3-25-2019

SCIENTOMETRIC ANALYSIS OF DIABETES RESEARCH OUTPUT DURING THE YEAR 2014-2018: Indexed by Web of Science

BOOPATHI P Mr
Periyar University, boopathilibrarian@gmail.com

GOMATHI P Dr
Periyar University, gomathi148@gmail.com

SCIENTOMETRIC ANALYSIS OF DIABETES RESEARCH OUTPUT DURING THE YEAR 2014-2018: Indexed by Web of Science

1. Mr.P. Boopathi, Technical Assistant, NIT Central Library, Trichy.pboopathi@nitt.edu
2. Dr.P.Gomathi, Assistant Professor, DLIS, Periyar University, Salem.gomathi148@gmail.com

Abstract:

To assess diabetes research productivity in India and analysis to various parameters in the view of the scientometric analytical study. Collections include (Articles, Reviews, Meeting Abstracts, Letters and book chapter), etc. published 8016 diabetes journals in 2014 – 2018 were screened with the Web of Science database (Clarivate Analytics). The study mainly focused on the Author and journal wise distribution, Year and country wise output and Institution wise collaboration are discussed in this paper. Most of the research articles published from India, between 2016 and 2017 has been published more journals. All India Institute of Medical Science has published highest journals compare with the other institutions.

Key Word: Diabetes, AIIMS, MEA, JEMDS, MDRF, Citation Network

INTRODUCTION:

We know very well, the scientometric study is the most optimistic method for identifying the quality and productivity of a particular subject or the nature of the scientific output. In this paper deeply analyzed diabetes articles indexed by a Web of science (Clarivate Analysis) database during the year from 2014 to 2018, (Five Years) only. The key term "Diabetes" is used for data collection and also additionally used the key term "India" in the location tab. As a result of 8016 articles were published during the years. Each article has published in different periods and different authors.

OVERVIEW OF DIABETES: Globally and in India

Diabetes is the most common disease of in this world population; Generally, Diabetes disease caused by genetic, ethnic and socioeconomic factors. It's not a communicable disease; it is usually inherited from the hereditary. Diabetes that occurs when the pancreas is unable to secrete the insulin or when our body does not use it properly the secreted insulin. Insulin is a hormone; it is secreted by the pancreas to help the separate the glucose from the food; the separated glucose helps to nourish our cells. When glucose production decreases, or it is not used

properly, glucose levels increase in the blood, medically known as hyperglycemia. Due to the continuous increase of glucose level in blood, many parts of the body are at risk of disrupting.

As per the WHO (World Health Organisation) report, most of the developed countries are affected by this disease. According to the International Diabetes Federation analytical report, "Worldwide 425 million adults were living with diabetes; It is expected to rise to 628 million by 2045. 1 in 2 (212 million) people with diabetes were undiagnosed; this disease has killed 4 million people, More than 21 million live births (1 in 7 births) were affected by diabetes during pregnancy". Most of the Indian people suffered from this disease. India is second place after China in this survey. In this paper focused on Indian research productivity, So, let's look at the statistics of this disease in India. 1,14,394.8 thousand of adults living with diabetes in India, 9.7% of people are affected by this disease, 61,294 thousand of people living with diabetes but they are undiagnosed. The expenditure per person is 549.4 USD. As per 2017, IDF Atlas report 8,42,994 thousand people have died related to diabetes in India.

DATA COLLECTION AND METHODOLOGY

All the needed data for research downloaded from the Web of Science database. WOS (Clarivate Analysis) is the most reliable database because of accurate data, objective, and complete resource available. It's offered completely indexed and cited all references, and also we can find author affiliations. More than 20 thousand Journals cautiously and loyally elected for the maintaining standardization, 1.4 billion cited references available from the year of 1990. The WOS platform is interlinked with WOS core collection and various citation indexing system, such as patent, special subject, and research datasets, almost included 33,000 journals.

In this study, we are using Histcite software for analyzing data and identifying the quality of authors and articles. It is very helpful and familiar software worldwide for bibliometric and Scientometric analytical studies.

REVIEW OF LITERATURE

The last decades, so many scientometrics studies have been conducted on diabetes at various periods. Some of the research authors belong to the medical field, and others belong to library science professionals.

Aniko Somogyi and Andras Schubert analyzed, "Correlation between national bibliometric and health indicators given diabetes case." They have collected the data from

PubMed database up to 2000. In this study revealing the growth rate of diabetes in the year wise and also analyzed the geographical wise distribution of diabetes-related publication. The USA has occupied first place in this rating with 1725 publications. They also discussed the Prevalence of diabetes among the countries very carefully in this study. Finally discovered the correlation between countries and their population.

Waleed M. Sweileh, Sa'ed H. Zyoud, and Samah W. Al-Jabi examine the "bibliometric analysis of diabetes mellitus research output from Middle Eastern Arab countries during the period (1996–2012)". The primary objectives of this research to identify scientific productivity, developing from Middle East Arab (MEA) countries in the field of diabetes mellitus. The Scopus database was used for data collection and act in the data source in this complete study. The analytical process is done by SPSS Program version 15 software; the Impact factor (IF) is a vital role in evaluating journals through the citation report; the citation data imported from Journal Citation Report (JCR). The 64,137 articles were downloaded from the Scopus database during the period 1996 to 2012. In this paper previewing the Author, Country, Institution wise distribution as well as analyzed the most cited papers also. As per the result of the comparative study worldwide with MEA literature growth, the MEA curve line reached the top position in 2012. The Diabetes Research and Clinical Practice journal in the first place with 63 frequency and 2.741(IF). Diabetes Care is the first data source among the top ten data source journals.

Rasolabadi M, Khaledi S, Ardalan M, and others scrutinize diabetes research in Iran. This Scientometric study is focused on the Iranian publication in related to diabetes research indexed by Scopus database; in this study limited to the end of 2014 only. The following search terms are used for data collection; the keyword "diabetes" is used for data retrieval in the rage of title, position, in addition, to mentioning the "Iran" is address position. Totally 4425 papers were published relating to diabetes research from 1968 to 2014. Per year, 96.2 % of papers published averagely and annual growth rate is 25.55%. Iran is in the place on 25th with 4425 papers and 0.72% of the global share among the top 25 countries. Iran's publication has 6.19 citations per paper; especially diabetes-related Iran's publication output increased from 1.63. The year of 1968 – 1999 gradually increased the Iranian publication output from 1.63 to 10.42. However the diabetic patients of Iranians are increasing, But the number of diabetes research

output is not sufficient. The “International Diabetes Federation suggested increased funding for research in diabetes in Iran for cost-effective diabetes prevention and treatment. In addition to universal and comprehensive services for diabetes care and treatment provided by the Iranian health care system, Iranian policymakers should invest more on diabetes research”.

ANALYSIS

Diabetes is now more common in developed countries; Research on diabetes is ongoing around the world. The limitations of this study covered up to during the year 2014 – 2018 indexed by Web of Science database. The research article gets special status with the author’s skill. So let's first examine the quality of the author and their distribution. The top ten authors only have taken into account from this table; the next author's records of these ratings, gradually it goes down, So they are not included here.

S.No	Author	Recs	% of Recs	TLCS	TGCS
1	Mohan V	182	16.71	392	4902
2	Kalra S	169	15.52	90	515
3	Kumar A	151	13.86	89	1281
4	Kumar S	108	9.91	62	1575
5	Anjana RM	90	8.28	273	1837
6	Sharma S	86	7.89	39	505
7	Gupta S	80	7.34	31	338
8	Gupta R	77	7.07	168	13861
9	Singh S	76	6.99	16	289
10	Tandon N	70	6.43	92	2862
	Total	**1089**	**100**		

Table: 1 Author wise distribution of diabetes output.

Table No:1 represents the author wise distribution in the field of diabetes. The first place occupied by Viswanathan Mohan C, from Madras diabetes research center, he has published 182 (16.71%) records with 392 TLCS and 4902 TGCS. Kalara is next to it with 169 (15.52%) records; Kumar A and R are in the next third and fourth places, they have been published almost same just with 42 records difference for each other. However, Kumar S is getting 1575 global

citation score. Kupta R, who is in eighth place with 77 (7.07) and has a second highest global citation score. Tandon N is in the last place in this table with 70 (6.42%) records.

S.No	Journal	Recs	TLCS	TGCS
1	JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS	495	7	27
2	JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH	303	33	408
3	INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH	159	8	65
4	INTERNATIONAL JOURNAL OF DIABETES IN DEVELOPING COUNTRIES	156	61	150
5	DIABETES & METABOLIC SYNDROME-CLINICAL RESEARCH & REVIEWS	133	44	578
6	RESEARCH JOURNAL OF PHARMACEUTICAL BIOLOGICAL AND CHEMICAL SCI	124	2	23
7	PLOS ONE	116	0	1060
8	INTERNATIONAL JOURNAL OF SCIENTIFIC STUDY	110	5	20
9	DIABETES RESEARCH AND CLINICAL PRACTICE	101	100	615
10	JOURNAL OF THE PAKISTAN MEDICAL ASSOCIATION	98	41	114

Table:2 Journal wise distribution of diabetes research

The Journal is the spinal cord of research publications; it is a powerful medium for spreading information to worldwide. Numerous journals published every day in different places, but someone journals only reached the right person at the right time. So, every scientometric study has an analyzed journal contribution. On that way, I have analyzed here, as per the result of this analytical study most of the Indian journals contributed to this rating. Top ten journals only represented in this table; in this rating, JEMDS occupied in first place with 495 articles. JEMDS is an official publication of the "International Society of Medical and Dental Sciences" from Karnataka State in India. Journal of clinical and diagnostic research in place of second with 303 articles and 408 global citations. It is published by Dr. Hemant Jain, Paediatric Intensivist from Delhi, India; who is a famous and well-experienced person in this field. The Third place is the International Journal of Pharmaceutical Sciences and research. It is a free, open access journal worldwide. The fourth place journal special focused on diabetes in developing countries; It is published by Springer publication in association with Research Society for the Study of Diabetes in India. PLOS ONE is US-based International Journal; pictorial representation is the special

features of this journal. It is in seventh place in this rating. JPMA is the last place in this table; it is published from Pakistan every month.

S.No	Publication Year	Recs	TLCS	TGCS
1	2014	991	1112	13753
2	2015	1742	1073	14116
3	2016	1822	757	13082
4	2017	1823	393	5639
5	2018	1638	85	1187

Table:3 Year-wise distribution of Diabetes Literature Productivity

A total of 8016 Publications was published on diabetes during 2014-2018. Year-wise distribution of publications is given in Table:3. Fluctuations in the publication of diabetes literature were noticed throughout the study. At this rating, the highest number of publications, i.e., 1823 was in 2017. Followed by 2016 is second place with 1822 records. Next to that 2015 in the place of the third with 1742 records. The recent year of 2018 has in the place of fourth with 1638 records. The initial year 2014 is the last place with 991 records. The median number of publications per year was 1603.2. As per citation score, wise calculation result moves to reverse a line from 2014 to 2018.

S.No	Institution	Recs	% of 8047	TLCS	TGCS
1	All India Inst Med Sci	278	3.455	191	9534
2	Manipal Univ	163	2.026	98	662
3	Madras Diabet Res Fdn	154	1.914	325	3593
4	Bharti Hosp	147	1.827	72	444
5	Govt Med Coll	135	1.678	25	175
6	Postgrad Inst Med Educ & Res	126	1.566	187	5801
7	CSIR	114	1.417	63	1619
8	Aligarh Muslim Univ	104	1.292	146	807
9	Banaras Hindu Univ	102	1.268	52	2660
10	Univ Delhi	99	1.23	76	4227

Table:4 Institute wise distribution of diabetes research

Table No.4 represents the list of huge ten institutions to number of publications. All India Institute of Medical Science has the outstanding number of publications with 278 papers relate to diabetes; This is 3.455% of the total output of this field. AIIMS is India's leading institute in the field of medical research; and also offering high-quality medical education, more than 600 research publications are published by their faculties and researchers in a year. In the second position is the Manipal University in 163 (2.026%) publications followed by the Madras Diabetes research foundation. MDRF recognized worldwide as a premier research institute for diabetes and its complications; it is collaborating with various universities and research institutes in both International and National Level. It is followed by the Bharti Hospital and research center, Government medical colleges, CSIR and Aligarh Muslim, Banaras, Delhi Universities.

Visualization and Mapping analysis.

Science mapping is an additional procedure of scientometrics study. Through this mapping system, we can reveal the current situation and the development of literature. There are many software available in the current scenario. However, VOSviewer is the best option in my choice; It is free software formulated by Eck and Waltman. The visualization and mapping are done by VOSviewer software. It's a little bit harder to finish research as a person,

A single person cannot complete a full research work in an effective and right manner. The collaborative authorship is most powerful and represents accurate information on various aspects. In that way, more than one country conducting similar research. In this area, we are concentrate to represent the analytical report of institute co-authorship by the VOSviewer software.

The Institute Co-authorship analysis.

The institute co-authorship network is shown in Figure 1. The big nodes are representing the top most institutes of diabetes research. We can see on this map, most of the influential institutes belong to India. Specifically, Institutes like AIIMS and Manipal University, MDRF, Bharti hospitals are at the forefront. The strength of these institutions is given at the above table.

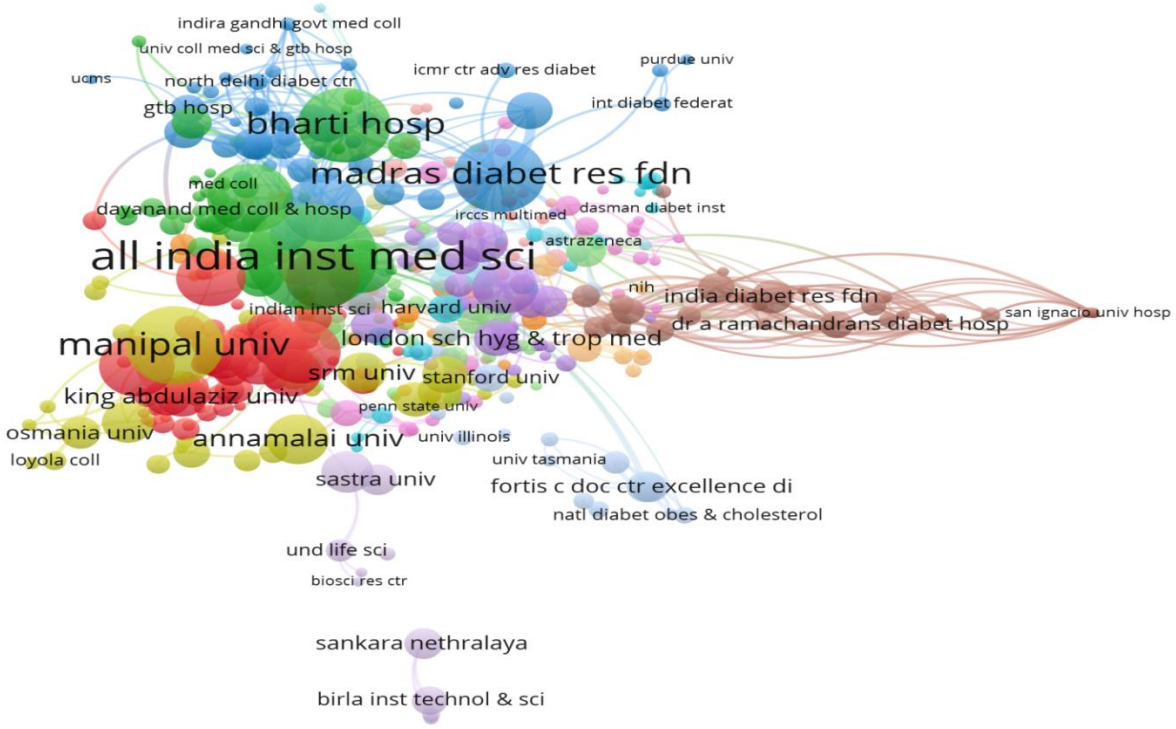

Figure 1. The institute co-authorship network of Diabetes-related publications.

The Country co-authorship network analysis

The figure No.1 is representing the country wise co-authorship network in the field of Diabetes publication. It's pointing out the relationship and communication between the countries as well as the potent countries in this subject. In this map having many colours, which shows the variegation of different path of research. The large nodes are representing the most authoritative country in this field of research. The connection between nodes revealing the association among the countries. The length between the nodes and the dimensions of the links represent the level of cooperation among countries. As we can see in Figure 1, Indian is the most influential country in the field of diabetes research. We can see in collaborative research with the United States, UK, China, and other countries through the network line.

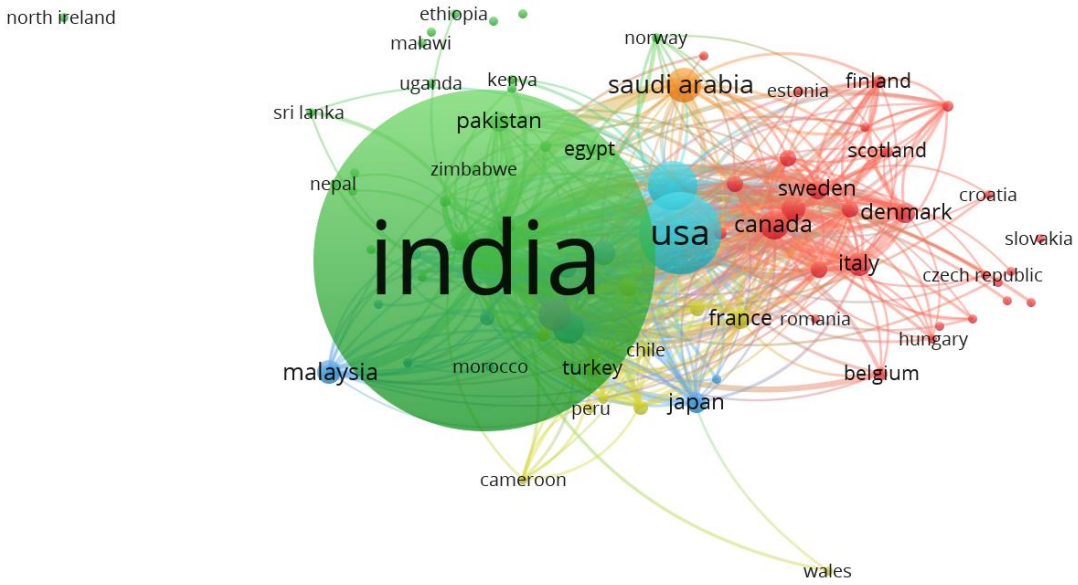

Figure 1. The country co-authorship network of Diabetes-related publications

CONCLUSION

As per the WOS database data and the support of HisteCite & VOSviewer software, we have represented the various analytical reports in terms of scientometric analytics. In this research, we have identified different kinds of fascinating facts and results relate to Diabetes-output. Let's summarize some of these here:

Diabetes-related publications, though slightly less in early 2014. However, the publications growth rate gradually increased after 2014. The highest papers are published in 2017 and 2016. In terms of institutes, the All India Medical Sciences has the highest number of publications. Herewith represents the top 10 institutes are tabulated which are belongs to India; the first seven places owned by research institutes and the last three places captured by Indian Universities. The journal, JEMDS, ranks first among the Diabetes-related journals. India has the most publications; India is the most influential country in Diabetes domain. Diabetes research has been going on over the entire world; even though India is most dominated country in this research field; and also research with other foreign countries. We, can see the relationship with other countries by visualization map. Nowadays Diabetes has risen in developed and developing

countries rapidly. Therefore, through this research to getting a solution for diabetes; This is the great expectation of the people.

Abbreviation:

Recs - Number of Records show the number of records where a given item is found.

LCS - Local Citation Score shows the count of citations to a paper within the collection.CR - Number of Cited References show the number of cited references in the paper's bibliography.

GCS - Global Citation Score shows the total number of citations to a paper in Web of Science.

LCR - Local Cited References show the number of citations in a paper's reference list to other papers within the collection.

REFERENCES

1. Yu, D.J. Liao, H.C. "Visualization and quantitative research on intuitionistic fuzzy studies" (2016). *J. Intell. Fuzzy Syst*. 30, 3653–3663.
2. Powell T.H, Kouropalatis, Y. Morgan, R.E. Karhu, P. "Mapping knowledge and innovation research themes: Using bibliometrics for classification, evolution, proliferation and determinism" (2016). *Int. J. Entrep. Innov. Manag*. 20, 174–199.
3. Chen, C.M.; Hu, Z.; Liu, S.; Tseng, H. "Emerging trends in regenerative medicine: A scientometric analysis in CiteSpace" *Expert Opin. Biol. Ther*. 2012, 12, 593–608.
4. Van Eck, N.J. Waltman, L. "Software survey: VOSviewer, a computer program for bibliometric mapping" (2010). *Scientometrics*, 84, 523–538.
5. Huchang Liao, Ming Tang, Li Luo, Chunyang Li, and others. A Bibliometric Analysis and Visualization of Medical Big Data Research" *Acta Inform Med*. 2015 Jun;23(3):160-4. doi: 10.5455/aim.2015.23.160-164. Epub 2015 May 25.
6. Elena Pallari, Grant Lewison, Oriana Ciani and others. "The impacts of diabetes research from 31European Countries in 2002 to 2013", *Research Evaluation*, 2018, 1–13 doi: 10.1093/reseval/rvy006
7. Murugan, Indrani, "Mapping of Authorship Pattern and Collaborative Research on Fossil Fuels Publications indexed in A & HCI and SCI-Expanded" (2018). *Library Philosophy and Practice (e-journal)*. 1981.
8. Masoud Rasolabadi, Shahnaz Khaledi, Marlin Ardalan and others. "Diabetes Research in Iran: a Scientometric Analysis of Publications Output" (2015). *Journal of Academy of Medical Sciences of Bosnia and Herzegovina (e-journal). doi: 10.5455/aim.2015.23.160-164.*