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TYPE 2 DIABETES SCHOLARLY LITERATURE ANALYSIS THROUGH SCIVAL: A SCIENTOMETRIC STUDY

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Abstract:

In this paper deeply analyzed the “Type 2 Diabetes Mellitus” scholarly output during the year of 2014 – 2018 indexed by the Scopus database. This is one kind of microscopic study; A variety of research articles have emerged in the field of Scientometrics so far. But this article makes accurate statements using new types of measurement methods in Scientometrics study with the help of SCIVAL. Nowadays, the research process goes on as an analyst, research manager, organizational role, collaboration with authors and institutions, research design, and final evaluation. There is advanced data analysis and supercomputer technology to analyze these. SciVal provides powerful analytics and on-demand visualization with large amounts of data. We hope this article is beneficial for metric study researchers.

Keywords: diabetes mellitus; insulin; type 2 diabetes; SciVal; metric study; scientometrics

1. Introduction:

The publication of research articles has multiplied in the last ten years. But it is necessary to analyze how many articles are recognized by researchers and how many articles are getting more citation scores as well as national and international levels. It is also necessary to analyze the Prolific authors, Quality publications, Best Research Institutions, and Countries that promote research. Traditionally, we use a Scientometrics study to determine the quality and impact of them. This study examines various aspects of the intellectual output of “type 2 diabetes” during the research period.

1.1. Diabetes:

Diabetes is widespread in all countries, including developed and developing countries. The Majority of populations are affected by two significant kinds of diabetes; there are Type I and Type II Diabetes; both are based on insulin secretion rates and their use. Insulin is hormonal; it should be secreted a sufficient amount. If the secretion rate is variable, diabetes can occur. This study analyzes the data with a particular focus on type 2 diabetes literature growth.

1.2. Data Source:

SCIVAL: SciVal is a web-based metric tool; it provides analytical data about the research performance of individuals or groups. It helps to create evaluation reports, to identify a publication strategy, and to find new collaborations. It is an unparalleled analytical database that provides comprehensive access to the research performance of more than 14,000 research institutes and related researchers in more than 230 countries around the world. It has powerful analytical tools such as Overview, Benchmarking, Collaboration, and Trend reports. It analyzes based on Scopus database data; All analytical data required for this study were obtained by the SciVal tool.

1.3. Limitation of this Study:

- This study is based on Online SciVal analytical data.
- Analytical data were obtained from the Scopus database. Hence, only Scopus indexed journals are considered for this study.
- This study is subject to the last five years (2014 – 2018).
- We have used three kinds of key terms for data collection, such as Insulin, Type 2 Diabetes Mellitus, and Glucose.

1.4. Objectives of this Study

- To trace out the source-wise publication and their impact.
- To analyze top institutions.
- To discover the fertile author in this field.
- To identify the most occupied countries in the field of type 2 diabetes research.
- To Figure out subject area-wise publication and their citation counts.
- To reveal the views count and Key Phrase.

During the five-year (2014 - 2018) study period, 38,116 scholarly publications were identified. Data is tabulated and formatted by SciVal analytical tools. All statistical data and results are calculated entirely by the metric formula. For this study, each analysis was analyzed here according to the scholarly publication and its impact.

The following measurements have been used in this analytical study:

Scholarly output: Refers to the proliferation of their Scholarly publications from a particular institution, country, or journal.

Subject Area Count: It is calculated according to the “publication-driven” formula, which is a method of measuring how many subjects a particular keyword is used in and its contribution.

h-index: It indicates a balance between the productivity (Scholarly Output) and citation impact (Citation Count) of an entity’s publications.

Views Count: It indicates the total usage impact of a publication; Calculates how many views a particular publication has received. It is calculated from usage data in SciVal.

Field-Weighted Views Impact indicates how the number of views received by an entity’s publications compares with the average number of views received by all other similar publications in the same data universe.

2.ANALYSIS

2.1. Source –wise distribution of type 2 diabetes

S.No	Scopus Source	Publications	Publications (growth %)	Citations	Citations per Publication	Source-Normalized Impact per Paper (SNIP)	CiteScore 2018	SCImago Journal Rank (SJR)
1	Diabetes Care	1040	-19.2	40314	38.8	4.196	8.71	6.085
2	Diabetes, Obesity and Metabolism	760	120	14659	19.3	1.604	6.08	2.777
3	Diabetes Technology and Therapeutics	735	-23.2	5937	8.1	1.417	2.53	1.8
4	Journal of diabetes science and technology	679	4.7	5857	8.6	1.095	2.91	1.196
5	PLoS ONE	651	-41.6	7668	11.8	1.123	3.02	1.1
6	Diabetes Research and Clinical Practice	593	23.3	7696	13	1.147	3	1.206
7	Diabetic Medicine	535	32.9	4906	9.2	1.225	2.85	1.515
8	Diabetes Therapy	358	260	2411	6.7	1.015	2.67	0.953
9	The Lancet Diabetes and Endocrinology	331	-26.2	9150	27.6	5.917	6.39	10.088
10	Journal of Diabetes and its Complications	319	20.5	2986	9.4	0.958	2.62	1.116

Table No: 1 Source – wise distribution of type 2 diabetes.

Top ten journals only have taken and tabulating here. At the top of the list is the Diabetes Care journal, published by the American Diabetes Association from 1978; It is an open-source monthly journal. It has 1040 publications, 40314 total citations, and 38.8 citations per publication, and stands out with an average citation of 8.71 and an SJR rating of 6.085. In second place is Diabetes, Obesity, and Metabolism Journal, with 760 publications. Its

publications Growth Rate stands at 120 with phenomenal growth. All the journals in this table are primarily deal with diabetes except PLoS One. However, it is in fifth place with 651 publications and citations per publication rate with 11.8. It is noteworthy that the Journal of Lancet Diabetes and Endocrinology scored 10.088 points in the SJR rankings in this table.

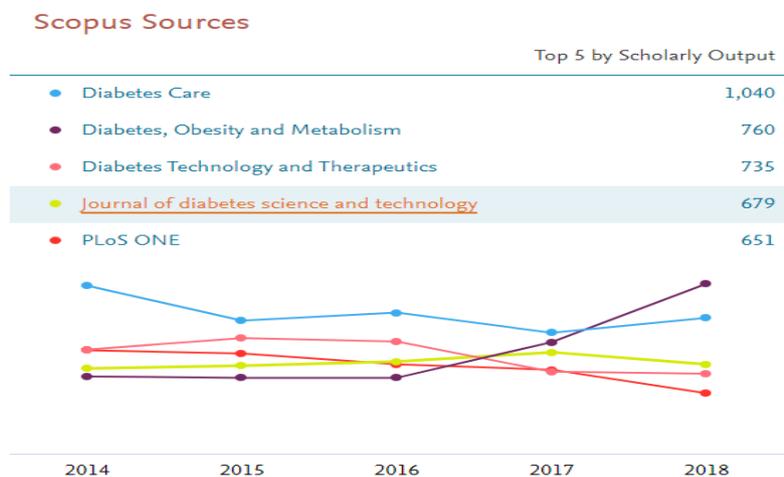


Chart No.1 Top five sources – scholarly output

The chart No.1 shows that the curve line of Diabetes Care travels downward, with the other three journals going that way. The growth rate of Diabetes, Obesity, and Metabolism Journal have increased dramatically in 2017 and 2018.

2.2. Institution-wise distribution of type 2 diabetes

S.No	Institution	Country	Scholarly Output	Scholarly Output (growth %)	Citations	Citations per Publication	Field-Weighted Citation Impact
1	Harvard University	United States	853	41.5	21349	25	4.25
2	Novo Nordisk A/S	Denmark	780	58.8	17095	21.9	3.7
3	University of Copenhagen	Denmark	627	39.2	13140	21	2.96
4	University of Toronto	Canada	605	32.4	24356	40.3	6.91
5	University of Colorado Denver	United States	470	41.9	8714	18.5	2.74
6	Institut National de la Santé et de la Recherche Médicale	France	415	14.7	7613	18.3	2.25
7	Yale University	United States	377	30.4	15945	42.3	7.26
8	Department of Veterans Affairs	United States	361	37.1	6380	17.7	2.36
9	University of Washington	United States	332	-3.1	10104	30.4	4.09
10	AstraZeneca	UK	309	65.9	7461	24.1	3.61

Table No: 2 Institution – wise distribution of type 2 diabetes

Only the top ten institutions are scrutinized here based on scholarly publications and citations. Harvard University Publications in the United States tops the list; It has 223 scholarly publications with 1233 citations, and its FWCI (field-weighted citation impact) is 0.79, and h-index is 24. (“**Field-Weighted Citation Impact – FWCI** is calculated by the citations received in the year in which an item was published, and the following 3 years, are counted for this metric”). Denmark-based Novo Nordisk A / S, the flagship research institute, is in second place with 780 scholarly publications; Its scholarly output growth rate of 58.8% is noteworthy. The University of Comphengen follows this in third place. AstraZeneca, the largest multinational pharmaceutical company, is ranked tenth in the list. But, its scholarly output rate of 65.9% attracts everyone's attention. The University of Toronto shines alone with 40.3 Citation per publication and Yale University with a 7.26 FWCI score.

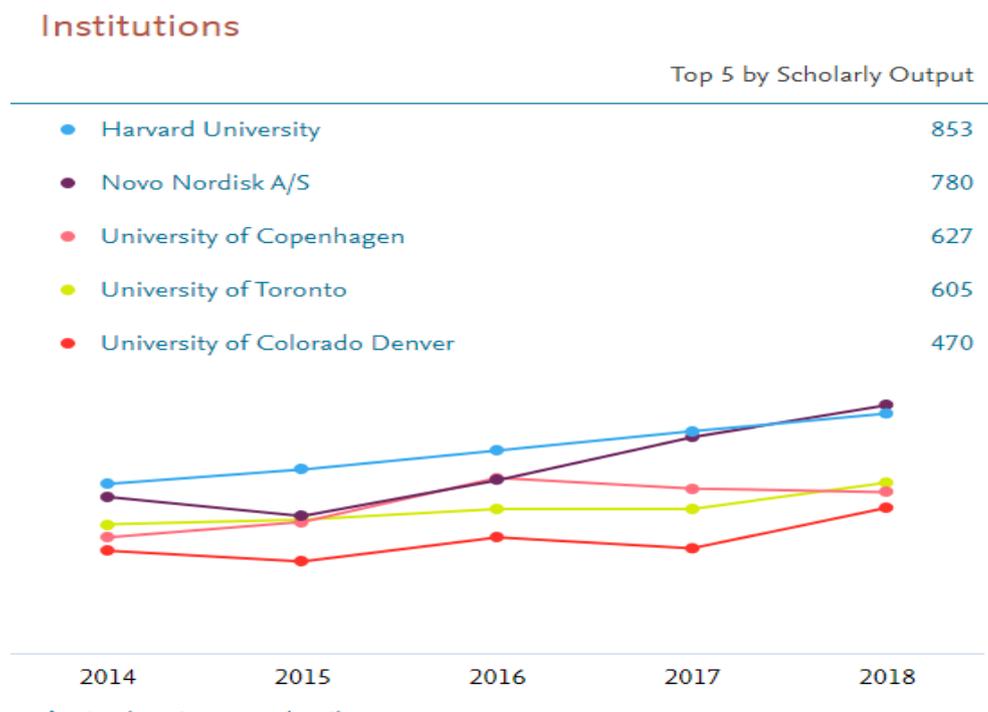


Chart No: 2 Top Five Institution – wise scholarly output

Chart No.2 indicates the top five institutions' literature growth rate. Harvard University's growth rate line can be seen to be moving upwards; It is clear that there is good progress from year to year. Novo Nordisk A / C saw a slight decline in 2015 but has seen dramatic growth since then. In the end, its growth is higher than that of Harvard University. Copenhagen University's publishing rate increased in 2015 and 2016 and decreased in 2017 and 2018. The other two universities have parallel growth rates.

2.3. Author-wise distribution of type 2 diabetes

S.No	Name	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact	h-index
1	Kalra, Sanjay	223	1233	5.5	0.79	24
2	Holst, Jens Juul	159	2865	18	2.2	132
3	Scheen, André J.	143	6526	45.6	7.81	70
4	Khunti, Kamlesh	134	2936	21.9	3.19	62
5	Cobelli, Claudio	124	2548	20.5	2.53	73
6	Maahs, David M.	124	3202	25.8	3.74	47
7	Davies, Melanie J.	123	3499	28.4	4.44	69
8	Heinemann, Lutz	120	1561	13	2.33	47
9	Ji, Linong	118	1381	11.7	1.34	39
10	Woerle, Hans Juergen	98	10204	104.1	13.84	62

Table No: 3 Author – wise distribution of type 2 diabetes

Authors are the lifeblood of publications, so the top ten authors are listed in Table No.3 based on their publications and their ratings. Kalra Sanjay ranks first with 283 intellectual documents and 1233 citations; His average citation for a paper is 5.5, and his H-index is 24. Holst Jens Juul is ranked second with 159 scholarly publications and 2865 citations by his publications. In terms of H-Index value, he ranks first with 132 points. In third place is Scheen with 6526 citations and 45.6 citations per paper. Woerle also gets overall 10204 citations and 104.1 citations per publication at the end of this table. His FWCI rating of 13.84 is the highest on the table.

Chart No. 3 represents Kalra's publications are seen to fluctuate year after year. Holst's releases moved upwards until 2016 and have since declined sharply. The publications of both Scheen and Cobelli have seen steady improvement and then a setback. It is clear that the development of Khunti Kamalesh continues upwards as compared to the other four authors.

Authors

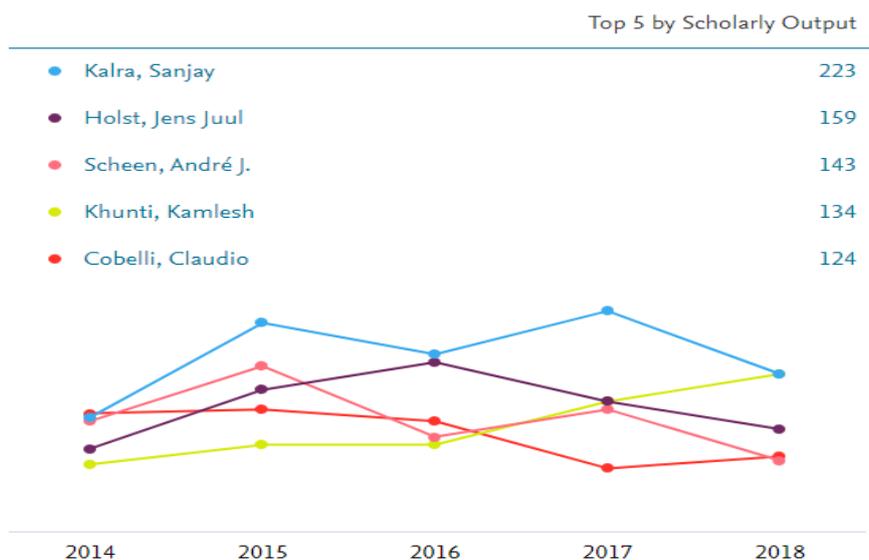


Chart No.3 Top Five Authors Productivity

2.4. Country-wise distribution of type 2 diabetes

S.No	Countries	Scholarly Output	Views Count	Field-Weighted Citation Impact
1	United States	11210	196,805	2.29
	United Kingdom	3934	81,860	3.11
2	China	3762	56,492	1.28
3	Germany	2581	44,730	3.14
4	Japan	2286	31,229	1.52
5	India	2035	26,944	1.02
6	Canada	1855	41,710	4.6
7	Australia	1711	44,720	2.92
8	Italy	1706	40,737	2.6
9	France	1417	22,074	1.6

Table No: 4 Country-wise distribution of type 2 diabetes

The top ten countries are listed in Table No. 4, which is ranked based on their scholarly publications and their impact. In the first place, the United States stands majestically with

11210 scholarly publications; its view count is 196805. In second place is the UK with 3934 scholarly publications and 81860 views count. But its FWCI value is 3.11. China, Germany, and Japan are next in line. India ranks sixth in this table with 2035 publications.

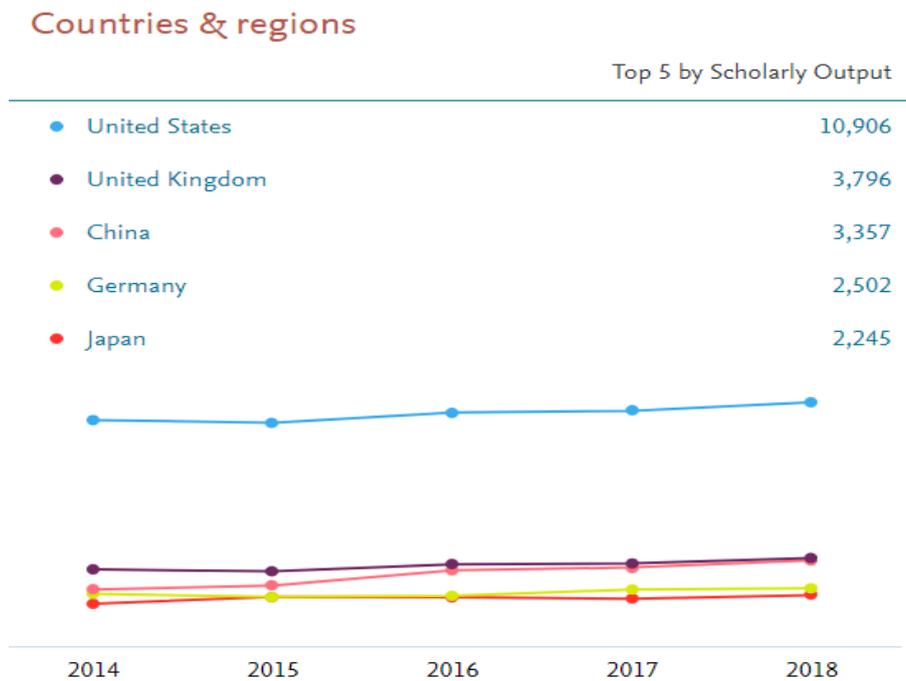


Chart No: 4 Top Five countries and their scholarly output

The United States looks unique in this chart No. 5 because its growth rate is consistent. Following this, the UK is seen with consistent productivity each year. China, in third place, has been increasing its output in parallel with the UK since 2015. The other two countries are seen without any significant change in their output.

2.5. Subject area-wise distribution of type 2 diabetes

This area examines the fields that used the term Type 2 Diabetes in their study and the citations they received. Chart No. 5 illustrates the role of the term type 2 diabetes in various fields. It can be seen that 50.1% of most scholarly publications come from the medical field. Its FWCI value is 1.5. This is followed by 18.3% of publications by the Department of Biochemistry and Genetics. 5.8% of publications are from the nursing industry, with an FWCI rating of 1.8, which is higher than the medical sector. Further, 3.2% of publications were published in the field of engineering and 2.4% from health professionals.

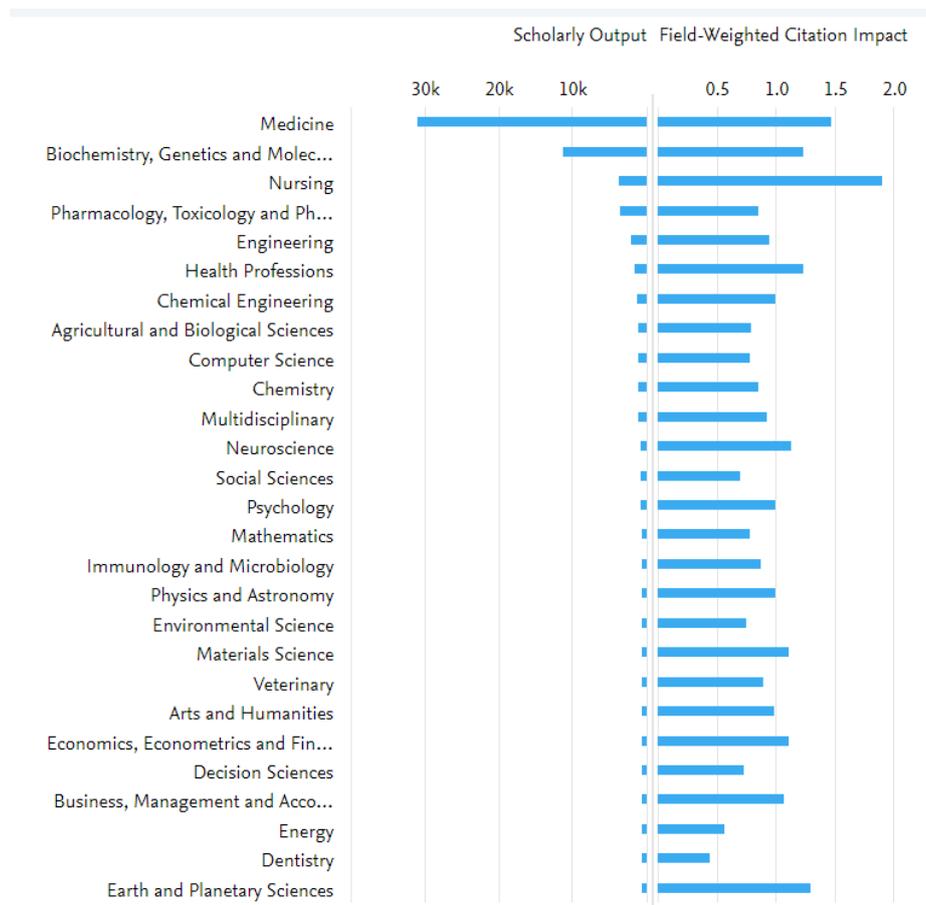


Chart No: 5 Publications by Subject area – Type 2 diabetes

3.VIEWS METRICS

A researcher publishes their articles in journals, conferences, seminars etc. Similarly, they are published in different regions at different times. Thousands of research articles are published every day, but not all of them go unnoticed by readers; It is determined by factors such as easily visible, freely accessible, indexing by quality database etc. Research articles that are viewed by world readers are the ones that get the most citations. Therefore, the role of the viewers in the scholarly publication plays an essential element. Views Count indicates the total usage impact of an entity:

Views Counts in SciVal are generated from usage data in Scopus. The metric is the sum of abstract views and clicks on the link to view the full-text at the publisher’s website. These events cover all views from both subscribed and trial customers. These data hold intelligence about the interest in research outputs. They are an important piece of the jigsaw puzzle that builds the complete picture of the impact of research on academia and society.

3.1.Views Count:

Views Count

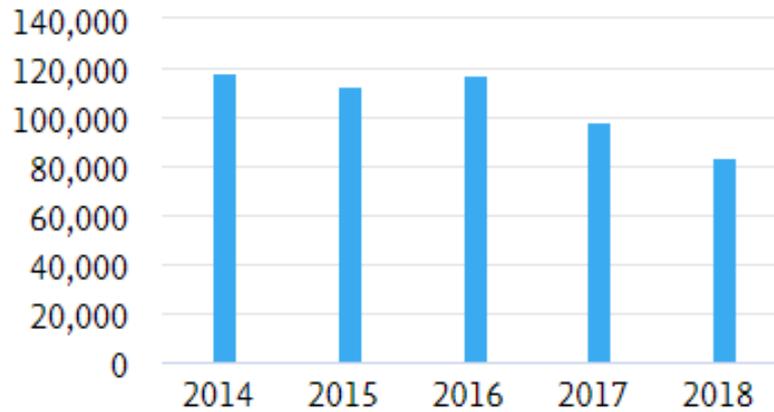
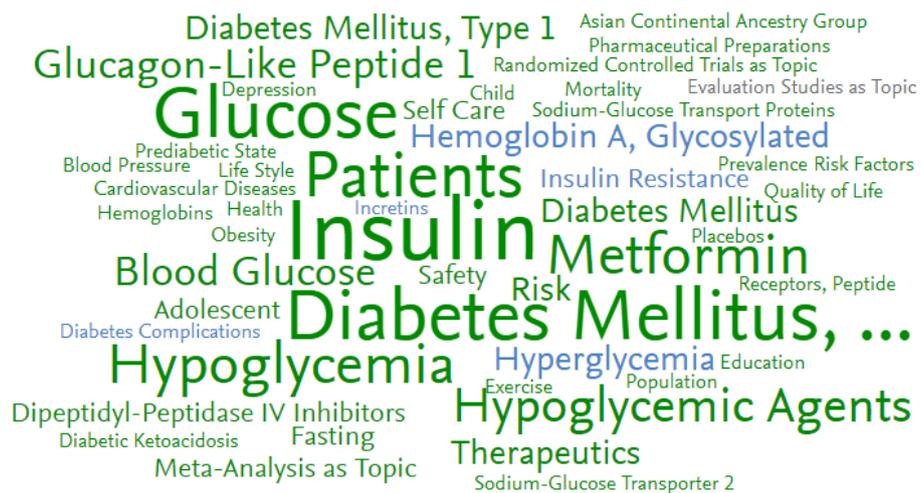


Chart No. 6 Views Count for scholarly publication

Chart No. 6 illustrates the view count of publications released during the period of study. The publications of 2015 and 2016 have attracted a large number of readers. In 2015, 2017, and 2018 the number of views can be seen to decrease. Hence the need to improve the quality of publications; And also publications should be easily accessible to all.

3.2. Key Phrases



AA A relevance of keyphrase | declining AA A growing (2014-2018)

Figure No. 1 Top 50 Key Phrases

SciVal uses the Elsevier fingerprint machine to extract unique keywords within the research area. The Elsevier Fingerprint Machine uses text mining and uses various natural language processing techniques to identify essential keywords in the research area, publication package, title, or abstracts of documents in the title or title cluster. 530,139 number of Scopus views received by publications in Insulin; Type 2 Diabetes Mellitus; Glucose; Figure No. 1 illustrates the top 50 keywords used in this study.

3.3. Outputs in Top Views Percentiles

Outputs in Top Views Percentiles

Share of publications in Insulin; Type 2 Diabetes Mellitus; GI

Show as field-weighted

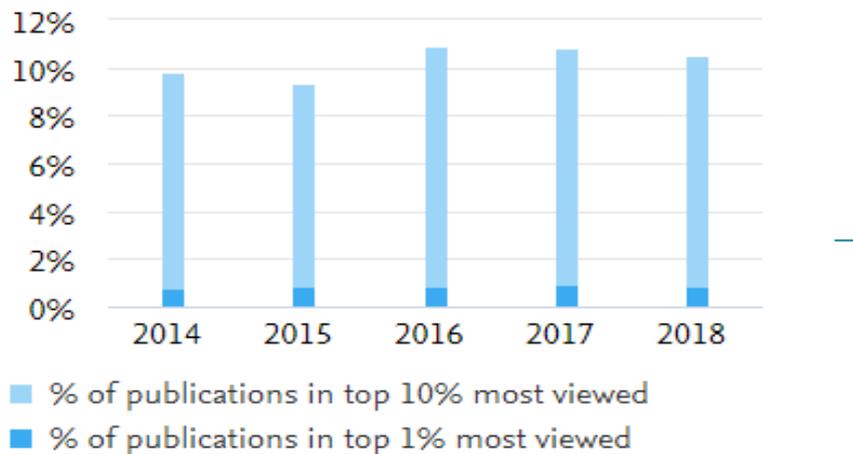


Chart No. 7 Top Views Percentiles

Outputs in Top Views Percentiles in SciVal indicate used to examine which institute's publications or which year have the most views percentiles. Chart No: 7 represents, Share of publications in the top 1% most viewed publications is 09% worldwide, and the Share of publications in the top 10% most viewed publications is 10.3% Worldwide.

3.4. Views per Publication

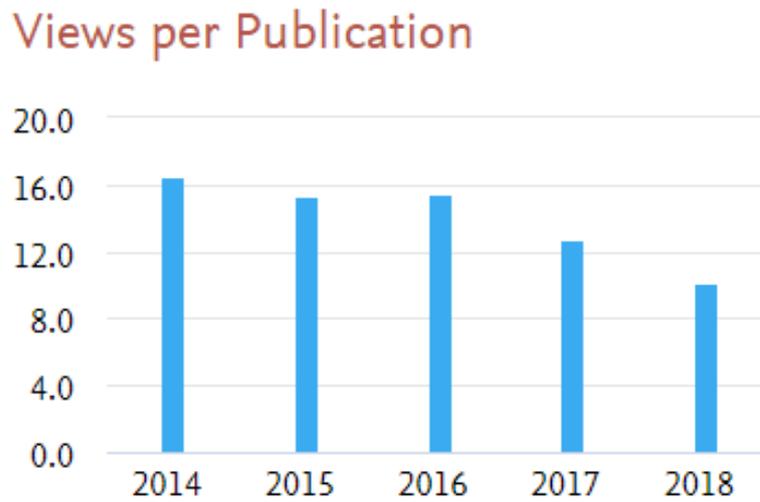


Chart No. 8 Views Per Publication

Views per publication indicate the average usage impact of a publication. The publications are counted as the average received views, and the views per publication are calculated according to the citations per publication. A view per publication value for type 2 diabetes is 13.9.

3.5. Field-Weighted Views Impact:

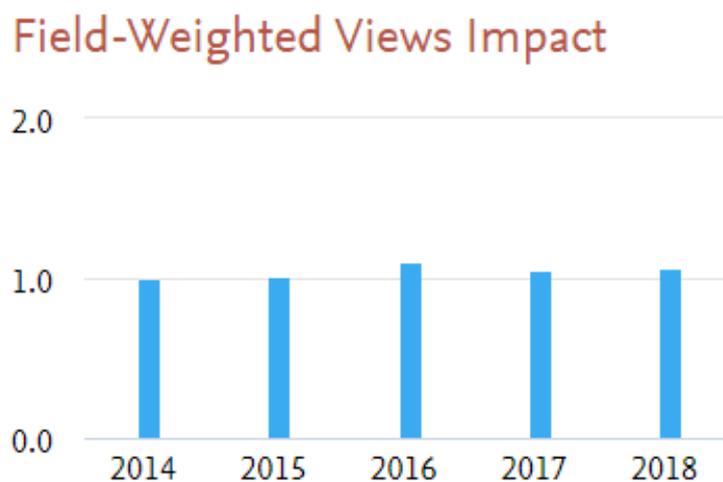


Chart No. 9 Views Per Publication

Field-Weighted Views Impact indicates how the number of views received by an entity's publications compares with the average number of views received by all other similar publications in the same data universe. Type 2 diabetes average Field-Weighted Views Impact is 1.05. A Field-Weighted Views Impact of more than 1.00 indicates that the entity's publications have been viewed more than would be expected based on the global average for similar publications in the same database. 1.05 means 0.87% more views than the world average within the same database.

4.CONCLUSION

Analysis of these five-year publications reveals that 38116 scholarly publications have been published associated with type 2 diabetes. Although "Diabetes Care" ranks first in the journal rankings, its publication growth rate has been declining to -19.2 in recent years. On the other hand, "Diabetes , Obesity and Metabolism" have the lowest total output; however, its growth rate has increased to +120 in recent years. So there is no doubt that in the coming years, it will be the number one place in type 2 diabetes publication. Harvard University continues to rise in the rankings of institutions; the "Navo Nordisk A / S" has a parallel 58.8 scholarly output rate. Kalra tops the list of authors in terms of highest publications; In terms of h-index, Holst tops the list with 132 points. As far as citation ranking is concerned, Woerle looks unique, with 10204 total citations and 104.1 citations per publication. The United States remains an unshakable force in the rankings of countries.

The medical field dominates the analysis of the subject area. It is noteworthy, however, that nurses' publications have received more citations. All publications subject to the study period received 353,395 citations and 530,139 views; Its Field-Weighted Citation Impact is 1.32. 7,502 scholarly publications are involved in international collaboration.

References:

1. (n.d.) *Research Metrics Guidebook*, : Elsevier.
2. Hähnle, R., & Van der Aalst, W. (2020). Automated model analysis tools and techniques presented at FASE 2019. *International Journal on Software Tools for Technology Transfer*. <https://doi.org/10.1007/s10009-020-00589-6>
3. Siniksaran, E., & Satman, M. H. (2019). WURS: a simulation software for university rankings- software review. *Scientometrics*, 122(1), 701-717. <https://doi.org/10.1007/s11192-019-03269-8>

4. Jayasree V and Baby M. D., F. F. (2019). Scientometrics: Tools, Techniques and Software for Analysis. *Indian Journal of Information Sources and Services*, 9(2), 116-121. <https://www.trp.org.in/issues/scientometrics-tools-techniques-and-software-for-analysis>.
5. Boopathi,P and Gomathi, P (2019) "scientometric analysis of diabetes research output during the year 2014-2018: Indexed by Web of Science", *Library Philosophy and Practice* (e-journal). 2449.
6. Kim, M. C., & Zhu, Y. (2018). Scientometrics of Scientometrics: Mapping historical footprint and emerging technologies in Scientometrics. *Scientometrics*. <https://doi.org/10.5772/intechopen.77951>
7. Boopathi,P and Gomathi, P (2019) 'Scientometric Analysis of Library and Information Science Articles During the Year 2008-2017 Using Web of Science', *Indian Journal of Information Sources and Services*, 9(1), pp. 12-15.