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Evaluating the Role of Open Access Journals in Promoting Research Equity: A Comparison of Publications from High/Upper-Middle and Low/Lower-Middle Income Countries in Otolaryngology

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INTRODUCTION

Open access (OA) publishing has transformed the dissemination of scientific knowledge by removing paywalls and increasing access to research outputs globally. This proposal has the potential to induce research equity, particularly benefiting researchers from low- and middle-income countries who often suffer from financial and infrastructural disadvantages. The real question is whether OA has a real impact on reducing the disparity of access to knowledge production and participation in it. Otolaryngology serves as a useful framework to investigate these dynamics by its worldwide clinical significance and heterogeneous input (1-5).
This study investigates whether OA publishing is associated with greater global representation and equity in research output, authorship characteristics, and citation impact by comparing articles authored from high- and low-income countries published in the top otolaryngology journals.

METHODS

Using six top otolaryngology journals listed in Science Citation Index Expanded, a bibliometric study was conducted from 2020 to 2022 on original research articles. As per the 2020 Journal Citation Reports (Clarivate), these comprised the three top-impact OA journals and the three top-impact subscription-based journals. All chosen journals were general otolaryngology publications, thus guaranteeing broad coverage of the subject in the field. The analysis incorporated only research papers released from 2020 to 2022, excluding review articles, editorials, and other types of publications. Articles published as OA in subscription-based journals were excluded after analysis to preserve the clear differentiation between OA and subscription-based publications.

Every article's authorship, citation count (via Scopus), financing status, international cooperation, number of authors, and first and last authors' h-index were recorded. All articles were manually reviewed to ensure accurate extraction and classification of relevant data. Based on the income levels of the World Bank, countries were classified as lower-middle- and low-income and then high and upper-middle-income ones and they were analyzed separately. No statistical testing could be done since there were 2,995 papers from higher-income countries compared to only 31 from lower-income ones, due to the great disparity in the number of publications. To reduce time-based citation bias, four researchers carried out data extraction over a four-week period. Excel (Microsoft Corporation, Version 2502, Redmond, WA, USA) was used to produce descriptive summaries and proportional comparisons. The study used publicly available bibliometric data and did not involve human subjects, ensuring compliance with ethical research standards.

RESULTS

Table 1 presents information on the three subscription-based and three open-access journals reviewed in the research as well as their annual impact values, their ranking in the top 25% quartiles based on Clarivate's Journal Citation Reports, and their discount policies. Over the three-year period specified, 3,026 original research papers were examined. Table 2 depicts the distribution of these articles by journal type and country income level; Table 3 shows a more thorough classification by year and particular journal. Table 4 and Figure 1 show comparisons of the mean number of authors, h-indices of the first and last authors, citation counts per article, the presence of multinational collaboration, and whether the studies received research funding, all stratified by journal type and country income group.

Table 1. Characteristics of the journals included in the study

	Journal	Impact Factor			JCR Quartile			Discount Policies
		2020	2021	2022	2020	2021	2022	
Subscription-Based Journals	Larngoscope	3.325	2.97	2.6	Q1	Q2	Q2	-
	Otolaryngol Head Neck Surg	3.497	5.591	3.4	Q1	Q1	Q1	-
	JAMA Otolaryngol Head Neck Surg	6.223	8.961	7.8	Q1	Q1	Q1	-
Open Access Journals	Laryngoscope Investig Otolaryngol	2.458	2.542	1.9	Q2	Q2	Q3	+
	J Otolaryngol Head Neck Surg	2.441	4.856	3.4	Q2	Q1	Q1	+
	Clin Exp Otorhinolaryngol	3.372	3.34	3	Q1	Q1	Q1	-

Larngoscope: The Laryngoscope, Otolaryngol Head Neck Surg: Otolaryngology–Head and Neck Surgery, JAMA Otolaryngol Head Neck Surg; Otolaryngology–Head and Neck Surgery, JAMA Otolaryngol Head Neck Surg: JAMA Otolaryngology–Head & Neck Surgery, Laryngoscope Investig Otolaryngol: Laryngoscope Investigative Otolaryngology, J Otolaryngol Head Neck Surg: Journal of Otolaryngology - Head & Neck Surgery, Clin Exp Otorhinolaryngol: Clinical and Experimental Otorhinolaryngology, JCR: Journal Citation Reports (Clarivate)

Table 2. Distribution of research articles by journal type and country income level

	High / Upper-Middle Income Countries	Lower-Middle / Low-Income Countries	TOTAL
Subscription-Based Journals	2235 (98.98%)	23 (1.01%)	2258
Open Access Journals	760 (98.95%)	8 (1,04%)	768
TOTAL	2995	31	3026

Table 3. Yearly and journal-wise distribution of research articles (2020–2022)

	Subscription-Based Journals						Open Access Journals					
	Larngoscope		Otolaryngol Head Neck Surg		JAMA Otolaryngol Head Neck Surg		Laryngoscope Investig Otolaryngol		J Otolaryngol Head Neck Surg		Clin Exp Otorhinolaryngol	
	High/Upper-middle income	Lower-middle/Low-income	High/Upper-middle income	Lower-middle/Low-income	High/Upper-middle income	Lower-middle/Low-income	High/Upper-middle income	Lower-middle/Low-income	High/Upper-middle income	Lower-middle/Low-income	High/Upper-middle income	Lower-middle/Low-income
2020	486	8	214	1	75	1	122	1	49	-	43	-
2021	630	7	216	1	77	-	159	3	52	-	35	-
2022	215	3	233	2	89	-	237	4	35	-	28	-
Total	1331	18	663	4	241	1	518	8	136	-	106	-

Table 4. Comparison of author and article characteristics by journal type and country income level

		Avg. No. of Authors	1st Author h-index (avg.)	Last Author h-index (avg.)	Avg. Citation Count	Multinational Articles (%)	Funded Studies (%)
High / Upper-Middle Income Countries	Subscription-Based Journals	6.97	10.22	26.32	11.62	75/2235 (3.35%)	746/2235 (33.37%)
	Open Access Journals	6.44	9.08	21.15	6.71	73/760 9.60%	332/760 (43.68%)
	SUBTOTAL	6.84	9.93	25.01	10.38	148/2995 (4.94%)	1078/2995 (35.99%)
Lower-Middle / Low-Income Countries	Subscription-Based Journals	6.91	7.13	13.56	13.47	2/23 (8.69%)	2/23 (8.69%)
	Open Access Journals	6.37	5.87	17.12	3.62	2/8 (25%)	1/8 (12.50%)
	SUBTOTAL	6.77	6.80	14.48	10.93	4/31 (12.90%)	3/31 (9.67%)

Avg: Average, No: Number

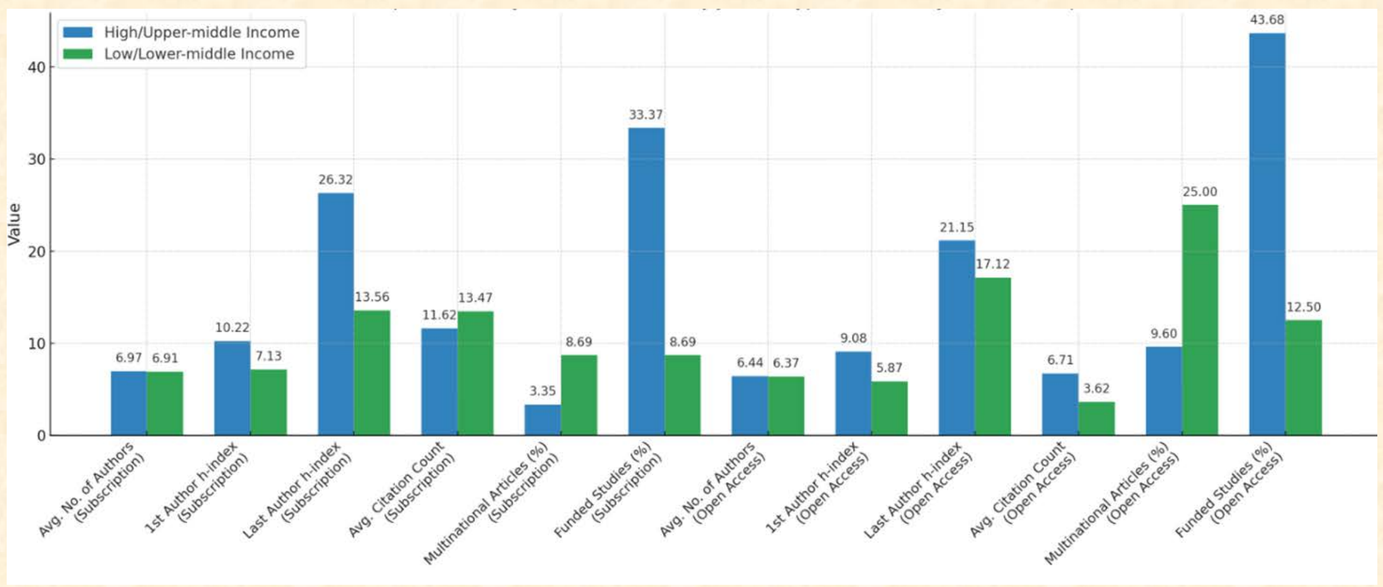

Figure 1. Visual comparison of key metrics by journal type and country ıncome

CONCLUSION

In terms of research output, there was a clear disparity, as 99% of papers came from high and upper-middle-income countries and just 1% from lower-middle and low-income countries. Even if open access publishing is often seen as a possible equalizer in worldwide academia, this research indicates that it has not yet closed the gap between nations with different income levels. Particularly, publications from high-income nations in subscription-based journals were linked to increased funding support, more frequent multinational collaborations, greater author h-indices, and higher citation effect. These results highlight long-standing structural imbalances in scientific publishing.
Still, our study is restricted to a few journals in one discipline and over a fairly brief three-year timespan. More general research covering more disciplines outside otorhinolaryngology, over extended periods, is needed to better define the scope and origins of these inequalities and therefore advise policies that might help to create a more inclusive and fair worldwide research climate.

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