

GUEST EDITORIAL – Professor Mary Courtney, Director of Research, School of Nursing, Queensland University of Technology, Brisbane, Australia and Dr Jackie Jones Editor AJAN, Australia

IMPACT FEVER: WHAT IS IT ALL ABOUT?

At the last Editorial Advisory Board meeting of the Australian Journal of Advanced Nursing, Dr Jackie Jones, Editor of AJAN, reported on the progress being made toward AJAN being included in the rankings prepared by the Institute for Scientific Information (ISI). There are two major editions of the ISI, the Social Science Edition and the Science Edition. Journals listed on the ISI database are ranked by a range of quantitative measures including the number of articles appearing in the journal, the number of citations to journals and by a simple quantitative measure called the impact factor.

The impact factor is simply a quantitative measure of the journal's performance and is the average number of times articles from a journal published in the past two years have been cited in the current year. When interpreting the impact factor, it is generally understood that the higher the impact factor, the higher the quality of the journal.

Currently, of the 1712 scientific journals listed in Social Science Edition database of ISI, only 32 journals are ranked under the nursing category. Similarly, in the Science Edition database, of the 5120 journals ranked only 33 appear under the nursing category. When examining the range of impact factors across these databases nursing journals tend to be ranked quite low.

Why is this so? Does it mean that nursing journals are of less quality than medical journals? Because nursing journals' impact factor tends to be on the low side should we be concerned? Also, why are so few nursing journals listed by the ISI for ranking when there are potentially over 500 nursing journals listed by CINAHL? Before answering these questions we need to understand a little more about how impact factors are calculated, who uses them, why they have grown in popularity and what purpose they serve.

How to calculate an impact factor (IF)

The ISI maintains a database of thousands of journals and calculates an impact factor for each journal that is ranked. The impact factor calculation consists of a ratio of two key elements. The denominator is the total number of 'citable' articles published in a specific journal over a 2 year period. The numerator is the total number of citations in the current year to any article published in this journal during that same 2 year period.

For example, in calculating the impact factors for two different journals, Journal AAA and Journal CCC, in the year 2006 let's say the following data is available:

	Journal AAA		Journal CCC	
	Citations	Citable Articles	Citations	Citable Articles
2005	1000	50	200	50
2004	2000	45	100	45

The impact factor is computed using the following formula:

$$\text{IF} = \frac{\text{All citations to articles in Journal during 2005 + 2004}}{\text{All 'citable' articles in Journal during 2005 + 2004}}$$

$$\text{IF (AAA)} = (1000+2000) / (50+45) = 3000/95 = 31.57$$

$$\text{IF (CCC)} = (200+100) / (50+45) = 300/95 = 3.157$$

In this example both journals produced the same number of articles over the two year period (95). However, Journal AAA received 3000 citations whereas Journal CCC had only 300 citations. Therefore, the number of times that articles were cited in other journal articles raised the impact fact of the journal where the article first appeared.

Who uses impact factors?

With the expansion of the internet and personal computers more people now have easy access to the ISI database and are able to calculate the number of citations for individual researchers and impact factors for individual journals. Therefore, impact factors have grown in popularity as they are a simple objective measure that can serve many purposes. For example:

- librarians use them to decide which journals to purchase and which subscriptions to cancel;
- editors and publishers use them to chart the growth of citations in relation to their competitor;
- researchers use them to gauge where their research papers might obtain the most attention;
- university recruitment and promotion committees use them to gauge the quality of the research papers published by future and current employees;
- government agencies use them to gauge the quality of research papers published;
- competitive funding bodies use them to gauge the quality of journal papers previously published by potential grant recipients.

Impact factor rankings for nursing journals – are they really low?

At first glance, it appears individual nursing journals have very low impact factors compared to other journals. For example, nursing's highest ranked journal is *Birth* with an impact factor of 1.9, whereas the highest ranking medical journal *New England Journal of Medicine* has an impact factor of 32. When reviewing the Journal Citation Reports (JCR) of ISI databases, it is possible to create summary lists of categories of journals which can be ranked by total citations, median impact factors, number of journals and number of articles, etc. The median impact factor is the bibliometric of interest when examining these reports. Previously, when reviewing impact factors for individual journals it appeared that impact factors for nursing journals were quite low. However, when examining summarised median impact factors for groups of journals (categories) a different picture emerges.

In the 2004 JCR Science Edition the median impact factor of the Medicine, General and Internal category was 0.835 compared to 0.689 for the nursing journal category. By grouping the journals together into categories and calculating the median impact factor, the JCR report demonstrates there is not so much difference between the median impact factor. Why is this so? The number of journals that make up categories and the number of articles that subsequently appear in these journals can influence the calculations of these ratios. For example there are 103 journals in the Medicine, General and Internal category compared to 33 in the nursing category and within the 12695 Medicine, General and Internal articles in that category there were some 658118 citations compared to 1959 journals and 21007 citations in the nursing category.

Why are so few nursing journals listed in the ISI and does this mean they are of less quality?

Returning to the question of why are so few nursing journals listed in the ISI, it seems nursing journals have been overlooked in the past. Many thousands of journals are waiting to be evaluated by ISI (which is a private company) and yet as ISI state, 'librarians are their true customers' (Freda 2006, p.58) and that 'no one had ever questioned their coverage of nursing journals previously' (p.58) despite the fact that there are '11 million practicing nurses worldwide'. The ISI have, according to Freda (2006, p.59) from the International Academy of Nursing Editors (INANE), 'decided to add an additional 23 nursing journals in 2006' following extensive lobbying by Freda on behalf of nursing journals. Even this inclusion cannot, at this stage, possibly represent the scope and extent of nursing research worldwide.

However, shouldn't the target audience be one of practice, research, education, and policy not just the degree to which one scholar communicates and is communicated about by another scholar? Gottlieb and Clarke (2005, p.2) quite rightly point out that we may 'unwittingly censor ideas and approaches because the priorities and emphases of most biomedical journals may be very different from those of nursing journals'. Limiting the choice of nursing journals with an impact factor makes it even more difficult for nursing research to make it into press regardless of the quality of that work. Practice is then poorer as a result.

Furthermore, the calculation of impact factor was never intended to be used as a measure of quality of an individual researcher's work. Rather, the impact factor is attached to the journal where the researcher's work appears. Like medical colleagues (Abbasi 2004) and nurses overseas (Freda 2006) nurses in Australia are being instructed to publish in journals with the highest impact factors. As Editor-in-Chief Melby (2005, p.219) strongly argues, IF should not be used to measure a nurse academics' research impact. Amongst other things IFs are sensitive to the type of articles a journal publishes so that a literature review which forms the basis of a researchers argument may then be frequently cited thus influencing the IF (Gottlieb and Clarke 2005; Amin and Mabe 2000) and its ranking. Therefore the jury remains out on the impact factor debate. We would say that it is impossible to compare the scholarship and relevance of one piece of work to another that is not included in the same ranking exercise. *AJAN* chose to participate in the impact factor evaluation process in a mindful and considered manner. The question for clinicians to ask is does this article have potential to make a difference to my practice context and is it a rigorous study worthy of further exploration and discussion?

REFERENCES

- Abbasi, K. 2004 Lets dump impact factors, Editor's Choice, *BMJ*, 329(7471): 0.
- Amin, M. and Mabe, M. 2000 Impact factors: use and abuse, Perspectives in Publishing, No.1: 1-6, (Entire Issue), Elsevier Science www.elsevier.com/framework_editors/pdfs/Perspectives1.pdf.
- Freda, M.C. 2006 Don Quixote, David and Me, AAN New and Opinion, *Nursing Outlook*, 54(1): 58-59.
- Garfield, E. 1955 Citation indexes to science: a new dimension in documentation through association of ideas, *Science* 122(3159): 108-111.
- Garfield, E. 1990 How ISI selects journals for coverage: quantitative and qualitative considerations, *Current Contents* 33(22): 5-13.
- Gottlieb, L.N. and Clarke, S.P. 2005 Impact factors and the law of unintended consequences, *Canadian Journal of Nursing Research*, 37(4): 2-4.
- Meadows, J. 2005 A practical line in bibliometrics, *Interlending and Document Supply*, 33(2): 90-94.
- Melby, C.S. 2005 Examining the future of professional journals, *Nursing and Health Sciences*, 7(4): 219-220.
- Science Citation Index (<http://www.isinet.com/products/citation/sci/>).