Short Communication

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Do open access articles have a citation advantage? — a research based on European Urology Family

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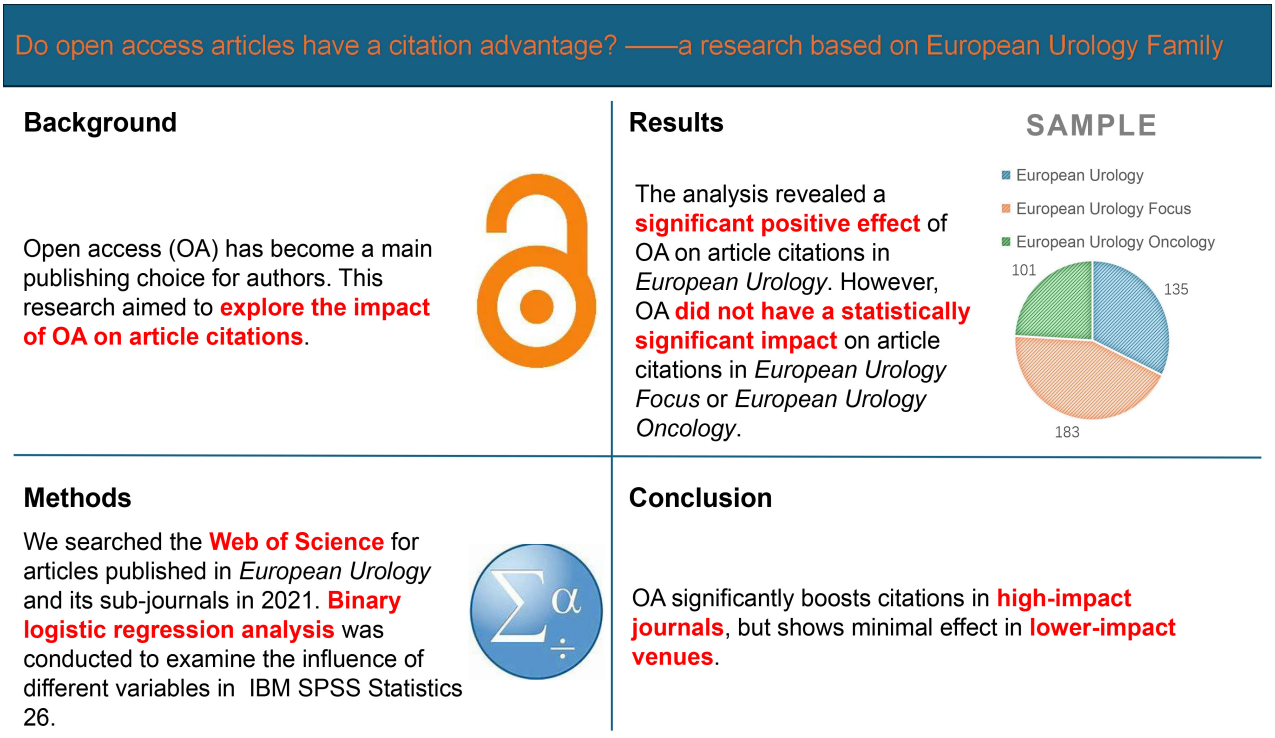
Graphical Abstract



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Do open access articles have a citation advantage? — a research based on European Urology Family

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Abstract

Background: Open access (OA), referring to the practice of providing unrestricted access to scholarly research outputs, has become a main publishing choice for authors. Previous studies have reported OA articles had a citation advantage compared to non-OA articles. Thus, this research aimed to further explore the impact of OA on article citations.

Methods: We searched the Web of Science for research articles and reviews published in European Urology and its sub-journals in 2021. After data extraction, IBM SPSS Statistics 26 was used for statistical analysis, and binary logistic regression analysis was conducted to examine the influence of different variables, particularly OA, on article citation counts.

Results: The study included 135 articles from European Urology, 183 articles from European Urology Focus, and 101 articles from European Urology Oncology. The analysis revealed a significant positive effect of OA on article citations in European Urology (OR = 0.391, 95%CI = 0.189-0.810, p = 0.011). However, OA did not have a statistically significant impact on article citations in European Urology Focus (p = 0.847) or European Urology Oncology (p = 0.83).

Conclusion: Our analysis suggests OA significantly boosts citations in high-impact journals, but shows minimal effect in lower-impact venues.

Keywords: open access; European Urology; regression analysis.

Introduction

Open access (OA) refers to the practice of providing unrestricted access to scholarly research outputs. It is a movement within the academic and research communities aimed at making research findings freely available to anyone with an internet connection, without the need for subscription or payment. Compared with traditional subscription-based access, OA provides unrestricted online access to research, which might lead to wider reach and higher citations. Previous studies in the field of human electrophysiology have reported OA articles had a citation advantage compared to non-OA articles [1], while literature [2] from dentistry field has demonstrated divergent results. However, OA also presents limitations, such as the financial burden of publication fees that some authors cannot afford.

As the important journals in urology, European Urology (Cite Score = 47.2), European Urology Focus (Cite Score = 11.0), European Urology Oncology (Cite Score = 13.0) publish peer-reviewed original articles and topical reviews on a wide range of urological problems, which offers authors two choices to publish their research: Gold OA and Subscription. Gold OA articles are freely available to both subscribers and the wider public with permitted reuse while Subscription articles are made available to subscribers as well as developing countries and patient groups through access programs. Also, these journals are under a under a unified publisher, which could reduce bias. Therefore, this study aimed to discovered the role of OA in citation of OA articles in these journals.

Methods

We selected 135 records of articles published in European Urology, 183 articles in European Urology Focus and 101 articles in European Urology Oncology in 2021 on the Web of Science, which contained 2 study types: research article and review article. The records included OA status, study types,

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number of references, length of article in pages, the continent of origin of the corresponding author, number of authors, number of citations, number of months online and international collaboration status. International collaboration status "yes" was defined as the article containing authors from at least two countries. The deadline for calculating the number of citations and number of months online was October 1th, 2024. If the number of article citations was larger than 30, the article would be categorized as highly cited, otherwise, it would be classified as low-citation group. Fisher's exact test or χ^2 test were used to compare differences in dichotomous variables between OA and subscription access articles. Student's t-test was employed to assess differences in continuous variables. Binary logistic regression was performed to identify independent significant factors for citation. Statistical analyses were performed with IBM SPSS Statistics 26. P values < 0.05 were considered statistically significant.

Results

For European Urology, 135 articles were enrolled, of which 61 exhibited OA articles, while 74 presented as subscription access articles. The specific characteristics of the articles are elucidated in Table 1. Number of citations of OA articles were significantly higher than that of subscription access articles (p = 0.014, Table 1), while other variables between them had no statistically significant difference. Results of logistic regression analyses are displayed in Table 2. Variables showing statistical significance (p <0.05) in univariate analysis were included in multivariate analysis. Among all variables in multivariate analysis, only OA had a statistically significant positive impact on the highly cited group (OR = 0.391, 95%CI = 0.189-0.810, p = 0.011, Table 2).

However, in European Urology Focus, OA articles were not significantly higher than that of subscription access articles (p = 0.847, Table 1), and the same applied to European Urology Oncology (p = 0.83, Table 1).

Discussion

An empirical investigation over multiple disciplines [3] reported that OA had a general positive effect in increasing journal CiteScores. Similarly, a study in the field of hepatology [4] and craniofacial surgery [5] identified a citation benefit from OA. However, a study in ophthalmology field [6] did not found the positive effect of OA on citation. According to Yang's study [3], high-ranking journals realize less benefit from OA because researchers will always cite such journals in their fields, regardless of their access policies, which might explain the inconsistent results of studies on different types of journals.

According to our research, OA was significantly associated with higher citation counts for articles from European Urology in 2021. But in European Urology Focus and European Urology Oncology, OA did not have statistically significant positive impact. We infer that in high-impact journals, OA will lead to more significant citation enhancement. This is because papers published in high-scoring journals tend to have a greater impact factor, whereas papers in relatively low-scoring journals may have limited citation value irrespective of whether they are openly accessible or not, thus failing to produce notable citation enhancement. This explains why we only observed the citation enhancement effect of OA in European Urology. Thus, for authors who plan to publish their articles in high-impact journals, OA merits consideration in order to gain citation advantage.

The limitation of the present study is that we only included articles from European Urology, European Urology Focus, and European Urology Oncology, which restricted the generalizability of our findings to other journals. Additionally, the study was limited to a sample size of 419, and such insufficient sample size may introduce selection bias, potentially compromising the robustness of the conclusions.

Conclusion

Our analysis suggests open access significantly boosts citations in high-impact journals, but shows minimal effect in lower-impact venues. However, further large-sample studies are necessary to support this conclusion.

Abbreviations

OA: open access.

Authors' contributions

Jincong Li and Ruimeng Yue performed data management. Jincong Li, Chengxiang Tian and Shuangying Zhang performed data analysis. Jincong Li, Shuangying Zhang, Yun Peng, Yuxuan Song and Yuyao Jian wrote the manuscript. Rui Chen, Yang Liu, Yun Peng and Yuxuan Song performed conception and design. Jincong Li, Yun Peng and Yuxuan Song performed project development. All authors read and approved the final manuscript.

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Ethics Approval and Consent to Participate

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

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Data Availability

The dataset used in the present study could be accessed from Web of Science.

Table 1. The main characteristics of all the articles included.

Variables	European Urology		p	European Urology Focus		p	European Urology Oncology		p
	Open access n=61	Subscription access n=74		Open access n=64	Subscription access n=119		Open access n=32	Subscription access n=69	
Number of months online	35.90 ±3.234	35.77 ±3.602	0.826	37.78 ±3.475	39.06 ±3.521	0.02	38.00 ±3.048	38.04 ±3.440	0.951
Continent of origin of the corresponding author			0.138			0.4			0.595
Asia	0(0%)	5(6.8%)		0(0%)	5(4.2%)		0(0%)	2(2.9%)	
Africa	0(0%)	0(0%)		0(0%)	1(0.8%)		0(0%)	0(0%)	
Australia	4(6.6%)	2(2.7%)		1(1.6%)	3(2.5%)		0(0%)	0(0%)	
Europe	29(47.5%)	39(52.7%)		45(70.3%)	73(61.3%)		22(68.8%)	44(63.8%)	
North America	28(45.9%)	27(36.5%)		18(28.1%)	37(31.1%)		10(31.2%)	23(33.3%)	
South America	0(0%)	1(1.4%)		0(0%)	0(0%)		0(0%)	0(0%)	
Number of authors	16.34 ±9.857	14.78 ±8.725	0.331	12.84 ±8.342	10.24 ±5.418	0.011	17.41 ±11.410	12.07 ±5.364	0.002
International collaboration			0.304			0.003			0.646
Yes	36(59.0%)	50(67.6%)		45(70.3%)	56(47.1%)		21(65.6%)	42(60.9%)	
No	25(41.0%)	24(32.4%)		19(29.7%)	63(52.9%)		11(34.4%)	27(39.1%)	
Number of references	39.21 ±40.934	38.95 ±40.033	0.97	29.13 ±17.893	26.75 ±11.762	0.282	40.66 ±26.374	33.23 ±21.379	0.135
Length of article in pages	9.52 ±3.534	9.50 ±4.162	0.971	7.89 ±2.939	7.22 ±2.108	0.076	9.94 ±4.111	8.75 ±4.384	0.201
Number of citations			0.014			0.847			0.83
>30	36(59.0%)	28(37.8%)		9(14.1%)	18(15.1%)		9(28.1%)	18(26.1%)	
<=30	25(41.0%)	46(62.2%)		55(85.9%)	101(84.9%)		23(71.9%)	51(73.9%)	
Study types			0.714			0.35			0.934
Research article	47(77.0%)	55(74.3%)		42(65.6%)	86(72.3%)		22(68.8%)	48(69.6%)	
Review	14(23.0%)	19(25.7%)		22(34.4%)	33(27.7%)		10(31.2%)	21(30.4%)	

Table 2. Univariate and multivariate logistic regression analysis for European Urology articles.

Variable	Univariate analysis		Multivariate analysis	
	OR (95%CI)	p-value	OR (95%CI)	p-value
Number of months on-line	1.028(0.931-1.135)	0.582		
Continent of origin of the corresponding author		0.493		
Asia	Reference			
Australia	8.0(0.500-127.900)	0.141		
Europe	2.974(0.316-28.034)	0.341		
North America	4.462(0.468-42.514)	0.194		
South America	n.a.			
Number of authors	1.013(0.977-1.052)	0.483		
International collaboration		0.659		
No	Reference			
Yes	1.171 (0.579-2.368)			
Length of article in pages	1.159 (1.045-1.285)	0.005	1.081 (0.925-1.263)	0.326
Study types		0.013		0.446
Research article	Reference		Reference	
Review	0.350 (0.154-0.798)		0.648 (0.212-1.982)	
Number of references	1.016 (1.003-1.029)	0.013	1.006 (0.988-1.025)	0.503
OA status		0.015		0.011
No	Reference		Reference	
Yes	0.423 (0.211-0.846)		0.391 (0.189-0.810)	

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