RESEARCH PRODUCTIVITY OF INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES, MUMBAI: A SCIENTOMETRIC ANALYSIS

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Abstract: This present study is a scientometric analysis of the research productivity of the International Institute for Population Sciences (IIPS), Mumbai, between 2014 and 2024. The data is collected from Scopus using relevant keywords and affiliations associated with IIPS. The study focuses on publication count, citations received, author productivity, types of documents, collaboration patterns, and publication trends by analyzing scholarly publications within a defined time frame.

Keywords: International Institute for Population Sciences, IIPS, research productivity, scientometric analysis, bibliometric analysis, research output, scholarly publications, citation analysis.
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1.0 Introduction
Research institutions are essential in providing quality education and promoting research and development activities. Quality education promotes quality research output. It becomes necessary to study the research productivity of various institutions to enable policymakers and academicians to identify the factors contributing to successful research communication. Examining the publications of an institute offers an overview of its research output. Various methods and tools are available to explore the research output. One such method is scientometric analysis. This method is used widely to assess the quantitative aspects of scholarly output in various subjects. It helps to identify the pattern of publications, authorship, citations and trends in particular given period. In this study, the researcher evaluates the research productivity of the International Institute for Population Sciences (IIPS), Mumbai. It is an autonomous institute under the administrative control of the Ministry of Health and Family Welfare, Government of India. It was established in July 1956. It is the first kind of center which is dedicated to teaching and research in population sciences.

2.0 Literature Review
Various scientometric studies have been conducted to analyze the research output of academic institutions in different disciplines. Mamdapur, G.M.N., Hadagali, G.S. & Kaddipujar, M.D studied the productivity of Karnataka University, Dharwad, from 1960 to 2019 using the Scopus citation database. The study showed that a total of 4990 documents were retrieved from the database and analyzed to quantify the growth of KUD's scholarly literature in terms of the authorship pattern, year-wise distribution of publications and citations, domain-wise distributions of publications, and author's ranking. The result indicates that the science faculty has contributed 4785 publications out of 4990. Department of Chemistry contributed 1701 publications, and T. M Aminabhavi was found to be the most prolific author with 364 publications. Most of KUD's collaborations were with the Indian Institute of Science, Bengaluru.

Lihitkar, Shalini R. and Bankar, Ravindra found the scientific publications of Shivaji University, Kolhapur, from 1989 to 2018. The study was based on the data collected from the Web of Science. This study found that Material Science is the top research yield; the highest number of publications was in 2017. The study also shows that 92% of publications are journal articles. Dr. CD Lokhande was the top h-index-ranking author in the university.
Priya and Shivarama Rao conducted a scientometric study and found the productivity of the Central University of Himachal Pradesh from 2011 to 2020. The study used bibliometric methods to analyze data retrieved from the

Scopus database. The study showed that the Central University of Himachal Pradesh published 442 publications and received 5,531 citations during 2011-2020. Akhter, Y had published the highest number (60) and received 746 citations. It was found that most of the CUHP publications have collaborated with Babasaheb Bhimrao Ambedkar University, Lucknow.

Siwach and Kumar (2015) analyzed the research output of Maharshi Dayanand University (Rohtak) from 2000-2013. A total of 1,247 papers published during this period were examined using the SCOPUS database, which revealed that these papers received 6,959 citations. The study found that most of the articles were published in 2013 (219 papers), while the lowest was in 2001 (30 papers). The university's national collaboration was with Guru Jambheshwar University of Science and Technology. Internationally, South Korea (56 documents) and the United States (26 articles) were the most frequent collaborators.

3.0 Objectives

- To know the year-wise publications of IIPS.
- To know the preferred sources of publications.
- To know the most productive authors of IIPS.
- To know the highly cited articles.
- To know the National and International collaborations of IIPS for research publications.
- To know the co-occurrence of keywords of the subjects.

4.0 Methodology

There are many popular databases exist worldwide, such as Scopus, web of Science, Google Scholar, etc. These databases have a very wide range of publications. In this study the Scopus database was used to retrieve the publication data of IIPS. The Scopus was searched with the name of the affiliation, i.e., International Institute for Population Sciences. Scopus retrieved 1763 results from 2014 to 2024. The citations, bibliographic fields, and keywords of 1763 publications were exported in the CSV format. VOS viewer was used for visual analysis.

5.0 Data Analysis

5.1 Year-wise publication of IIPS during 2014-2024

Table 1: Growth of Publications

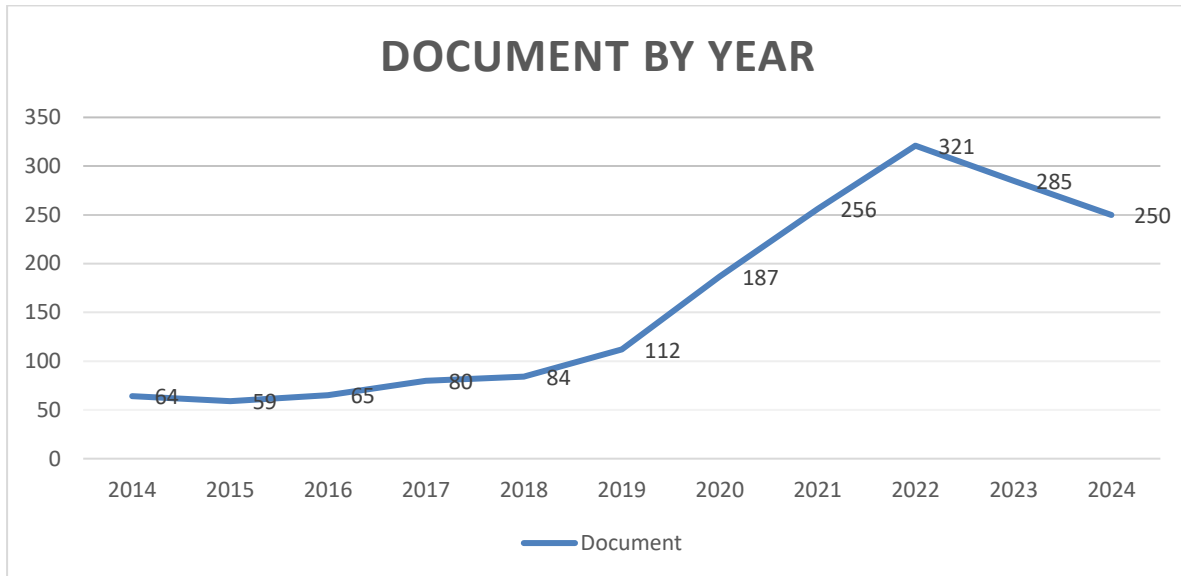| Year	Documents	Percentage %
2014	64	3.63
2015	59	3.34
2016	65	3.68
2017	80	4.53
2018	84	4.76
2019	112	6.35
2020	187	10.60
2021	256	14.52
2022	321	18.20
2023	285	16.16
2024	250	14.18

Figure 1: Year-wise Growth of Publications

Table 1 shows the year-wise growth in terms of total publications of the International Institute for Population Sciences, Mumbai, during 2014-2024. Figure 1 shows that the growth of publications has steadily increased over the years. In 2014 there were 64 documents which is 3.63% of the total and the growth of publication was slow in the starting year However, the numbers started to grow significantly from the 2019 onwards. The highest number of publications was in 2022, with 321 documents making up 18.20% of the total, followed by 2023, with 285 documents making up 16.16% of the total.

6.0 Published Documents Types

Table 2: Distribution of research output according to their type

Document Type	Publications	Publication %
Article	1527	86.61
Book Chapter	110	6.23
Review	51	2.89
Erratum	21	1.19
Letter	11	0.62
Note	19	1.07
Book	9	0.51
Editorial	7	0.39
Conference Paper	5	0.28
Data Paper	2	0.11
Retracted	1	0.05

Table 2 displays the type of document that authors preferred in their research. Most of the research output at IIPS are articles with 1527 publications, making up 86.61% of the total followed by book chapter with 110 publications.

7.0 Subject Area Of Published Research

Table 3: Documents By Subject Area

S.No	Subject Area	Documents	Percentage
1	Medicine	1079	43.9
2	Social Sciences	568	23.1
3	Multidisciplinary	167	6.8
4	Economics, Econometrics and Finance	97	3.9
5	Psychology	87	3.5
6	Biochemistry, Genetics and Molecular Biology	72	2.9
7	Environmental Science	70	2.8
8	Nursing	58	2.4
9	Arts and Humanities	51	2.1
10	Agricultural and Biological Sciences	43	1.8

Table 3 shows the top ten published research in different subject areas. The highest number of publications is in Medicine with 1079 documents which is 43.9%. This is followed by Social Sciences with 23.1%, and Multidisciplinary research with 6.8%.

8.0 Source of Research Publication

Table 4: Top 10 Journals preferred by the authors

S.No	Source	Documents
1	BMC Public Health	103
2	Plos One	89
3	Clinical Epidemiology And Global Health	76
4	Journal Of Biosocial Science	73
5	Lancet	60
6	Scientific Reports	54
7	Economic And Political Weekly	40
8	BMC Geriatrics	39
9	Journal Of Public Health Germany	38
10	BMJ Open	33

Table 4 shows the top 10 journals preferred by authors at IIPS. The most popular journal is BMC Public Health with 103 publications, followed by Plos One, with 89 publications. Having a variety of journals shows that the university's research covers a wide range of topics, including epidemiology, public health, and social sciences.

9.0 Most productive authors

Table 5: Top Ten Authors with The Most number of publications.

Author	Publications	h-index
Mohanty S.K	108	30
Singh, S.K	78	16
Goli, Srinivas	66	28
Ram Usha	65	46
Dwivedi, Laxmi Kant	64	15
Chattopadhyay, Aparajita	61	18

Sahoo, H.	50	18
Shekhar, C.	50	13
Dhillon, Preeti.	49	16
James, K.S	48	16

Table 5 shows the list of the top ten authors with the most publications. It is clear that Prof. Mohanty S.K. leads with 108 publications and has an h-index of 30, indicating both a high volume and significant impact of his work, followed by Prof. Singh, S.K. with 78 publications, and Prof. Goli, Srinivas with 76 publications. Ram Usha has the highest h-index of 46 and shows substantial influence in her field.

10.0 National and International Collaborations

Table 6.1: Top Ten National Level Collaborator

S.No	Name	Documents
1	Public Health Foundation of India	118
2	Indian Council of Medical Research	109
3	Jawaharlal Nehru University	96
4	Tata Institute of Social Sciences	86
5	Banaras Hindu University	85
6	All India Institute of Medical Sciences, New Delhi	75
7	The Aga Khan University	73
8	Indian Institute of Public Health Gandhinagar	71
9	Manipal Academy of Higher Education	70
10	Postgraduate Institute of Medical Education & Research, Chandigarh	68

Table 6.1 shows the National level collaborations. This analysis reveals that IIPS has a diverse research network. The Institute collaborates with a range of institutions, including public health organizations, medical schools, universities, and government research bodies. The most number is collaboration is done with The Public Health Foundation of India, with 118 documents, followed by the Indian Council of Medical Research, with 109 documents.

11.0 International Collaboration

Table 6.2: Top Ten International Level Collaborator

S.No	Name	Documents
1	Harvard University	117
2	University of Washington	114
3	Harvard T.H. Chan School of Public Health	114
4	Tehran University of Medical Sciences	113
5	Institute for Health Metrics and Evaluation	111
6	Imperial College London	108
7	Heidelberg University	106
8	University of Belgrade	106
9	University of Melbourne	105
10	University of São Paulo	103

Table 6.2 Top Ten International Level Collaborator showcases the Institute's global reach and impact in population

sciences research. Harvard University and University of Washington emerged as the leading international partners with 117 and 114 collaborations, indicating strong ties with top-tier U.S. institutions.

12.0 Funding

Table 7: Documents by Funding Sponsor

S.No	Funding Sponsor	Documents
1.	Bill and Melinda Gates Foundation	152
2.	National Institute of Health	107
3.	U.S. Department of Health and Human Services	102
4.	National Institute on Aging	83
5.	National Health and Medical Research Council	48
6.	Department of Health and Aged Care, Australian Government	47
7.	European Commission	46
8.	Wellcome Trust	42
9.	Ministry of Health & Family Welfare	39
10.	United Nations Population Fund	39

Table 7 shows the top funding sponsors for research at IIPS. The Bill and Melinda Gates Foundation is the leading sponsor, with 152 documents. Other major contributors include the National Institute of Health, which has 107 documents, and the U.S. Department of Health and Human Services with 102 documents. These sponsors play a key role in supporting diverse research projects at the Institute.

13.0 Highly Cited Research Publication

Table 8: Top Ten Highly Cited Articles

S.No	Article	Authors	Year	Source	Cited by
1.	The impact of multimorbidity on adult physical and mental health in low- and middle-income countries: What does the study on global aging and adult health reveal?	Arokiasamy, P., Uttamacharya, U., Jain, K., Chatterji, S., Kowal, P.	2015	BMC Medicine 13(1),178	317
2.	Prevalence, risk factors, and disability associated with fall-related injury in older adults in low- and middle-income countries: Results from the WHO Study on Global Ageing and Adult Health	Stewart Williams, J., Kowal, P., Hestekin, H., Arokiasamy, P., Chatterji, S.	2015	BMC Medicine 13(1),147	174
3.	The incidence of abortion and unintended pregnancy in India, 2015	Singh, S., Shekhar, C., Acharya, R., Kalyanwala, S., Browne, A.	2018	The Lancet Global Health 6(1), pp. e111-e120	166
4.	Disease-specific out-of-pocket and catastrophic health expenditure on hospitalization in India: Do Indian households face distress health financing?	Kastor, A., Mohanty, S.K.	2018	PLoS ONE , 13(5), e0196106	165
5.	Chronic noncommunicable diseases in 6 low- and middle-income countries: Findings from wave 1 of the world health organization's Study on Global Ageing and Adult Health (SAGE)	Arokiasamy, P., Uttamacharya, Kowal, P., . Naidoo, N., Chatterji, S.	2017	American Journal of Epidemiology , 185(6), pp. 414–428	151

6.	Maternal mortality in India: Causes and healthcare service use based on a nationally representative survey	Montgomery, A.L., Ram, U., Kumar, R., Jha, P.	2014	PLoS ONE , 9(1), e83331	125
7.	India's escalating burden of non-communicable diseases	Arokiasamy, P.	2018	The Lancet Global Health , 6(12), pp. e1262–e1263	120
8.	Prevalence and determinants of tobacco use in India: Evidence from recent global adult tobacco survey data	Singh, A., Ladusingh, L.	2014	PLoS ONE , 9(12), e114073	112
9.	Understanding epidemiological transition in India	Yadav, S., Arokiasamy, P.	2014	Global Health Action , 7(SUPP.1), 23248	99
10.	Menstrual hygiene practices and its association with reproductive tract infections and abnormal vaginal discharge among women in India	Anand, E., Singh, J., Unisa, S.	2015	Sexual and Reproductive Healthcare , 6(4), pp. 249–254	85

Table 8 shows that the paper titled "The impact of multimorbidity on adult physical and mental health in low- and middle-income countries: What does the study on global aging and adult health reveal?" by Arokiasamy, P., Uttamacharya, U., Jain, received the highest number of citations (317), followed by the article "Prevalence, risk factors, and disability associated with fall-related injury in older adults in low- and middle-income countries: Results from the WHO Study on Global Ageing and Adult Health" by Stewart Williams, J., Kowal, P., Hestekin, H., Arokiasamy, P., Chatterji, S. received 174 citations.

14.0 Co-occurrence of keywords

Co-occurrence analysis is a common technique in bibliometric studies, text mining, and data analysis to understand the structure and trends in a particular area of research. Figure 9 represents the network map of commonly used author keywords. This figure was generated with the help of VOSviewer.

As seen in the figure 9, each circle represents a term. The size of the circle indicates the number of publications with corresponding terms. In this study, out of 2895 terms, 71 meet the threshold of a minimum of 10 times occurrence. The term "India" occurred 609 times, while the phrase "older adult" ranked second with 122 occurrences. The phrases "NFHS," "stunting," and "gender" occurred 43, 36, and 42 times, respectively.
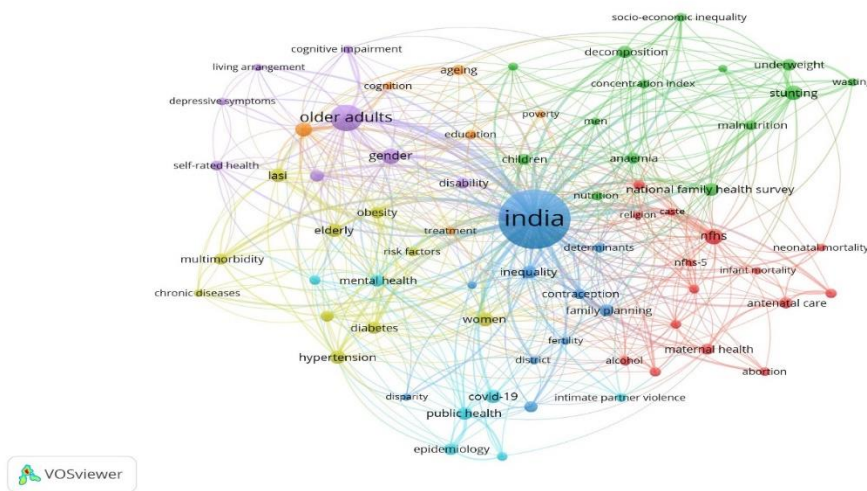

Figure 9

15.0 Limitations

This study focused exclusively on the Scopus database, and it is important to note that the results may differ when analyzing other databases such as Web of Science or Google Scholar.

16.0 Findings

- The most number of publications was done in 2022 (321), which is 18.20% of total publications.
- Most of the research output at IIPS are articles with 1527 publications, making up 86.61% of the total publication.
- Most number publication is in the subject area of Medicine with 1079.
- The most popular journal for publishing is BMC Public Health, with 103 publications.
- Mohanty S.K. is the most prolific author, with 108 publications and a 30-h index.
- Ram, Usha has highest number of h-index of 46.
- The most national collaboration was done with The Public Health Foundation of India with 118 documents.
- Most International collaboration was done with Harvard University, with 117 documents.
- The top funding sponsor for research at IIPS is The Bill and Melinda Gates Foundation, with 152 documents.
- The highest cited article titled "The impact of multimorbidity on adult physical and mental health in low- and middle-income countries: What does the study on global aging and adult health reveal?" by Arokiasamy, P., Uttamacharya, U., Jain, K., Chatterji, S., Kowal, P. published in 2015 received 317 citations.

17.0 Conclusion

The present study has explored the scientific productivity of the International Institute for Population Sciences from 2014-2024. This study examines 1763 publications using the Scopus database. The results show an upward trend in the number of publications and citations. This shows that the Institute is putting more effort into research and producing more academic work. The national and international collaborations reflect IIPS's role in interdisciplinary research and its influence on national health policies. It also shows that IIPS is a significant contributor to worldwide population studies.

18.0 References

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