J Data Sci. Info. Citation Studies., 2025; 4(2):263-268.
https://www.jcitation.org

Research Article

Gender Inequality in Scientometric Research: A Case Study of Scientometrics Journal

Beeresh N Gundur*, Sampath Kumar B T

Department of Library and Information Science, Tumkur University, Tumakuru, Karnataka, INDIA.

ABSTRACT

This study examines gender inequalities in research productivity and citation impact among first authors in Scientometrics journal from 2020 to 2024. It examines the representation of male and female first authors, their research output, and citation patterns, shedding light on persistent gender gaps in scientometric research. A bibliometric analysis was conducted using data from the Scopus database, encompassing 1734 articles and review papers published in Scientometrics journal. The gender of first authors was identified using the Namsor platform. Research productivity, citation counts, and single-authored contributions were analyzed to assess gender-based trends. Male authors dominated research productivity as first authors (64.01%) compared to female authors (35.99%). Similarly, 71% of single authored publications were observed by male researchers. Analysis of citations also shown the discrepancies like male first authors acknowledged 69% of total citations while 31% of share by female first authors. Apart from that, 75% of citations were noticed by male single authors compare to female single authors with 25% only. These trends reveal the underrepresentation of female participation in research productivity and citation impact. The study assesses the contribution and active involvement of female authorship in research productivity and impact compare to male counterpart considering the reputed journal indexed in Scopus with Citescore 7.2. The observations and findings would be valuable and perceptive for the researchers involved in scientometric studies.

Keywords: Gender Disparity, Research Productivity, Scientometrics, Citations, Bibliometrics, Global South, Global North.

Correspondence:
Mr. Beeresh N Gundur
Department of Library and Information Science, Tumkur University, Tumakuru, Karnataka, INDIA.
Email: beeresh.isro@gmail.com

Received: 11-04-2025;
Revised: 09-06-2025;
Accepted: 25-08-2025.

INTRODUCTION

Gender inequality remains to be an important concern in academic research with respect to all disciplines. The participation of women and awareness of gender gap has been discussed by scholarly world and directed towards gradual improvement of their involvement over the years. Though, the disparity is persisting with their absence in high impact roles being in first and last authors (Sugimoto and Larivière, 2023; West *et al*., 2013). According to the Global Gender Gap Report 2024 by the World Economic Forum, it will take 134 years to fulfil the gender gap across all sectors including academia (World Economic Forum, 2024). This disparity highlights the lack of female representation in crucial roles that hinders their career progression and advancement. This limitation also roots to the unhealthy fostering of innovation and advancement of knowledge (Thelwall *et al*., 2019). This gap is also observed in scholarly publishing ecosystem where women representation is insufficient in important positions such as chief of editorial boards and getting research grants which further broadens the gender divide (Pinho-Gomes *et al*., 2021). The implications out of this disparity are noteworthy that not only limiting the academic prospects but also restrict the inclusiveness and diversity for academic enhancement. Therefore, gender equality is a global concern and recognized as a base for achieving the 17 Sustainable Development Goals (SDGs) introduced by United Nations targeting to achieve by 2030 (Shang *et al*., 2022).

Gender inequality comprehends various sectors of society like education, healthcare, job opportunities, and political engagement etc. This disparity discourages the capability of half of global population to contribute meaningfully to address various societal challenges (Shang *et al*., 2022). Scholarly publishing is one such area where equal female engagement is also expected for innovation and knowledge enhancement. In spite of efforts made by the scholarly world in assessing the gender equality in research productivity, trends and citation patterns, still few areas of scientific studies have got limited attention by the scholars and scientometric is one among them. Hence, this study focuses on this gap by examining the research productivity, citation impact and trend analysis with respect to gender equality in the field of scientometric research considering the journal "Scientometrics"

DOI: 10.5530/jcitation.20250206

from 2020 to 2024. This is a peer-reviewed and international journal indexed by popular database Scopus with notable CiteScore of 7.2 (Scientometrics Journal). The observations and outcomes from this study would be helpful for discussions on gender equity in academic publishing and policy making that promote a more inclusive and equitable academic environment.

Past Studies

The literature review discloses the constant less representation of female engagement in scholarly publications such as first and last authorship, key member in editorial committees, and citation patterns, etc. For instance, Sugimoto and Larivière, (2023) conducted a large-scale analysis of scholarly publications and highlighted that under representation of female as last author that typically meant for seniority in research, mentoring and leadership positions. Another study by West *et al*., (2013) revealed that comparatively female participation has gradually increased but their representation in reputed journals remains still low. These disparities not only limited to authorship rather extended to citation patterns as well. Interestingly, Ioannidis *et al*., (2023) highlighted that the publications by male researchers have got more citations than those by female researchers. The analysis of citation behaviours shown the less frequency of citing female authored researchers especially in Scopus based fields where male is dominant. This pattern of gender differences imbalances the academic impact and further inclusivity (Thelwall *et al*., 2019).

In the field of library and information science also similar trend was observed where male accounted 69% of first authorship over a ten-year period analysing the publications from DESIDOC Journal of Library and Information Technology (Saikia and Verma, 2024). Bisaria, (2018) further supported these trends by examining the citation patterns showing that male authors generally receive higher citation counts which intensifies gender inequalities in academic appreciation. However, one study was found on gender disparities focusing on Scientometric research, considering the journal 'Journal of Scientometric Research' and found a notable gender gap in research productivity and impact where male authors dominating in research output and citation counts. Subsequently, this study has been taken up to fill the gap by exploring gender equality in scientometric research, focusing on a well-known and reputed journal titled "Scientometrics" which has been publishing mainly scientometric research studies.

Objectives of the Study

- To identify and categorize the gender of first authors in research publications.
- To analyse the growth of scholarly publications based on the gender of first authors.
- To compare the research productivity and impact from a gender perspective.
- To assess the productivity and impact of single authored papers through gender lens.

METHODOLOGY

This study examines the gender inequalities in research contributions employing bibliometric analysis, focusing on 'Scientometrics' journal alone. The data was retrieved from Scopus database on January 22, 2025 that yielded 1734 records concentrating on articles and review papers published during 2020 to 2024. MS Excel was used for further data processing and gender identification was done using Namsor platform (https://namsor.app/) which is a trusted tool that recognizes gender based on names and regional attributes. This study primarily focused on first authors and single authored publications to assess the gender disparity in scholarly productivity and impact. The data analyzed including the assessment of annual growth of publications, gender wise contributions, disparities in citation patterns, share of male and female authors as single authored publications, etc. and then illustrated the trends using graphs for clearer projection of data. The observations might shed light on gender imbalances in scientometric research and enhances the understandings of equity in academic publishing. The detailed process of data collection and analysis illustrated in Figure 1.

RESULTS AND DISCUSSION

Growth of scholarly publications from a gender perspective

The annual growth of scholarly publications extracted from 'Scientometrics' journal from 2020 to 2024 shown in Figure 2, that also illustrates the categorisation of publications gender wise. The data discloses that male authors constantly dominant as first authors compare to female authors in research productivity. The analysis of data for five years shown that female authors contributed a total of 149 publications with the highest number of publications in the year 2021. The highest number of publications irrespective of gender noticeable in the year 2021 with 395 papers while lowest in the year 2023 with 269 publications. The growth of publications by both genders looks unbalanced and observed variations. For example, the year 2021 marked an increasing trend in publications and the subsequent years witnessed a decreasing trend, noticeably very least in the year 2023. This trend might be due to various reasons like; the rise of publications in the year 2021 because of COVID-19 pandemic where researchers might have focused more on scientometric studies to analyse the academic productivity during that period and the decreasing trend in 2023 might be insufficient funding or shift towards other research interests. The similar trend also was observed in other studies where West *et al*., (2013) mentions that the global events or funding cycles often effect on annual growth of publications and additionally, Gupta, (2017) has highlighted that gender gap is being observed in scholarly productivity more often due to,

as women might have other challenges like balancing her career development and other inevitable personal responsibilities.

Gender wise distribution of research publications as first authors

The first author always represents as a key contributor in research publications and analysing the first authors is crucial to assess the gender disparity. Therefore, the Figure 3 highlights the clearer picture on gender gap in producing the research output as a first and key contributor during these five years' time where male authors contributed 64.01% of total publications while female authors satisfied with 35.99% of share. This similar tendency was observed by other scholars and found that 69% of male first authors' contributions noted over female authors with 31% in the field of library and information science (Saikia and Verma, 2024). This kind of constant pattern might lead to limit the grant of projects to female authors in the academic environment. This gender gap could be due to the lack of collaborative networks, multifaceted responsibilities, lack of exposure to senior academic positions, etc. that shall be addressed with ensuring the equal opportunities in academics, organising workshops, and support from all possible respects.

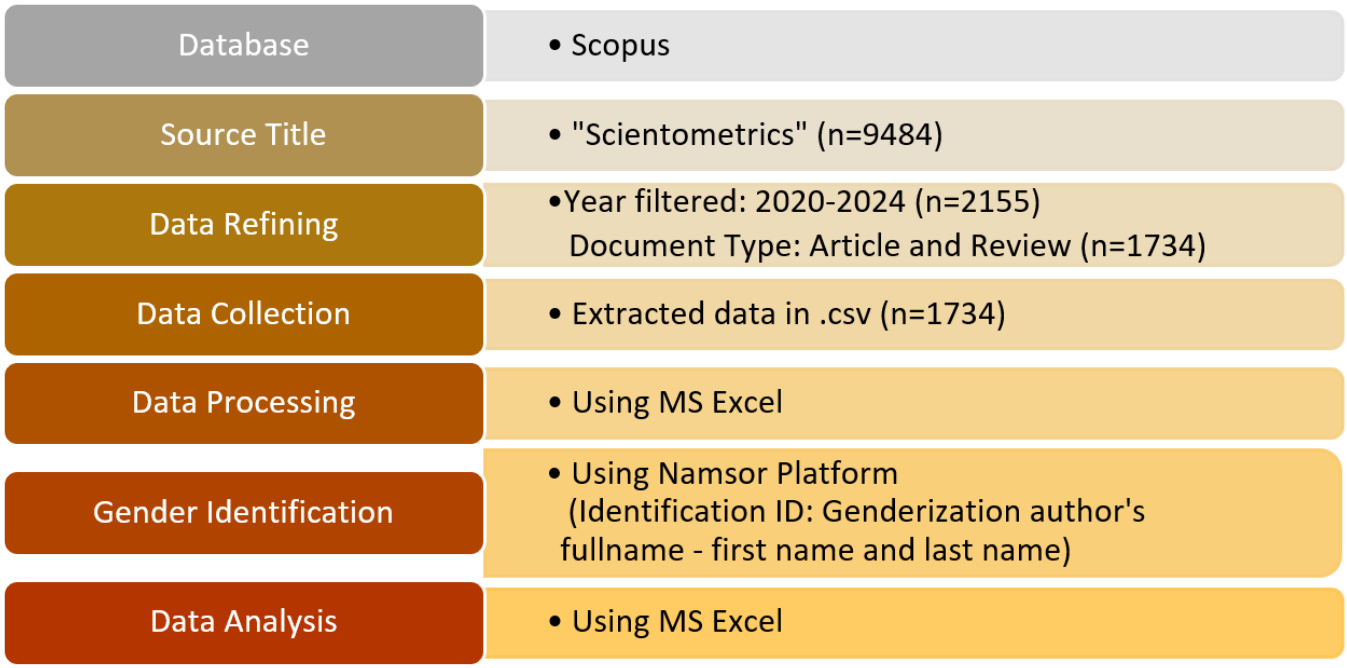

Figure 1: Workflow of data collection process and analysis.

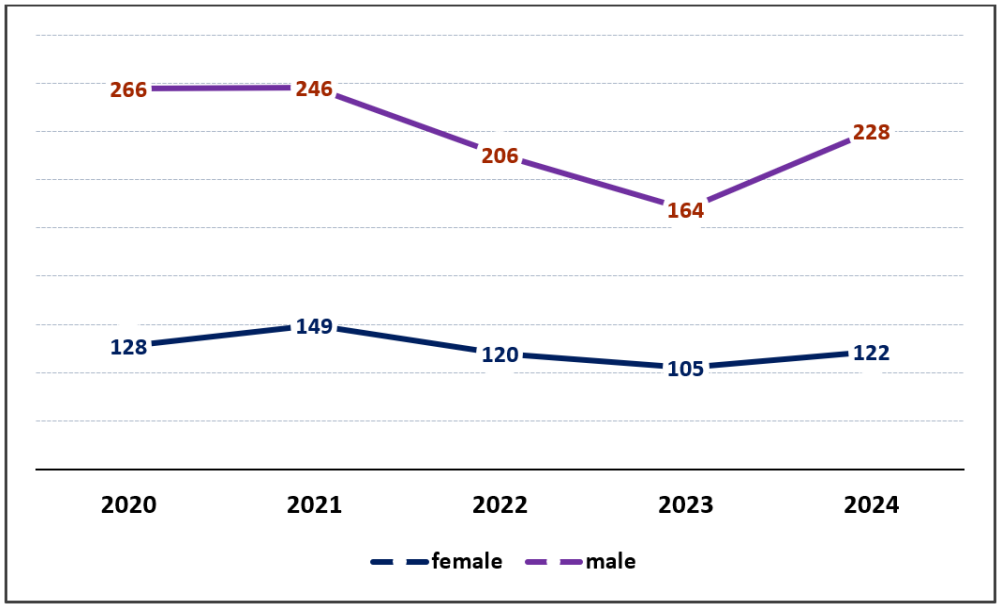

Figure 2: Annual growth of scholarly publications from a gender perspective.

Impact of research output by first authors from a gender perspective

The citations are the key parameters to assess the quality and impact of research publications in terms of number of times the particular work cited in other publications and influenced to knowledge growth in the specific fields and disciplines (Bisaria, 2018). Examining the citation pattern received by the male and female authors is also an important to assess the gender equality. Hence, the Figure 4 illustrates the data on citations credited against the selected publications from Scientometrics journal in the account of respective genders for period of five years. The data again reveals a substantial gender gap with 69% of share credited to male first authors and 31% of share accounted by women scholars out of total 18652 citations. This disparity might be the presence of lower research publications by female first authors as discussed in previous section. The observed lower citation rates by female authors could be the implications due to lack of visibility of their publications in scientific platforms and validity of research findings.

Gender Inequality in Single-Authored Research Publications

The data shown a total of 250 single authored publications during 2020-2024 and the Figure 5 highlights the distribution of these publications to show the gender gap as an independent contribution. The data reveals that 71% of male single authored publications were noted of the total while female single authors contributed only 29% of publications. This trend exhibits the

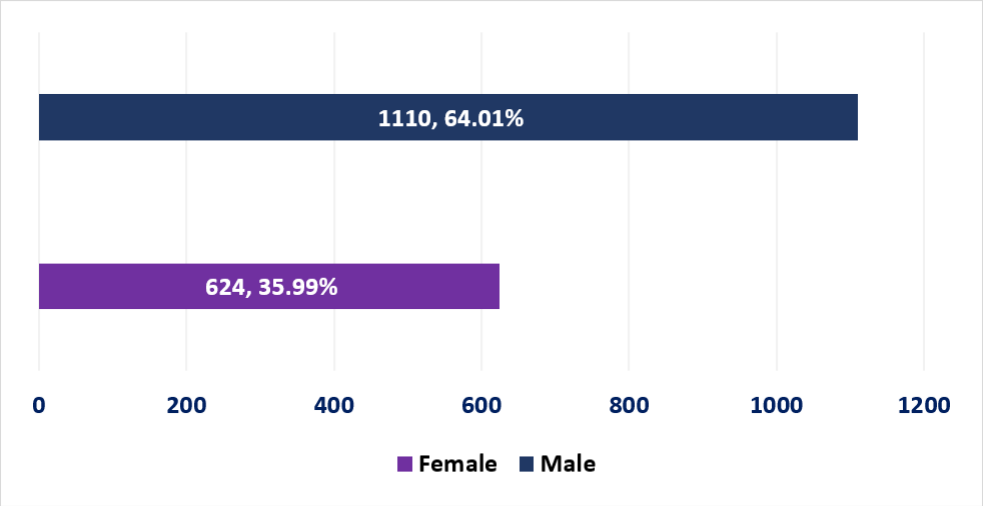

Figure 3: Gender-based research productivity as first Authors.

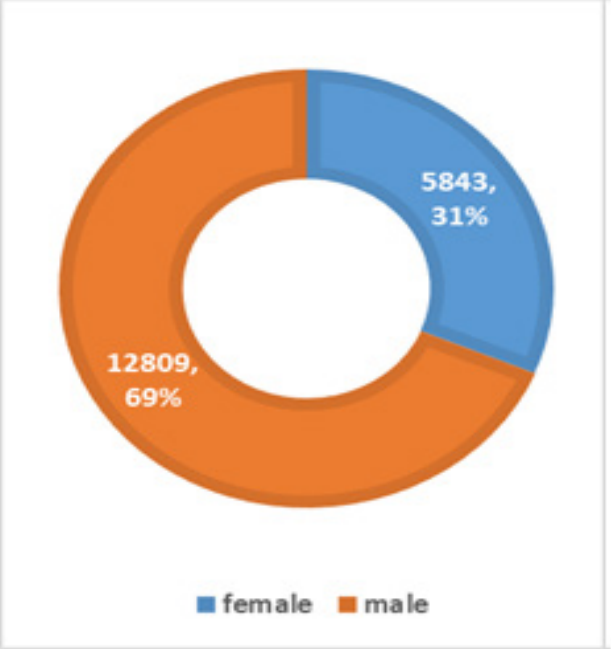

Figure 4: Impact of research output by male and female first Authors.

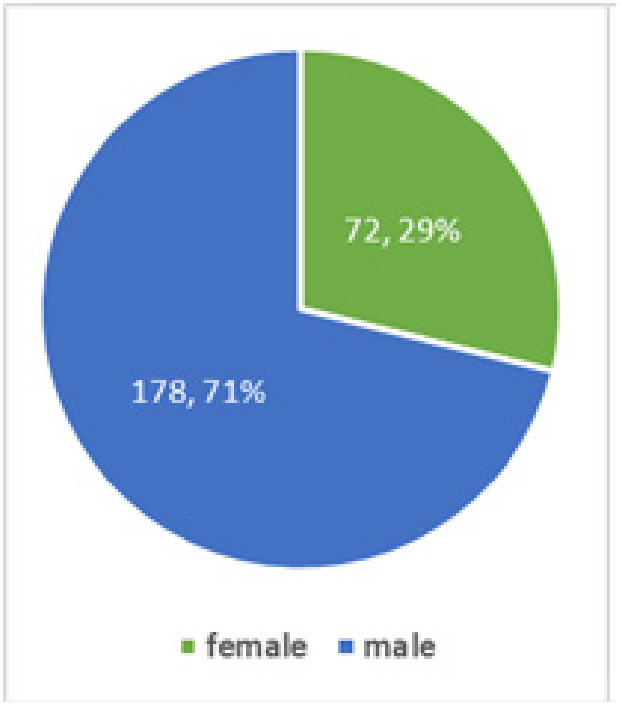

Figure 5: Gender inequality in single-authored research publications.

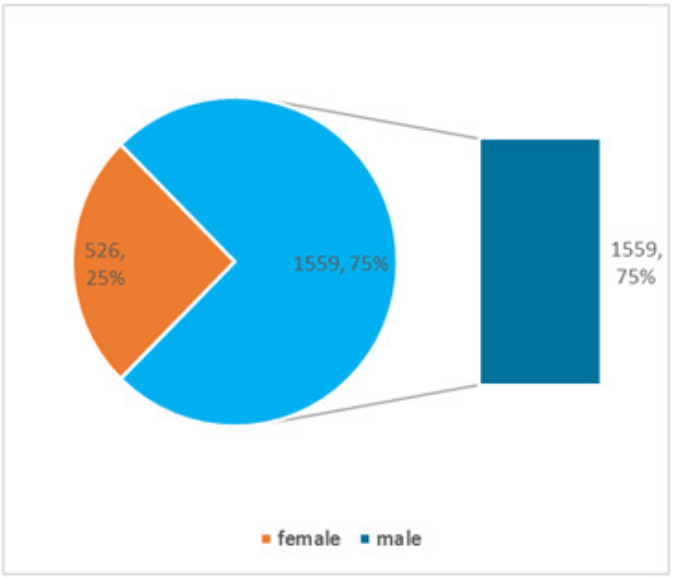

Figure 6: Citations received by the single-authored publications and gender share.

tendency of women authors in publishing less independently compare to male authors. This disparity might be influenced by factors as discussed previously like limited accessibility, equal opportunity and balancing of academic and personal duties, etc. this disparity shall be addressed by ensuring the overall strategic development of women to stand with male counterparts.

Citations received by single-authored publications from a gender perspective

Figure 6 measures the academic attention received in terms of citations to the single authored publications and reveals the notable female underrepresentation with respect to citation impact. There were 2085 citations received by the total of 250 publications authored independently by the both genders. Out of which, 75% of (1559) citations accounted for male single authored publications whereas female independent authors received only

25% of (526) citations. The lower citation count could be linked to their less research productivity as independent authors as discussed earlier. However, the citations are primarily influenced by the quality of work rather than the gender representation (Bisaria, 2018). Therefore, the female authors shall focus on enhancing the quality and visibility of their work even when publishing independently.

CONCLUSION

This study reveals persistent gender inequalities in authorship and citation impact within the Scientometrics journal from 2020 to 2024. Male authors dominated research productivity, representing 64.01% of first authors and 71% of single-authored publications, while female authors accounted for 35.99% and 29% respectively. Citation patterns further highlighted inequities with male first authors receiving 69% of citations and male single-authored works securing 75% compared to 31% and 25% for female researchers. These observations might be aligning with broader trends in academic publishing where barriers such as unequal access to senior roles, biases in collaboration networks, and limited visibility for female researchers (Ioannidis *et al.*, 2023; Saikia and Verma, 2024). While female authorship has shown gradual growth, achieving gender equity requires mentorship programs, equitable funding opportunities, and policies promoting inclusive editorial practices.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

Bisaria, G. (2018). DESIDOC journal of library and information technology: A gender perspective. *DESIDOC Journal of Library & Information Technology*, 38(6), 410-415. DOI: 10.14429/djlit.38.6.13238

Gupta, N. (2017). Gender inequality in the work environment: A study of private research organizations in India. *Equality, Diversity and Inclusion: An International Journal*, 36(3), 255-276. DOI: 10.1108/EDI-04-2016-0029

Ioannidis, J. P. A., Boyack, K. W., Collins, T. A., and Baas, J. (2023). Gender imbalances among top-cited scientists across scientific disciplines over time through the analysis of nearly 5.8 million authors. *PLOS Biology*, 21(11), e3002385. DOI: 10.1371/journal.pbio.3002385

Pinho-Gomes, A.-C., Vassallo, A., Thompson, K., Womersley, K., Norton, R., and Woodward, M. (2021). Representation of Women Among Editors in Chief of Leading Medical Journals. *JAMA Network Open*, 4(9), e2123026. DOI: 10.1001/jamanetworkopen.2021.23026

Saikia, S., and Verma, M. K. (2024). Author's gender and citations in open access publications: A study of DESIDOC Journal of Library and Information Technology. *Proceedings of the 69th ILA Conference 2024*, p. 1035-1041.

Scientometrics. (n.d.). SpringerLink. Retrieved January 29, 2025, from https://link.springer.com/journal/11192/aims-and-scope

Shang, Y., Sivertsen, G., Cao, Z., and Zhang, L. (2022). Gender differences among first authors in research focused on the Sustainable Development Goal of Gender Equality. *Scientometrics*, 127(8), 4769-4796.

Sugimoto, C. R., and Larivière, V. (2023). Equity for women in science: Dismantling systemic barriers to advancement. Harvard University Press.

Thelwall, M., Bailey, C., Tobin, C., and Bradshaw, N.-A. (2019). Gender differences in research areas, methods and topics: Can people and thing orientations explain the results? *Journal of Informetrics*, 13(1), 149-169. DOI: 10.1016/j.joi.2018.12.002

West, J. D., Jacquet, J., King, M. M., Correll, S. J., and Bergstrom, C. T. (2013). The Role of Gender in Scholarly Authorship. *PLoS One*, 8(7), e66212. DOI: 10.1371/journal.pone.0066212

World Economic Forum. (2024). Global Gender Gap Report 2024: Insight Report. https://www.weforum.org/publications/global-gender-gap-report-2024/

Cite this article: Beeresh NG, Kumar BTS. Gender Inequality in Scientometric Research: A Case Study of Scientometrics Journal. Journal of Data Science, Informetrics, and Citation Studies. 2025;4(2):263-8.