Quantitative Assessment of 'Diabetes Type 2' Literature at Global Level - A Scientometric Study

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Abstract

The current study attempts to document the publications output on 'diabetes type 2' in the global literature, which is available in the electronic form. The data for this study were retrieved from the Web of Science database only. Diabetes type 2 literatures which do not covered fully in Web of Science database were not taken for analysis. Using search string in Web of Science, the term 'diabetes type 2' in 'topic' published from 1st January 2016 to 23rd August 2019 and all types were analyzed. In all, 20,905 documents results were found in Web of Science database during the above said period. The collected data were analyzing with the assistance of'Histcite Software' and 'MS Excel' for data classification or to eliminate duplication from downloaded data. Using illustrations in the form of diagram and table the result of the study were discussed broadly. There are very many printed journal and other electronic resources which could not be include in this study, due to various reasons. These results reveal that author 'Drexel' and country 'USA' have produced the majority of records. The present study recommended that research scholar, the health educationist and physical educators should involve in diabetes research activities, thirst to increase productivity of literature on 'diabetes type 2'. To preserve the information and to enhance the academic excellence globally, literature in 'diabetes type 2' should be in electronic form.

Key words: Diabetes type 2, Scientometrics, Web of Science and Histcite

Introduction

Scientometric is a branch of bibliometrics. The bibliometrics and scientometrics are popular methods used throughout the world to assess the publication on a particular area. Scientometric studies are an important usage to understood evolution of literature review such as trends in specific fields or within geographical area. Scientometric study has been increase thrust of concurrent used day by day. It is quantitative methods to study the various discipline of subjects. It is measuring and analyzing of scientific literature. Modern days Information scientists are applying very many techniques to assess the publication on a particular area.

According to International Diabetes Federation website (2019), Diabetes is one of the most seventh leading death of cause. In type 2 diabetes results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes combined with as absolute insulin deficiency. The literature suggest that diabetes can lead to blindness, kidney failure, nerve damage, micro-vascular disease, strokes, coronary heart disease and macro-vascular disease. World-wide 422 million peoples affected diabetes in 3 decades it seems to rapidly increasing.

Web of Science is a bibliographic database containing abstract and citations of peer-reviewed literature. Web of Science is owned by Thomson Reuters and is available in online by subscription. Web of Science website (2007), Institute of scientific information produced citation index and it have maintained by clarivate analytic. Database that which are various multi-disciplinary research papers and 256 discipline supports as per Wikipedia-encyclopedia.

Peykari (2015) reported quantify research output trend on diabetes focus on countries publication, citation and international collaboration, more efficient intervention in the knowledge production. Encourage to maintain trends on the strategy planning. Djalalinia (2012) said that there are two main functions in health research system that knowledge production and evaluation and aim of paper reveals promoting of health research organization and health knowledge production. The knowledge management is a set of principle that enable people create knowledge about it and share, translate with improve effectiveness. McKee, Stuckler and Basu (2012) identified where there is no health research-what can be done to fill the world-wide gaps in health aspect research? That output measure of clinical based on researcher publication and its institution wise. Although there were positive association between economic development and research output, health of this publication invest knowledge need to address the problem. Saquib (2018) analysed the research productivity on type 2 diabetes patients and this characterize and quantify particular type 2 diabetes patients. There were reported all study extracted such as included authorship on number and gender, publication year, journal, article location, size of sample, research design, type of sample (general or patient), sample (male or female), and sampling collections (random methods or non-random methods). This study attempts to analyse the research output on 'diabetes type 2' at global level which is available in the electronic form.

Objectives of the study

The major objective of the current research study is to examine publications on 'diabetes type 2' by using scientometric analysis.

- To know the most prolific authors of research publications on 'diabetes type 2'.
- To know the top ten contributing journals.
- To ascertain the document type and publication year produced during period from 1st January 2016 to 23rd August 2019.
- To analysis the number of publications output in various languages.
- To investigate the number of records distributed by institution.
- To find out the publications output contributed by each the country.

Methodology

The data for this particular study were retrieved from 'Web of Science' database on diabetes, which covers a time span of all years starting from 1st January 2016 to 23rd August 2019. Using search string in Web of Science, the term 'diabetes type 2' for getting data from the Web of Science database was limited to India which includes Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (AHCI) all types were analyzed. In all, 20,905 records documents results were found in Web of Science database. With the assistance of analyse result option, the data for analyse were collected. All the publications taken with file format and also plain text as export to notepad. Web of science provides researchers, administrators, academics and students with quick power full access to the world leading citation database. The collected data were analyzing with the assistance of'Histcite Software' and 'MS Excel' for data classification or to eliminate duplication from downloaded data. Using illustrations with MS Office and Excel, in the form of graph / table, mapping software vos viewer used visualizations to authors, country and institution and the result of the study were discussed broadly.

Data analysis

By analyzing the authorship pattern, at world level 65,847 authors have participated in publishing on 'diabetes type 2'. The table below shows the top ten authors productivity on 'diabetes type 2'. It also indicates the number of works done by each of them. Drexel has published 146 items and followed by Leiherer who published 140 articles. Khunti stood third with 135 publications with a total global citation score 934.

Table 1. *Top ten contributing authors*

S.No	Author	Recs	%	TLCS	TGCS
1	Drexel H	146	0.7	2	12
2	Leiherer A	140	0.7	0	1
3	Khunti K	135	0.6	390	934
4	Muendlein A	119	0.6	0	0
5	Ji LN	117	0.6	228	679
6	Liu J	107	0.5	291	928
7	Zhang Y	106	0.5	95	422
8	Mader A	105	0.5	0	0
9	Vonbank A	105	0.5	0	1
10	Saely CH	102	0.5	0	1

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

Figure I. Mapping of publication by author

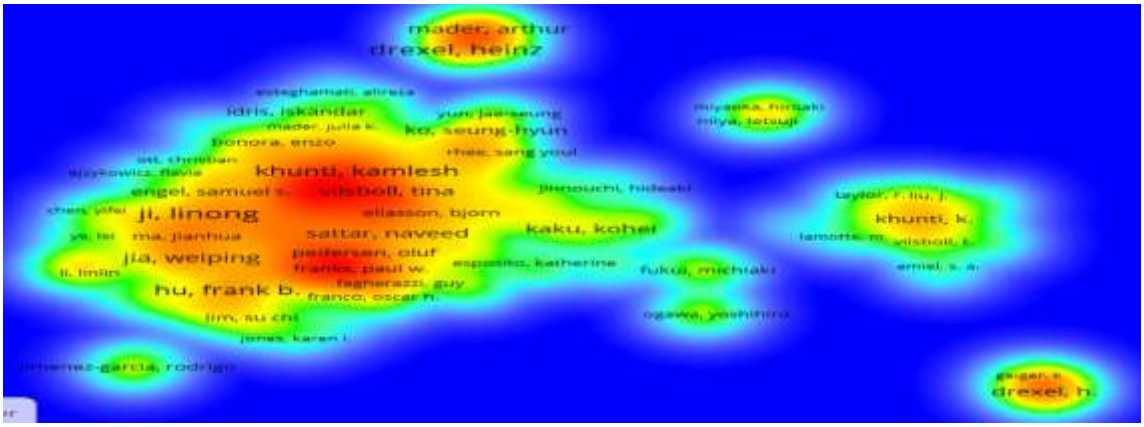


Table 2. *Title-wise distribution of publications*

S.No	Journal	Recs	%	TLCS	TGCS
1	Diabetes	1588	7.6	370	1414
2	Diabetologia	1237	6.0	764	2779
3	Diabetic medicine	626	3.0	299	1021
4	Diabetes research and clinical practice	541	2.6	519	1565
5	Diabetes obesity & metabolism	508	2.4	1499	3526
6	Diabetes care	447	2.2	1851	5882

7	Value in health	419	2.0	26	52
8	Plos one	341	1.6	0	1612
9	Journal of diabetes and its complications	283	1.4	321	1236
10	Diabetes therapy	260	1.3	400	812

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

It could be noted that scientists were to bring out their publication in different type of source. The present investigation had taken top ten published journals, which published 'diabetes type 2' literature is shown in table 2. In the table top ten listed, Diabetes journal 1,588 (7.6%) documents have been top published out of 1,927 journals, followed by 1,237 (6.0%) documents contributed in Diabetologia journal. Those among journals high level of total citation scores of 5,882 was in the Diabetes Care followed by citation scores 3,526 in Diabetes Obesity & Metabolism.

Figure II. Contributions in top ten journals

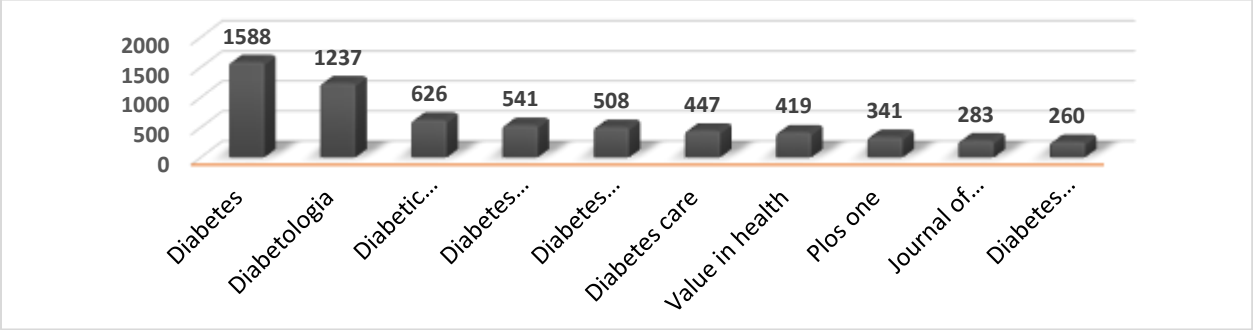
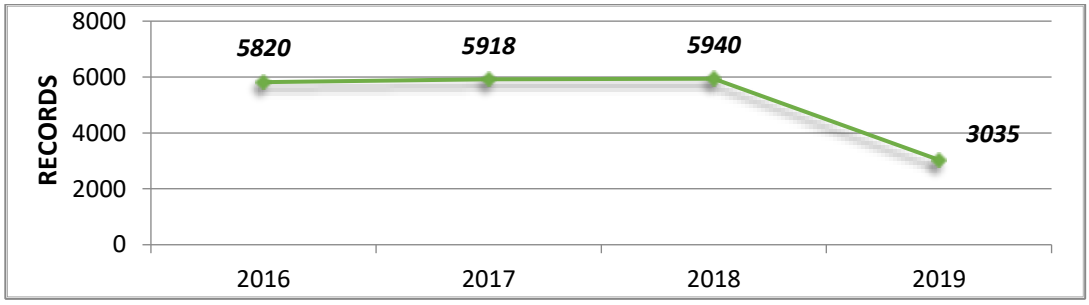
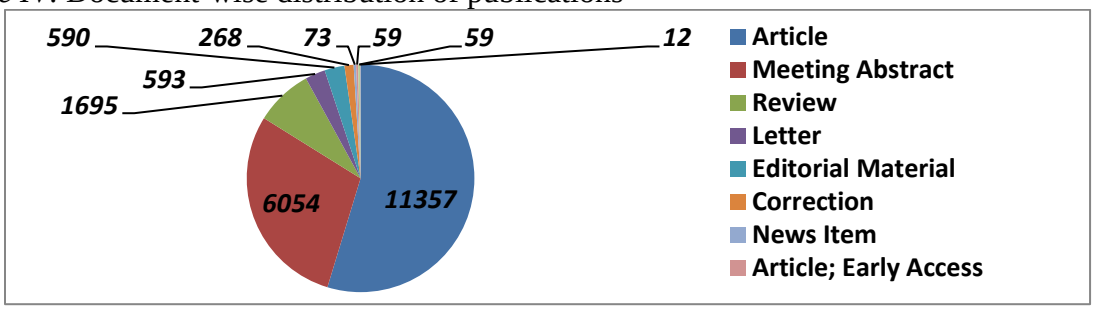


Figure III. Year-wise classification of Diabetes type 2 literature



In Web of Science, publications pretended to 'diabetes type 2' were limited only from 1st January 2016 to 23rd August 2019. From the above graph, it was found that the total numbers of document available was 20,904. In 2018 year have high level records 5,940 (28.6%) out of 20904 documents followed by 5,918 (28.6%) publication in the year 2017. From the analyses it is clear that each year there was a slight increase records.

Figure IV. Document-wise distribution of publications



The result indicates that 'diabetes type 2' literature has been classified into 19 types of documents. The above pie diagram indicates the numerical values of each document. The analysis reveals that most number of publication 11,357 (54.6%) and have high citation scores produced in the form of Article, then followed by 6,054 (29.1%) documents have been formed in Meeting abstract, but those 405 low citation scores. The third place have 1,695 (8.2%) documents formed Review and although could 14,574 citation scores.

Table 3. *Distribution of publication by language*

S.No	Language	Recs	%	TLCS	TGCS
1	English	20407	98.2	19092	86317
2	German	217	1.0	13	57
3	Spanish	88	0.4	14	111
4	Russian	27	0.1	4	9
5	French	21	0.1	2	9
6	Hungarian	8	0.0	2	3
7	Chinese	3	0.0	0	3
8	Italian	3	0.0	0	1
9	Japanese	3	0.0	0	0
10	Portuguese	3	0.0	0	1

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

It could be noted that scientist used to bring out their publication in different type of languages. The present investigation had taken published languages, which published 'diabetes type 2' literature. The table 3 shows that analyses with 14 languages at global level around 20,905 publications, these top ten language table shows 20407 (98.2%) contribution have been observed given by English language and also 86,317 global high citation scores. Further followed 217 (1.0%) records contain German language and 57 citation scores. Spanish have third place in top ten, publication 88 (0.4%) and 111 citation scores.

Table 4. *Top ten Institution-wise publication output*

S.No	Institution	Recs	%	TLCS	TGCS
1	Harvard Med School	350	1.7	1060	4078
2	Univ Copenhagen	308	1.5	818	3423
3	Univ Toronto	276	1.3	2046	7628
4	Novo Nordisk AS	274	1.3	873	1903

5	Univ Oxford	256	1.2	1361	4948
6	Peking Univ	253	1.2	417	1386
7	AstraZeneca	210	1.0	516	1478
8	Eli Lilly & Co	208	1.0	405	1002
9	Karolinska Inst	199	1.0	439	2006
10	Brigham & Womens Hosp	191	0.9	596	2425

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

It was found the number of publications produced by various institutions and have top ten listed by institution-wise. Totally 15,720 institutions containing records but, mostly Harvard Med School 350 (1.7%) publications have citation scores about 4,078, followed by Univ. Copenhagen 308 (1.5%). Then, further 3rd place among top ten institution got high citation scores 7,628. Those institution documents collaborate with subdivision about 38,185.

Figure V. Top ten Institution-wise publication output

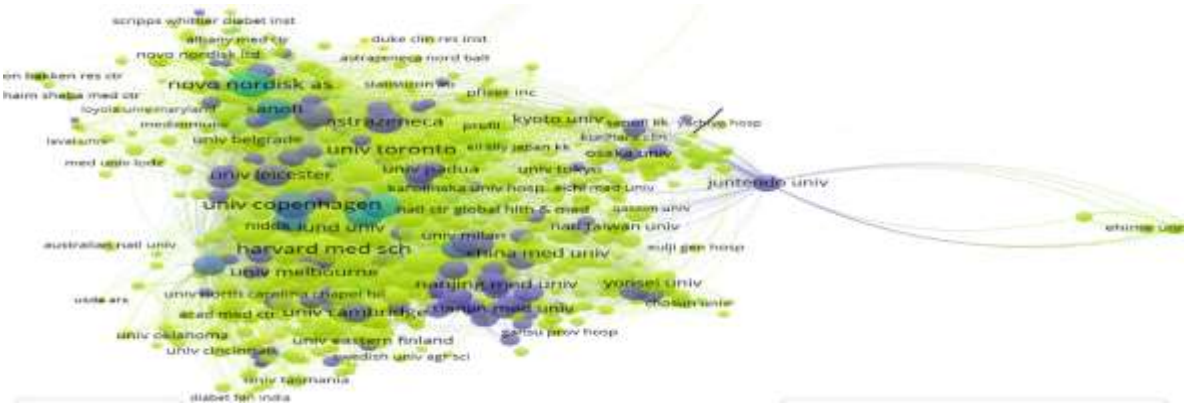


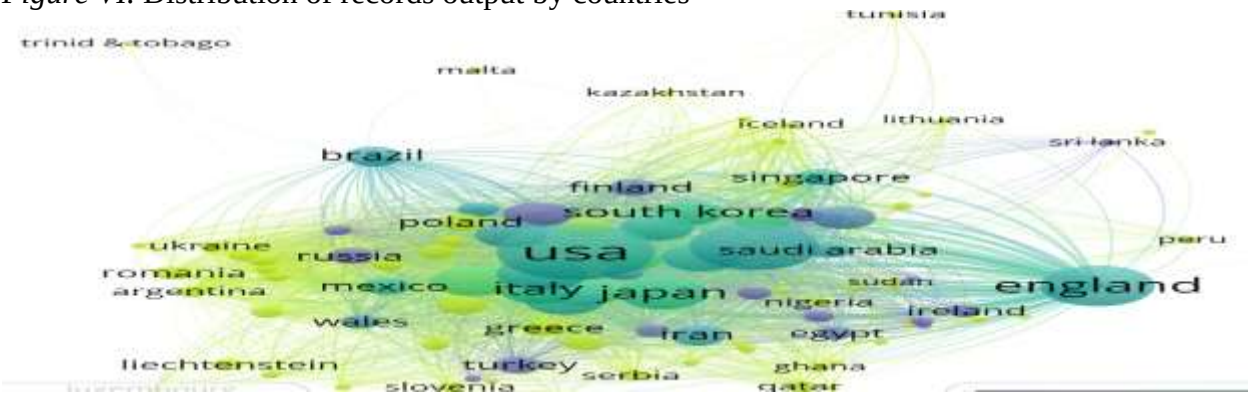
Table 5. *Distribution of records output by countries*

S.No	Country	Recs	%	TLCS	TGCS
1	USA	4969	23.9	9663	37382
2	China	2983	14.4	2641	13108
3	UK	2508	12.1	5520	20058
4	Unknown	2006	9.7	105	604
5	Japan	1276	6.1	1736	5803
6	Germany	1242	6.0	3220	11865
7	Canada	972	4.7	3201	11969
8	Italy	942	4.5	2199	8389
9	Australia	925	4.5	1562	6635
10	Denmark	898	4.3	2812	9253

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

Out of 144 countries, table 5 analyzed top ten countries listed that mostly records have USA 4,969 (23.9%) with highly citation scores 37,382, followed by China contain 2,983 (14.4%) publications output with 13,108 citation scores. Further United Kingdom country publication 2,508 (12.1%) output with citation scores about 20,058.

Figure VI. Distribution of records output by countries



Findings

1. The result exposed that records of 65,847 authors throughout world and 'Drexel' who had records 146 items that result top contributed in 'diabetes type 2' literatures.
2. The result shown the top journal of Diabetes has 1,588 records largest output level rather than the other journals in 'diabetes type 2'.
3. The result reveals that maximum number of publications in 'diabetes type 2' was recorded in the year 2018 along with output has 5,940 publications. Articles has highest displayed about 11,357 of total documents sources and followed by meeting abstracts.
4. The current result indicates that out of 14 languages, which is English contains 20,407 top records 'diabetes type 2' literatures more than the all sources languages.
5. The institution result is surprise to records analysis top that institution Harvard Med School has contributed into 'diabetes type 2' records about 350 highest numbers of publications.
6. The study exposed that output of publications in 'diabetes type 2' were 144 countries and its top listed by United States of America country has 4,969 publications.

The current study results were similar to the results of the past which is documented hereunder. Tabatabaei (2016) examined the paper were scientific assessment of co-authorship, highest international collaboration, highest cited article and a top source was a systematic review alone publication showed increase trends on diabetes type 2 whereas that network of authorship and institution. According to Sweileh (2014), current and future status of research publication and authorship in diabetes mellitus and further, information of research action needs to be sustained analysis of researcher's outputs in the region to given feedback to individual health, health intuition, and education future action. Vezyridis and Timmons (2016) observed that Scientometric study of evolution in care database and were needed yearly with current days; there were mostly output of research increase in medicine. Thus, the study analyzed with identifies leading institution, journal, publication, author and additional network of published research. Gupta, Kaur & Adarsh (2008) and Kalidasan &Vigneshwaran (2015) analysed that Diabetes research of Indian, a scientometric analysis of outputs parameters like several including global publication and its rank and growth maximum. Subject's impact and international collaborative paper was small, share of major collaborative partner.

Conclusion and Recommendations

It is concluded that the research output on the 'diabetes type 2' increase in every year during the period from 1st January 2016 to 23rd August 2019. Only 2019 in which year data was opted still august month, therefore low number of publications when compare with above years. All the data taken from Web of Science only, and printed journal and other electronics sources not involve in the research. Use of technology makes elucidate for author to publish research work in referred journal, which are contribution with various author collaboration in inter-related field. The current study that concluded global level among type 2 diabetes, and would be work encouraged other electronic sources on current title. The current study recommended that research scholar, the health educationist and physical educators should involve in diabetes research activities, thirst enhance to increase productivity of literature on type 2 diabetes. To preserve the information and to enhance the academic excellence globally, literature in 'diabetes type 2' should be in electronic form.

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