0.30	4	0.27	4	0.14	4	0.27	4	0.20	4			Yes	Yes	Yes	Yes	Brazil
JNP—Journal for Nurse Practitioners	0.13		0.23	4											Yes	Yes	No	Yes	Japan
Australian Journal of Advanced Nursing	0.22	Q3	0.22	4	0.24	4	0.34	4	0.43	4	0.38	4	0.59	4	Yes	Yes	Yes	Yes	Australia
Pflege	0.17	Q3	0.22	4	0.47	4	0.46	4	0.18	4	0.30	4			Yes	Yes	Yes	Yes	Switzerland
Bariatric Surgical Practice and Patient Care			0.15	4											Yes	No	Yes	Yes	US
Bariatric Nursing and Surgical Patient Care	0.12		0.12	4	0.13	4	0.23	4	0.30	4	0.65	3	0.91	3	Yes	Yes	Yes	Yes	US
Aquichan	0.15	Q3			0.18	4	0.03	4	0.05	4	0.05	4			No	Yes	No	No	Colombia
International Journal of Nursing Terminologies and Classifications					0.90	3	0.36	4	2.18	1					No	No	Yes	Yes	US
International Journal of Urological Nursing	0.17	Q3					0.19	4	0.07	4	0.11	4	0.42	4	No	Yes	Yes	Yes	England
Journal of the American Association of Nurse Practitioners	0.13														Yes	Yes	Yes	Yes	US
Texto & Contexto Enfermagem	0.34	Q2					0.13	4	0.15	4					No	Yes	Yes	No	Brazil

Note. IF, impact factor; SJR, Scimago Journal Rank; SSCI, Social Sciences Citation Index.
* Workplace Health & Safety change from *AAOHN J.*

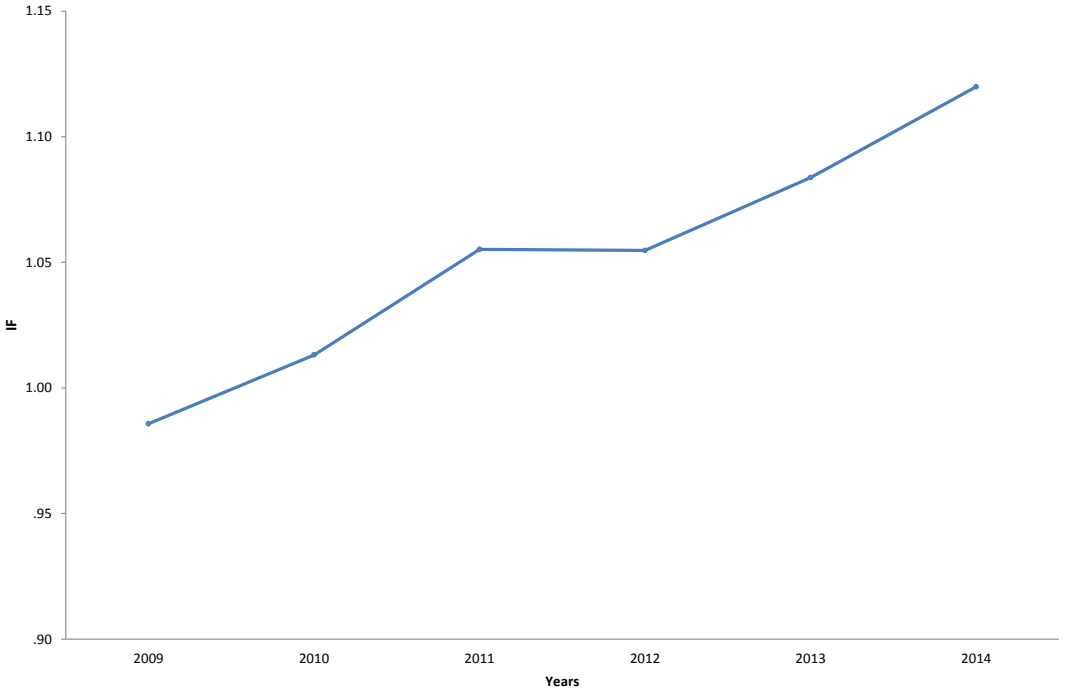

Figure 1 – Changes over time in nursing journal impact factor (2009–2014, $n = 70$).

4,800 in 2009, 774 nursing journals out of a total 5,624 in 2016; 5.2% vs. 13.7%) or CINAHL (a total 568 nursing journals in 2009 to an increase of 3,100 in 2015, total increase of 465%) (Freda, 2006).

Although the mean IF of the journals indexed in JCR has shown an upward trend in recent years (2009–2014), no statistically significant differences were found in its variation, to the contrary of the findings of similar studies covering earlier periods of time (Isabel Orts Cortés et al., 2002). Another study revealed, in addition to a statistically significant increase in average IF score, a 722% increase in citations received by seven core international nursing journals over a 32-year period (Smith, 2010). Our results though differ a little with Isabel Orts Cortés et al. (2002), it is likely related to the time period studied (1997–2000 vs. 2009–2014). This investigation included a greater number of years and those a decade later.

With regard to the change over time of the IF of the nursing journals indexed in JCR during the years 2009 to 2014, only the two periods that recorded the highest IF score in 2014 figured among the top-ranking publications throughout the whole of this period.

Despite the increase in nursing journals' mean IF in recent years, their scores are still low when compared with those received by many publications in the subject category of medicine (Thompson & Clark, 2012) or other disciplines. Another point to highlight note is that when assessing the IFs of journals, it is important that comparisons are made on an intradisciplinary rather than an interdisciplinary basis. In other words, nursing journals should be considered together for their rankings rather than in comparison with journals in disciplines with very high journal IFs (Fitzpatrick & Madigan, 2013). Although it has been shown that the list of indexed nursing journals has indeed undergone a notable expansion, it nevertheless seems likely that nurse editors will persist in advocating for greater coverage of nursing journals and will continue to formally apply to ISI to have their journals evaluated for inclusion (Polit & Northam, 2011).

IF has received much criticism as an indicator of the quality of scientific journals (Oermann & Shaw-Kokot, 2013), although in all fairness it must be said that this was not its original purpose. IF was originally designed to enable scientists and librarians to map the network of journals throughout the various disciplines (Crookes et al., 2010). It should also be noted that the most prestigious journals are those that receive the largest number of submissions and thus attract and can choose from among the best and potentially the most cited research (Garfield, 1999).

Our results are consistent with these remarkable differences between IF and SJR because of their differences in computation used to calculate it.

It has also been pointed out that IF measures the number of citations received by a journal rather than the specific impact of a given article. It is thus unable to reflect an article's quality and importance (Hunt & Cleary, 2011; Oermann, 2012), which is why bibliometrics should be only one aspect of the consideration of the quality and impact of a scientist's work and when taken in isolation are insufficient for the determination of appropriateness for appointment, promotion, and/or tenure (Fitzpatrick & Madigan, 2013).

Nursing has traditionally been a relatively small and slow-growing area (in terms of the number of scientific journals indexed under the subject category) with greater focus on applied rather than basic science approaches, features that are all associated with low IF scores (Isabel Orts Cortés et al., 2002). Yet, in recent years, the discipline of nursing has experienced a global change of course as a scientific discipline. The transfer of nursing to the higher education sector by many countries in the last few decades has also required the development of a body of practice and research-based literature that is distinctly related to nursing (Smith & Hazelton, 2008). Increasingly, nursing academics and those in senior clinical and management positions are expected to contribute to the advancement of health-care knowledge via publication. At the same time, the highly competitive nature of grant funding programs, as well as academic and professional promotion procedures in universities and health departments, means that the ability to demonstrate the impact of one's research is now a critically important consideration (Smith & Hazelton, 2008).

The main differences between journal IF and the SJR indicator derive principally from the differences between the scientific databases used as the sources of citations and from methodological differences between the way the two indices are calculated (Falagas, Kouranos, Arencibia-Jorge, & Karageorgopoulos, 2008). With regard to the methodology used to estimate the two indices being compared, the most significant difference lies in the fact that the SJR takes into account not only the absolute number but also the "quality" of citations received by a journal, whereas the journal IF only considers citations of that article in quantitative terms (Falagas et al., 2008).Given that the number of citations varies from one scientific field to another, some authors have suggested alternatives such as normalization at article level, using the citing audience as the reference set, or using nonparametric statistics for testing the significance of differences among ratings (Leydesdorff, 2012).

Limitations of the IF have led to the development of new indicators designed to be used as alternatives or complements to IF. These include adjusted IF, cited half-life IF, Eurofactor, disciplinary IF, journal to field impact score, journal international index, prestige factor, and the h-index (Aleixandre-Benavent et al., 2007), which is rapidly gaining acceptance as a means of evaluating the work published by individual scientists (Cronin & Meho, 2006). The H factor has the advantage of being easy to calculate from data available in databases such as WOS, Scopus, and Google Scholar (Bakkalbasi, Bauer, Glover, & Wang, 2006). The h-index was developed in 2005 by J.E. Hirsch, a physicist at the University of California (Hirsch, 2005). Put simply, it consists of taking every work published by a given author and ranking them in descending order according to the number of citations received. Each work, therefore, has, in addition to the number of citations received, a place in the ranking, which we shall simply refer to as its rank. We can thus construct two lists of numbers, one in ascending order (ranks) and the other in descending order (citations). The point at which the two values intersect gives the h-index, which is a measure of position, more specifically that in which the number of citations is lower or equal to the rank order occupied by the article in a descending distribution of citations. (Scimago & Citas, 2006). Braun, Glänzel, and Schubert (1985) subsequently introduced a further innovation by applying this method to a complete journal instead of to a single author (Schubert & Glänzel, 2007; Vinkler, 2007).

The use of bibliometric indicators to assess a person's curriculum vitae has its shortcomings, which has been commented on by numerous authors (Fitzpatrick & Madigan, 2013; Isabel Orts Cortés et al., 2002; Oermann, 2012; Thorne, 2011). Nevertheless, as Thompson and Clark (2012) point out, nursing must "play the games" of the academy with other disciplines, whereas recognizing that debate about these games is good and seeking to improve its status and influence.

Although there is clearly a need for increased bibliometric awareness in nursing scholarship and research, radical change cannot be demanded nor expected to happen overnight (Smith & Hazelton, 2011). It is, therefore, important to begin to modify our mindset and include bibliometrics at undergraduate level by including it in nursing curricula (Smith & Hazelton, 2011).

Conclusions

To conclude, although IF and other bibliometric indicators have been shown to have their limitations, it is nevertheless true that bibliometrics is currently the most widely used means of assessing scientific output in all disciplines, and in this case nursing in particular. Hence the important reason of being familiar with such tools when it comes to deciding the journal or journals in which to publish our research results. At the same time, however, it should not be forgotten that there are other possible alternative ways of assessing the quality and impact of scientific contributions.

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