

Citation and self-citation in medical research in Iran

During the past two decades, Iran has witnessed a positive trend in output of medical research.^[1] The impact of such productivity has been reflected on the rate of citations of researchers from other countries.^[2]

However, citations are used as indicators to evaluate scientific impact or influence, self-citations are often considered problematic.^[3,4] Although authors may have good reasons to cite their own works, these citations do not necessarily reflect the importance of their work or its impact on the rest of the scientific community.^[5,6]

Author self-citation has been translated as a means for an author or group of authors to expand their earlier hypotheses or methods. Therefore, author self-citation may be an inevitable consequence of developing research by authors in a specific field. However, self-citations, when pervading, may falsely inflate an author's importance to the general scientific community.^[7]

With regard to Iran, the rate of self-citation varies between 22% and 39% in a different field and accounted for an average of 33% (95% confidence interval). The rates of self-citations in many different medical subspecialty either basic or clinical sciences based on extracted data from Scopus database between 1996 and 2012 pursue the general pattern [Table 1].

Table 1: The number of documents, citations and self-citation in different fields of medical sciences between 1996 and 2012*

Discipline	Documents	No. of citations	No. of self-citations	Percentage of self-citations
Biochemistry, genetics and molecular biology	16100	105767	41144	39
Immunology and allergy	4627	25594	9230	36
Neuroscience	1771	11563	3811	33
Dentistry	808	4292	954	22
Nursing	757	2295	860	37
Pharmacology, toxicology and pharmaceuticals	5835	34498	12877	37
Medicine	38147	131537	43207	33

*Extracted from: SCImago. (2007). SJR = SCImago journal and country rank; Available from: <http://www.scimagojr.com>. [Retrieved on 15 Mar 2014]

Observation of constant increase of self-citation rate by Iranian scholars in all fields shows that self-citation plays an important role in scientific communication even in the field of medicine. Base on Ghane's study^[8] the rate of journal self-citation among Iranian medical journals is about 61.5% and with reared to the Iranian author self-citation rate, the study of Ghazimirsaeid *et al.*^[9] over 12 most prolific authors confirmed the average of 25.89% author self-citations.

It has previously been reported that 20% of self-citation may be considered as a normal rate,^[10] but the higher number of self-citations of the Iranian researchers may be taken as a rhetorical and tactical tool in the struggle for visibility and scientific authority.^[7,11]

Base of the citation analysis literature, it appears that self-citation phenomenon would be a problematic issue in the assessment of scientific communication of Iranian scholars from bibliometric approach. As a result, to have an unbiased impact of Iranian scientists, we suggest the application of Landoni *et al.* model^[12] at every bibliometric analysis of Iranian medical literature who did not take into account self-citation exceeding 20% of the total and called it "new impact factor (IF) 20%." Landoni model pursues the following formula:

$$\text{IF Formula according to the Landoni model} = \frac{\text{number of non self-citations} + (0.2 \times \text{total number of citations})}{\text{number of papers}}$$

Surprisingly the "new IF 20%" had only a minimal effect on the rankings of the journals. Correcting IF would limit the extensive use of self-citation by authors and contribute to the publication of more broadly and scientifically based references.

Ali Rashidi

Department of Information Sciences, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

Address for correspondence: Dr. Ali Rashidi,
Department of Information Sciences, School of Medicine,
Urmia University of Medical Sciences, Urmia, Iran.
E-mail: alirashidi@umsu.ac.ir

REFERENCES

1. Falahat K, Eftekhari M, Habibi E, Djalalinia Sh, Peykari N, Owlia P, *et al.* Trend of knowledge production of research centers in the field of medical sciences in Iran. *Iran J Public Health* 2013;42:55-9.
2. Ashrafi F, Mohammadhassanzadeh H, Shokraneh F, Valinejadi A, Johari K, Saemi N, *et al.* Iranians' contribution to world literature on neuroscience. *Health Info Libr J* 2012;29:323-32.
3. Macrobarts MH, Macrobarts BR. Problems of citation analysis: A critical review. *J Am Soc Inf Sci* 1989;40:342-9.
4. Seglen PO. Citations and journal impact factors: Questionable indicators of research quality. *Allergy* 1997;52:1050-6.

5. Aksnes DW. A macro study of self-citation. *Scientometrics* 2003;56:235-46.
6. Phelan TJ. A compendium of issues for citation analysis. *Scientometrics* 1999;45:117-36.
7. Kulkarni AV, Aziz B, Shams I, Busse JW. Author self-citation in the general medicine literature. *PLoS One* 2011;6:e20885.
8. Ghane MR. Correlation between self – citation and impact factor in Persian journal citation report's medical journals. *Health Inf Manag J* 2009;6:53-64.
9. Ghazimirsaid S, Hemmat M, Dargahi H, Khansari J. Self-citation status of Iranian prolific authors in the field of medicine and its impact on the Hirsch index in web of science database. *Payavard* 2011;4:67-76.
10. Glanzel W, Debackere K, Thijs B, Schubert A. A concise review on the role of author self-citations in information science, bibliometrics and science policy. *Scientometrics* 2006;67:263-77.
11. Gami AS, Montori VM, Wilczynski NL, Haynes RB. Author self-citation in the diabetes literature. *CMAJ* 2004;170:1925-7.
12. Landoni G, Pieri M, Nicolotti D, Silvetti S, Landoni P, Silvani P, *et al.* Self-citation in anaesthesia and critical care journals: Introducing a flat tax. *Br J Anaesth* 2010;105:386-7.