

Indian Contribution on Diabetes Type 2 – A Scientometric Analysis

***R.Vivek & **Dr.R.Kalidasan**

* Research Scholar, Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamilnadu, India-620 024.

** Associate Professor, Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamilnadu, India-620 024.

Abstract

The study investigated the publications outputs on diabetes type 2 in India contribution. The information was taken from electronic form and analysis using scientometric which was considered to investigate and mapping technique. Type 2 diabetes is a metabolic disease and chronic condition affects pancreas organ does not release adequately amount of insulin. It has one of the common types of diabetes, in which beta cells does not enough function of glucose regulation. Diabetes type 2 has increased health problem around India in last four decades. The data were collected from 'Web of Science' database in which search term used diabetes type 2. The present study objectives were to find top publication output among out of 4898 records totally. The study period designed from 1st January 1989 to 25th March 2021. Collected data were plain text format and their document used in Histcite software also tabulation & classification in Excel sheet. Tables, diagrams and figures illustrated the top results were broadly discussion. The study revealed that records of publication on diabetes type 2 were 136 countries and its top listed by United States of America has huge records. The result shown out of 21533 authors, and 'Mohan V' who had huge records items resulted in top on diabetes type 2 publication. The study presently recommended that teachers, research scholar, scientists, academic workers, the health educationist and physical educators should involve in diabetes research activities and their increasable thirsts enhance to increase records production on diabetes type 2.

Key words: Diabetes type 2, Web of Science, Scientometrics, Histcite, R-studio and VOS Viewer

I. Introduction

In Greek long back history, Apollonius of Memphis who was coined diabetes period had about 250 BC. Term of word diabetes means siphon - to pass through, person run-out more fluid frequently than consume. Later Latin word, mellitus means sweet or honey in urine. The history of Hindu scholars explained diabetes as long as around BC 1500. In six century, Indian mentors, Sushruta were classified the diabetes into "madhumeha" implies honey (madhu) and jointly as "sweet urine". Ancient Indian scholar had tested the ant on diabetes patients and their urine remained sweet due to ants attracted urine (Das & Shah Siddharth, 2011). Vivek, R., & Kalidasan, R. (2020), Type 2 diabetes is a metabolic disease and chronic condition affects pancreas organ does not release adequately amount of insulin. It has one of the common types of diabetes, in which beta cells does not enough function of glucose regulation. The cause of type 2 diabetes has genetic and environmental as well as life style factors. Now a days, complication of

type 2 diabetes has short and long-time co-morbidities are cardiac arrests, hyperlipidaemia, retinopathy, neuropathy and hypertension.

According to sivakumaren (2019), scientometric study is easy to understand the analysis of trend in specified field and also confined geographical region. Presently research increase thrust about scientometric study. Research studies of different disciplines quantitative analysis method used in scientometric.

Web of Science is a largest database that contains research papers about 256 discipline supports. Institute of scientific information offers citation index which assess publication quality and quantity of journals published online or printed. It's based on subscription and accesses multiple scientific literature sources and presently maintained by Clarivate analytics. In Web of Science, official web pages are to takeout information covered wide range of journals and using search facilities, restriction as well as frequent up-to-date (Wikipedia, 2007).

II. Literature review

Review literature is an essential for research carried-out. Previous literature may facilitate to analysis the growth and development of specified field. It helps to find the research articles of various authors, sources of publication and year. McKee, Stuckler & Basu (2012) stated where there is no health research - what and how can be done to fill the world-wide gaps in health aspect research? that output assess of clinical parameter based on researcher contribution and its institution base. However, there were positive relation between cost-effective development and research contribution, health of this publication provide knowledge need to deal with the problem.

Kalidasan & Vigneshwaran (2015) stated that Indian contribution on diabetes and searching publication accessed through the database of Web of Science. Using search term 'diabetes' research output focused from 1925 to 2015. Results revealed diabetes literature growth in the year 2013 which had maximum document about 886. High productive output of institution which was All India Institute of Medical and Science contained around 488. Output sources huge on English language. Articles had highly about 5570 records composed in total type of documents output. Mohan published 352 huge items compared to other authors.

Peykari (2015) examined a scientometrics study from 1990 to 2012 on diabetes research in Middle East countries output. Improvement of technology and science can be considered development through research topics. In scientometrics study, scientific research publications need to be strengthening the specific field. Research output trend has been using to search on three largest databases such as Web of Science, Pub Med and Scopus on diabetes and its focused on middle east countries in which Yemen had huge publication, citation and international collaboration, top journals in diabetes were Diabetes care, Diabetes, Diabetes Medicine, Diabetologia, Diabetes Research and Clinical Practice. These were involved more proficient involvement in the knowledge production. It has been encouraged to maintain trends on the strategy planning.

Vivek & Kalidasan (2019) study exposed that a scientometric study - quantitative assessment of global level among type 2 diabetes mellitus. Search term used ‘diabetes type 2’ and selected ‘topic’ wise and its retrieved information using Web of Science database from 2016 to 2019. Totally, collection of documents recorded 20905, in which major objective of study was given. ‘Drexel’ had huge profile publication. Top journal was diabetes which contained more research output about 1588. Assess the document types, articles have high records about 11,354. In the year 2018 research published maximum records contribution. English language had majority of research records. The top institution of Harvard Med School records about 350.

III. Objective of the study

The objective of the present research is carried-out to examine Indian address publications output on “diabetes type 2” through scientometric analysis.

- ✚ To know the countries records and with collaboration contributed on the publications output.
- ✚ To analysis the author’s records contributed and their publications and citation impacts.
- ✚ To investigate most of the records bring by institution.
- ✚ To identify and detect highly cited works & the document types.
- ✚ To ascertain the numbers of publications come out in the various journals.
- ✚ To examine the records contribution in various languages.
- ✚ To observe publication year formed during period from 1st January 1989 to 25th March 2021. And analysis the words cloud focused on written materials.

IV. Methodology

The scientometric study was analyzed to use search term ‘diabetes type 2’ and their total records output about 4898 India address which data has been composed in Web of Science database. Web of science offers researchers and scholars, administrators, academic profilers and students might help to access easily the global leading citation database. The information retrieved during period from 1st January 1989 to 25th March 2021. All the records were taken with file format into plain text exporting to notepad. The objectives of analyses, file format using histcite software operated total records about 4898 covered only Web of Science database. After that tables and figures help of MS Office and Excel. Mapping software vos viewer and R studio were shown visualization.

V Data analysis

Table 1. Country collaboration and production records

	Country	Recs	Citations	Country	Recs	Citations
1	USA	702	56455	Philippines	50	22988
2	UK	404	40201	Thailand	49	11857
3	Peoples R China	197	36277	Belgium	45	15843
4	Australia	178	32168	Finland	45	13087
5	Canada	156	30961	Greece	44	18338
6	Saudi Arabia	154	12869	Austria	42	18857
7	Germany	141	28226	Egypt	42	10550
8	Denmark	139	24491	Norway	40	19557

9	Italy	120	33015	Hungary	39	11373
10	France	119	23085	Bangladesh	38	10690
11	South Korea	118	22676	Czech Republic	37	11048
12	Malaysia	99	18916	Indonesia	37	16776
13	Sweden	97	20482	Sri Lanka	35	18550
14	Argentina	96	22960	Romania	33	11106
15	Singapore	92	22296	Chile	28	14260
16	Japan	89	25698	New Zealand	28	17597
17	Turkey	85	12246	Portugal	28	16989
18	Russia	84	21558	Estonia	25	18420
19	Netherlands	79	31244	Lebanon	24	9810
20	Taiwan	79	24485	Cameroon	23	9676
21	Brazil	78	25357	Croatia	23	7598
22	Spain	77	24529	Iran	22	10660
23	South Africa	76	22017	Peru	19	18987
24	Mexico	74	21400	Vietnam	19	10555
25	Switzerland	70	19878	Algeria	18	5880
26	Poland	65	18253	Kuwait	18	254
27	Israel	63	20609	Nepal	17	50
28	Pakistan	59	13225	Nigeria	17	10750
29	U Arab Emirates	57	10594	Uganda	17	6844
30	Colombia	51	18385	Ukraine	17	13843

Table 1 revealed the amount of publications contributed on diabetes type 2 in which United States of America has highest records output about 702 also highest citation about 56455, followed by United Kingdom 404 records, followed by China 197 records.

Figure 1. Mapping of country collaboration records

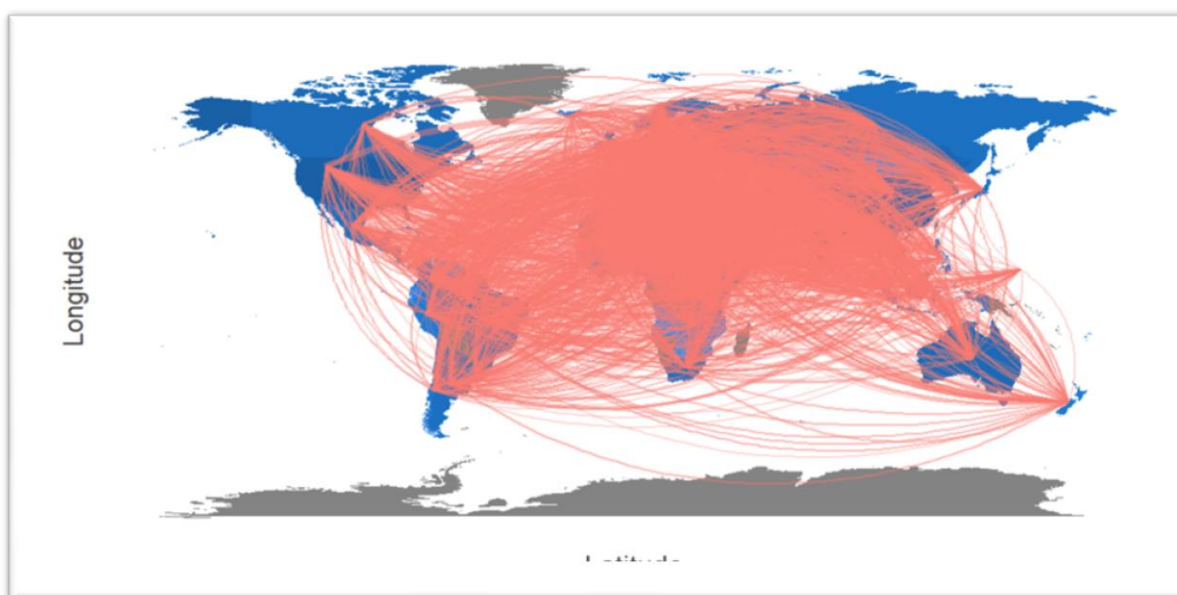


Figure 2. Mapping of country scientific production records

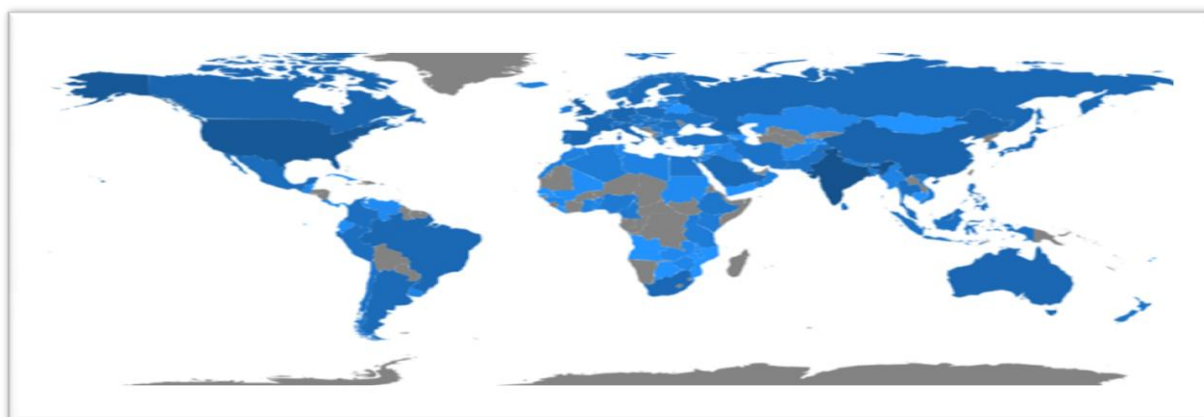


Table 2. Most cited and productive Authors

	Publication Impact			Citation Impact		
	Author	Records	Citations	Author	Records	Citations
1	Mohan V	338	20470	Gupta R	40	22491
2	Ramachandran A	117	7679	Mohan V	338	20470
3	Kalra S	104	711	Kim D	16	16866
4	Anjana RM	98	1865	Zinman B	31	15645
5	Kumar A	93	2773	Tan K	12	13963
6	Bhansali A	91	2203	Karlsson T	20	13942
7	Tandon N	91	5003	Kaul A	7	12369
8	Misra A	87	4672	Karimkhani C	4	12360
9	Ghosh S	80	1808	Kawakami N	4	12360
10	Viswanathan V	68	1060	Lam H	4	11703
11	Kumar S	67	1239	Prabhakaran D	40	11553
12	Sharma S	64	1133	Shah S	45	10406
13	Gupta S	58	7555	Jain S	34	9985
14	Snehalatha C	55	3831	Chowdhury R	6	9927
15	Singh S	53	652	Swaminathan S	8	9844
16	Gupta A	52	944	Woo V	17	9765
17	Radha V	52	2435	Ali R	6	9715
18	Balasubramanyam M	49	1600	Basu A	8	9715
19	Deepa R	48	2719	Inoue M	5	9714
20	Shah S	45	10406	Liu Y	4	9684
21	Singh K	43	845	Aronoff S	13	9672
22	Das S	42	961	Banerjee A	8	9645
23	Kumar R	42	521	Huang C	11	9644
24	Kumar V	42	516	Dandona L	4	9641
25	Raman R	41	2418	Dandona R	4	9641
26	Gupta R	40	22491	Remuzzi G	4	9630
27	Prabhakaran D	40	11553	McKee M	5	9615
28	Sharma T	40	2646	Deerochanawong C	23	9612
29	Madhu SV	39	794	Xu GL	4	9563
30	Pradeepa R	39	1611	Balakrishnan K	6	9558

Table 2 showed author's publication impact and citation impact on publication top output by Mohan V records about 338 and followed by Ramachandran A records about 117, followed by Kalra S about 104. Top citation publication author's namely 40 records of Guptha R has highest citation about 22491, followed by 338 records of Mohan V about 20470.

Figure 3. Mapping of most productive top Authors

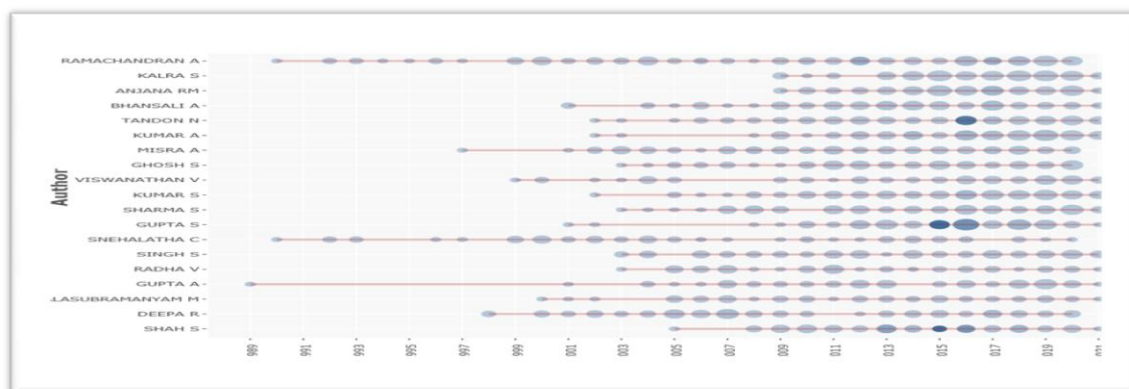


Table 3. Most productive Institution wise records

	Institution	Recs	TLCS	TGCS
1	Madras Diabet Res Fdn	271	1199	12909
2	All India Inst Med Sci	251	695	23829
3	Postgrad Inst Med Educ & Res	109	154	9202
4	Bharti Hosp	83	37	504
5	Dr MohansDiabet Special Ctr	80	218	4914
6	CSIR	78	118	1458
7	Novo Nordisk AS	75	95	2869
8	Banaras Hindu Univ	70	49	6597
9	Manipal Univ	68	36	849
10	Univ Delhi	68	105	7211
11	Chinese Univ Hong Kong	63	225	5460
12	Jamia Hamdard	62	47	685
13	King Saud Univ	60	38	6212
14	PublHlthFdn India	58	82	10573
15	Natl Inst Pharmaceut Educ & Res	55	89	1263
16	Emory Univ	52	213	11253
17	Christian Med Coll & Hosp	50	96	6321
18	Annamalai Univ	49	51	1669
19	Aligarh Muslim Univ	47	27	593
20	Dr A RamachandransDiabet Hosp	46	168	1912
21	Univ Madras	46	52	856
22	Univ Oxford	46	207	14435
23	Indian Stat Inst	45	207	1303
24	NIPER	45	163	2256
25	Karolinska Inst	44	110	13643
26	MV Hosp Diabetes	44	172	1539
27	Panjab Univ	44	48	1123
28	Univ Toronto	44	211	22982

29	India Diabet Res Fdn	42	162	3976
30	Guru Nanak Dev Univ	40	64	702

TLCS= Total Local Citation Score TGCS= Total Global Citation Score

Table 3 revealed top institutions list on publication output namely Madras Diabet Res Fdn records highly contributed about 271 and also highly cited about 23829, followed by All India Inst Med Sci records about 251, followed by Postgrad Inst Med Educ & Res records about 109 out of 8821records totally published. Uni Toronto has citation about 22982.

Figure 4. Mapping of most productive Institution wise records

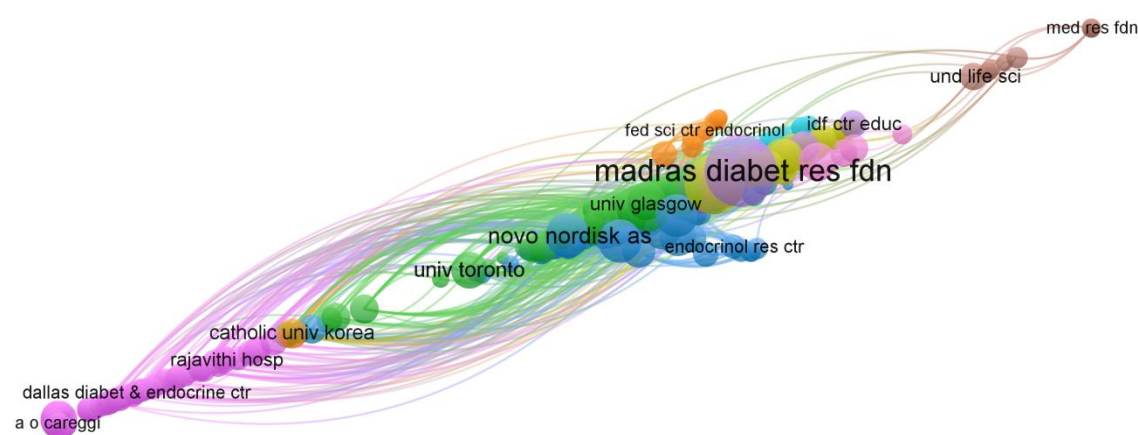


Figure 5. Mapping of Three fields plot shown countries, authors and affiliations

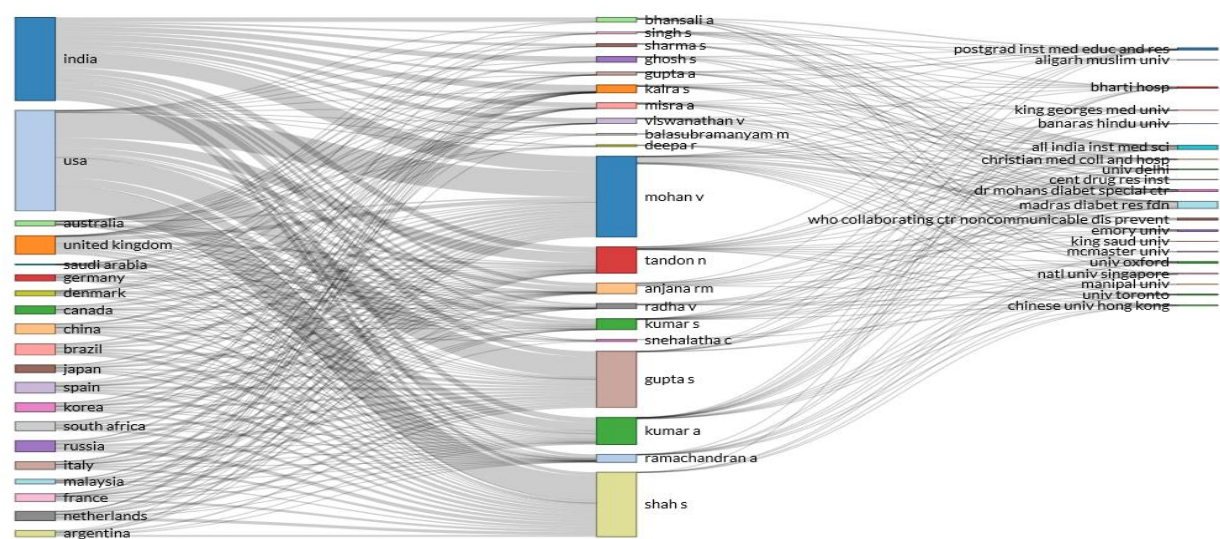


Table 4. Highly cited works

	Date / Author / Journal	Citations
1	241Barba C, Cavalli-Sforza T, Cutter J, Darnton-Hill I, Deurenberg P, et al. Appropriatebody-massindex for Asianpopulations and its	4843

	implications for policy and intervention strategies LANCET. 2004 JAN 10; 363 (9403): 157-163	
2	2604Zinman B, Wanner C, Lachin JM, Fitchett D, Bluhmki E, et al. Empagliflozin, Cardiovascular Outcomes, and Mortality in Type 2 Diabetes NEW ENGLAND JOURNAL OF MEDICINE. 2015 NOV 26; 373 (22): 2117-2128	4427
3	2304Naghavi M, Wang HD, Lozano R, Davis A, Liang XF, et al. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013 LANCET. 2015 JAN 10; 385 (9963): 117-171	4075
4	2953Vos T, Allen C, Arora M, Barber RM, Bhutta ZA, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015 LANCET. 2016 OCT 8; 388 (10053): 1545-1602	2806
5	2952Wang HD, Naghavi M, Allen C, Barber RM, Bhutta ZA, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015 LANCET. 2016 OCT 8; 388 (10053): 1459-1544	2673
6	1819Scirica BM, Bhatt DL, Braunwald E, Steg PG, Davidson J, et al. Saxagliptin and Cardiovascular Outcomes in Patients with Type 2 Diabetes Mellitus NEW ENGLAND JOURNAL OF MEDICINE. 2013 OCT 3; 369 (14): 1317-1326	2149
7	2707Victora CG, Bahl R, Barros AJD, Franca GVA, Horton S, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect LANCET. 2016 JAN 30; 387 (10017): 475-490	1905
8	1348Yau JWY, Rogers SL, Kawasaki R, Lamoureux EL, Kowalski JW, et al. Global Prevalence and Major Risk Factors of Diabetic Retinopathy DIABETES CARE. 2012 MAR; 35 (3): 556-564	1767
9	3023Gulshan V, Peng L, Coram M, Stumpe MC, Wu D, et al. Development and Validation of a Deep Learning Algorithm for Detection of Diabetic Retinopathy in Retinal Fundus Photographs JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. 2016 DEC 13; 316 (22): 2402-2410	1690
10	2868Wanner C, Inzucchi SE, Lachin JM, Fitchett D, von Eynatten M, et al. Empagliflozin and Progression of Kidney Disease in Type 2 Diabetes NEW ENGLAND JOURNAL OF MEDICINE. 2016 JUL 28;	1487

375 (4): 323-334	
------------------	--

Table 4 revealed highly cited work of publication output on diabetes type 2, top cited author's namely Barba, et., al. and the title of *Appropriatebody-massindex* for *Asianpopulations* and its *implications* for *policy* and *interventionstrategies* has citation about 4843 and followed by Zinman, et., al. the title of *Empagliflozin*, *CardiovascularOutcomes*, and *Mortality* has citation about 4427 in *Type 2 Diabetes*.

Figure 6. Mapping of highly cited works

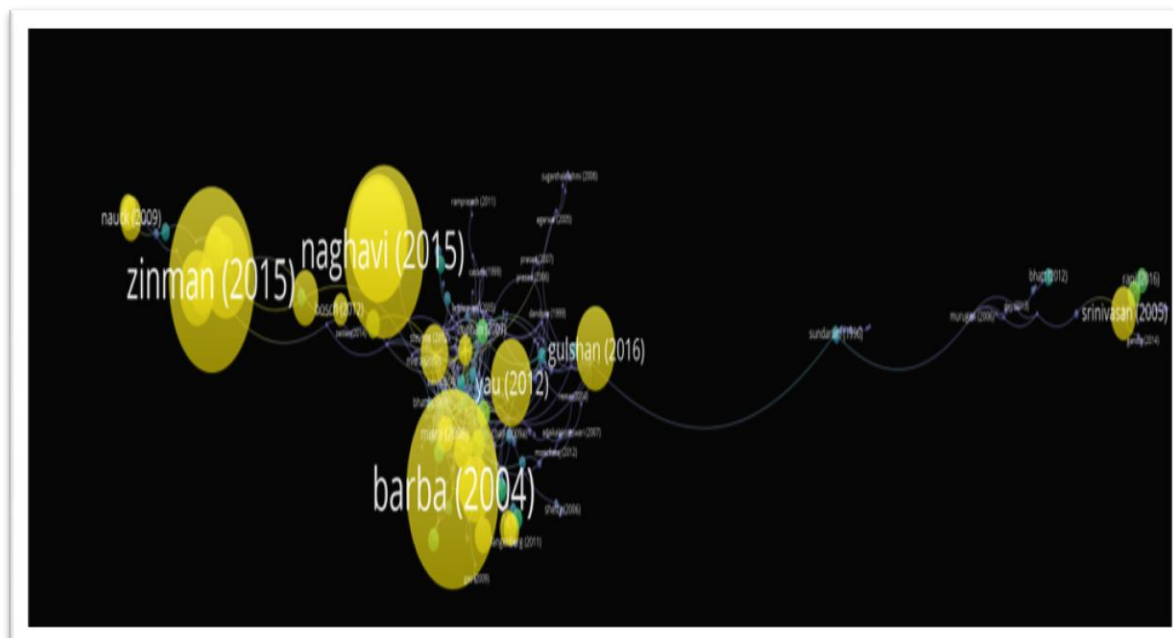


Table 5. Document types of records output

	Document Type	Recs	TLCS	TGCS
1	Article	3635	5368	109031
2	Review	598	1047	19979
3	Meeting Abstract	396	4	88
4	Letter	61	14	115
5	Editorial Material	60	20	252
6	Article; Proceedings Paper	56	129	2240
7	Article; Early Access	46	0	24
8	Correction	15	0	1
9	Review; Early Access	9	0	8
10	Article; Book Chapter	4	1	22
11	Review; Book Chapter	3	2	23
12	Editorial Material; Early Access	2	0	0
13	Article; Data Paper	1	0	10
14	Article; Retracted Publication	1	0	32
15	Correction; Early Access	1	0	1
16	Editorial Material; Book Chapter	1	1	8

17	Note	1	1	38
18	Reprint	1	0	3

TLCS= Total Local Citation Score **TGCS**= Total Global Citation Score

Table 5 revealed documents types of publication output on diabetes type 2, majority of records has covered only article about 3635 also highly cited about 109031 and followed by Review records about 598 also cited about 19979, followed by meeting abstract about 396 also cited about 88.

Figure 7. Mapping of document types of records output

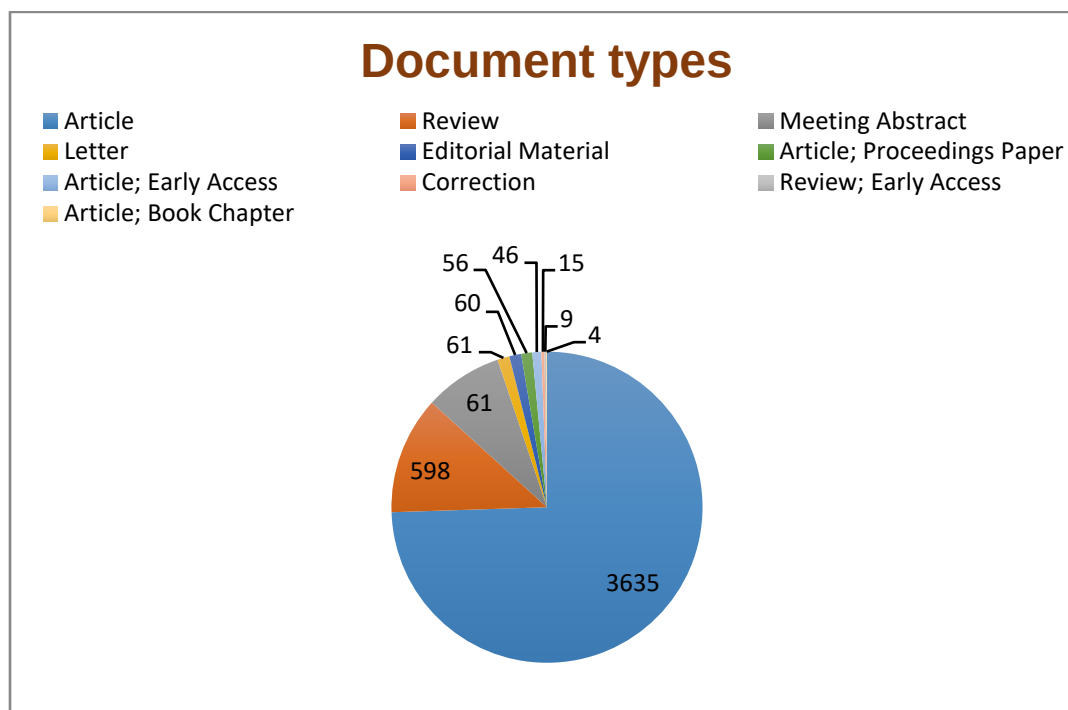


Table 6. Publications output journal wise

	Journal	Recs	TLCS	TGCS
1	INTERNATIONAL JOURNAL OF DIABETES IN DEVELOPING COUNTRIES	197	74	717
2	DIABETES RESEARCH AND CLINICAL PRACTICE	170	350	3373
3	DIABETOLOGIA	149	333	4084
4	PLOS ONE	93	0	2236
5	DIABETES TECHNOLOGY & THERAPEUTICS	89	192	1075
6	DIABETIC MEDICINE	78	286	2048
7	OBESITY SURGERY	75	52	803
8	INDIAN JOURNAL OF MEDICAL RESEARCH	73	270	2118
9	DIABETES CARE	63	372	6218
10	JOURNAL OF DIABETES AND ITS COMPLICATIONS	55	82	889
11	DIABETES OBESITY & METABOLISM	52	78	1581
12	INDIAN JOURNAL OF PHARMACOLOGY	52	12	343
13	VALUE IN HEALTH	52	2	7
14	DIABETES THERAPY	51	21	257
15	MOLECULAR AND CELLULAR BIOCHEMISTRY	42	72	1147

16	SCIENTIFIC REPORTS	42	0	360
17	JOURNAL OF THE PAKISTAN MEDICAL ASSOCIATION	41	17	126
18	EUROPEAN JOURNAL OF PHARMACOLOGY	38	29	635
19	JOURNAL OF DIABETES	34	41	423
20	METABOLISM-CLINICAL AND EXPERIMENTAL	33	132	1029
21	BIOMEDICINE & PHARMACOTHERAPY	31	27	533
22	MEDICINAL CHEMISTRY RESEARCH	31	23	227
23	LIFE SCIENCES	28	30	926
24	CURRENT MEDICAL RESEARCH AND OPINION	25	51	407
25	INDIAN JOURNAL OF OPHTHALMOLOGY	25	1	79
26	INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES	25	7	389
27	JOURNAL OF ETHNOPHARMACOLOGY	25	37	740
28	CHEMICO-BIOLOGICAL INTERACTIONS	24	52	898
29	CURRENT SCIENCE	24	52	404
30	GENE	24	34	416

TLCS= Total Local Citation Score **TGCS**= Total Global Citation Score

Table 6 focused from publication output by journals and top journal has International Journal of Diabetes in Developing Countries records about 197 and followed by Diabetes Research and Clinical Practice records about 170, followed by Diabetologia records about 149. Lancet journal records only about 14 but highly cited about 18766 and followed by New England Journal of Medicine only records 15 although cited about 12172.

Figure 8. Mapping of publications output journal wise

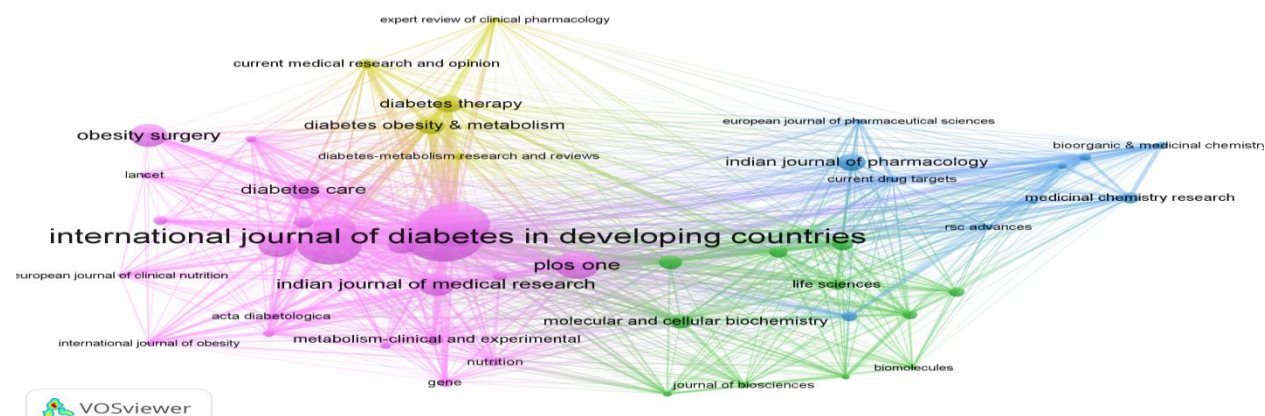


Table 7. Records contribution in Language

S.No	Language	Recs	TLCS	TGCS
1	English	4888	6586	131854
2	French	1	0	0
3	German	1	0	0
4	Serbian	1	1	21

TLCS= Total Local Citation Score **TGCS**= Total Global Citation Score

Table 7 revealed publication output on diabetes type 2, English language has majority of records about 4888 also cited about 131854 compared to other languages. Only one record contributed by French, German and Serbian.

Table 8. Annual Publication output year wise

	Publication Year	Recs	TLCS	TGCS		Publication Year	Recs	TLCS	TGCS
1	2020	503	31	1045	18	Unknown	58	0	33
2	2019	462	128	4244	19	2004	53	309	8166
3	2017	400	302	7088	20	2003	44	93	1639
4	2016	399	315	17736	21	2002	39	102	1421
5	2018	396	187	4276	22	2000	22	126	707
6	2015	372	375	14392	23	2001	20	163	1109
7	2014	369	451	8559	24	1999	9	50	358
8	2013	317	528	8710	25	1997	7	2	201
9	2012	289	436	11206	26	1992	6	3	100
10	2011	229	398	8143	27	1996	6	39	389
11	2010	197	405	5841	28	1998	6	21	135
12	2009	182	527	8167	29	1991	3	20	82
13	2008	126	345	4603	30	1993	3	2	28
14	2007	115	504	5497	31	1994	3	2	43
15	2021	106	5	40	32	1990	2	1	45
16	2006	75	273	3379	33	1995	2	14	231
17	2005	70	429	4250	34	1989	1	1	12

TLCS= Total Local Citation Score TGCS= Total Global Citation Score

Table 8 revealed year-wise annually publication output from 1989 to 2021 on diabetes type 2 records. In the year 2021 has few records about 106 covered only two months. Huge numbers of publication in the year 2020 records about 503 also cited highly about 1045, followed by in the year 2019 records about 462 also cited about 4244.

Figure 9. Mapping of annual Publication output year wise

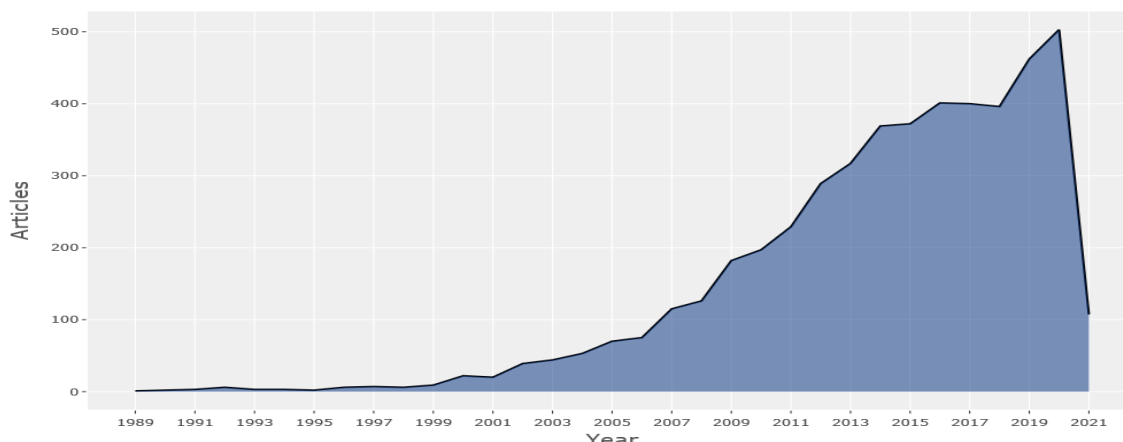


Table 9. The words cloud of key words on Publication

	Word	Recs	TLCS	TGCS		Word	Recs	TLCS	TGCS
1	DIABETES	2672	4147	62161	11	RISK	301	567	10288

2	TYPE	2382	3403	54945	12	RATS	295	313	5690
3	MELLITUS	972	917	14928	13	ASSOCIATION	294	492	5770
4	DIABETIC	783	972	17289	14	GLUCOSE	271	566	6403
5	PATIENTS	783	709	17106	15	DISEASE	239	240	17061
6	INSULIN	519	634	11301	16	ANALYSIS	234	166	13774
7	INDIAN	409	971	8386	17	GENE	225	454	4011
8	INDIA	378	904	6685	18	ASIAN	224	1070	12498
9	EFFECT	312	303	8731	19	SOUTH	222	682	5302
10	INDUCED	311	348	6318	20	METABOLIC	218	402	6334

TLCS= Total Local Citation Score TGCS= Total Global Citation Score

Table 9 revealed key words covered in publication output on diabetes type 2, Diabetes word mostly recorded about 2672 and followed by type word recorded about 2382.

Figure 10. Mapping of the words cloud of key words on Publication



VI. Findings

- The study revealed that records of publication on diabetes type 2 were 136 countries and its top listed by United States of America has 702 records.
- The result revealed out of 21533 authors, and “Mohan V” who had records 338 items top resulted on diabetes type 2 publication.
- The institution analyzed the result has surprised to the institution namely Medras Diabet Res Fdn has given top records on diabetes type 2 publication output about 271 highest numbers of records out of 8821 total records.
- The study resulted Barba, et al., highly citation and title of Appropriatebody-massindex for Asianpopulations and its implications for policy and interventionstrategies has about 4843 citation.
- Out of 18 documents, only articles sources have highest about 3635, next documents sources’ review records about 598 and followed by meeting abstracts.
- The result shown out of 1196 journal, the top journal of International Journal of Diabetes in Developing Countries has the largest records about 197, and followed by Diabetes Research and Clinical Practices.

- ✚ The present result shown out of 4 languages, which is English composed top records about 4888 'diabetes type 2' than the other languages.
- ✚ The result exposed annually publications output on diabetes type 2 was recorded in the year 2020 output has 503 publications and in the year 2016 has only highest global citation scores about 17736. The words cloud resulted records on key words about 2672.

VII Conclusion and Recommendations

The research output concluded on diabetes type 2 raise in every year during the period from 1st January 1989 to 25th March 2021. Only in the year 2021, information was given few records due to search used till March month, and their publications output compared with previous years. Data were retrieved from web of science only printed journal. Other electronics sources did not involve in this scientometric study. User of technology enables to find the author's publication and publishes to elucidate research field in referred journal, these are contributed with more authors collaboration in interconnected field as well as to know frequently using key words on specific area. The present study concluded Indian contribution on diabetes type 2, and would be worked to encourage other electronic sources on the same term. The study presently recommended that teachers, research scholar, scientists, academic workers, the health educationist and physical educators should involve in diabetes research activities and their increasable thirsts enhance to increase records production on diabetes type 2.

Reference

1. Das, A., Shah Siddharth N., (2011). History of diabetes: from ants to analogs. *Journal of Association of Physicians of India*, 59.
2. Kalidasan, R., & Vigneshwaran, G. (2015). Study of Indian Publications Output on Diabetes. *International Journal of Recent Research and Applied Studies*, 2, 12(4), 17 – 21 (ISSN: 2349 – 4891).
3. McKee, M., Stuckler, D., & Basu, S. (2012). Where There Is No Health Research: What Can Be Done to Fill the Global Gaps in Health Research? *PLoS Medicine*, 9(4), e1001209. doi: 10.1371/journal.pmed.1001209
4. Peykari, N., Djalalinia, S., Kasaeian, A., Naderimagham, S., Hasannia, T., et al. (2015). Diabetes research in Middle East countries; a scientometrics study from 1990 to 2012. (2015, March 1). Retrieved from <https://www.researchgate.net/publication/279303673> Diabetes research in Middle East countries A scientometrics study from 1990 to 2012.
5. Sivakumaren, K. S. (2019). A Scientometric study of Anna University faculty publications in Indian citation index. *Chinese Librarianship: An International Electronic Journal*, 44. Retrieved from <https://www.researchgate.net/publication/336374322> A Scientometric Study of Anna University Faculty Publications in Indian Citation Index.
6. Vivek, R., & Kalidasan, R. (2019). A scientometric study- quantitative assessment of global level among type 2 diabetes mellitus, *Journal of Xidian University*, 13 (1), ISSN No:1001-2400.
7. Vivek, R., & Kalidasan, R. (2020). Varied exercise regimen and its impact on glucose control among type 2 diabetes mellitus patients: A meta-analysis, *Journal of The Maharaja Sayajirao University of Baroda*, 54 (2) (ISSN: 0025-0422).
8. Wikipedia, the free encyclopedia. (2007, September 12). Web of Science. Retrieved from https://en.wikipedia.org/wiki/Web_of_Science.