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Open Access Publications from University Grants Commission Funded Research: A Bibliometric Study

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Research funding agencies play a crucial role in shaping the impact and dissemination of scholarly research. As Open Access (OA) to research findings gains momentum, understanding the impact of funding agencies on OA publications becomes essential. This study explores the impact of open access publications resulting from research funded by the University Grants Commission (UGC), with a focus on the Indian context. It utilizes comprehensive publication data from the Scopus database, specifically where UGC is listed as a funding sponsor. The analysis is entirely based on Scopus data, with results drawn from entries where the term "UGC" appears. The study examines a total of 145,158 documents published as an outcome of UGC research funding. Among these, 36,662 (25.25%) were found to be OA publications. Despite being one third of total publications, these OA publications garnered significant attention, receiving 928,267 citations. This citation impact of OA publications highlights the importance and effectiveness of UGC funding in promoting open access publishing in research. The findings underscore the need for continued support and encouragement for open-access initiatives by research funding agencies to enhance the accessibility and impact of scholarly research.

Keywords: Open Access (OA); Open Access Publications; Research Performance; Funding Acknowledgements; Impact Analysis; Bibliometrics: University Grants Commission (UGC)

1. Introduction

Open Access (OA) research publications have significantly grown in the past decade. One of the key factors contributing to this growth, is increased funding for research and also funding to cover the costs associated with OA publishing. This has helped to incentivize authors to publish their research in OA journals, thereby increasing the number of OA publications. Many funding agencies, universities, and research institutions now have OA mandates that require researchers to make their research output freely available to the public. This has helped to increase the number of OA publications as researchers strive to comply with these mandates. The Internet and digital technologies have made publishing and disseminating research more accessible and more affordable. Online platforms and tools have allowed researchers to share their work more widely and quickly, increasing OA publications. There is a growing public interest in accessing research findings, particularly in health and the environment. OA publications make it easier for the public to access and use research findings, leading to more significant impact and relevance. Some OA journals have achieved high levels of prestige and impact, attracted high-quality research, and increased the visibility of resarch[1]. A combination of funding, mandates, technology, public interest, and prestige drives the growth of research publications. This growth is expected to continue in the coming years as more researchers and institutions embrace OA publishing and its benefits.

Research funding agencies play a critical role in the growth of OA publications. Here are some ways they impact on OA publications:

1. **Funding OA publishing**: Research funding agencies have increasingly provided funds to cover the costs associated with OA publishing, including article processing charges (APC) or publication fees. This has helped to incentivize authors to publish their research in OA journals, thereby increasing the number of OA publications.
2. **Requiring OA publication**: Research funding agencies now require the research they fund to be made openly accessible. This has led to increased OA publications as researchers strive to meet these requirements and comply with the funding agency's policies.

3. **Establishing OA repositories**: Research funding agencies often provide funds to institutions to establish OA repositories for storing and disseminating research output. This helps increase the visibility and impact of research and promote collaboration and knowledge sharing.
4. **Promoting OA policies:** Research funding agencies can also promote OA policies at the institutional and national levels[2,3]. This can include advocating for OA mandates or promoting best practices for OA publishing.

Funding agencies play a crucial role in the growth of open access (OA) publications by requiring funded research to be openly accessible and providing funding for OA publishing charges. This support has been instrumental in promoting OA policies and practices, driving the growth of OA publications. All these above factors have helped to increase the accessibility and impact of research, as well as promote collaboration and knowledge sharing[4].

India has made significant progress in promoting OA in recent years. Here are some of the key developments in India's OA landscape: the research funding agencies, including the University Grants Commission (UGC), Council of Scientific & Industrial Research (CSIR), Department of Biotechnology (DBT), Department of Science & Technology (DST) and other Indian higher education regulators, have mandated OA for all research articles and theses produced with public funding[5]. This policy has helped to increase the visibility and impact of Indian research. They also provide funding for the publication of research in OA journals, which helps to encourage researchers to publish in OA journals. Several academic universities and research institutions in India have established OA repositories for storing and disseminating research output[6]. This helps increase the visibility and impact of research and promote collaboration and knowledge sharing. India has many OA journals, highly regarded and indexed in major databases such as *Scopus*[7] and Web of Science[8]. The Government of India has also adopted a National OA Policy to make publicly funded research freely available to the public[9]. This policy has helped to increase the accessibility and impact of Indian research. India has made significant strides in promoting OA research performance through policies, funding, and infrastructure development[10]. These efforts are helping to increase the visibility and impact of Indian research and promote collaboration and knowledge sharing both nationally and internationally. However, much work needs to be done to ensure that all researchers and institutions in India comply with policy guidelines and embrace OA publishing and make their research freely accessible to the public.

2. Literature Review

It is evident through the literature review that funding organizations have a significant impact on OA research, facilitating the dissemination and accessibility of research outputs. However, the geographical patterns of OA publication and the challenges faced by research organizations in promoting OA highlights the complex nature of this issue. While the funding to OA publishing by funding organizations presents opportunities, there are also potential ethical, organizational, and economic considerations. The Berkeley Research Impact Initiative (BRII) distributed over $244,000 to support University of California (UC) Berkeley authors, leading to a belief among respondents that their OA articles had a greater impact[11]. OA publication rates were found to be highest in sub-Saharan Africa and low-income countries, indicating factors other than OA policy strongly influence authors' decisions to make their work openly accessible[12]. Research-Performing Organizations (RPOs) face challenges in shaping the OA transformation and need to strengthen the interaction between funding agencies and RPOs to effectively promote OA[13].

Funding organizations, such as the European Commission and the European Research Council, have made OA publishing mandatory for recipients of their agencies' research funding[7,9]. This indicates that one key factor influencing funding organizations is the establishment of mandates and policies to promote OA. Some funding organizations have initiated awareness campaigns and workshops on OA to encourage and motivate researchers, along with providing financial support for OA publications[10]. This indicates that funding organizations contribute to the promotion and dissemination of OA research by providing financial support and raising awareness[12,14.]

India is one of the leading nations in the OA movement, with a significant number of OA journals indexed in *Scopus*, WoS, and Directory of Open Access Journals (DOAJ)[15]. This indicates a strong presence of OA research literature in India[10]. Major funding bodies in India, such as Council of Scientific and Industrial Research (CSIR), UGC, Department of

Science & Technology (DST), Department of Biotechnology (DBT), and Indian Council of Agricultural Research (ICAR), have formulated OA policies and mandated authors to make research outcomes of publicly funded research OA[16]. This demonstrates the active role of funding organizations in promoting OA in India[17]. A study mapping India's research publications in OA journal funded by national and international agencies revealed that a significant portion of funded research literature is available as OA, with most available via green routes of OA, followed by gold and bronze OA[18]. In comparison, India's proportion of OA publications is slightly below the world average, the annual growth rate of OA publications is around 18%. However, the compliance of OA policies among Indian researchers is relatively low, indicating potential challenges and opportunities for improvement[19].

3. University Grants Commission (UGC)

The University Grants Commission (UGC) is a statutory body in India responsible for the coordination, determination, and maintenance of standards of university education[20]. It is also responsible for disbursing funds to universities and colleges in India and providing guidance and support to them in various academic matters. It also promotes research and innovation in higher education institutions and maintains a list of recognized universities and colleges. To support research and innovation, UGC offers several funding schemes for research and development in various fields at universities and colleges. UGC plays a crucial role in improving the country's research ecosystem by providing support for quality control, promoting interdisciplinary research, encouraging international collaborations and creating research infrastructure in the higher education institutions.

Over the years, UGC has substantially enhanced its support for open access research publications in India[22]. It committed to open access initiatives and promotes the free online availability of scientific information, including supporting open access journals and repositories to improve accessibility to the academic community (Dulumoni, Goswami, 2015). Research group UGC endorsed the Open Access Plan (the Plan) on 6th January 2021, and it contains list of initiatives to be undertaken within and beyond the research community under a phased approach for promotion of open access (UGC, 2021). It has not only contributed to promoting open access research but also mandated for data management including research articles and theses that are produced with the help of public funds to be made available for wider access. This means that research articles and theses must be made freely available online, which helps to increase their visibility and impact. UGC strives to promote teaching and research in emerging areas in Humanities, Social Sciences, Languages, Literature, Pure sciences, Engineering & Technology, Pharmacy, Medical, Agricultural Sciences etc. UGC's Research Funding Council provides the quantum of assistance for major & minor research projects. This support covers the items like equipment, books & journals, research personnel, travel, field work and other expenditure (UGC, 2023). This helps to encourage researchers to conduct quality research and publish their research findings in open access journals, which helps to promote the broader dissemination of research. The UGC has encouraged universities and research institutions to establish OA repositories for storing and disseminating research output. This helps increase the visibility and impact of research and promote collaboration and knowledge sharing. The UGC monitors compliance with its OA policies and has taken steps to ensure that researchers and institutions comply[23]. All these have greatly helped create an ecosystem where research publications are made freely available through open access.

4. Objectives of the Study

This study aims to demonstrate the impact of the open access publications from University Grants Commission funded research across disciplines, institutions, and researchers nationally and internationally. The major objectives of the study are:

- To examine the growth of OA research publications from the research funded by the UGC.
- To identify different types of documents and the articles published in different types of Open Access Journals
- To assess the impact of OA publications
- To identify OA publications funded by multiple funding agencies.
- To determine the top-cited research papers, frequently cited in journals and analyse the geographical and institutional contributions to OA

5. Methodology

'Scopus,' a bibliographical citation database, is the data source for searching and retrieving OA research articles published based on the research funded by the

University Grants Commission (UGC). To access all publications where the research is funded by UGC, *Scopus's* advanced search facilities were utilized with the search string "FUND-ALL (university grants commission) OR FUND-ALL (UGC)." The search results were then filtered to include OA, Gold, Green, Hybrid and Bronze articles. The downloaded results from the database were analysed using various bibliometric parameters including citation growth, OA types, year-wise growth of OA publications, document types, subject areas, top sources, prolific authors, cited papers, institutions, and geographical contributions. The data so collected and analysed have been subsequently presented in the form of tables, charts, graphs, and other visual representations. Advanced features in Excel and RAW Graphs were employed for data analysis and graphical presentation.

6. Scope and Limitations

The study is limited to only articles published as OA and are based on the research funded or with financial support from UGC, and it does not consider the non-open access articles published which are also based on the research funded by the UGC over the period. The authors considered all types of OA articles indexed in *Scopus* without limiting to specific years. We have extracted data on Open Access publications funded by the University Grants Commission (UGC). However, detailed expenditure information for these publications is not available. For this analysis, we have included all open access publications listed as UGC-funded in the Scopus database.

7. Analysis & Findings

The analysis of the data collected for the purpose of this study revealed several key findings. The study mainly focused on OA articles where authors have acknowledged the UGC for having received the funding support. Of the total publications (145,158) where authors acknowledged the funding by UGC, India, 36,662 (25.25%) were identified as OA publications, while the remaining 74.74% were published in non-open access journals or journals need subscription to access. Table 1 summarizes the research results obtained from the *Scopus* database. It presents both OA and non OA publications from University Grants Commission funded research. As it shows that the 36,662 OA articles received 928,267 citations, with an average of 25.31 citations per article and an h-index of 298. Over 145185 non OA publications received 2,643,644 citations, with average of 18.21 citation per article and an h-index of 380. These findings demonstrate the significant impact OA publications against non OA publications, an average citation per article OA publications is higher than non OA publications of UGC funded research and wide dissemination of OA publications, contributing to the citation impact of scientific research. The results highlight the importance and effectiveness of UGC funding in promoting OA research publications, which not only ensures wider accessibility but also facilitates more significant citation impact within the scientific community.

7.1. Citation *vs* Publications

The quality of OA publications is measured by the citations received over the period. The total number of citations (928267) shows that OA research publications have attracted many researchers, practitioners, and scientists. Figure 1, presents the range of citations and the number of publications that have received citations. As presented, over 227(0.62%) articles have received the 351 & above citations, followed by 167(0.46%) articles have received citations between 251-350. Going down further, 158 (0.43%) articles that received citations between 201-250. 294(0.80%), and 691 (1.89%) articles have received citations in the range of 151-200 and 101-150, respectively. 2277 (6.21%) and 28400 (77.49%) articles have received citations of 51-100 and 1-50, respectively. There are still 4438 (12.11%) articles which are yet to receive citations, and many recently

Table 1 — Summary of the publication data

	OA Publications	Non OA Publications
Total results (N) articles	36662	145158
Total citations	928267	2643644
Average citation per article	25.31	18.21
h-Index	298	380

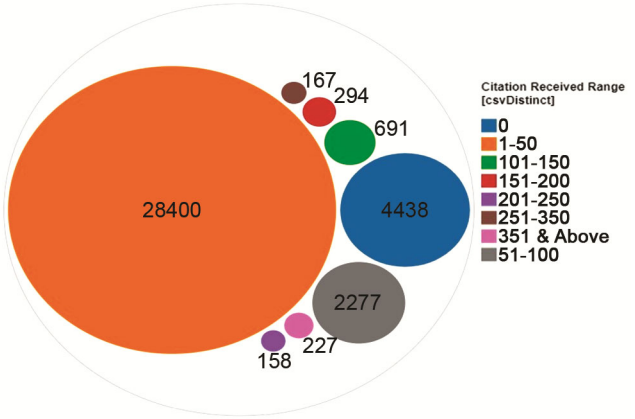

Figure 1 — Citation vs Publications

published publications may attract citations in the future.

7.2. Type of OA Publications

Scopus database categorises the OA publications by type such as green, bronze, hybrid gold, and gold. Gold open documents are in journals that only publish OA; hybrid gold documents are in journals that provide authors the choice of publishing OA, a bronze-published version of a record or manuscript accepted for publication. The publisher has chosen to provide temporary or permanent free access. Green published version or manuscript accepted for publication, available at the repository (Elsevier, 2024). Figure 2 presents the types of OA publications published based on the research funded by the UGC. As presented, a maximum number of articles i.e., over 69.37% (25435) were published in Gold OA journals, followed by the 40.65% (14904) published under the Green OA. Only 8.11% (2975) of articles were published in the hybrid gold journals, and the remaining 22.17% (8128) were published in Bronze OA journals. It is clear from this data that highest number of articles are published in Gold, OA journals.

7.3. Yearly Growth of OA Publications

When we closely look at the data of research articles published as Open Access based on the research funded by UGC, we find that the first article was published in 1957. Since then, there is a continuous growth in OA articles. Figure 3 presents the year-wise growth of these OA articles. Until 2000, the number of publications was growing at a slow pace, then between 2000 and 20013, the number of publications jumped to 200+. After 2014, as the Open Access movement picked up the pace, the number of articles by Indian researchers also increased substantially. The data presented in figure 3 reveals that over 84% of articles were published from 2014 to 2023 were in OA journals. This clearly shows that the funding by UGC and its policies have made an impact. It can also be equally attributed to increase in UGC funding for research and acceptance of publications in OA journals.

7.4. Citations Growth of OA Publications

The growth of citations shows the impact of the research articles published in OA journals published over the period. Over 9,00,000 citations have been received by the OA articles till now. Therefore, it is essential to study the growth of the citations received by the OA articles, which may be directly related to the UGC research funding. Figure 4 presents the citation growth of OA publications. As presented, the citations

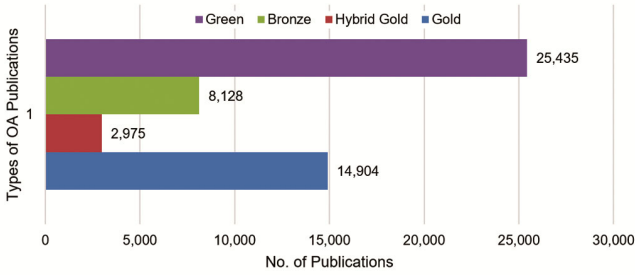

Figure 2 — Types of OA Publications

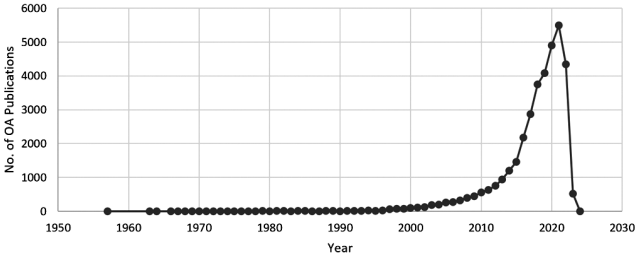

Figure 3 — Yearly growth of OA publications

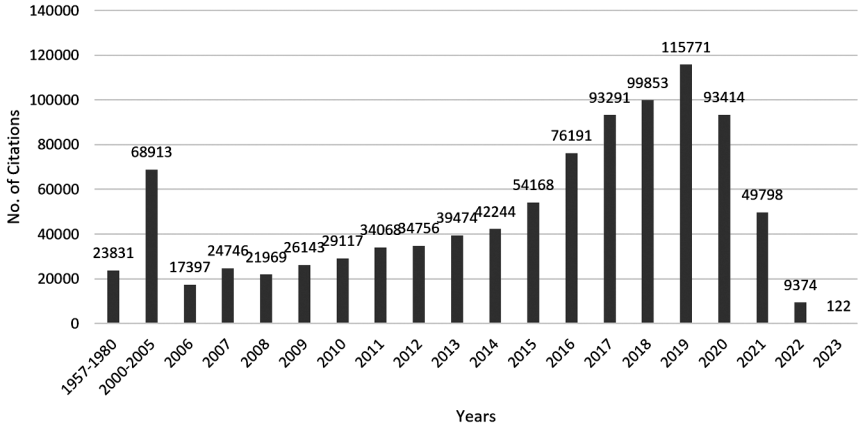

Figure 4 — Citation growth of OA publications

received for the period from 1957 to 2023 were measured. Up to the year 2000, only 23830 (2.56%) of the citations were obtained, while the overwhelming majority (97.43%) were received between 2001 and 2023. As we can see from the figure presented here, in 2019, the maximum number of citations received for OA articles was 115771 (12.47%). It is evident from the above data that there is a clear impact of UGC funding for research on the research publications, especially in OA journals.

7.5. Types of OA Documents

The OA publications emanating from the research funded by UGC have been published in different types, which includes research articles, case studies, short reviews, surveys, etc. Figure 5 presents 11 different types of documents published in open access. As expected, and as has always been a trend that the maximum number of articles i.e., 32846 (89.6%), were published in peer review journals, followed by 2102 review articles (5.8%,) and 1046 conference papers (2.9%,). Other document categories include letters, data papers, notes, editorials, erratum, short surveys, book chapters, and others. It is evident that the maximum number of articles have gone through a peer review process demonstrates that UGC funded research has a significant contribution to the scientific knowledge and most of it is published as open access.

7.6. OA Documents by Subject Area

UGC has several funding schemes for supporting subject-wise and multidisciplinary research. Therefore, it is important to analyse documents published in OA journals by their subject or discipline. Here, as the authors used *Scopus* database as source for the study, the *Scopus* subject classification was considered as base for analysing or grouping the documents. Figure 6 presents the maximum number of publications in biochemistry, genetics, and molecular biology (13.7%), followed by medicine (11.2%) and physics and astronomy (9.3%). Equally, a good number of were also from other disciplines like chemistry, agricultural and biological sciences, material science, engineering, environmental sciences, immunology and microbiology, and multidisciplinary, etc. This figure also presents that over 25.4% of publications are in the chemical engineering, social sciences, energy, nursing, psychology, decision sciences, business, management, accounting, etc. The subject-wise analysis of OA publications also reveals that the UGC has been funding for research in every discipline.

7.7. Top 5 Journals (Source titles) Publishing OA Articles

Most of the articles were published as articles (as presented in Figure 3), and these articles appeared in the well-known and high-impact factor journals published by prestigious national and international publishers. The researcher found 6134 journal sources from the national and international publications covering OA publications emanating from the research funded by UGC, which are indexed in *Scopus* database. Figure 7 here provides the top 5 journals where articles were published in OA mode. As presented in this figure, 1083 articles (2.95%) were published in Scientific Reports, a Nature journal, followed by the 558 (1.52%) in ACS Omega and 466 (1.27) in RSC Advances, PLoS ONE and Nature Communications are the other two journals that published 421 (1.14%) and 413 articles (1.12%), respectively. It is worth noting that maximum number of articles published as OA were in the high-impact scientific journals published by well-known publishers. It is also worth noting here that UGC funding is given to emerging areas and research output coming from

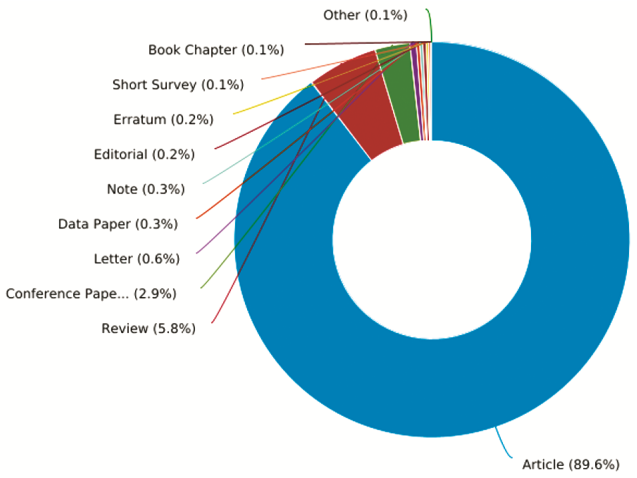

Figure 5 — Document type-wise OA publications

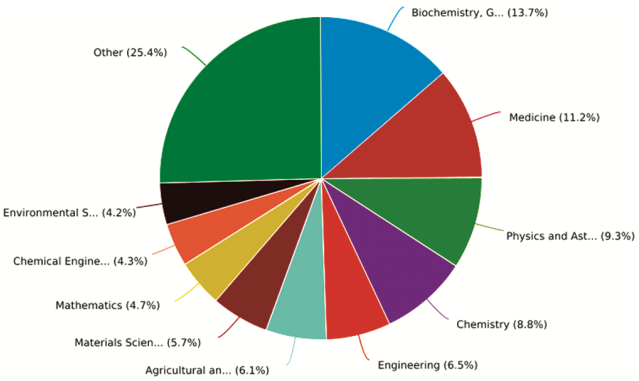

Figure 6 — Subject-wise of OA Publications

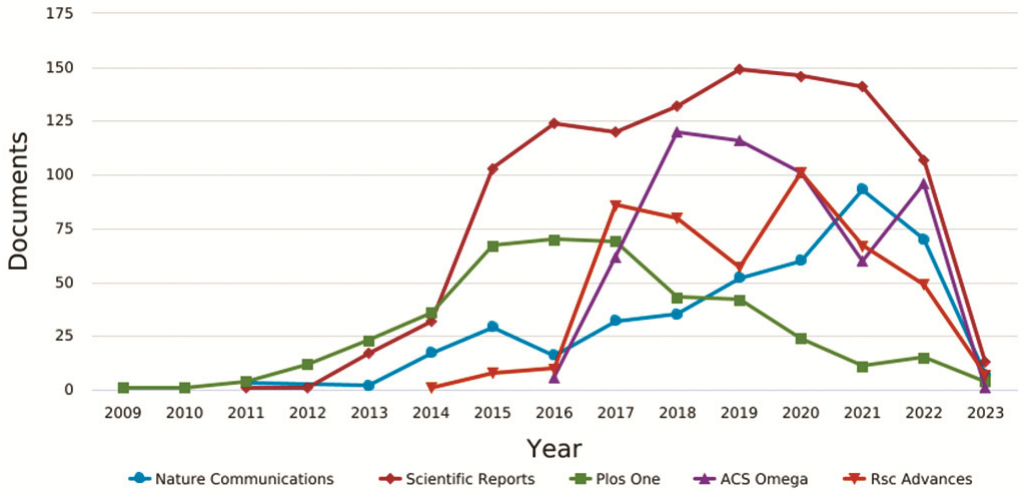

Figure 7 — Top 5 Journal Sources of OA Publications

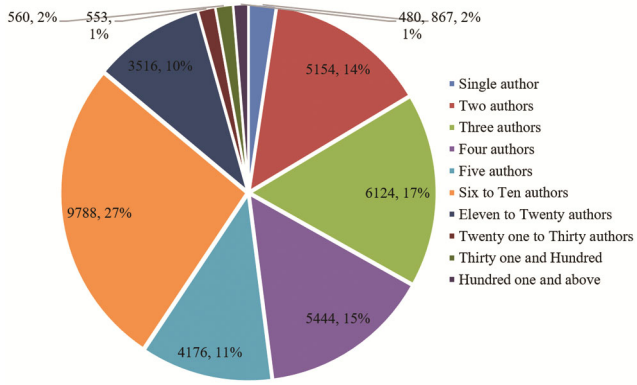

Figure 8 — Authorship/collaboration pattern of OA publications

these projects is of a high quality.

7.8. Author Collaboration in OA Publications

Author collaboration in scholarly communication help produce a high impact and quality research publications. It helps in exploring different subject areas, interdisciplinary research and wide dissemination of research results. Several authors coming together and working on a problem and contributing to publication as collaborator is an exciting part of the study. The author collaboration pattern in research publication reflects that the UGC encourages and funds the researcher where more than one researcher is involved. Figure 8 presents the authorship or collaborative patterns of OA publications from the research funded by the UGC. As this figure shows, 26.70% of the OA articles (9788) have been published with six to ten authors, followed by 16.70% of OA articles (6124) have been published with three authors. There are 5154 (14.06%) articles which have two authors, 5444 (14.85%) articles have four authors, and 4176 (11.39%) articles have five authors Eleven to twenty authors, and twenty-one to thirty authors collaboratively published the 3516 (9.59%) and 553 (1.51%) articles, respectively. It also found that there are 553 articles containing twenty-one to 30 authors each and 560 article were found having thirty-one hundred authors. Over 480 articles were found to having hundred-one and above authors. It shows the vast network of researchers/authors who have carried out research funded by the UGC and published their research as open access.

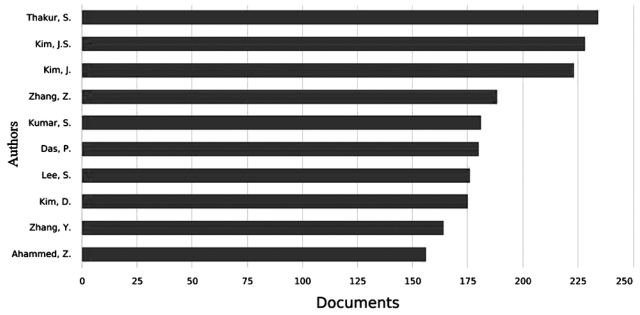

Figure 9 — Top 10 Prolific Authors

7.9. Top 10 Prolific Authors

The prolific authors are the one who are regularly involved in publishing their scientific research results. The analysis of prolific authors helps identify the topic researchers/authors working on particular research areas and receive more research funding from the UGC. Figure 9 provides the top 10 prolific authors who have published most of their articles in OA mode, the research of which is funded by UGC. As presented, Thakur, S., from Variable Energy Cyclotron Centre,

Homi Bhabha National Institute, Kolkata, has published a maximum number of articles the research of which are funded by UGC, followed by the three international collaborators, i.e., Kim, J.S., Kim, J. and Zhang, Z. have authored 228, 223 and 188 articles respectively. Then Kumar, S. from the Indian Institute of Technology Bombay, has authored 181 publications. Das, P. from Tata Institute of Fundamental Research-B, Mumbai, authored 180 articles. Some top international collaborators like Lee, S., Kim, D., and Zhang, Y. authored maximum number of articles and are in the top 10 prolific authors. Ahammed, Z., a research faculty member from Variable Energy Cyclotron Centre, Homi Bhabha National Institute, Kolkata, have published 156 publications, which is also equal to Bhat, M.A. Professor from the Department of Physics and Centre for Astroparticle Physics and Space Science (CAPSS), Bose Institute, Kolkata. All these papers have directly been an outcome of the research funded by UGC or at least one of the authors have received the funding from UGC and output this has been published in Open Access journals. Authors from UGC-funded Indian universities have published a substantial number of articles. Notable contributions include the University of Delhi with 922 articles, Panjab University with 651 articles, Banaras Hindu University with 639 articles, Jawaharlal Nehru University with 587 articles, University of Calcutta with 549 articles, and Aligarh Muslim University with 548 articles.

7.10. Top 10 Cited Publications

The top-cited publications show the scholarly impact created by the OA publications funded by UGC, India. As presented earlier in Figure 3, the citations for these publications have been constantly growing. The total number of citations count is 928267, where the average citation per publication is 25.31 and 298 is the h-index of the OA publications funded by UGC (as seen in Table 1). Table 2 presents the top 10 cited OA publications, and it shows the title, publication year, source of publications, number of citations received, and document type. An articles entitled “Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019 and Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019” has received

Table 2 — Top 10 Cited Papers

Rank	Title	Year	Source title	No. of Citations	Document Type
1	Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019	2020	The Lancet	9095	Article
2	Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019	2020	The Lancet	4673	Article
3	Alcohol use and burden for 195 countries and territories, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016	2018	The Lancet	2173	Article
4	A review on plants extract mediated synthesis of silver nanoparticles for antimicrobial applications: A green expertise	2016	Journal of Advanced Research	2122	Review
5	A draft map of the human proteome	2014	Nature	1683	Article
6	Williamson-Hall analysis in estimation of lattice strain in nanometer-sized ZnO particles	2012	Journal of Theoretical and Applied Physics	1533	Article
7	Nanocellulose, a Versatile Green Platform: From Biosources to Materials and Their Applications	2018	Chemical Reviews	1093	Review
8	Review of high efficiency and clean reactivity controlled compression ignition (RCCI) combustion in internal combustion engines	2015	Progress in Energy and Combustion Science	1044	Review
9	Mitochondrial dysfunction and oxidative stress in metabolic disorders — A step towards mitochondria based therapeutic strategies	2017	Biochimica et Biophysica Acta - Molecular Basis of Disease	923	Review
10	Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990â€“2019: a systematic analysis from the Global Burden of Disease Study 2019	2021	The Lancet	730	Article

the highest number of citations 9095 and 4673 respectively. These articles published by The Lancet in 2020. Another article on "Alcohol use and burden for 195 countries and territories, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016" published by The Lancet in 2018 has received 2173 citations and 'A review on plants extract mediated synthesis of silver nanoparticles for antimicrobial applications: A green expertise' published by Journal of Advanced Research in 2016 has received 2122 citations. Nature journal article also come under the top 10 cited papers. Such articles are " A draft map of the human proteome " with 1683 citations, as seen from the data presented in below given table that maximum of top cited OA articles has published by The Lancet an Elsevier journal. The articles published as OA have wider access and attracts more citations.

7.11. Institutional Contributions

Academic and research institutions rewards authors who are affiliated to their institutions by way of promotions and with other important recognitions. Usually, research funding is provided to researcher who are affiliated to academic and research organisations. UGC provides research funding to faculty who are affiliated to one of other academic institutions in the country. These institutions provide a supportive and sustainable research environment to the researchers. Therefore, the institution has a key role in scholarly publishing. Of the huge number of academic institutions in the country, over160+ institutions have contributed immensely to the research publications. Figure 10 shows the top institutions that have contributed most to the OA publications. It is interesting that international universities have also contributed the most to OA publications as they are collaborators with Indian institutions. The maximum number of OA publications have the authors having the affiliation of The University of Hong Kong (2602), followed by the Hong Kong Polytechnic University (2012), Chinese University of Hong Kong (1964), Hong Kong University of Science and Technology (1464), City University of Hong Kong (1245) and Chinese Academy of Sciences (1084). Indian-known higher education institutions like the Indian Institute of Science (1030) and the University of Delhi (792) have also contributed the maximum number of OA publications where the research was funded by UGC.

7.12. Geographical Contributions

As mentioned in the beginning, UGC is an Indian statutory body that coordinates, determines, and maintains standards of teaching, examination, and research in university education in India. However, it has provided research funding, scholarships, and fellowships to international students and researchers to attract them and enhance the higher education and research ecosystem in the modern era. Therefore, it is essential to analyse the geographical contribution to the OA publications funded by UGC. Figure 11

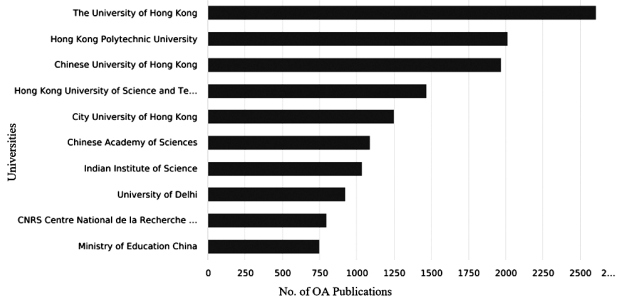

Figure 10 — Institutional Contribution of OA Publications

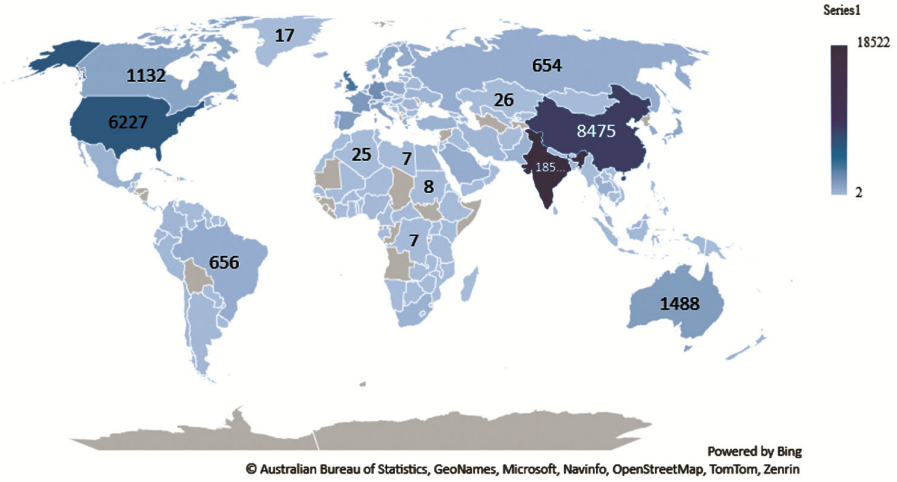

Figure 11 — Geographical Contribution of OA Publications

presents the geographical contributions of 159 individual countries around the world. A maximum of over 50.71% (18522) of articles were contributed by Indian institutions, followed by 23.20% (8475) in China and 23.06% (8425) in Hong Kong. The other developed countries who have also contributed or authors come from the Institutions from the United States (6227, 17.05%), United Kingdom (3554, 9.73%), Germany (2300, 6.29%) and France (1683, 4.60). Also, it is found that the institutions from the Asian continent contributed the maximum to the OA publications where the research was funded by UGC.

8. Discussion

The present study provides a comprehensive analysis of the impact of University Grants Commission (UGC) research funding on the production and dissemination of open access (OA) publications within the Indian academic landscape. By analysing data from the Scopus database, this research highlights the significant role that UGC funding plays in promoting OA publishing and enhancing the visibility and impact of scholarly work.

The study reveals that out of the 145,158 documents resulting from UGC-funded research, 36,662 (25.25%) were published as open access. This indicates a substantial commitment to making research findings freely available to the global scholarly community. The fact that one-quarter of all UGC-funded publications are OA underscores the UGC's active role in supporting and encouraging open access initiatives. This commitment is critical in an era where the accessibility of research is paramount for fostering knowledge dissemination and innovation.

The citation data collected in this study demonstrate the high impact of OA publications. The 36,662 OA articles collectively received 928,267 citations, underscoring the significant attention and academic influence these works command. The citation advantage of OA publications can be attributed to their broader accessibility, which facilitates increased readership and the potential for greater scholarly engagement. This finding aligns with existing literature that suggests OA articles generally achieve higher citation rates compared to their non-OA counterparts, reinforcing the value of open access as a dissemination model.

UGC funding not only boosts the quantity of research outputs but also enhances their quality and collaborative nature. The availability of funding enables researchers to engage in interdisciplinary and collaborative projects, often resulting in high-impact publications. The study's bibliometric data indicate a strong presence of multi-authored papers among UGC-funded OA publications, reflecting a collaborative research culture. This culture is essential for addressing complex research questions and fostering innovation across different fields of study.

Despite the positive outcomes, several challenges remain in maximizing the potential of UGC-funded OA publications. One major challenge is the sustainability of funding. Continuous financial support is crucial to maintaining research productivity and ensuring that researchers can consistently publish their findings as open access. Additionally, there is a need for greater awareness and understanding of OA publishing among researchers. Providing training and resources to navigate OA publishing, including understanding publication fees and identifying reputable OA journals, can help mitigate this challenge.

Institutional policies also play a vital role in promoting OA. Universities should establish clear guidelines and provide incentives for researchers to publish in OA formats. Addressing the threat of predatory journals is another critical issue that requires attention to maintain the integrity of OA publications. Institutions and funding agencies must work together to develop mechanisms that help researchers identify and avoid predatory publishers.

Contributors

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Her contributions to the current work are the conceptualisation of ideas, research design, manuscript review and overall polishing of the paper.

9. Conclusion

This study highlights the significant impact of UGC funding on open access publications in India. By facilitating a substantial number of OA articles, UGC funding not only enhances the accessibility and visibility of research but also contributes to the overall impact and citation advantage of Indian scholarly work. Continued support and encouragement for OA initiatives are essential to sustain these benefits, ensuring that scholarly research remains accessible, impactful, and beneficial to the global academic community. The UGC's role in promoting OA serves as a model for other funding agencies aiming to enhance the dissemination and impact of research through open access.

References

1 Scopus: access and use support center. How do I find open access documents and journals in Scopus?: https://service .elsevier.com/app/answers/detail/a_id/11268/ supporthub/scopus/OA/ (Accessed on 10 March 2024).

2 Neema, S. & Chandrashekar, L. Research funding—why, when, and how? *Indian Dermatol Online J.*, 2021, 12(1), 134–138. DOI:10.4103/idoj.IDOJ_684_20

3 Pölönen, J. & Auranen, O. Research *performance and scholarly communication profile of competitive research funding: the case of Academy of Finland*. *Scientometrics*, 2022, 127, 7415–7433. DOI:10.1007/s11192-022-04385-8

4 Heyard, R. & Hottenrott, H. The value of research funding for knowledge creation and dissemination: A study of SNSF Research Grants. *Humanities and Social Sciences Communications*, 2021, 217.

5 Gondaliya, A. V. & Shah, K. V. Funding agencies in India for research in science and technology. *Pharma Science Monitor*, 2013, 4(3).

6 Jisc. OpenDOAR. Retrieved from Jisc: https://www.jisc.ac.uk/ opendoar (Accessed on 20 May 2024).

7 Elsevier. Scopus Sources. Retrieved from Scopus: https://www.scopus.com/sources.uri (Accessed on 20 May 2024).

8 Clarivate. Web of Science Master Journal List. Retrieved from Web of Science: https://mjl.clarivate.com/home (Accessed on 20 May 2024).

9 Government of India. (2020). *Science, Technology, and Innovation Policy (STIP-2020)*. New Delhi: Ministry of Science & Technology.

10 Smits, P. A. & Denis, J.-L. How research funding agencies support science integration into policy and practice: an international overview. *Implementation Science*, 2014, 28. DOI:10.1186/1748-5908-9-28

11 Teplitzky, S. & Phillips, M. Evaluating the impact of open access at Berkeley: Results from the 2015 survey of Berkeley research impact initiative (BRII) funding recipients. *College and Research Libraries*, 2016, 77(5), 568 - 581. DOI:10.5860/crl.77.5.568

12 Iyandemye, J. & Thomas, M. P. Low income countries have the highest percentages of open access publication: A systematic computational analysis of the biomedical literature. *PLoS ONE*, 2019, 14(7). DOI: 10.1371/journal.pone.0220229

13 Pampel, H. Promoting open access in research-performing organizations: spheres of activity, challenges, and future action areas. *Publications*, 2023, 11(3). DOI:10.3390/publications 11030044

14 Bashorun, M. T.; Muhammed, J. O. & Abubakar, H. Open access initiatives and its implications on research transformations. *In Open Access Implications for Sustainable Social, Political, and Economic Development*, IGI Global, Pennsylvania, 2020, 221-243. DOI: 10.4018/978-1-7998-5018-2.ch012

15 Nazim, M. & Ali, A. Open access publishing and its academic, economic, and societal impact: an Indian perspective. *DESIDOC Journal of Library and Information Technology*, 2023, 43(1), 4-10. DOI:10.14429/djlit.43.01.18621

16 Manu, T. R., & Gala, B. Research data management: An evaluation of Indian research funding agencies' policies and guidelines. *Library Herald*, 2021, 58(4), 42-65. DOI:10.5958/ 0976-2469.2020.00030.9

17 Barik, N. & Jena, P. Current status of open access journals in India: a bird's eye view. *Serials Librarian*, 2022, 205-214. DOI:10.1080/0361526X.2023.2183926

18 Deori, M.; Verma, M. K. & Nazim, M. Open access availability of India's scientific research funded by national and international agencies. *DESIDOC Journal of Library and Information Technology*, 2022, 42(4), 234-245. DOI:10.14429/djlit.42.4.17810

19 Nazim, Mohammad; Bhardwaj, Raj Kumar; Agrawal, Anil. Open access publishing in India: trends and policy perspectives. *Global Knowledge, Memory and Communication*, 2023, 72(4-5), 437-451. DOI:10.1108/GKMC-09-2021-0158

20 UGC. University Grants Commission (UGC). https://www.ugc. gov.in/ (Accessed on 15 March 2024).

21 UGC. Fellowship and Research Grant. https://frg.ugc.ac.in/ (Accessed on 15 March 2024).

22 Dulumoni, G. Role of UGC in funding higher education with special reference to North-east India. *The Clarion- International Multidisciplinary Journal*, 2015, 4(1).

23 Singh, S. & Singh, G. Research Promotion Schemes (RPS) of University Grants Commission (UGC) in India for Higher Education Institutes. *Proceedings of NAAC Sponsored Online National Conference on Quality Enhancement in HEIs and Evaluation with RAF of NAAC*. National Assessment and Accreditation Council. 2021.