Drivers of Influence in Top Transplant Journals: Predictors of Positive Impact

Badi Rawashdeh, MD[1], Saif Aldeen Alryalat, MD[2,3], Yaser Rayyan, MD[2], Haneen Al-Abdallat, MD[2], Noor Haj Mohammad*[2], Ayham Asassfeh, MD[1], Emre Arpali, MD[1], Raj Prasad, MD[1], and Mathew Cooper, MD[1]

[1]Division of Transplant Surgery, Department of General Surgery, Medical College of Wisconsin, Milwaukee, WI, USA. 2. School of Medicine, The University of Jordan, Amman, Jordan. 3. University of Illinois Chicago, Illinois, USA

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Abstract

Introduction: The impact of scientific articles is often measured using metrics such as the Journal Impact Factor (JIF) and CiteScore, which rely on citation counts and publication volume. In this study, we aimed to identify the predictors of article impact in the leading solid organ transplantation journals from 2019 to 2020. Article impact was determined using its citation count in 2021 compared to the JIF.

Methods: Statistical analysis was performed using IBM SPSS Statistics to identify significant predictors of positive impact on the JIF. A total of 2,461 articles and reviews were included, with variations observed among the top transplantation journals.

Results: Articles discussing kidney transplantation and COVID-19 were associated with a positive impact on the JIF, while those discussing lung transplantation had a negative impact. Open access publishing also correlated with increased citations and a positive impact on the JIF.

Conclusion: Further research incorporating a broader range of journals and years would provide a more comprehensive understanding of factors influencing article impact.

Introduction

Citations play a vital role in scientific publications by establishing durable connections to the referenced sources and attributing intellectual credit to the authors being cited (1,2). They serve as tangible evidence of an article's reach within the scientific community, reflecting its dissemination and impact (3,4). Furthermore, citations provide a quantitative measure of recognition, serving as a means for peers to evaluate the quality and significance of the cited work (4,5). Consequently, being cited holds substantial value for scientists, as it serves as a motivating factor and plays a pivotal role in the assessment and evaluation of their research contributions (6). In an effort to enhance their impact metrics, journals strive to improve their standing in the scientific community. Two widely recognized metrics, the Journal Impact Factor (JIF) developed by Clarivate®, and CiteScore developed by Elsevier®, are commonly used for this purpose

*Corresponding author: Noor Haj Mohammad ¡noorashraf267@gmail.com¿

(7,8,9,10). Both metrics use similar calculation methodology, with citation on nominator and number of publications on the denominator, meaning that the more the publications or the lower the citation, the negative impact of these impact metrics. Traditionally, the impact factor (IF) of a journal has been used as an indicator of the quality of a journal and an author's scientific standing (11,12). Several factors have been found to be correlated with the JIF; these include the country's income level and the language of publishing, as well as variables such as study sample size and the publication year (13). It is well known that articles published in top journals in each field receive higher citations, regardless of their topics (8,12,14). However, if an article published in such journals received citations less than the journal's impact factor, such articles will have a negative impact on the journal's impact factor, meaning that it resulted in lowering this impact metric. The aim of this study was to assess factors that predict a positive impact on articles published in the top five transplantation journals in their respective journals. This study distinguishes itself from prior bibliometric analyses related to transplantation, which mainly examined publication trends, citation patterns, or author productivity, by quantifying the influence of specific article-level factors, such as open access status, organizational affiliation, and authorship format, on each article's contribution to its corresponding journal's impact factor enabling a direct assessment of variables linked to a favorable or negative impact on JIF.

Materials and Methods

Journal Impact Factor Calculation:

The 2021 JIF for each journal was calculated by dividing the total number of citations received in 2021 for articles published in the years 2019 and 2020 by the total number of articles published during that two-year period. All data regarding citations and publications were sourced from the esteemed Web of Science (WoS) database.

Identification of Top Transplantation Journals and Contributing Institutions:

The Journal Citation Report, which is connected with the WoS database, was utilized for journals selection. Five solid organ transplant journals that are ranked in the first quartile (Q1) were identified and selected from this report. According to the 2021 journal citation report, the top solid organ transplantation journals were Journal of Heart and Lung Transplantation; American Journal of Transplantation; Nephrology Dialysis Transplantation; Liver Transplantation and Transplantation. The WoS classification was also used to find leading institutions that are top contributors in the field. The list included Harvard University, UDICE French Research Universities, University of London, University of California System, Pennsylvania Commonwealth System of Higher Education, which exhibited more significant contributions compared to the subsequent institutions in the ranking.

Data Collection and Retrieval:

To conduct a comprehensive analysis, we retrieved all articles and reviews published in the aforementioned top transplantation journals during the years 2019 and 2020. The data retrieval process involved accessing the WoS database. From the journals' respective citation reports within the WoS platform, we obtained the total number of citations received by each article in 2021. To enrich our dataset, we collected additional data for each article, including its publication date, number of authors, number of pages, and open access status. The affiliations of the article's authors were thoroughly analyzed, and a point was attributed if any author was affiliated with one of the top 5 institutions contributing significantly to the transplantation field.

Topic Analysis and Abstract Screening:

A meticulous topic analysis of each article was conducted based on the content of its abstract. An Excel formula was employed to extract relevant keywords related to specific transplantation topics, such as Kidney, Liver, Pancreas, Heart, and Lung. Furthermore, articles discussing the impact of COVID-19 on transplantation were meticulously assessed.

Statistical Analysis:

The statistical analysis was carried out using IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, N.Y., USA). Continuous variables were described using mean (± standard deviation), while other nominal variables were presented as frequencies and percentages. The association between different variables and JIF category (positive or negative) was initially assessed using univariate analyses. Independent sample t-tests were applied for continuous variables, and chi-square tests were used for categorical variables. Variables showing statistical significance in univariate analysis (p ¡ 0.05) were subsequently entered into a multivariable logistic regression model to identify independent predictors of JIF category. Regression coefficients were converted into odds ratios (OR) with corresponding 95% confidence intervals (CI). Model performance was evaluated using the Nagelkerke R^2 statistic and overall classification accuracy. To facilitate interpretation, odds ratios were converted into percentage change using the formula: Percentage change = (OR – 1) × 100%.

Results

A total of 2,461 article and review were published by the top solid organ transplantation journals in the years 2019 and 2020, majority were published by American Journal of Transplantation (841, 34.2%), followed by Transplantation (633, 25.7%), Nephrology Dialysis Transplantation (472, 19.2%), Liver Transplantation (276, 11.2%), then Journal of Heart and Lung Transplantation (239, 9.7%). Journals significantly differed in the percentage of articles that had positive impact (p¡ 0.001), with highest proportion for Transplantation (172, 27.2%), followed by Nephrology dialysis transplantation (108, 22.9%), American Journal of Transplantation (183, 21.8%), Journal of Heart and Lung Transplantation (32, 13.4%), then Liver transplantation (19, 6.9%). Figure (1)

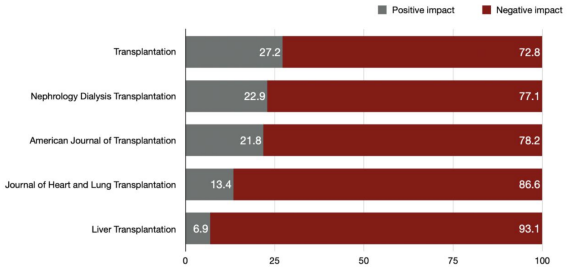

Figure 1: Distribution of articles with positive and negative impact across top transplantation journals.

We performed univariate analysis to assess factors that are related to article's positive or negative impact on JIF, supplementary table (1). Factors significant in the univariate analysis were tested in the logistic regression model supplementary table (2). On regression analysis, the model was significant at ¡0.001 with predictive accuracy of 79.1% and a Nagelkerke R2 of was 0.053. Significant predictors of positive JIF impact include: Number of authors (p= 0.006), associated with 1.3% (0.4% to 2.3%) increase in potential impact on JIF with increasing number of authors. • Open access publication (p¡ 0.001), associated with 61.9% (28.5% to 103.9%) increase in potential impact on JIF. • Affiliation with top five institutions (p= 0.014), associated with 53.8% (9% to 117%) increase in potential impact on JIF. Moreover, several topics were significantly predictive of JIP: • Kidney-related topics (p ¡ 0.001) were associated with a 63.2% increase (32.1%–101.7%) in JIF impact. • Lung-related topics (p = 0.025) were associ-

ated with a 33.3% decrease (5%–53.1%) in JIF impact. COVID-19–related articles (p ¡ 0.001) demonstrated a striking 1,449.8% increase (886.5%–2,371.1%) in JIF impact.

Discussion

In this study, we assessed the factors that contributed to either a positive impact (high citation counts) or a negative impact (low citation counts) of articles published in the top five solid organs transplantation journals. The analysis revealed significant differences in the proportion of articles with a positive impact across the transplantation journals. Notably, publications addressing COVID-19 exhibited the most substantial positive impact. Moreover, articles discussing kidney transplantation had a positive impact, while those discussing lung transplantation had a negative impact. This discrepancy could be attributed to the substantial effect of COVID-19 on organ transplantation, with kidney transplantation being the most affected among various specialties (15). Kidney is the first and most frequently transplanted organ (16) Additionally, the number of end stage kidney disease patients are growing exponentially (17). These factors contribute to the extensive discussions and research surrounding kidney transplantation compared to topics such as liver, lung, and heart transplantation (18). With regard to article authorship, articles with more authors or authors from top affiliations were generally more likely to have positive impact, which is consistent with previous studies that indicate a higher number of authors facilitate a wider range of expertise and a greater diversity of ideas and data types, particularly in interdisciplinary collaborations (19,20,21). Additionally, our study revealed that open-access articles had a higher chance of receiving citations and achieving a positive impact. This finding aligns with previous research conducted across a variety of disciplines including philosophy, political science, engineering, mathematics, physics, computer science and agriculture, which consistently demonstrated that open access publications exhibit greater research impact and citation rates compared to non-open access publications (22,23,24,25). Together, these findings highlight the importance of collaboration, institutional reputation, and research accessibility in enhancing scientific impact. Despite the significance of these findings, certain limitations should be acknowledged. Firstly, the study focused only on the top five transplantation journals, which may not be representative of the entire field. The findings may not be applicable to journals outside of this sample. Secondly, the study only considered articles published in 2019 and 2020, limiting the temporal scope of the analysis. Future research could incorporate a broader range of publication years to capture any potential trends or changes over time. Additionally, the study relied on citation counts as a measure of impact, which may not fully capture the influence or quality of an article. Other indicators could provide a more comprehensive assessment of impact.

Conclusion:

This analysis delineates essential elements that enhance the visibility and influence of journals at the forefront of transplantation research. Articles characterized by extensive author collaborations, open-access availability, and contributions from leading organizations were more likely to influence their citation performance. The significance of subjects such as COVID-19 and kidney transplantation further illustrates how temporal and thematic relevance can influence scholarly impact within a specific context. These insights underscore the role of drivers of influence in transplantation research. Future investigations should include a wider journal selection and extended timeline to validate the generalizability of the findings and to promote interdisciplinary viewpoints to enhance the quality and impact of publications.

Conflict of Interest

The authors declare that they have no competing interests.

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References

[1] ↑ Hagstrom W. 1965 The scientific community. New York, Basic Books. 1965.

[2] ↑ Kaplan N. The norms of citation behavior: Prolegomena to the footnote. American documentation. 1965;16(3):179-84.

[3] ↑ Garfield E. Citation indexes for science: A new dimension in documentation through association of ideas. Science. 1955;122(3159):108-11.

[4] ↑ Cronin B. The citation process. The role and significance of citations in scientific communication. 1984;103.

[5] ↑ Merton RK. The Matthew effect in science, II: Cumulative advantage and the symbolism of intellectual property. isis. 1988;79(4):606-23.

[6] ↑ Cole JR, Cole S. Social Stratification in Science [by] Jonathan R. Cole & Stephen Cole: University of Chicago Press; 1973.

[7] ↑ Time to remodel the journal impact factor. Nature. 2016;535(7613):466.

[8] ↑ Brown T, Gutman SA. Impact factor, eigenfactor, article influence, scopus SNIP, and SCImage journal rank of occupational therapy journals. Scand J Occup Ther. 2019;26(7):475-83.

[9] ↑ Callaway E. Beat it, impact factor! Publishing elite turns against controversial metric. Nature. 2016;535(7611):210-1.

[10] ↑ Baker DW. Introducing CiteScore, Our Journal's Preferred Citation Index: Moving Beyond the Impact Factor. Jt Comm J Qual Patient Saf. 2020;46(6):309-10.

[11] ↑ Wang YX, Arora R, Choi Y, Chung HW, Egorov VI, Frahm J, 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.

[12] ↑ Villasenor-Almaraz M, Islas-Serrano J, Murata C, Roldan-Valadez E. Impact factor correlations with Scimago Journal Rank, Source Normalized Impact per Paper, Eigenfactor Score, and the CiteScore in Radiology, Nuclear Medicine & Medical Imaging journals. Radiol Med. 2019;124(6):495-504.

[13] ↑ Yousefi-Nooraie R, Shakiba B, Mortaz-Hejri S. Country development and manuscript selection bias: a review of published studies. BMC Med Res Methodol. 2006;6:37.

[14] ↑ Nielsen MB, Seitz K. Impact Factors and Prediction of Popular Topics in a Journal. Ultraschall Med. 2016;37(4):343-5.

[15] ↑ Rawashdeh B, AlRyalat SA, Abuassi M, Syaj S, Jeyyab MA, Pearson T, et al. Impact of COVID-19 on abdominal organ transplantation: A bibliometric analysis. Transpl Infect Dis. 2023:e14027.

[16] ↑ Hatzinger M, Stastny M, Grutzmacher P, Sohn M. [The history of kidney transplantation]. Urologe A. 2016;55(10):1353-9.

[17] ↑ Thurlow JS, Joshi M, Yan G, Norris KC, Agodoa LY, Yuan CM, et al.

Global Epidemiology of End-Stage Kidney Disease and Disparities in Kidney Replacement Therapy. Am J Nephrol. 2021;52(2):98-107.

[18] ↑ Lentine KL, Smith JM, Hart A, Miller J, Skeans MA, Larkin L, et al. OPTN/SRTR 2020 Annual Data Report: Kidney. Am J Transplant. 2022;22 Suppl 2:21-136.

[19] ↑ Fox CW, Paine CET, Sauterey B. Citations increase with manuscript length, author number, and references cited in ecology journals. Ecol Evol. 2016;6(21):7717-26.

[20] ↑ Scully C. The positive and negative impacts, and dangers of the impact factor. Community Dent Health. 2007;24(3):130-4.

[21] ↑ J.Sylvan Katz BRM. What is research collaboration? 1997;26(1):1-18.

[22] ↑ Lawrence S. Free online availability substantially increases a paper's impact. Nature. 2001;411(6837):521.

[23] ↑ AlRyalat SA, Saleh M, Alaqraa M, Alfukaha A, Alkayed Y, Abaza M, et al. The impact of the open-access status on journal indices: a review of medical journals. F1000Res. 2019;8:266.

[24] ↑ MacCallum CJ, Parthasarathy H. Open access increases citation rate. PLoS Biol. 2006;4(5):e176.

[25] ↑ Riera M, Aibar E. [Does open access publishing increase the impact of scientific articles? An empirical study in the field of intensive care medicine]. Med Intensiva. 2013;37(4):232-40.