The Impact of the Open-Access Ophthalmology Journals Status on Journal Indices

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Background: In recent years, there has been an increasing trend towards open-access (OA) publishing.

Objective: To evaluate the current status of OA Scopus-indexed journals of ophthalmology regarding quality and volume.

Design: A Cross-Sectional Study.

Setting: University of Jordan Hospital, Amman, Jordan.

Method: Active journals indexed by Scopus in 2017 were investigated. Data were gathered and filtered into OA or non-OA ophthalmology journals. Eight variables were adopted to compare the quality of the included journals namely: CiteScore, CiteScore Percentile, Citation Count, Scholarly Output, Percent Cited, SCImago Journal Rank (SJR), Source Normalized Impact per Paper (SNIP), and SCImago Quartiles.

Result: One hundred eight ophthalmology journals were indexed by Scopus in 2017. OA journals were 29 (26.9%). We found that OA journals did not have higher impact indices, and the only index that differs between OA and non-OA ophthalmology journals was SJR.

Conclusion: The increasing demand of OA publishing has not yet been linked to improved quality and citation advantage.

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Open-Access (OA) is a publishing model where research output is made available to scholars free of charge and barriers[1]. In this model, processing and presenting expenses are covered by different means, including but not limited to article processing charges (APCs), where the authors, rather than the readers, deal with financing issues for their articles to become available[2]. OA journals have been criticized regarding the source of funding and possible influence on research outputs, and the relative scientific impact of OA journals compared to subscription journals[3].

The scientific impact of academic journals in their corresponding fields is objectively measured and compared using different variables, including but not limited to Journal Impact Factor (IF), Source Normalized Impact per Paper (SNIP), SCImago Journal Rank (SJR) and scholarly output, among others[4]. These variables are measured based on each journal's performance in terms of citations and number of articles published, where they differ in the formula used in their calculations[4]. Whereas the impact factor compares journals with each other, regardless of their discipline; SJR compares journal performance with its peers in the same discipline. Taking into account the discipline upon comparing journal indices is an important factor due to the high variation in scientific productivity between different disciplines[5]. Up to our knowledge, there have been no studies comparing objective variables of scientific impact among OA and non-OA journals in ophthalmology.

The aim of this study is to evaluate OA ophthalmology journals and the impact of the OA status.

METHOD

Data were collected from the Scopus Source List[6]. We used the relevant filters on the list of medical journals in order to gather only the list of ophthalmology journals. OA journals are listed in the Directory of Open Access Journals (DOAJ) and/or the Directory of Open Access Scholarly Resources (ROAD)[7,8].

For each journal, we extracted the following variables:

- **CiteScore**: The measure of average citations per published document in the serial.

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- **CiteScore Percentile:** The standing of a serial title relative to its subject field. A journal that has a CiteScore Percentile of 96% is ranked as high as or higher than 96% in that subject field.
- **Citation Count:** Citations received in one year (e.g. 2017) for the documents published in the previous 3 years (e.g. 2014–2016).
- **Scholarly Output:** Sum of documents published in the serial title (e.g. 2017) in the 3 years prior to the year of the metric (e.g. 2014–2016).
- **Percent Cited:** The proportion of the documents (e.g. 2014–2016) that have received at least one citation (e.g. 2017).
- **SCImago Journal Rank (SJR):** This metric measures weighted citations received by the serial depending on subject field and prestige (SJR) of the citing journal.
- **Source Normalized Impact per Paper (SNIP):** This metric measures actual citations received relative to expected citations for the journal's subject field.
- **SCImago Quartiles:** Quartile 1 = 99th–75th CiteScore Percentile. Quartile 2 = 74th–50th CiteScore Percentile. Quartile 3 = 49th–25th CiteScore Percentile. Quartile 4 = 24th–0 CiteScore Percentile.

SPSS version 22.0 was used for statistical analysis. The mean (± standard deviation) was used to describe continuous variables, and frequencies were used to describe other nominal variables. Mann-Whitney U test was used to analyze the difference between OA status and measurements. To analyze OA journals between ophthalmology and medicine, we used the Chi-square test. A P-value of ≤0.05 was considered statistically significant.

RESULT

According to the 2017 Scopus report, there were 108 ophthalmology journals. Elsevier published 18 (16.7%), Wolters Kluwer published 14 (13%), Taylor & Francis Group published 12 (11.1%), Springer Nature published 10 (9.3%), and Wiley-Blackwell published 4 (3.7%). Twenty-nine (26.9%) journals were OA journals. Table 1 and Figure 1 detail the statistics for minimum, maximum, mean, and standard deviation of ophthalmology journal indices.

Upon analysis of the difference between ophthalmology OA and non-OA journals, a significant difference was found in only one index, SJR (P=0.009), with a median of 0.457 (25-75%: 0.257- 0.711) for OA, and 0.699 (25-75%: 0.220-1.314) for non-OA journals.

Table 1: Descriptive Statistics of All Ophthalmology Journals

	N	Minimum	Maximum	Mean	Std. Deviation
CiteScore	108	0	12	1.38	1.470
Percentile	108	1	99	49.52	28.959
Citation count	108	0	9778	733.56	1420.174
Scholarly output	108	7	3002	416.96	453.317
Percent cited	108	0	98	44.82	25.145
SNIP	108	.000	3.922	.77163	.640890
SJR	108	.000	5.751	.83791	.892455
Rank	108	1.00	106.00	54.28	31.20503

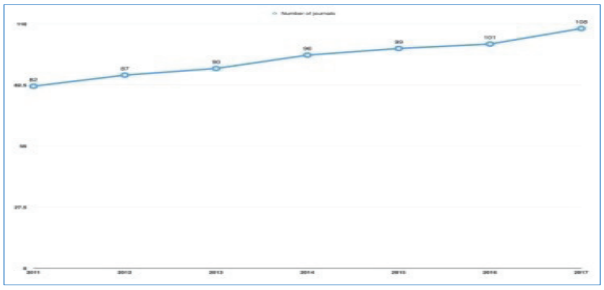

Figure 1: Number of Ophthalmology Journals from 2011 to 2017

Comparison between the 5 most common publishers revealed no significant difference (P=0.675). Table 2 details the open access status for most common publishers. The top 5 non-OA journals had an impact factor ranging from 4.01 to 11.7; they were added to the ISI journal list from 1918 to 1990. The OA impact factor of the top 5 OA journals ranged from 0.96 to 3.32; they were added to the ISI journal list from 1971 to 2008, thus, recent compared to the non-OA journals. A comparison between the five highest-ranked OA and non-OA journals according to SJR index is shown in table 3. In the years from 2011 to 2017, the percentage of OA journals has increased from 17.1% to 26.9%. Figure 2 shows the yearly percentage of OA journals.

Table 2: Open Access Status for Most Common Publishers

Publishers	OA 2017		Total
	No	Yes	
Elsevier	16 (88.9%)	2 (11.1%)	18 (100%)
Wolters Kluwer Health	9 (64.3%)	5 (35.7%)	14 (100%)
Springer Nature	9 (75.0%)	3 (25.0%)	12 (100%)
Wiley-Blackwell	7 (70.0%)	3 (30.0%)	10 (100%)
Taylor & Francis	3 (75.0%)	1 (25.0%)	4 (100%)
Others	35 (70.0%)	15 (30.0%)	50 (100%)
Total	79 (73.1%)	29 (26.9%)	108 (100%)

Table 3: Comparison between the Five Highest-Ranked OA and Non-OA Journals According to SJR Index. We Extracted Impact Factors from 2016-2017 Journal Citation Report (JCR 2017)[9]

Journals	Citation count 2017	Scholarly output 2014-2016	Impact factor 2017	Scopus coverage	Country
Non-OA					
Progress in Retinal and Eye Research	897	83	11.65	1990	United Kingdom
Ophthalmology	6210	1525	7.48	1958	Netherlands
American Journal of Ophthalmology	3979	1135	4.8	1918	Netherlands
Survey of Ophthalmology	649	191	3.76	1956	Netherlands
Retina	2439	1033	4.01	1976	United States
OA					
Journal of Vision	2775	943	2.67	2001	United States
Acta Ophthalmologica	1245	675	3.32	2008	United States
Molecular Vision	2285	934	2.22	1995	United States
BMC Ophthalmology	125	71	1.77	2001	United Kingdom
Indian Journal of Ophthalmology	416	492	0.96	1971	India

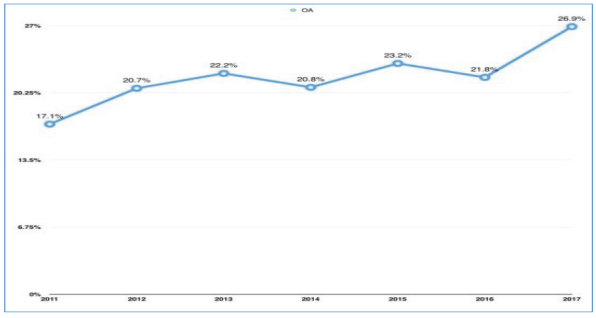

Figure 2: The Percentage of Open Access (OA) Ophthalmology Journals between 2011 and 2017

DISCUSSION

Although the percentage of OA journals increased from 17.1% to 26.9% during the years 2011 to 2017, it is still significantly lower compared to non-OA journals, 73.1%. The only index that differed between ophthalmology OA journals and non-OA journals was SJR, where the median SJR for OA journals was lower than non-OA journals (0.457 versus 0.699). In the Study of Open Access Publishing project (SOAP), approximately 29% of researchers have not published open access articles; most of them were due to lack of funding or journal quality (OA journals are perceived/assumed not to be of good quality or do not have an impact factor)[10]. Our finding reveals that non-OA journals have a generally higher impact factor, which might be due to their prolonged established period. The cost of publishing can reach as high as $4,000 and the researcher has to pay before publishing the articles[11].

Our finding that OA journals do not have higher impact indices is similar to a previous study where OA articles did not receive a higher citation, especially after correcting other confounding variables[12]. This shows that OA journals in the ophthalmology field are still lagging behind in terms of citation advantage. Previous studies in different disciplines showed that there were more citations in OA articles compared to non-OA articles within similar journals' impact factor[13,14].

The percentage of OA has grown significantly from 2011 to 2017 (17.1%); this may be attributed to the major research funders such as the US-based National Institutes of Health (NIH) and the UK based Welcome Trust who now require OA publishing from their grantees[15]. In addition, the creation of a new electronic OA journal is relatively inexpensive[1]. Ophthalmology journals indices are also increasing with time[16]. We believe that the continuous support to OA publishing will enhance OA citations and impact indices; this is also supported by a previous study which found that OA advantage expands as the article ages, gathering more citations with time[17].

In this study, we did not include an examination and comparison of journals that support hybrid OA. Hybrid journals are journals that offer authors an OA choice, although they are typically non-OA journals[18]. This limitation is due to the nature of OA journal categorization by the Scopus database, which depends on the Directory of Open Access Journals (DOAJ) and the Directory of Open Access Scholarly Resources (ROAD) to classify journals as OA.

CONCLUSION

Despite the increasing number of OA ophthalmology journals, the citation advantage is still lagging behind. We believe that with the continuous support of OA publishing, OA journals will have citation advantage in the coming years.

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Ethical Approval: The study was exempted from ethical approval as it used openly accessed data not related to human or animal subjects.

REFERENCES

1. Björk B, Solomon D. Open Access versus Subscription Journals: A Comparison of Scientific Impact. BMC Medicine 2012; 10(1).
2. Pinfield S, Salter J, Bath PA. The "Total Cost of Publication" in A Hybrid Open-Access Environment: Institutional Approaches to Funding Journal Article-Processing Charges in Combination with Subscriptions. J Assoc Inf Sci Technol 2016; 67(7):1751-66.
3. Gilbert N. Editor Will Quit Over Hoax Paper. Nature News 2009; 15.
4. Bollen J, van de Sompel H, Hagberg A, et al. A Principal Component Analysis of 39 Scientific Impact Measures. PloS one 2009; 4(6):e6022.
5. Sims JL, McGhee CN. Citation Analysis and Journal Impact Factors in Ophthalmology and Vision Science Journals. J Clin Exp Ophthalmol; 31(1):14-22.
6. Scopus. Sources. https://www.scopus.com/sources.uri?zone=TopNavBar&origin=searchbasic Accessed 12 January 2019.
7. Directory of Open Access Journals. https://doaj.org Accessed 12 January 2019.
8. Directory of Open Access Scholarly Resources. https://road.issn.org Accessed 12 January 2019.
9. Clarivate Analytics. InCites Journal Citation Reports. https://jcr.clarivate.com Accessed 12 January 2019.
10. Dallmeier-Tiessen S, Goerner B, Darby R, et al. Open Access Publishing - Models and Attributes. 2010. http://edoc.mpg.de/478647 Accessed 12 January 2019.
11. van Noorden R. Open Access: The True Cost of Science Publishing. Nature News 2013; 495(7442):426.
12. Lansingh VC, Carter MJ. Does Open Access in Ophthalmology Affect How Articles are Subsequently Cited in Research? Ophthalmology 2009; 116(8):1425-31.
13. Eysenbach G. Citation Advantage of Open Access Articles. PLoS Biology 2006; 4(5):e157.
14. Chua SK, Qureshi AM, Krishnan V, et al. The Impact Factor of an Open Access Journal Does Not Contribute to An Article's Citations. F1000Research 2017; 6.
15. Pinfield S. Paying for Open Access? Institutional Funding Streams and OA Publication Charges. Learn Pub 2010; 23(1):39-52.
16. Mansour AM, El Mollayess G, Habib R, et al. Bibliometric Trends in Ophthalmology 1997-2009. Indian J of Ophthalmol 2015; 63(1):54.
17. Norris M, Oppenheim C, Rowland F. The Citation Advantage of Open-Access Articles. J Assoc Inf Sci Technol 2008; 59(12):1963-72.
18. AlRyalat SAS, Momani SM. A Beginner's Guide to Using Open Access Data. Milton Park, Abingdon: Taylor & Francis, 2019. https://books.google.jo/books?id=-k3HugEACAAJ Accessed 12 January 2019.