RESEARCH ARTICLE

The impact factor of an open access journal does not contribute to an article's citations [version 1; peer review: 2 approved]

SK Chua¹, Ahmad M Qureshi², Vijay Krishnan³, Dinker R Pai⁴, Laila B Kamal¹, Sharmilla Gunasegaran¹, MZ Afzal¹, Lahiru Ambawatta¹, JY Gan¹ , PY Kew¹, Than Winn⁵, Suneet Sood⁶

¹Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Selangor, Malaysia

²Department of Public Health, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Selangor, Malaysia

³All India Institute of Medical Sciences, New Delhi, India

⁴Ng Teng Fong General Hospital, JurongHealth, Jurong East, Singapore

⁵Department of Community Medicine, MAHSA University, Kuala Lumpur, Malaysia

⁶Department of Surgery, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Selangor, Malaysia

V1 First published: 02 Mar 2017, 6:208
<https://doi.org/10.12688/f1000research.10892.1>

Latest published: 02 Mar 2017, 6:208
<https://doi.org/10.12688/f1000research.10892.1>

Abstract

Background

Citations of papers are positively influenced by the journal's impact factor (IF). For non-open access (non-OA) journals, this influence may be due to the fact that high-IF journals are more often purchased by libraries, and are therefore more often available to researchers, than low-IF journals. This positive influence has not, however, been shown specifically for papers published in open access (OA) journals, which are universally accessible, and do not need library purchase. It is therefore important to ascertain if the IF influences citations in OA journals too.

Methods

203 randomized controlled trials (102 OA and 101 non-OA) published in January 2011 were included in the study. Five-year citations for papers published in OA journals were compared to those for non-OA journals. Source papers were derived from PubMed. Citations were retrieved from Web of Science, Scopus, and Google Scholar databases. The Thompson-Reuter's IF was used.

Results

OA journals were found to have significantly more citations overall compared to non-OA journals (median 15.5 vs 12, $p=0.039$). The IF did not correlate with citations for OA journals (Spearman's $\rho=0.187$, $p=0.60$). The increase in the citations with increasing IF was minimal for OA journals (beta coefficient = 3.346, 95% CI -0.464, 7.156, $p=0.084$). In contrast, the IF did show moderate correlation with

Open Peer Review

Approval Status

	1	2
version 1
02 Mar 2017	view	view

1. Eleftherios P Diamandis , University of Toronto, Toronto, Ontario, Canada
2. Samiran Nundy , Sir Ganga Ram Hospital, New Delhi, India

Any reports and responses or comments on the article can be found at the end of the article.

citations for articles published in non-OA journals (Spearman's $\rho=0.514$, $p<0.001$). The increase in the number of citations was also significant (beta coefficient = 4.347, 95% CI 2.42, 6.274, $p<0.001$).

Conclusion

It is better to publish in an OA journal for more citations. It may not be worth paying high publishing fees for higher IF journals, because there is minimal gain in terms of increased number of citations. On the other hand, if one wishes to publish in a non-OA journal, it is better to choose one with a high IF.

Keywords

bibliometrics, bibliometric analysis, information science, publications, literature based discovery, open access, Web of Science, Google Scholar

Corresponding author: Suneet Sood (suneet.sood@monash.edu)

Competing interests: No competing interests were disclosed.

Grant information: The author(s) declared that no grants were involved in supporting this work.

Copyright: © 2017 Chua S *et al.* This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Data associated with the article are available under the terms of the [Creative Commons Zero "No rights reserved" data waiver](#) (CC0 1.0 Public domain dedication).

How to cite this article: Chua S, Qureshi AM, Krishnan V *et al.* **The impact factor of an open access journal does not contribute to an article's citations [version 1; peer review: 2 approved]** F1000Research 2017, **6**:208 <https://doi.org/10.12688/f1000research.10892.1>

First published: 02 Mar 2017, **6**:208 <https://doi.org/10.12688/f1000research.10892.1>

Introduction

A journal's impact factor (IF) has long been used as a measure of the quality of a journal¹. Today, the IF is used as a tool to assess researchers for employment, career promotion, and funding²⁻⁴.

In the past, most libraries could possess only a limited number of journals, and librarians used the IF to decide which journals to buy^{3,5-7}. Consequently, high IF journals were more likely to be purchased, read, and cited. With low IF journals, availability was a constraint. Scientists, wanting a greater audience for their research, preferred to publish in high IF journals. There was plenty of evidence that publishing in a higher IF journal resulted in more citations⁸⁻¹³.

In contrast, at present, open access (OA) journals are universally available. Libraries have no need to subscribe, and researchers can access OA articles freely. Expectedly, OA publication is associated with increased citations¹⁴⁻¹⁹, so researchers are likely to prefer this path. What is not known is whether, within OA journals, increasing IF is associated with increasing citations, as it is for non-OA journals. Yet this information is important, since cost of publishing in an open access journal is high and increases with the journal's IF. Should a researcher, or a sponsor, pay good money for publication in a higher IF OA journal if the IF will not influence citations?

We conducted a study to determine whether an OA journal's IF influences citations.

Methods

We first conducted a pilot study to estimate required sample size. For this purpose, 57 randomized controlled trials (RCTs) were extracted from PubMed, and scanned for citations as listed in the Web of Science. PubMed was chosen to look for source articles because most researchers start their search on PubMed²⁰. Within this pilot group, for OA articles the mean citations were 12.0 ± 8.81 ; for non-OA articles the mean citations were 7.14 ± 6.89 . The estimated sample size, at $\alpha = 0.05$ and $\beta = 0.2$, was 58 articles per group, which we rounded up to an intended 100 articles per group.

In order to have a 5-year follow up for citations, we chose 2011 as the publication year of articles included in this study, and restricted our source articles to those published in January 2011. We found 3,742 RCTs, and saved them into a Microsoft Excel file. The IF of their journals were derived from the Thompson Reuters' Web of Science database.

From these 3,742 articles, we extracted titles until at least 100 articles met the criteria for OA, and 100 for non-OA. Articles were picked at random, using MS Excel's RANDBETWEEN function.

Articles were considered OA if the journal title was present in PubMed's OA subset list as open access, and open access was allowed immediately upon publication.

Articles were considered non-OA if the following three conditions were all fulfilled:

1. The publishing journal was not listed in PubMed's OA subset list;
2. The article was never made freely available by the journal;
3. The article was not self-archived (as determined by a careful web search for the article).

In other words, the non-OA article could, in theory, only be read by someone with a subscription. Within non-OA journals, we excluded articles if their journals allowed free access to all articles any time after publication. We further excluded articles published in hybrid non-OA journals if over 20% of their articles were freely available (for this, we counted 100 successive 2011 articles in that journal, and ensured that fewer than 20 were marked as freely accessible). In other words, we attempted to ensure that the non-OA journal was true non-OA, and its IF would properly represent the IF of a non-OA journal (Figure 1). Finally, we also excluded articles if their journal did not have a measurable Web of Science IF for 2011.

The articles were scanned for citations as listed in Web of Science, Scopus, and Google Scholar databases. The search period was extended up to 2016, allowing for five years of publication time, with the assumption that citations over five years provide a better estimate of the impact of a paper than citations over two years⁵. Only journal citations were included in the counts; citations in books, theses, and government documents were excluded to conform with the Web of Science policy²¹. We exported citation data from the three databases into .csv files, and imported these into a Microsoft Excel sheet. Duplicates were excluded. Citations that appeared in two language versions of the same paper were counted as one.

IBM® SPSS® Statistics (version 22.0) software was used to conduct the statistical data analyses on the dataset (Dataset 1, doi: [10.7910/DVN/XR6MR9](https://doi.org/10.7910/DVN/XR6MR9)²²). OA journals were compared to non-OA journals for overall IF and citations over 5 years. Normality for each independent variable and dependent variable was assessed using the "Kolmogorov-Smirnov" test, which showed that citations were not normally distributed ($p < 0.05$). Consequently, non-parametric univariate analysis was carried out using the "Mann-Whitney" test. Linear regression was performed before and after logarithmic transformation of the data.

Results

Citations for articles published in OA and non-OA journals

203 articles (101 non-OA, and 102 OA) fulfilled the criteria for inclusion. The IFs of their journals for 2011 (IF-2011) ranged from 0.121 to 10.111 (median 2.083, mean 2.285 ± 1.323). The median of number of citations was 15 (range 0–92).

There were significantly more citations in OA publications than in non-OA publications. The IFs were almost identical (Table 1).

Figure 1. Workflow of OA and non-OA article selection from PubMed. ¹We entered the PubMed search command: "Randomized Controlled Trial [ptyp] AND ("2011/01/01"[PDAT] : "2011/01/31"[PDAT])". Ptype = publication type, pdat = publication date.

Table 1. Comparison of citations in OA and non-OA publications, for number of citations and IF-2011. IQR: Interquartile range; SD: standard deviation.

		OA	Non-OA	p
Number of citations	Median (IQR)	15.5 (18)	12 (20)	0.039 ^a
	Mean (SD)	22.37 (+19.3)	18.13 (+16.9)	0.097 ^b
IF-2011	Median (IQR)	2.083 (0.779)	1.996 (1.953)	0.133 ^a

^aMann-Whitney test

^bIndependent samples t-test

Correlation between IF-2011 and citations

We assessed the correlation between IF-2011 and citations. Since the data was skewed, we used Spearman's rho (r_s). The r_s value for all papers was 0.387 ($p < 0.001$).

The correlation was assessed separately for OA and non-OA publications. For OA publications the correlation was very small ($r_s = 0.187$, $p = 0.060$). In contrast, it was significant ($r_s = 0.514$, $p < 0.001$) for non-OA publications.

Regression

We calculated the linear regression coefficient between IF and citations. The crude β regression coefficient was 0.297 (Table 2). We then calculated the regression values separately for OA and non-OA publications. There was very little correlation between IF and citations for OA publications. The five-year citations increased by 3.3 for every unit increase in IF. There was, however, significant correlation between citations and IF in non-OA publications, which showed a rise in five-year citations by 4.3 for every unit increase in IF (Table 2).

In view of the skew, we repeated the regression analysis after $\log_{10}$ transformation of the citation data. The data became normally distributed after transformation. The outcome was roughly similar to the pre-transformation results (Table 3).

Discussion

The IF served an important function in the pre-internet era. Libraries needed to decide which journals to buy. With limited budgets, especially in poorer countries, they purchased only a few of the highest IF journals^{7,23–25}. In a self-propagating mechanism, the higher IF journals continued to be better read and cited, and were purchased more often. To quote Peter Suber²⁴, “Prestige even feeds prestige. Journal prestige attracts readers, and helps justify library decisions to spend part of their limited budget on a subscription. The growth in readers and subscribers directly boosts prestige.”

Table 2. Association between IF-2011 and citations for articles published in OA and non-OA journals. Final model equation for all citations: $4.093 \times (\text{IF-2011}) + 10.904$. Final model equation for OA citations: $3.346 \times (\text{IF-2011}) + 14.648$. Final model equation for non-OA citations: $4.347 \times (\text{IF-2011}) + 8.291$. β : crude regression coefficient. SE: Standard error.

	β (95% CI)	p	Constant (SE)
All	4.093 (2.264, 5.923)	<0.001	10.904 (0.928)
OA	3.346 (-0.464, 7.156)	0.084	14.648 (1.920)
Non-OA	4.347 (2.420, 6.274)	<0.001	8.291 (0.971)

Table 3. Association between IF-2011 and citations for articles published in OA and non-OA journals, after $\log_{10}$ transformation of the citations. Final model equation for all $\log_{10}$ citations: $0.097 \times (\text{IF-2011}) + 0.926$. Final model equation for $\log_{10}$ OA citations: $0.066 \times (\text{IF-2011}) + 1.055$. Final model equation for $\log_{10}$ non-OA citations: $0.109 \times (\text{IF-2011}) + 0.839$. β : crude regression coefficient. SE: Standard error.

	β (95% CI)	p	Constant (SE)
All	0.097 (0.057, 0.138)	<0.001	0.926 (0.021)
OA	0.066 (-0.008, 0.141)	0.081	1.055 (0.038)
Non-OA	0.109 (0.061, 0.158)	<0.001	0.839 (0.025)

With time, the IF became widely used as a measure of the quality of a journal, author, and paper^{21,24}. Universities rewarded faculty who published in high-IF journals. Promotion and tenure committees, as well as funding agencies, preferred authors who had published papers in high-IF journals²⁴. Researchers thus were driven to publish their best papers in high-IF journals. Instead of the content identifying the journal, the journal began to identify the content.

Today, the game has changed and the efficiency of the internet has lead to the proliferation of OA journals. Libraries do not need to make any choices at all; the reader just needs to decide which paper is relevant and read it. This has diminished at least one purpose served by the IF: to help institutions decide which journals to buy. It also raises two questions. The first is: Are publications in OA journals more likely to be cited than those in non-OA journals? The second is: Will a higher IF lead to more citations?

Citations in OA and non-OA journals

OA journals are always available to all—this is their advantage over non-OA journals. Consequently, one would expect that an article published in an OA journal would be more easily accessible, more widely read, and therefore more often cited. Research has proved that this is indeed true^{14,18,26}.

Our data has also shown that articles published in OA journals are associated with more citations than those published in non-OA journals—by a factor of 1.3. Although statistically significant, this increase in citations was slightly lower than that shown by others. Antelman¹⁴, found that open access publications in various specialties (philosophy, political science, engineering, mathematics) were associated with increased citation rates by a factor of 1.45–1.9. Freely accessible articles had 1.5 times higher citation rates than non-OA articles. Kousha and Abdoli¹⁸ showed that citation rates of OA publications were higher by a factor of 1.9, giving them a clear advantage. However, these other authors compared OA articles and non-OA articles, rather than OA journals and non-OA journals. Our data is different as it compares the number of citations of publications in OA journals with citations of publications in non-OA journals.

This leads us on to the next question: Is the expectation of more citations with a higher IF being fulfilled?

Correlation between citations and IF

At the start of the study we had expected to see a significant correlation between IF and the number of future citations, believing that increasing IF indicated improved quality of journal and article. For OA journals the correlation, however, was poor and insignificant ($r_s=0.187$, $p=0.060$). We believe that it is safe to say an OA journal's IF contributes little to an article's future citations.

In contrast, the relationship between citations and IF was strong for non-OA publications. Our correlation coefficient for non-OA publications (0.514), closely matched the values reported by Judge *et al* (0.44)¹², Piwowar and Vision (0.45)²⁷, Vancly (0.56)¹¹, and Leimu and Koricheva (0.62)²⁸. Thus, despite using different

databases, particularly Google Scholar, the citation rate in our study showed a moderate (yet statistically significant) correlation with the IF in our study. This validates our methods, and strengthens the findings about OA publications.

Improvement in citations with increasing IF

Linear regression analysis indicated a very real relationship between citations and IF for non-OA publications. The expected citations rise at an approximate rate of one citation per year per rise in impact factor—a change that is consistent with the very definition of the impact factor. This result was quite similar to the findings reported by Vanclay¹¹ and by Perneger²⁹. In contrast, publishing in an OA journal with a higher IF did not result in significantly increased citations. For every 1 unit rise in IF, the data showed a rise of just over 3 citations in five years; using the $\log_{10}$ transformed data the rise was even lower at low IFs. We could not compare our results to those of other authors, as we were unable to find a publication that correlated IF with citations exclusively for OA journals.

We are unable to comment on whether any other variable is a better predictor for an article's citations compared to the IF, since we did not analyze other factors. Nevertheless, it is reasonable to presume that the article's quality and relevance will influence the citations much more than IF will. Even for non-OA publications, the citations of an article are likely to be strongly influenced by other factors including the quality of the article, and not by the IF alone. This, of course, is well established^{4,11,30}.

Publishing in OA and non-OA journals

Since OA publications are cited more often, it seems logical that a researcher should publish in an OA journal. Should an author search for a high-IF OA journal? An author may reasonably expect about 14 citations in five years, regardless of the IF, and these would rise to about 20 if the OA journal's IF was 2 (from 11 to 15 if we use the $\log_{10}$ transformed data). With a rise in IF from 0 to 4, the total citations would not even double. And unlike non-OA journals, OA journals charge the author, and, in general, the higher the journal's IF, the higher the cost. BioMed Central journals with IFs higher than 2 typically charge article-processing fees of about 2000 euros. Even if the journal's IF contributes to a higher readership and citation rate — which is questionable, considering the low r^2 value — it is doubtful whether the few extra citations are worth the cost.

In contrast to OA journals, the number of citations for an article published in a non-OA journal with IF of 4 will be thrice as many as those published in a non-OA journal with an IF of 0. So it makes sense to select as high an IF as possible when publishing an article in a non-OA journal, particularly since non-OA journals charge their readers, and not their contributors.

Strengths and limitations

We have tried to minimize confounders by selecting RCTs published across one specific month, so that all studies have had the same period of citation. Our other strength was to analyze citations in more than one database: Web of Science, Scopus, and Google Scholar. The inclusion of Google Scholar allowed us to include

results from a much larger database³¹, and thus to provide a better representation of citations than would have been possible if we had depended solely on Web of Science or Scopus. We also ensured that non-OA articles were truly non-OA by excluding those that were self-archived and those that were made freely available by the journals. The journals themselves could also be considered truly non-OA, and consequently their IFs could be considered representative of non-OA journals, because we excluded journals that allowed significant numbers of articles to be freely available. We took care to adhere closely to the Web of Science definition of "Impact Factor"²¹, by manually examining every Google Scholar citation and excluding citations in books, theses, and government documents. We also included citations over the following 5 years, which we believe provides a better estimate of a paper's IF⁵.

The main weakness of our study lies in our inability to evaluate the quality of the papers. In ideal circumstances we would have ensured that all papers were of equivalent quality. However this was not feasible. The other potential issue is that inclusion of citations from Google Scholar might allow entry of poor quality publications and predatory publications³¹. Despite this possibility, we believe that Google Scholar represents an important database, and must not be excluded.

Conclusions

OA journals attract more citations than non-OA journals. If all other considerations are equal, a researcher should prefer an OA journal to a non-OA journal for publication. If a researcher publishes in an OA journal, the IF does not matter. It is reasonable to select a journal that will publish quickly and cheaply. If a non-OA journal is selected, the researcher should aim to publish in a journal with a high IF.

Data availability

Dataset 1: Impact factor data. doi, [10.7910/DVN/XR6MR9](https://doi.org/10.7910/DVN/XR6MR9)²²

Author contributions

SS conceived the study. SS, AMQ, DRP, and VK designed the study details, and supervised the data collection. TW was the statistician, and was involved in the study design. The study was conducted as a BMedSc thesis by SKC, who was primarily responsible for the data collection and writing of the first draft; SS and AMQ were her supervisors. LBK, SG, MZA, LA contributed significantly in collecting the data. JYG, PYK participated in writing the paper and rechecking the draft for errors. The paper was largely written by SKC, SS, AMQ, DRP, and VK.

Competing interests

No competing interests were disclosed.

Grant information

The author(s) declared that no grants were involved in supporting this work.

Acknowledgments

We wish to thank Prof Rusli bin Nordin, epidemiologist, for guidance during the study.

References

- Wáng YX, Arora R, Choi Y, *et al.*: **Implications of Web of Science journal impact factor for scientific output evaluation in 16 institutions and investigators' opinion.** *Quant Imaging Med Surg.* 2014; 4(6): 453–61.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Smith D, Bissell G, Bruce-Low S, *et al.*: **The effect of lumbar extension training with and without pelvic stabilization on lumbar strength and low back pain.** *J Back Musculoskelet Rehabil.* 2011; 24(4): 241–9.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Brink PA: **Article visibility: journal impact factor and availability of full text in PubMed Central and open access.** *Cardiovasc J Afr.* 2013; 24(8): 295–6.
[PubMed Abstract](#) | [Free Full Text](#)
- Smith DR: **Historical development of the journal impact factor and its relevance for occupational health.** *Ind Health.* 2007; 45(6): 730–42.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Kamat PV, Schatz GC: **Journal Impact Factor and the Real Impact of Your Paper.** *J Phys Chem Lett.* 2015; 6(15): 3074–5.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Garfield E: **The Thomson Reuters Impact Factor.** 1994; [cited 2016 14/06].
[Reference Source](#)
- DeSart M, Bailey D, Powers A, *et al.*: **Metrics and More: How Librarians Decide to Purchase or Cancel Your Journal.** *Science Editor.* 2007; 30(1): 15.
[Reference Source](#)
- Filion KB, Pless IB: **Factors related to the frequency of citation of epidemiologic publications.** *Epidemiol Perspect Innov.* 2008; 5(1): 3.
[PubMed Abstract](#) | [Free Full Text](#)
- Nieminen P, Carpenter J, Rucker G, *et al.*: **The relationship between quality of research and citation frequency.** *BMC Med Res Methodol.* 2006; 6(1): 42.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Etter JF, Stapleton J: **Citations to trials of nicotine replacement therapy were biased toward positive results and high-impact-factor journals.** *J Clin Epidemiol.* 2009; 62(8): 831–7.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Vancly JK: **Factors affecting citation rates in environmental science.** *J Informetr.* 2013; 7(2): 265–71.
[Publisher Full Text](#)
- Judge TA, Cable DM, Colbert AE, *et al.*: **What Causes a Management Article to Be Cited-Article, Author, or Journal?** *Acad Manage J.* 2007; 50(3): 491–506.
[Publisher Full Text](#)
- Falagas ME, Zarkali A, Karageorgopoulos DE, *et al.*: **The impact of article length on the number of future citations: a bibliometric analysis of general medicine journals.** *PLoS One.* 2013; 8(2): e49476.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Antelman K: **Do Open-Access Articles Have a Greater Research Impact?** *Coll Res Libr.* 2004; 65(5): 372–82.
[Publisher Full Text](#)
- Lawrence S: **Free online availability substantially increases a paper's impact.** *Nature.* 2001; 411(6837): 521.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Hajjem C, Harnad S, Gingras Y: **Ten-Year Cross-Disciplinary Comparison of the Growth of Open Access and How it Increases Research Citation Impact.** 2006.
[Reference Source](#)
- Norris M, Oppenheim C, Rowland F: **The citation advantage of open-access articles.** *J Am Soc Inf Sci Technol.* 2008; 59(12): 1963–72.
[Publisher Full Text](#)
- Kousha K, Abdoli M: **The Citation Impact of Open Access Agricultural Research: A Comparison between OA and Non-OA Publications.** *Online Information Review.* 2010; 34(5): 772–85.
[Publisher Full Text](#)
- Eysenbach G: **Citation advantage of open access articles.** *PLoS Biol.* 2006; 4(5): e157.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- De Leo G, LeRouge C, Ceriani C, *et al.*: **Websites most frequently used by physician for gathering medical information.** *AMIA Annu Symp Proc.* 2006; 2006: 902.
[PubMed Abstract](#) | [Free Full Text](#)
- Garfield E: **The history and meaning of the journal impact factor.** *JAMA.* 2006; 295(1): 90–3.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Sood S: **Impact factor data 2017-02-11.** Harvard Dataverse, V1, UNF:6:z/aZ/8XtsnATQ+GAPxm7WA==, 2017.
[Data Source](#)
- Collins T: **The current budget environment and its impact on libraries, publishers and vendors.** *J Libr Adm.* 2012; 52(1): 18–35.
[Publisher Full Text](#)
- Suber P: **Thoughts on prestige, quality, and open access.** *LOGOS: The Journal of the World Book Community.* 2010; 21(1): 115–28.
[Publisher Full Text](#)
- Kale R: **Health information for the developing world.** *BMJ.* 1994; 309(6959): 939–42.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Brody T, Harnad S: **Comparing the impact of Open Access (OA) vs. non-OA articles in the same journals.** *D-Lib Magazine.* 2004; 10(6).
[Publisher Full Text](#)
- Piwowar HA, Vision TJ: **Data reuse and the open data citation advantage.** *PeerJ.* 2013; 1: e175.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Leimu R, Koricheva J: **What determines the citation frequency of ecological papers?** *Trends Ecol Evol.* 2005; 20(1): 28–32.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Perneger TV: **Citation analysis of identical consensus statements revealed journal-related bias.** *J Clin Epidemiol.* 2010; 63(6): 660–4.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Montori VM, Wilczynski NL, Morgan D, *et al.*: **Systematic reviews: a cross-sectional study of location and citation counts.** *BMC Med.* 2003; 1(1): 2.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- de Winter JC, Zadpoor AA, Dodou D: **The expansion of Google Scholar versus Web of Science: a longitudinal study.** *Scientometrics.* 2014; 98(2): 1547–65.
[Publisher Full Text](#)

Open Peer Review

Current Peer Review Status:

Version 1

Reviewer Report 07 June 2017

<https://doi.org/10.5256/f1000research.11743.r23330>

© 2017 Nundy S. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Samiran Nundy

Department of Surgical Gastroenterology and Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, Delhi, India

This is an interesting approach to the vexed question of whether or not it is worthwhile publishing in the now ubiquitous, and commonly regarded inferior, open access journals.

The authors have convincingly demonstrated that to get more citations it is. Whether or not this will translate into more prestige points towards selection and promotion for e.g. faculty positions has to be evaluated later. However these are early days to judge this rather novel open access experiment.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 15 March 2017

<https://doi.org/10.5256/f1000research.11743.r20913>

© 2017 Diamandis E. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Eleftherios P Diamandis

Department of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, Ontario, Canada; Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, Ontario, Canada

This is a very interesting article which compares the effect of impact factor on collected citations of papers published in open access and non-open access journals. The major findings of this paper is that the open access journals attract more citations than non-open access journals and that the impact factor of an open access journal does not significantly affect the number of citations received. On the other hand, it was found that the number of citations increases with impact factor in non-open access journals. These data have implications for authors who wish to publish their research in either open access or non-open access journals, after considering their associated costs.

I have no suggestions for further changes of this manuscript except that recently, the findings of the authors have been speculated and/or corroborated with additional publications which should be cited.

1. In a paper published in Clin Chem Lab Med 2009¹, it has been suggested that the impact factor will go away soon, effectively in full agreement with the finding that at least for open access journals, the impact factor does not affect citations.
2. In a subsequent paper in Clin Chem Lab Med 2013², it has been speculated that journals will act as repositories of information and the impact factor will be irrelevant, further corroborating the findings of this paper that the impact factor of open access journals does not affect citations.
3. Also, in a recent paper in BMC 2017³, it is mentioned that the journal impact factor is under attack and another factor is proposed to assess journal quality. I believe that these 3 papers are very relevant to this contribution and should be briefly mentioned in the discussion and cited appropriately. Otherwise this is a nice contribution to the discussion related to journal impact factor and related themes.

References

1. Diamandis EP: Journal Impact Factor: it will go away soon. *Clin Chem Lab Med*. 2009; **47** (11): 1317-8 [PubMed Abstract](#) | [Publisher Full Text](#)

2. Diamandis EP: More discussion on journal impact factor. *Clin Chem Lab Med*. 2013; **51** (12): 2271
[PubMed Abstract](#) | [Publisher Full Text](#)
3. Diamandis E: The Journal Impact Factor is under attack – use the CAPCI factor instead. *BMC Medicine*. 2017; **15** (1). [Publisher Full Text](#)

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

The benefits of publishing with F1000Research:

- Your article is published within days, with no editorial bias
- You can publish traditional articles, null/negative results, case reports, data notes and more
- The peer review process is transparent and collaborative
- Your article is indexed in PubMed after passing peer review
- Dedicated customer support at every stage

For pre-submission enquiries, contact research@f1000.com

F1000Research