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# A BIBLIOMETRIC ANALYSIS OF JOURNAL OF THE MEDICAL LIBRARY ASSOCIATION (JMLA): 2013-2022

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**Abstract** *The present study conducts a bibliometric analysis of Journal of the Medical Library Association to assess the growth of publication in the journal for the study period i.e. 2013-2022. The paper measures and analyses the distribution of publications in the journal on different parameters like type of publications, the geographical distribution of publications, popular keywords and top-cited publications during the study period. Total 599 documents were retrieved and analysed and found that the year 2020 was the most productive year. Under the type of publications, article was the preferred category with 47.08%. Human and humans were popular keywords. United States is a predominant country (26.48%) and the University of Toronto (16.17%) is a predominant institution. The study is useful for researchers and faculty to understand the pattern of publication of the selected Journal and to conduct an evaluative literature search.*

**Keywords:** *Bibliometrics, Scientometrics, Research Productivity, Medical Librarianship*, *Medical Library Journal*

## INTRODUCTION

The most important and commonly used element on the planet is information, which is only surpassed by matter and energy. It is a crucial agent of action and change, requiring knowledge and experience. Information is positively impacted by its communication media (Satija, 2013). The rapid growth of information technology is shortening the time between submission and publishing through online submission.

Journals constantly carry out primary role in disseminating current information among researchers, teachers, students, scientists and others concerned with research and innovations (More & Motewar, 2021). A journal may be looked upon as an information shell on a subject. Print journals have occupied a central role in information creation and dissemination for centuries. Significant growth in the information and communication technology (ICT) sector introduced changes and progressively replaced print publications with electronic publications worldwide and as a result, e-journals are becoming increasingly prevalent in the information landscape of libraries. The ultimate goal of electronic journals is to provide fast and easy access to the information contained in objective publications with simple, powerful search and retrieval capabilities. Open access journals are scholarly journals that are available online to the reader without any financial, legal or technical barriers other than those inseparable from gaining access to the internet itself (Pandian et al., 2008).

Over the years, we have seen a paradigm shift in the variety of topics chosen by Library and Information Science (LIS) researchers to answer the problems related to library management, information behavior of users, library services, library automation, digital libraries, measuring research productivity and several other areas. Introduced in 1969 by Pritchard, Bibliometrics has become popular in library and information science and allied areas. Bibliometric analysis is essential for identifying specific and widely-used documents. It helps to monitor the growth of literature and patterns of research (Sevukan, Nagarajanb & Sharma, 2007). Bibliometric studies help to explore the publication pattern and research output of journals. These studies help researchers to identify research trends and predominant authors in academic publications and "contribute to knowledge management in information explosion era and help librarians and information specialists in selection of publication" (Gill & Gill, 2023). Databases like SCOPUS and Web of Science, which support bibliometric analysis as

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well as different software that help data visualisation like Biblioshiny and VOS Viewer have accelerated the literature output in bibliometrics.

## About the Journal

Journal of the Medical Library Association is a quarterly peer-reviewed, open-access journal that publishes original research work related to health science librarianship, the impact of the availability of information sources on health care, biomedical research and the medical science education system (https://jmla.pitt.edu/ojs/jmla/about). The journal is indexed in the SCOPUS database and at present has a 3.3 cite score, SNIP of 1.129 and SJR of 0.789 (https://www.scopus.com/sources.uri, 2022).

"The *JMLA* is a continuation of the *Bulletin of the Medical Library Association (BMLA),* beginning with v. 90, 2002. The *BMLA* began with volume 1 in 1911 as the successor to the *Medical Library and Historical Journal (Association of Medical Librarians),* v. 1–5, 1903–1907; the *Journal of the Association of Medical Librarians,* v. 1, 1902; and the *Medical Libraries* (Association of Medical Librarians), v. 1–5, 1898–1902 (official organ through 1901)" (https://jmla.pitt.edu/ojs/jmla/about).

## OBJECTIVES

The objectives of the present study are:

- To study the year-wise distribution of papers published in the Journal during the study period.
- To identify the types of documents published in the journal during the study period.
- To identify the most prolific countries and institutions contributing to the journal**.**
- To identify the top cited document in the journal during the study period.

## RESEARCH METHODOLOGY

The present study conducts bibliometric analysis of a prestigious online journal entitled Journal of the Medical Library Association (JMLA). It is published quarterly, with one issue every three months. The data for the present study was obtained from the Scopus database, which was selected for its excellent worldwide reputation and provides a multidisciplinary framework for research. A retrospective search of the Scopus database (https://www.scopus.com/), limited to 2013-2022 was conducted for the bibliometric analysis. The search string used to retrieve the data from the Scopus database was "Journal of the Medical Library Association: JMLA". As a result, details about a total of 599 publications were retrieved during the selected period. The retrieved data was exported as a CSV file and subsequently analysed using Microsoft Excel and VOS viewer. Tables and graphs are used for the presentation of data.

The VOSviewer software version 1.6.18 was used for network visualization of the analysed results (https://www.vosviewer.com). VOSviewer is open-source software for constructing and visualising bibliometric networks using publications and other data types (Van, 2017).

## Scope of the Study

The study covers 599 articles published in the Journal of the Medical Library Association taken from the Scopus database from 2013 to 2022.

## Limitation of the Study

The Scope of the study is limited to the publications of Journal of the Medical Library Association indexed in the Scopus database during 2013 to 2022.

## LITERATURE REVIEW

There is extensive literature available on bibliometric analysis of research productivity. Some relevant studies are reviewed:

Thanuskodi (2012) conducted a bibliometric analysis of the Indian Journal of Agricultural Research and discovered that 98.67% of the contributors were Indian. 93.69% of the authors contributed their research as joint authors. The year 2001 saw the publication of the highest number of articles (10.63%) throughout the research period of 2001-2010.

A bibliometric analysis of the journal Library Philosophy and Practice undertaken by Verma, Sonkar and Gupta (2015) indicated that a total of 1177 documents were published between 2005 and 2014, the year 2011 taking the top spot with 17% of total publications. 48% of authors favored working alone. "Library service" was the most preferred topic with 14.86% of articles. A total of 37 nations contributed throughout the research period, with 37% of articles contributed from Nigeria and 23% from India.

Parameshwar and Goutami (2017) analysed research articles published in the journal Library Progress (International). According to the analysis, a total of 260 documents were published between 2004 and 2014. The study explored that 13.08% of the highest-ranking publications were released in 2006. Joint authorship made up 45.38 percent of publications. 57.31% of articles contained 1-10 references, followed by 30% with 11-20 references.

Sushma (2018) conducted a bibliometric analysis of the research articles published during the five-year (2011-2015) in the DESIDOC Journal of Library and Information Technology to evaluate the authorship patterns, geographical distributions, most prolific authors and citation analysis. During the study, 294 articles were published in total and the year 2012 was ranked first with 10.83% of contributions. Joint authors made up 45.23% of the articles. 82.6% of the authors were from universities and colleges. 70.07% of the total publications were articles with page lengths of 6-10 pages.

Sa and Dora (2019) looked at the productivity and trends of research in the field of library and information science in India from 1944 to 2017. The analysis showed that, out of 1944 publications, 51% were indexed between 2012 and 2017. The inclusion of DESIDOC Journal of Library and Information Technology and Annals of Library and Information Studies as indexed in the Scopus database was the primary reason for growth. The research revealed that the University of Delhi had the highest publishing rate with 3.13% of articles. The majority of articles (40%) were written under a joint authorship pattern. The author with the highest publications (2.93%) and citations (406) was K.C. Garg.

Barik, Rautaray and Swain (2020) examined the KIIT Journal of Library and Information Management from 2014 to 2018 and reported that the year 2017 had the highest number of publications (22.35%), followed by 2018 and 2016 with 20.00% each. Out of 85 documents, joint authors contributed 48.24% of them.

Gill and Arora (2021) analysed contributions in Annals of Library and Information Studies (ALIS) for a decade i.e. 2010 to 2019 and found that a total of 328 papers were published during the decade and 617 authors contributed their research to the journal out of which 30.91% were teachers by profession. The average degree of collaboration was 0.64. A majority of contributions (74.14%) were from India. 29.26% of publications were written on bibliometrics and scientometrics and 22.56% of publications were related to e-resources.

A study of the IASLIC Bulletin from 2015 to 2019 by More and Motewar (2021) revealed that the year 2019 saw the greatest percentage of publications (23.46%). West Bengal contributed 30.61% of the publications, followed by Assam and Delhi with 9.18% each. Multi-author publications outnumbered single-author research papers in this study with 78.57% of the total articles and the value of the degree of cooperation was 0.78%.

To investigate the research output and publishing patterns of the Library Herald from 1958 to 1981, Singh and Ahmed (2021) conducted a bibliometric analysis. The study looked at several patterns, including yearly article distribution, authorship, degree of collaboration and regional distribution throughout the study period. The study unfolded that the maximum number of articles published in both the years 1963-64 and 1969-70 was 7.74% of the total 336 articles. The majority of the authors were single authors and the degree of collaboration was 0.11. The analysis found that 95.54% of the authors were Indian.

The bibliometric study of 1561 research papers compiled by Singh, Chand and Neha (2021) from 20 volumes published in the Indian Journal of Pure and Applied Mathematics between 1998 and 2017 found that volume 32 (2001) was the most productive with 11.14% of the research papers. Joint authors contributed 45.4% of the articles. A total of 1561 articles were published with a total of 20370 citations. 53% of the authors were from different universities.

Siwach and Thakur (2021) investigated the authorship and self-citation pattern in DESIDOC Journal of Library & Information Technology (DJLIT) during 2010-2019 and revealed that the year 2012 was the most productive with a 12.07% of contribution of the study period. Almost one-third of the papers were single-authored and the degree of collaboration was 0.667%. 36.72% papers had author self-citations and 29% of papers had journal self-citations.

Bachchhav (2022) conducted a study between 2011 and 2015 in the Annals of Library and Information Science (ALIS) and revealed that out of 173 articles, 21.96% were published in 2015. The month of December had the highest percentage of articles published (27.16%), followed by September (26.58%). As 74.56% of the papers in ALIS throughout the research period were written by Indian writers, the study reveals that ALIS was one of the most popular journals in the field of library and information science in India.

Siddique et al. (2023) conducted a bibliometric analysis of the Research productivity of Pakistani women library professionals working in Pakistan or abroad and explored that the year 2018 was most productive. The University of Punjab was the most productive institute during the study period followed by Islamia University, Bahawalpur. Pakistan Library & Information Science Journal is a top priority of Pakistani female researchers with a 29.5% contribution by Library Philosophy and Practice (14.1%) and Pakistan Journal of Information Management (11.9%).

Singh, Mohit and Siwach (2023) examined the publishing pattern of Allelopathy Journal and found that the main document type was research papers. The publications of the year 2007 have received the highest citations. About 66% of citations were received by 26% of papers only. The Chinese Academy of Sciences was the top contributing institute. The most frequently occurring keywords during the study period were Plant followed by Soil, Species, Weed, Alleochemical and Leaf. A total 4870 authors have contributed their research to the journal with 0.91 degree of collaboration.

# DATA ANALYSIS AND DISCUSSIONS

## Year-Wise Distribution of Publications

Analysis of the Journal for the study period shows that a total 599 papers were published in the Journal of the Medical Library Association (JMLA) throughout the study period i.e. 2013–2022 (Table 1 and Fig. 1). The year 2020 was the most productive year with 13.19% of the total publications followed by 2018 (11.85%). In 2022, a minimum number (5.34%) of publications was contributed. The analysis of the yearly distribution of articles reveals (as shown in Fig. 1) that the journal may prefer to publish good-quality research papers only, which results in a lower acceptance rate.

**Table 1 : Year-Wise Distribution of Articles from 2013-2022**

| Year | Number of Articles | %age | Cumulative Sum | Cum. %age |
|---|---|---|---|---|
| 2013 | 66 | 11.02 | 66 | 11.02 |
| 2014 | 67 | 11.18 | 133 | 22.01 |
| 2015 | 50 | 8.35 | 183 | 30.55 |
| 2016 | 56 | 9.35 | 239 | 39.89 |
| 2017 | 56 | 9.35 | 295 | 49.25 |
| 2018 | 71 | 11.85 | 366 | 61.10 |
| 2019 | 68 | 11.35 | 434 | 72.45 |
| 2020 | 79 | 13.19 | 513 | 85.64 |
| 2021 | 54 | 9.02 | 567 | 94.65 |
| 2022 | 32 | 5.34 | 599 | 100 |
| **Total** | **599** | **100** | | |

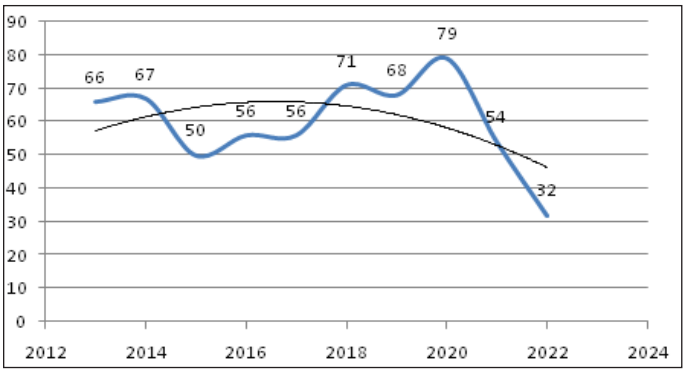


**Fig. 1: Year-Wise Distribution of Articles from 2013-2022**

## Type of Documents

Table 2 and Fig. 2 show the type of documents published in the journal during 2013-2022. The study found that the main documents published were research 'articles' (47.08%) followed by 'reviews' (44.74%). It reveals that research articles and review papers are popular among contributors.

**Table 2: Type of Documents Published during Selected Period**

| Documents Type | Total | %age |
|---|---|---|
| Article | 282 | 47.08 |
| Review | 268 | 44.74 |
| Editorial | 16 | 2.67 |
| Erratum | 13 | 2.17 |
| Conference Paper | 6 | 1.01 |
| Note | 4 | 0.66 |
| Letter | 4 | 0.66 |
| Book Chapter | 3 | 0.51 |
| Short Survey | 2 | 0.33 |
| Book | 1 | 0.17 |
| **Total** | **599** | **100** |

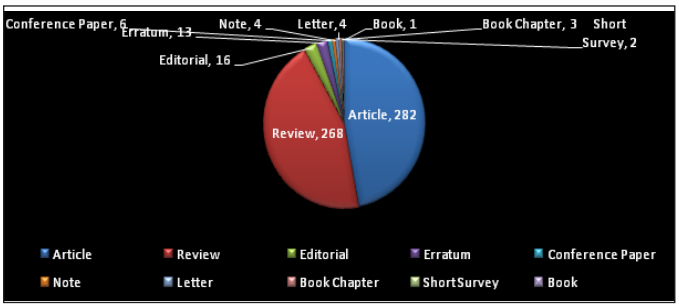


**Fig. 2: Type of Documents Published during Selected Period**

## Most Frequently Used Keywords

Across 599 documents, a total of 7,159 keywords were found which reflect the topics discussed in the journal. The word 'human' which had 523 frequencies was followed by its plural form 'humans' with 456 frequencies. The word 'Medline' appears 165 times, while 'Cochrane Library' appears 158 times (Table 3).

**Table 3: Top 10 Keywords during the Selected Period**

| Keyword | Frequency | Total Link Strength |
|---|---|---|
| Human | 523 | 3087 |
| Humans | 456 | 2830 |
| Medline | 165 | 1357 |
| Cochrane Library | 158 | 1343 |
| Female | 132 | 996 |
| Randomized Controlled Trail (Title) | 127 | 943 |
| Risk Factor | 115 | 800 |
| Disease Association | 114 | 847 |
| Male | 107 | 809 |
| Procedures | 93 | 608 |

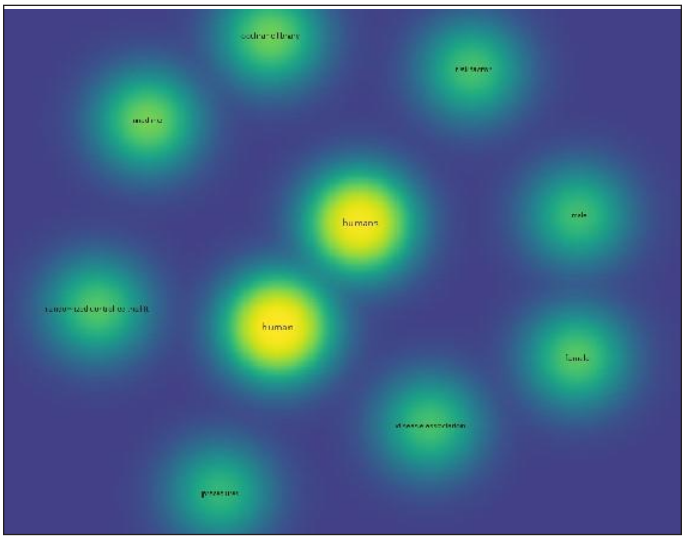


**Fig. 3: VOSviewer Density Visualization among Top 10 Keywords**

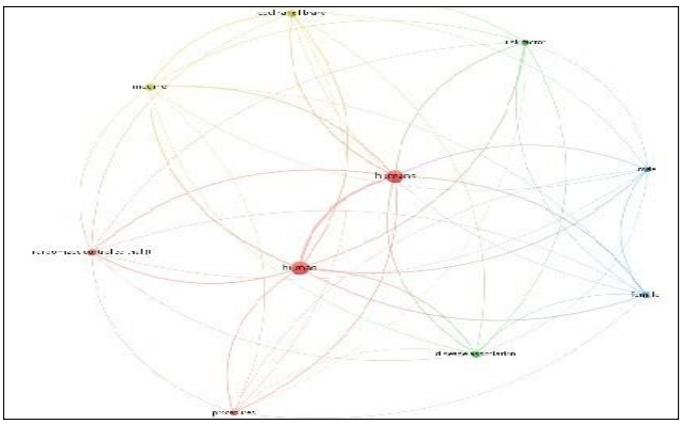


**Fig. 4: VOSviewer Network Visualization of Top 10 Keywords**

The VOSviewer network and density visualization (Fig. 3 and Fig. 4) show the association between top ten keywords mentioned in Table 3. The 10 items create four clusters with 45 links and 3445 total link strengths. The keyword human shows an association with the keywords humans, randomized controlled trials and procedures. In the second cluster, the keyword disease association shows a connection with a risk factor and in the third cluster, the keyword female shows association with male. The fourth correlation is between the Cochrane Library with Medline.

## The Geographical Distribution of Contributors

Country-wise distribution analysis of contributors in JMLA (Table 4) shows that more than 50% of publications in the journal come from three countries namely the United States, China and the United Kingdom. United States is leading with 26.48% followed by China (17.39%), the United Kingdom (10.54%) and Canada (7.51%). 29 authors had not mentioned their nation. India contributed 1.32% of papers and ranked in 16$^{th}$ place. The United States has received the highest citations followed by China.

**Table 4: Top Twenty Countries Contributing to JMLA (2013-2022)**

| Country/Territory | Name of Continent | Publications | %age | Citation | TLS |
|---|---|---|---|---|---|
| United States | North America | 201 | 26.48 | 20127 | 141 |
| China | Asia | 132 | 17.39 | 2667 | 24 |
| United Kingdom | Europe | 80 | 10.54 | 8764 | 147 |
| Canada | North America | 57 | 7.51 | 4725 | 56 |
| Netherlands | Europe/Holland | 37 | 4.87 | 6496 | 100 |
| Australia | Australia | 34 | 4.48 | 1572 | 41 |
| Italy | Europe | 32 | 4.22 | 3007 | 70 |
| Germany | Europe | 28 | 3.69 | 5082 | 70 |

| Country/Territory | Name of Continent | Publications | %age | Citation | TLS |
|---|---|---|---|---|---|
| France | Europe | 25 | 3.29 | 5601 | 96 |
| Spain | Europe | 19 | 2.50 | 5065 | 60 |
| Switzerland | Europe | 16 | 2.11 | 1797 | 43 |
| South Korea | Asia | 15 | 1.98 | 1325 | 8 |
| Brazil | South America | 14 | 1.84 | 409 | 11 |
| Sweden | Europe | 13 | 1.72 | 1480 | 35 |
| Japan | Asia | 11 | 1.45 | 548 | 18 |
| India | Asia | 10 | 1.32 | 524 | 12 |
| Belgium | Europe | 10 | 1.32 | 2744 | 35 |
| Taiwan | Asia | 9 | 1.19 | 291 | 17 |
| Portugal | Europe | 8 | 1.05 | 1406 | 17 |
| Greece | Europe | 8 | 1.05 | 323 | 18 |
| **Total** | | **759** | **100** | | |

## Visualisation of Author Collaboration

Trends in international collaboration among authors (Fig. 6) show the collaboration of authors with other nations. According to the figure, authors from the United States have collaborated with China, Canada and Australia. Contributors from the United Kingdom have collaborated with the Netherlands, Italy, Germany, Spain and France. China collaborated with Australia, the United Kingdom, Italy and France.

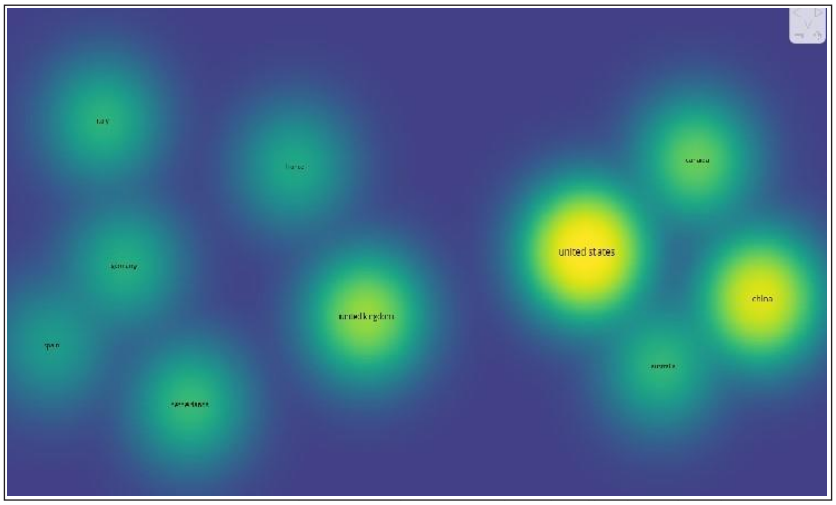


**Fig. 5: VOSviewer Density Visualization of Nations**

## Language-Wise Distribution

Analysis of the distribution of papers based on language (Table 5) during the study period shows that English is the predominant language since 576 (96.16%) articles were published in the English language. Only one paper is published in Spanish and Russian.

**Table 5: Language-Wise Distribution of Publications**

| Language | Frequency | Percentage |
|---|---|---|
| English | 576 | 96.16 |
| Chinese | 18 | 3.01 |
| German | 3 | 0.50 |
| Spanish | 1 | 0.17 |
| Russian | 1 | 0.17 |

## Highly Cited Documents

Table 6 presents data about 10 highly cited documents published during 2013-2022. The number of citations ranges from a maximum of 2151 to at least 852. The article 'The pathophysiology and treatment of glaucoma: A review' received the highest number of citations (2151) followed by the document 'ClinVar: Public archive of relationships among sequence variation and human phenotype' (1741). The analysis also shows that out of the top ten highly cited documents, the majority were published in 2014.

**Table 6: Highly Cited Documents during Study Period 2013-2022**

| Document Title | Authors | Source | Volume | Year | Citations |
|---|---|---|---|---|---|
| The pathophysiology and treatment of glaucoma: A review | Weinreb, R.N.; Aung, T.; Medeiros, F.A. | JAMA | 311(18) | 2014 | 2151 |
| ClinVar: Public archive of relationships among sequence variation and human phenotype | Landrum, M.J.; Lee, J.M.; Riley, G.R.;…Church, D.M., Maglott, D.R. | Nucleic Acids Research | 42(D1) | 2014 | 1741 |
| EAU Guidelines on Non-Muscle-invasive UrothelialCrcinoma of the Bladder: Update 2016 | Babjuk, M.; Bohle, A.; Burger, M.;…Sylvester, R.J.; Zigeuner, R. | European Urology | 71(3) | 2017 | 1423 |
| Meditation programs for psychological stress and well-being: A systematic review and meta-analysia | Goyal, M.; Singh, S.; Sibinga, E.M.S.;….Bass, E.B.; Haythornthwaite, J.A. | JAMA Internal Medicine | 174(3) | 2014 | 1314 |
| Caregiver burden : A clinical review | Adelman, R.D.; Tmanova, L.L.; Delgado, D.; Dion, S.; Lachs, M.S. | JAMA | 311(10) | 2014 | 1168 |
| The effectiveness and risks of bariatric surgery an updated systematic review and meta-analysis, 2003-2012 | Chang, S.H; Stoll, C.R.T.; Song, J.; …Eagon, C.J.; Colditz, G.A. | JAMA Surgery | 149(3) | 2014 | 1167 |
| Pharmacological treatment of Parkinson disease: A review | Connolly, B. S.; Lang, A.E. | JAMA | 311(16) | 2014 | 1004 |
| Association of dietary, circulating and supplement fatty acids with coronary risk: A systematic review and meta-analysis | Chowdhury, R.; Warnakula, S.; Kunutsor,S.;…Danesh,J.; DiAngelantonio, E. | Annals of Internal Medicine | 160(6) | 2014 | 941 |
| European Association of Urology Guidelines on Renal Cell Carcinoma: The 2019 Update | Ljungberg, B.; Albiges, L.; Abu-Ghanem,Y.;…Volpe, A., Bex, A. | European Urology | 75(5) | 2019 | 886 |
| European Association of Urology Guidelines on Non-muscle-invasive Bladder Cancer (TaT1 and Carcinoma In Situ)-2019 Update | Babjuk, M.; Burger, M.; Comperat, E.M.;…Seisen, T.; Soukup, V. | European Urology | 76(5) | 2019 | 852 |

## Top Ten Contributing Institutions

The top 10 contributing institutions in the journal are shown in Table 7. According to the data analysis, the top ten institutions have contributed 99 publications. Four out of ten institutes are from Canada and three are from the United States. The study explored that the University of Toronto was the most productive institute with 16.17% publications, followed by Harvard Medical School with 13.13% publications and Mayo Clinic (11.11%).

**Table 7: Top Ten Contributing Institutions**

| Institute of Affiliation | Country | Total Publications | %age |
|---|---|---|---|
| University of Toronto | Canada | 16 | 16.17 |
| Harvard Medical School | United States | 13 | 13.13 |
| Mayo Clinic | United States | 11 | 11.11 |
| Capital Medical University | China | 9 | 9.09 |
| University of Ottawa | Canada | 9 | 9.09 |

| Institute of Affiliation | Country | Total Publications | %age |
|---|---|---|---|
| McMaster University | Canada | 9 | 9.09 |
| Amsterdam UMC-University of Amsterdam | Netherlands | 8 | 8.08 |
| Ottawa Hospital Research Institute | Canada | 8 | 8.08 |
| Radboud University Medical Center | Netherlands | 8 | 8.08 |
| National Institute of Health (NH) | United States | 8 | 8.08 |
| **Total** | | **99** | **100** |

## FINDINGS OF THE STUDY

The study examined the publication pattern of Journal of the Medical Library Association during 2013-2022 using various bibliometric indicators. After analyzing data, the following findings of the study are drawn:

- During the ten-year research period, 599 documents were produced, with year 2020 leading with 13.19% of publications.
- The majority of publications (47.08%) were in the category "articles," which was followed by "review" (44.74%).
- 'Human' and 'Humans' are popular keywords in the journal.
- The journal has been enriched by intellectual contributions from all across the world. The United States leads with 26.48% articles, followed by China with 17.39% contribution.
- The University of Toronto has contributed the highest number of publications (16.17%), followed by Harvard Medical School with 13.13% publications.
- 96.16% of the articles were produced in English language.

## CONCLUSION

Journal of the Medical Library Association is an influential journal in the field of Medical Science librarianship with 76% contributions from library science (https://www.scopus.com/sources.uri). The study examined the productivity and research patterns of the Journal of the Medical Library Association and found that the journal has significantly contributed to the growth of knowledge by publishing quality research. The study found that the journal is truly international as authors across the globe contribute their research output in the journal. The present study would be useful for researchers and readers across the world.

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