Research productivity of Osteoporosis: A scientometric Analysis

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Abstract

This paper explores the research output on Osteoporosis during the period of 2013 to 2017(September). Total of 20594 records were collected from Web Of Science and its implication using Bibliometric techniques. The results of this study shows 1167 articles was in single author ship, 19427 articles was in multiple authorship. A maximum number 226 articles contributed by Cooper. C. In Country wise contribution USA is in leading of 4937 articles out of 20594

.Keywords

Bibliometrics ,scientometrics, Osteoporosis, Authorship pattern, Medical Sciences, Medicine, Bone diseases, Orthopedics, Web of science.

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INTRODUCTION

Bibliometrics is the statistical and mathematical application of bibliographics. It is one of the type of research method in Library and Information Science. Biblio means books or journals or printed materials and metrics means measuring. So, Biliometrics means measuring the printing materials. It was coined by Alan Pritchard in the year of 1969. It is used to know the statistical results of publications like authorship pattern, year wise output of articles.

Sengupta derived bibliometrics is the organization classification and quantitative evaluation of publication patterns of all micro and macro communication along with their authorships by mathematical and statistical calculus.

OSTEOPOROSIS

Osteoporosis is a degenerative bone disease that primarily affects post-menopausal women. It is estimated that more than one in two women over 50 will have an osteoporosis-related fracture. Literally meaning "porous bone," osteoporosis is characterized by a decrease in normal bone density due to the loss of calcium and collagen. A loss of bone density causes bones to become brittle, and in turn, leads to frequent fractures and other serious effects.

OBJECTIVES

The main objectives of the study are:

- To find out the year wise research output on Osteoporosis
- To identify authorship pattern of research publication
- To examine the country wise distribution of research output
- To analyses the language wise distribution of research output
- To analyses the form wise distribution of research output.

METHODOLOGY

Total 20594 records have been collected using the keyword of Osteoporosis from web of science database from the year 2013 to 2017(September). The search string “Osteoporosis” in the title, keyword field was used to extract publication related to Osteoporosis. The collected data were tabulated in the Bibexel software. The extent of collaboration in

research has been measured with the help authorship pattern of papers used by the formula of Subramanyam. K (1982).

Table 1: Year wise distribution of publications

S. No	Year	Record Count	% of 20594
1	2013	4227	20.525 %
2	2014	4193	20.361 %
3	2015	4383	21.283 %
4	2016	4736	22.997 %
5	2017	3055	14.844 %
Total		**20594**	**100.000**

Table 1 exhibit that the year wise distribution of Osteoporosis research. The study analysis the annual distribution and growth pattern of articles for the period 2013-2017(September), the maximum number of records published in the year 2016 with 4736 (22.997%), followed by the year 2015 with 4383(21.283%), 2013 with 4227(20.525%), 2014 with 4193(20.361%) and in the year 2017 we get the data up to the month of September so it is in last place of 3055(14.844%) records. Total 20594 research publications during 2013-2017 were published with an average 4118 articles per year.

Table 2: Authorship Pattern and Degree of collaboration

Year	Publications	Cum. Publications	% of 20594
Single Author	1167	1167	5.67
Multiple Author	19427	20594	94.33
Total	20594		100
Degree of Collaboration	**0.94**		

The table 2 shows the details about the authorship pattern and degree of collaboration. Single author contribution is just 5.67 percent in the field of Osteoporosis research output. Multi author's contribution is 94.33 percent of the Osteoporosis research output. The study interpreted that single author contributed papers maintained the low profile among Osteoporosis research scientists. It could be seen clearly from the above discussion that the degree of collaboration in producing research output on Osteoporosis research has shown an increasing trend during the study period since it is a new discipline. Based on this study, the result of the degree of collaboration C = 0.94.i.e, 94 percent of collaborative authors articles published during the study periods. The degree of collaboration is calculated by using the following formula (K. Subramanyam, 1982):

C= Degree of Collaboration
Nm = Number of multiple authors
Ns = Number of single authors

$C = N_m \div (N_m + N_s)$

$$C = \frac{19427}{20594}$$

In the present study the value of C is C= 0.94

As a result, it was found that the degree of collaboration in the Osteoporosis System is 0.94. This openly indicates its dominance upon multiple contributions.

Table 3: Ranking of Authors based on Publications

S. No	Author	Record	% of 20594
1	Cooper C	226	1.097 %
2	Reginster JY	136	0.660 %
3	Kanis Ja	129	0.626 %
4	Zhang Y	120	0.583 %
5	Adachi JD	102	0.495 %
6	Zhang L	102	0.495 %
7	Leslie WD	95	0.461 %
8	Brandi ML	93	0.452 %
9	Wang Y	93	0.452 %
10	Wang L	92	0.447 %

Table 3 indicates ranking of authors in the field of Osteoporosis. "Cooper C", has the top list with the contribution of 226 (1.097 %) records, Followed by "Reginster JY", has the second highest productivity of Osteoporosis output 136 (0.660 %) records, "Kanis JA" has the third highest productivity of Osteoporosis output 129 (0.626 %) records It could be found from this analysis, 'Cooper C', 'Reginster JY', 'Kanis JA' were identified the most prolific authors in the area of Osteoporosis research.

Table 4 : Top 10 country wise distribution of Research Output

S. No	Country	Record Count	% of 20594
1	USA	4937	23.973 %
2	China	2856	13.868 %
3	England	1380	6.701 %
4	Japan	1338	6.497 %
5	Germany	1269	6.162 %
6	Italy	1209	5.871 %
7	Canada	1106	5.370 %
8	South Korea	1062	5.157 %
9	Australia	928	4.506 %
10	Spain	847	4.113 %

Table 4 indicates that maximum number of records published by USA with 4937 (23.973%), publication followed by China 2856 (13.868%), Japan 1380 (6.701%), etc. and the minimum number of records published by Spain with 847 (4.113%).

Table 5: Document wise distribution of Publications

S. No	Document type	Record Count	% of 20594
1	Article	15382	74.692 %
2	Review	2280	11.071 %
3	Meeting abstract	2130	10.343 %
4	Editorial material	439	2.132 %
5	Letter	272	1.321 %
6	Proceedings paper	97	0.471 %
7	Correction	61	0.296 %
8	Book chapter	32	0.155 %
9	News item	18	0.087 %
10	Retraction	5	0.024 %

Table 5 explains that the document type wise research performance in Osteoporosis, Articles has predominant place 15382 (74.692 %) of records followed by, Review has 2280 (11.071%) of records, Meeting Abstract has 2130(10.343%) of records, in this way very last 5(0.024%) of records published by Retraction.

Table 6: Language wise distribution of Publications

S. No	Record Count	Records	% of 20594
1	English	19901	96.635 %
2	German	268	1.301 %
3	Spanish	138	0.670 %
4	French	66	0.320 %
5	Turkish	48	0.233 %
6	Russian	36	0.175 %
7	Portuguese	35	0.170 %
8	Polish	27	0.131 %
9	Czech	16	0.078 %
10	Hungarian	15	0.073 %

Table 6 indicates that maximum number of articles is published in English language (96.635%), followed by German (1.301%), remaining (2.064%) of the articles are published in various languages like Spanish, French, Turkish, etc.,

FINDINGS AND CONCLUSION

Bibliometric analysis is an authentic tool to evaluate the development and quality of scientific production. Conclusions from this study that, the maximum number of records published in the year 2016 with 4736 (22.997%). Among 20594 records, articles has paramount place with 74.69 percent. Country wise distribution, shows that USA has placed in first position with 4937(23.973%) records. In languages, English has published 19901 records with 96.635 percent.

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