Scientometric Analysis of Osteoarthritis Knee Research Publications In North American Countries

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Abstract- *This paper discusses or analyses trends in Osteoarthritis Knee research during from 2013-2018 the data have been collected from web of science database. Aim of the study to source wise research output, year wise publications and authorship pattern. The study finds that articles occupies first place among various forms of sources, during the study period in the year 2017 published highest research output, USA have published highest publication among the Osteoarthritis Knee research, majority research papers published themes of Osteoarthritis Research on medical field.*

Keywords- Osteoarthritis Knee, Arthritis, Knee Joint, Knee Pain

I. INTRODUCTION

Osteoarthritis of the Knee is a very common ailment and is becoming more common as our population ages. Osteoarthritis (OA) is also known as arthrosis or degenerative joint disease. The knee is one of the most common joints affected by this disease. The word arthritis means inflammation of a joint. Osteoarthritis, also known as "wear and tear" arthritis is the most common type of arthritis. Osteoarthritis affects the articular cartilage in the knee. Articular cartilage is the smooth coating that covers the surface of the bones inside the knee. Articular cartilage also cushions and helps lubricate the joint surfaces (see the anatomy section for further information about articular cartilage). In osteoarthritis the articular cartilage begins to degrade. Over time the articular cartilage can form cracks. Pieces of cartilage may come loose and float inside the knee, further irritating the joint after a long period of time the cartilage can become completely "worn away" and the bones begin to rub together. Osteoarthritis usually comes on slowly and results in knee pain, stiffness and swelling. Sometimes a grating sound can be heard when the knee is bent such as when climbing up and down stairs or crouching. Bumps or nodes may appear around the knee joint.

II. OBJECTIVES

To major objectives are formulated the present study as mentioned below:

1. To examine the Osteoarthritis Knee output during the study period.
2. To study the country wise research output of Osteoarthritis Knee research.
3. To identify the authorship pattern.
4. To study the language wise and institution wise Osteoarthritis Knee research publications studies.
5. To identify the country wise research output in Osteoarthritis Knee research.

III. METHODOLOGY

This study aims to analyze the trend in the development of Osteoarthritis Knee researchin scientometrics. It is also focused to trace the past trends in the area of Osteoarthritis Knee research publications in scientometrics based on the sample data. The study evaluates the contribute on countries to the growth pattern and development of research productivity in this discipline during the last few decades.

IV. DATA COLLECTION

The publication of research output on Osteoarthritis Knee research in scientometrics is obtained from various sources, such as Journals articles, Conference papers. Review, short survey, note, editorial press release and letter. The research data required for the present study are downloaded from the web of science database. All the publications retrieved from the web of science database on Osteoarthritis Kneeand scientometric cover the period from 2013-2018. Further, the researcher has downloaded the data in the form of notepad files; then the bibliographical details are converted to the form of MS-EXCEL format using the PHP (Hypertext Preprocessor) scripting language text unique data are rearranged in MS-EXCEL format to eliminate duplication from the download data. Overall data retrieved by the researcher are 7156 records for analyzing the present study.

V. LIMITATIONS

The findings of this study apply only to Osteoarthritis Knee studies in to the fields related to the Diseases Category, Musculoskeletal Diseases, Rheumatic Diseases, and Osteoarthritis. This study covers Osteoarthritis Knee with respect to the medical field, brought under the purview of the study and no other themes. This study makes a special attention only on the performance of research output in Osteoarthritis Knee research. This study covers the years from 2013 to 2018 only.

VI. ANALYSIS AND INTERPRETATION

Table-1year wise publication in Osteoarthritis Knee research

Note: TLCS: Total Local Citation Score, TGLS: Total Global Citation Score

S. No	Publication Year	Recs	Percent
1	2013	1012	14.1
2	2014	1096	15.3
3	2015	1249	17.4
4	2016	1390	19.4
5	2017	1406	19.6
6	2018	1003	14.0
	Total	7156	100.00

The year wise productivity of publications in Osteoarthritis Knee research during from year 2013 to 2018 is presented in table-1. It shows that the publication of output is gradually increasing and decreasing trend. In the 2017 occupied first position that the output is increased (19.6%) compared to 2013 and 2014. It is clearly stated that in future the research productivity in Osteoarthritis Knee research is increasing trend.

Table-2 sources wise output in Osteoarthritis Knee research

S. No	Document Type	Recs	Percent
1	Article	5139	71.8
2	Meeting Abstract	997	13.9
3	Review	697	9.7
4	Editorial Material	177	2.5
5	Letter	66	0.9
6	Article; Proceedings Paper	61	0.9
7	Correction	8	0.1
8	News Item	6	0.1
9	Article; Early Access	4	0.1
10	Article; Book Chapter	2	0.0
	Total	7156	100.00

The source wise output in continent level of Osteoarthritis Knee research is given in table-2. It shows that the Article is occupies first position (71.8 %), Meeting Abstract (13.9%); Review (9.7%) followed by Editorial Material; Letter; Article; Proceedings Paper, Correction, News Item, Reprint, Article; Book Chapter.

Table-3 Authorship pattern in Osteoarthritis Knee research output

S. No	Year	Single	Double	Three	Four	Five	Above Five	Total
1	2013	38	77	121	153	144	479	1012
2	2014	25	81	113	154	173	550	1096
3	2015	46	92	114	181	175	641	1249
4	2016	34	96	148	179	227	706	1390
5	2017	40	85	134	180	213	754	1406
6	2018	30	60	97	132	154	530	1003
	Total	213	491	727	979	1086	3660	7156

The author productivity of research output is given in table-3. The authorship pattern is classified as single, double, triple, four, five and above authors. It could be noted that single author contribution is dominated (213 articles) followed by double, three authors

Table-4 top 10 authors in of Osteoarthritis Knee research (Total authors 35708)

S.No	Author	Recs	Percent	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCR	TLCSb	TLCSe
1	Guermazi A	246	3.4	1243	275.97	616	2637	589.03	878	291	91
2	Felson DT	165	2.3	651	148.07	395	1540	357.15	265	151	38
3	Nevitt MC	158	2.2	620	142.33	281	1216	278.05	353	145	17
4	Hunter DJ	136	1.9	995	215.93	604	2354	512.08	391	180	90
5	Pelletier JP	132	1.8	328	71.87	179	1106	250.60	285	77	
6	Martel-Pelletier J	127	1.8	302	67.12	163	1014	234.35	275	69	
7	McAlindon TE	125	1.7	508	128.73	377	1458	348.00	227	3	
8	Driban JB	120	1.7	224	75.22	115	529	162.85	289	0	
9	Roemer FW	120	1.7	635	145.07	264	1385	314.43	519	115	22
10	Link TM	103	1.4	599	140.82	306	1061	243.45	464	119	44

Table 4 shows that top 10 authors of continent level of Osteoarthritis Knee research. It could be noted that the Guermazi A occupied in first position (3.4%) compared to Felson DT second position (2.3%) followed by Nevitt MC, Hunter DJ and Link TM occupied in last position (1.4%).

Table-5 top 10 Journals in of Osteoarthritis Knee research output (Total journals 7156)

S. No	Journal	Recs	Percent	TLCS	TLCS/t	TGCS	TGCS/t	TLCR
1	OSTEOARTHRITIS AND CARTILAGE	1033	14.4	2796	640.27	7431	1710.88	1752
2	ARTHRITIS & RHEUMATOLOGY	308	4.3	547	139.58	1734	442.75	283
3	JOURNAL OF ARTHROPLASTY	267	3.7	281	73.08	1438	402.57	403
4	JOURNAL OF ORTHOPAEDIC RESEARCH	201	2.8	587	150.43	1643	417.38	710
5	AMERICAN JOURNAL OF SPORTS MEDICINE	178	2.5	651	165.77	2540	646.75	459
6	ARTHRITIS CARE & RESEARCH	175	2.4	840	199.52	1956	467.58	396
7	ANNALS OF THE RHEUMATIC DISEASES	125	1.7	650	142.77	2155	469.88	138
8	BMC MUSCULOSKELETAL DISORDERS	120	1.7	0	0.00	744	172.18	226
9	CLINICAL ORTHOPAEDICS AND RELATED RESEARCH	115	1.6	248	57.28	1346	303.88	159
10	JOURNAL OF BIOMECHANICS	107	1.5	268	59.53	915	205.02	308

The journal wise output in continent level of Osteoarthritis Knee research is given in table-5. It could be noted that the Osteoarthritis and Cartilage Occupies in first position (14.4%) compared to Arthritis & Rheumatology (4.3%); Journal of arthroplasty (3.7%) followed by Journal Of Orthopaedic Research, American Journal of Sports Medicine, Arthritis Care & Research, Annals of The BMC Musculoskeletal Disorders, Clinical Orthopaedics and Related Research, Journal Of Biomechanics.

Table-6 Languages wise of Osteoarthritis Knee research output.

S. No	Language	Recs	Percent	TLCS	TGCS
1	English	7141	99.7	13581	56556
2	Spanish	13	0.2	0	4
3	German	3	0.0	0	1
4	Portuguese	2	0.0	0	3
5	Russian	1	0.0	0	0
		Total	7156	100.00	-

The language wise output in continent level of Osteoarthritis Knee research is given in table-6. It could be noted that the English is occupies in first position (99.7%) compared to Spanish (0.2%); German (0.0%) followed by Portuguese, Russian and etc.

Table-7 Top ten Country wise of Osteoarthritis Knee research output.

S. No	Country	Recs	Percent	TLCS	TGCS
1	USA	5988	83.6	11990	49242
2	Canada	1389	19.4	2575	10840
3	Australia	418	5.8	1718	5746
4	UK	405	5.7	1309	6039
5	Germany	391	5.5	1643	5249
6	Peoples R China	302	4.2	307	2477
7	Sweden	189	2.6	679	2770
8	Netherlands	160	2.2	486	2719
9	Denmark	151	2.1	685	2641
10	France	148	2.1	816	2995

The country wise output in continent level of Osteoarthritis Knee research is given in table-7. It could be noted that the USA is occupies in first position (83.6 %) compared to Canada (19.4%); Australia (5.8 %) followed by UK and etc.

Table-8 Top ten Institutions wise of Osteoarthritis Knee research output.

S. No	Institution	Recs	Percent	TLCS	TGCS
1	Boston Univ	604	8.4	2269	5909
2	Univ Calif San Francisco	433	6.0	1741	4104
3	Duke Univ	272	3.8	847	2666
4	Hosp Special Surg	241	3.4	506	2175
5	Harvard Univ	225	3.1	751	3066
6	Univ Pittsburgh	224	3.1	580	2357
7	Univ N Carolina	208	2.9	606	1781
8	Univ Toronto	206	2.9	352	1673
9	Rush Univ	202	2.8	525	2346
10	Tufts Med Ctr	202	2.8	671	1875

The institution wise output in continent level of Osteoarthritis Knee research is given in table-8. It could be noted that Boston University is occupying in first position (8.4%) compared to University Calif San Francisco (6.0%); Duke University (3.8%) followed by Hosp Special Surg and etc.

Table-9 word wise of Osteoarthritis knee research output.

S. No	Word	Recs	Percent	TLCS	TGCS
1	KNEE	3562	49.7	7302	23284
2	OSTEOARTHRITIS	3353	46.8	7922	25659
3	PAIN	915	12.8	1508	7380
4	PATIENTS	808	11.3	1159	4866
5	CARTILAGE	803	11.2	2228	7311
6	ARTHROPLASTY	727	10.2	997	5067
7	TOTAL	719	10.0	983	5009
8	JOINT	668	9.3	1464	5162
9	HIP	505	7.1	960	4375
10	ARTICULAR	436	6.1	993	3916
	Total	7156	100.00	-	-

The word wise output in continent level of Osteoarthritis Knee research is given in table-9. It could be noted that occupies in first position Knee (49.7%) compared to Osteoarthritis (46.8%), Pain (12.8%) followed by Patients and etc.

VII. CONCLUSION

It is due to the pivotal place of journal as a medium of scientific communication than any other form of publication; majority of the research output published in article in general. It could be deduced from the discussion that, during the study period the research paper publication trend is increasing and degreasing. Highest percent of publication published in 2017. Very lowest percent of research paper published in the year 2013. Conclude from the study, multi authored contributions is high compare to single authorship pattern. More papers published theme of Diseases Category, Musculoskeletal Diseases, Rheumatic Diseases, it's evident of continent level developed medical field.

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