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EDITORIAL

Citation trends and citation classics at *Occupational Medicine*

Citations have been described as the 'currency' of modern science [1], and the longitudinal analysis of citation trends is now becoming increasingly popular in many journals. There are four main indicators which are commonly used: 'citation counts', 'cited half lives', 'immediacy indexes' and the 'impact factor'. The term citation counts can be divided into two parts for the purposes of this editorial, with 'citable items' referring to the number of substantial articles published by the journal each year. Definition of the term 'substantial' is ascertained by the license holder, Thomson Scientific, formerly known as the Institute for Scientific Information (ISI). It generally includes original articles, reviews and short communications, but does not usually count editorials, letters to the editor and so on. Further details on the original criteria used for article selection are published elsewhere [2]. 'Citations received' indicates the number of times that articles from this journal were subsequently cited by any journal in a given year.

Cited half life is defined as the number of retrospective years, starting from the present, that are required to find 50% of all citations received by the journal in the current year [3]. The immediacy index represents the average number of times that an article published in a specific year is cited during that same year [4]. The impact factor is defined as the number of times that articles published in a given 2-year period are cited in the following year, divided by the total number of substantial articles published during the same 2-year time period [5]. Further explanation of these definitions, their uses and limitations can be found on the company Web site [6].

As many readers will know, *Occupational Medicine* officially began in 1992 [7], as a continuation of the *Journal of the Society of Occupational Medicine* and other titles prior to that [8]. An examination of historical data from Thomson Scientific's *Journal Citation Reports*® reveals some interesting trends during this time. Figure 1 displays 22 years of citation counts and impact factors at the journal (1985–2006), although citation data for *Occupational Medicine* is only available from 1993 onwards. Longitudinal trends of the cited half life and immediacy index of *Occupational Medicine* are displayed in Figure 2, for the 10-year time period where reliable data are available (1997–2006).

The term 'citation classics' was first used by Eugene Garfield in 1977 to describe articles that had received an unusually large number of citations and had been identified as such by the ISI's citation indexing systems [9]. The actual number of citations received is heavily influenced by the field of study, however, and most research fields have intrinsically different citation rates. Trends also change over time, with Garfield suggesting that the criteria for a citation classic rose from ~250 citations in 1955 to ~1000 in 1995 [10]. Gehanno *et al.* [11] have recently identified 85 citation classics in occupational medicine journals that had each received >100 citations.

Their list, unfortunately, highlights the skewness of research in our small field, with larger journals clearly taking the lion's share of all citation classics. Of the top 20 papers in Gehanno *et al.*'s [11] list for example, 70% had been published in the *British Journal of Industrial Medicine* (which has since become *Occupational and Environmental Medicine)*. Although *Occupational Medicine* is the official voice of the British Society of Occupational Medicine and celebrated its 50th year of publishing >7 years ago [8], it did not produce any articles with a citation count sufficient to make the 'top 20'. Nonetheless, *Occupational Medicine* does have its own citation classics, and Table 1 gives a list of the 10 most highly cited articles ever published in this journal, as identified by the Thomson Scientific *Web of Science*® database in September 2007.

Similar to impact factors, citation counting and the identification of citation classics remain a controversial topic in the academic world. Even for small fields such as occupational medicine, some journals and research topics will tend to garner the bulk of all citations. Such papers may overshadow the less cited articles, even though their contribution to the field may be equally important. This leads to a second point, of actually how important citation classics are in occupational medicine, given that most authors can probably never expect to publish such a paper. For example, the most cited paper in science had been referenced almost 300 000 times by 2005, although, of the 38 million citable items published between 1900 and 2005, <1% were cited >200 times and half were not cited at all [3].

In an editorial describing the historical development of *Occupational Medicine*, Carter [8] explained how the journal has long been a voice for the concerns and aspirations of its readers. Furthermore, the journal has placed an increasing emphasis on providing a solid knowledge base

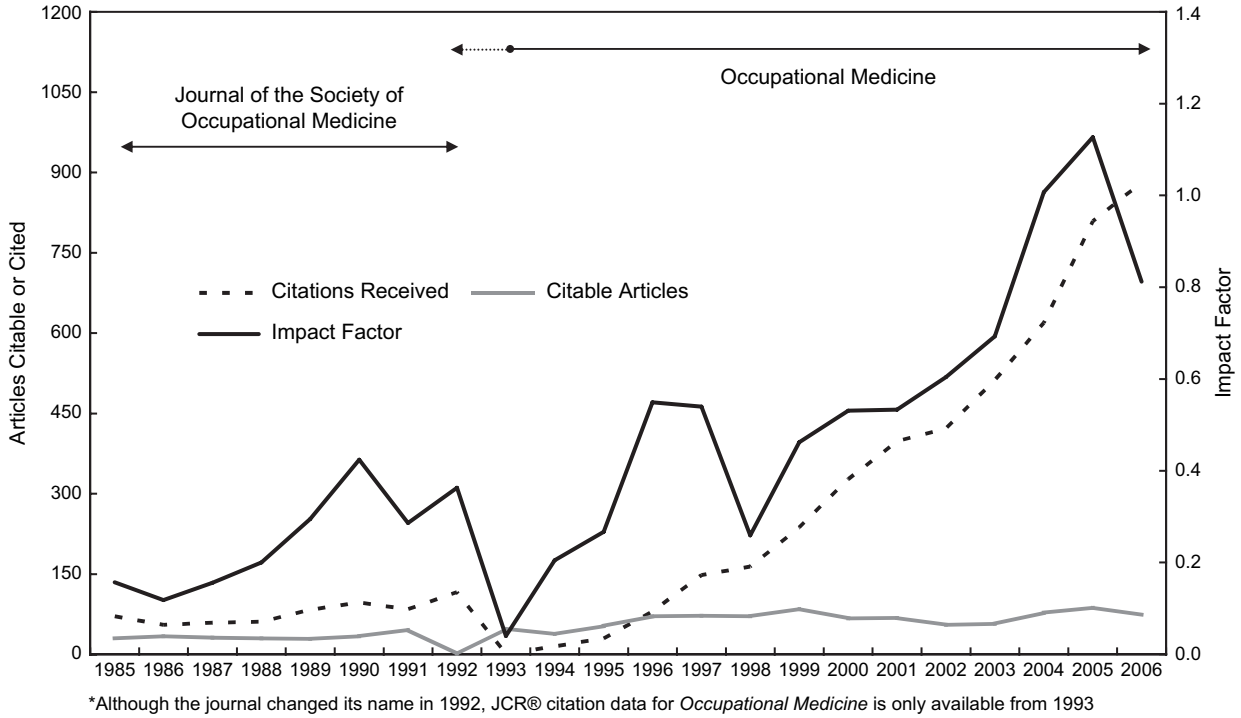

Figure 1. Citation history of *Occupational Medicine*, 1985–2006.

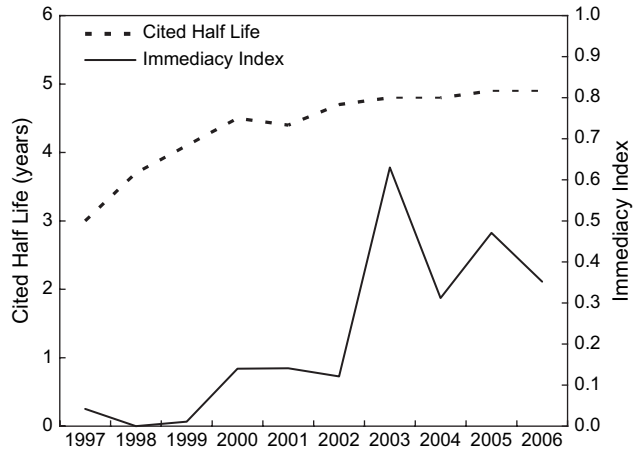

Figure 2. Cited half life and immediacy index, 1997–2006.

for practice and its effective application. The identification of citation classics clearly reveals which aspects of this knowledge base have been deemed important from a research perspective, as well as providing an interesting look at what the 'hot' research topics have been in our journal. There are other benefits as well. In their article, Gehanno *et al.* [11] highlighted the important educational role of super cited papers for the next generation of occupational health researchers. Identifying such articles in the smaller journals of our field helps to provide

Table 1. The 10 most cited papers in *Occupational Medicine*

Rank	Article details	Citations[a]
1	Knutsson A. Health disorders of shift workers. *Occup Med (Lond)* 2003;**53:**103–108.	77
2	Meredith SK, McDonald JC. Work-related respiratory disease in the United Kingdom, 1989–1992: report on the SWORD project. *Occup Med (Lond)* 1994; **44:**183–189.	63
3	Keech M, Scott AJ, Ryan PJ. The impact of influenza and influenza-like illness on productivity and healthcare resource utilization in a working population. *Occup Med (Lond)* 1998;**48:**85–90.	58
4	Symonds TL, Burton AK, Tillotson KM, Main CJ. Do attitudes and beliefs influence work loss due to low back trouble? *Occup Med (Lond)* 1996;**46:**25–32.	58
5	Yassi A, Tate R, Cooper JE, Snow C, Vallentyne S, Khokhar JB. Early intervention for back-injured nurses at a large Canadian tertiary care hospital: an evaluation of the effectiveness and cost benefits of a two-year pilot project. *Occup Med (Lond)* 1995;**45:** 209–214.	55
6	Akerstedt T. Shift work and disturbed sleep/ wakefulness. *Occup Med (Lond)* 2003;**53:**89–94.	50
7	Ross DJ, Sallie BA, McDonald JC. SWORD '94: surveillance of work-related and occupational respiratory disease in the UK. *Occup Med (Lond)* 1995;**45:**175–178.	49

Table 1. *Continued*

Rank	Article details	Citations[a]
8	Waddell G, Burton AK. Occupational health guidelines for the management of low back pain at work: evidence review. *Occup Med (Lond)* 2001;**51:**124–135.	48
9	Yassi A, Khokhar J, Tate R, Cooper J, Snow C, Vallentyne S. The epidemiology of back injuries in nurses at a large Canadian tertiary care hospital: implications for prevention. *Occup Med (Lond)* 1995;**45:**215–220.	46
10	Jones R, Pitt N. Health surveys in the workplace: comparison of postal, email and World Wide Web methods. *Occup Med (Lond)* 1999;**49:**556–558.	39

[a]Total number of citations received by September 2007.

greater enlightenment on what themes have significantly influenced research and scholarly publication in occupational medicine.

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