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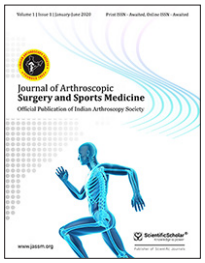

Review Article

Publication trends on arthroscopy from India

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ABSTRACT

Objectives: Arthroscopy is becoming more popular as a specialty in recent times in India. We looked into the publications done by Indian authors in journals listed in the Scopus database.

Materials and Methods: A search was carried out from the first publication until the end of 2019. The total number of publications was 638. We analyzed the output, looking into the top 10 authors, universities, journals in numbers, and citations. We also looked into the year-on-year growth of all articles and in each branch of arthroscopy to identify more academically active subspecialties.

Results: There has been a steady increase in the number of publications in this branch of orthopedics with a steep increase after 2016. The knee joint was the most published, followed by the shoulder. Maulana Azad Medical College and Lok Nayak Hospital was the most published university, followed by All India Institute of Medical Sciences, New Delhi. We identify the limitations and make recommendations to identify ways to improve and increase academic activity in the subspecialty as a whole.

Conclusion: There is a healthy trend of increase of publications on arthroscopy from India. Although the overall numbers published from India were a small fraction compared to global numbers, recent trends indicate increased interest in the subject. Higher quality studies and more contribution form private institutions is required over the coming years to boost the publications from India.

Keywords: Arthroscopy publication trends, Bibliometrics, Indian arthroscopy bibliometrics, Indian arthroscopy publications, Indian publications

INTRODUCTION

Arthroscopy, as a branch in India, has become more popular in recent years. Increasing cadaveric skills laboratories and workshops, as well as simulations of arthroscopy, have increased skills and surgeons in this specialty in India. Online submission of manuscripts and improvements in arthroscopic techniques has made this branch more popular, with expanding indications for arthroscopy in every joint. Bibliometrics plays an important role in the ranking of the performance of institutions, research groups, or journals in the studied area.[1] With the advent of PubMed, the number of publications has been reported to have increased significantly in the related fields of anterior cruciate ligament (ACL) and posterior cruciate ligament[2,3] surgery in general. With India registering a record number of medals in international games like the Olympics so far, sports-related injuries may be expected to increase in the future. With special issues dedicated to sports injuries and arthroscopy in leading Indian Orthopaedic Journals like Indian Journal of Orthopaedics (IJO) and Journal of Clinical Orthopaedics and Trauma (JCOT), and the recent start of an official Journal of the Indian Arthroscopy Society, the Journal of Arthroscopic Surgery

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and Sports Medicine, it is evident that the popularity of this branch of orthopedics is increasing in India.

Bibliometric studies have various advantages. They are scalable, can be analyzed at different levels, and Research Excellence Framework has been developed based on the bibliometric data.[4] In the current study, we looked into the trends of publications made by Indian authors in the literature from Scopus up to the year 2019 to study the academic interest in this branch of orthopedics in India. This study would serve as a baseline for reference for future developments, identify centers of excellence in arthroscopy in India, identify trends in subspecialties, and recommend future growth of this specialty based on the findings.

MATERIALS AND METHODS

The search strategy used was "Arthroscop*" with a time filter from the earliest to 2019 and the affiliation of authors restricted to India in the Scopus search engine. Hence, the search strategy used was "arthroscop*" in the all fields section, "India" in the affiliation field, and the limits from earliest to 2019. We included all articles which resulted from this output on September 8, 2020. We used Scopus mainly because some data such as citation counts, university, and country of publication are given here. It is one of the largest databases and lists commonly used journals by Indian authors.

We looked at the total counts of publications and citations, overall, year on year, related to authors, journals, universities, publishers, types of studies and subspecialties, and the trends of publications and their citations in each subspecialty. The above search strategy resulted in 632 articles in total, and the above parameters were studied from this set of articles. We present and discuss the findings from this descriptive, observational, cross-sectional bibliometric study. Statistical testing and analysis were not possible for this sample and this type of study. The search was carried out in the individual fields of title and index keywords to find out which subspecialty and type of studies were published and cited more. We also looked into the yearly publications and citations in each subspecialty to look at the trends for each of the major joints.

Output was collected from the Scopus database and analyzed using Microsoft Excel 365.

RESULTS

The year-to-year publications by Indian authors on arthroscopy have increased steadily from the year 2004 to a maximum of 96 in 2016. There has been a steep increase in the numbers from the year 2014, indicating an increased academic interest in arthroscopy. Numbers related to Indian articles, journals, and authors are given in [Table 1].

Key numbers related to publications on arthroscopy from India are given in [Table 1].

Maulana Azad Medical College, New Delhi, was the most published and cited university in India [Figure 1], followed by All India Institute of Medical Sciences, New Delhi, with 276 and 265 citations, respectively. Except for the KMC Manipal University, all the other top 10 universities publishing on arthroscopy were the government institutions.

Although the two Indian Journals, IJO and JCOT [Table 2], were second and third in the number of publications, when arranged by citation numbers, they stood third and fourth, respectively.

DISCUSSION

We chose Scopus as the database to study bibliometrics on this topic because it has the maximum number of journals listed compared to Web of Science and Google Scholar and has a strong coverage of science, including full Medline coverage.[1]

Arthroscopic surgery is evolving in India, and academic activity in arthroscopy is on the rise. We looked into the publications done by Indian authors in Scopus because it is one of the biggest search databases and lists more journals publishing articles by Indian authors compared to PubMed. The total publications from India were 638, but these publications in the Indian journals (IJO and JCOT) were only 13.63% (87/638), indicating international contribution and recognition of the work of Indian authors. The first publications to appear from India were in 1994 by Klein *et al*.[4] (part authored in India) and Rajan *et al*.[5] (fully authored in India).

We further studied citation counts for the Indian publications. Maximum yearly publications were seen in the year 2016 with 97 publications. The yearly publications were <50 until the year 2014. The total number of authors was 457. Of these, 432 were cited at least once. The most cited article was by Goyal *et al*. 2013[6] with 131 citations. Total citations for all the articles published from India were 3542. The yearly citations were plotted with the number of articles published in [Figure 2].

There has been a steady increase in the number of cited papers and the sum of citations year on year. It coincides with the rise in the publications in total articles

Table 1: Some numbers on Indian publications on arthroscopy.

Numbers on Indian Articles, Journals, and Authors
195 Journals published articles by Indian authors on arthroscopy 20 Journals contain India in their title632 articles were published in total out of which 447 articles were cited at least once IJO and JCOT have together published 87 articles (44 and 43 respectively) authored by Indian authors Citation count of all articles published by IJO was 224 and those by JCOT were 162 Total citations count for all cited articles by Indian authors were 3770

IJO: Indian Journal of Orthopaedics, JOCT: Journal of Clinical Orthopaedics and Trauma

Table 2: Top 10 published and cited journals. The number against the journal name indicates published number of articles or citation numbers in the respective columns.

(Count) – Top 10 Journals arranged by number published	(Sum) – Top 10 journals ordered by citation sums
58 – Journal of Arthroscopy and Joint Surgery	845 – Arthroscopy – Journal of Arthroscopic and Related Surgery
44 – Indian Journal of Orthopaedics	306 – Knee Surgery, Sports Traumatology, Arthroscopy
43 – Journal of Clinical Orthopaedics and Trauma	224 – Indian Journal of Orthopaedics
35 – Knee Surgery, Sports Traumatology, Arthroscopy	162 – Journal of Clinical Orthopaedics and Trauma
30 – Arthroscopy – Journal of Arthroscopic and Related Surgery	119 – International Orthopaedics
30 – Arthroscopy Techniques	110 – Journal of Clinical and Diagnostic Research
24 – Journal of Clinical and Diagnostic Research	104 – Journal of Shoulder and Elbow Surgery
18 – Indian Journal of Anaesthesia	83 – Arthroscopy Techniques
12 – Journal of Anaesthesiology Clinical Pharmacology	73 – Archives of Orthopaedic and Trauma Surgery
11 – Medical Journal Armed Forces India	73 – Indian Journal of Anaesthesia

on arthroscopy in [Figure 3]. As reported in previous publications on bibliometrics in arthroscopy-related topics, there is a lag of peak number of citations to the current year. While the number of publications usually is maximum in the final year, maximum citations were seen lagging by 4–7 years. This has been reported in other previous publications and is thought to be due to the time it takes for the knowledge to dissipate and be cited as well as the delay in the publication process.

[Table 3] shows subspecialties arranged in descending order of the number of citations. Knee and shoulder were the top two published and cited specialties. Although foot and ankle was fourth on the table, the number of citations stood last. The number of citations per article was highest for elbow followed by the hip and wrist.

[Table 4] shows publication numbers and citations according to study types. Case reports were the most published in numbers but were only 5th when arranged in descending order of citations. Reviews were the most cited, followed by prospective studies, which were the second most published in numbers. The citations per publication were highest for meta-analyses followed by systematic reviews. The lower number of citations for these types of studies is because their numbers are low compared to review and case reports.

[Figure 4] shows the timeline of publications in each specialty. The earliest publications were done for the knee in 1994, followed by the shoulder in 2002. Publications for knee and shoulder appear to be prominent compared to other joints at 43 and 25 in the years 2016 and 2015, respectively. Publications for other joints have been <5/year mostly. While publications on the knee have steadily increased from the year 2007, there has been a decrease in the number of publications of shoulder starting from 2015. Foot and ankle appear to be on an increasing trend in recent years. Publications on hip, elbow, wrist, and foot and ankle started in the years 2007, 2004, 2004, and 2003, respectively. Among the knee articles, ACL as a keyword was found in 119 articles garnering 932 citations, making up 38% of publication numbers and 48% of citations of the knee. Arthroscopy of wrist, elbow, and hip appears to be least active academically. Focus is needed on these joints among academic units in India to improve practice in these areas.

Table 3: Publications, total citations, and citations per publication by subspecialty.

Specialty	Publications	Citations sum	Citations/pub
Knee	311	1944	6.25
Shoulder	130	705	5.42
Hip	29	234	8.07
Elbow	14	129	9.21
Wrist	11	92	8.36
Foot	26	77	2.96

Table 4: Publications and citations by type of study.

Type of study	Publications	Citations sum	Citations/ Pub
Review	71	805	11.34
Prospective	101	608	6.02
Randomized controlled	54	551	10.2
Retrospective	57	506	8.88
Case report	142	399	2.81
Systematic review	13	303	23.31
Meta-analysis	8	198	24.75
Protocol	7	56	8
Case series	8	36	4.5
Survey	3	33	11
Editorial	12	26	2.17
Commentary	2	2	1

Citations for publications [Figure 5] reflect the publications. 2016 was the year with the most citations for all joints. Knee and shoulder were the most cited in most years in that order except in 2013 when shoulder publications were the most cited. The citations depicted here are the total accumulated citations for the publications done in that year.

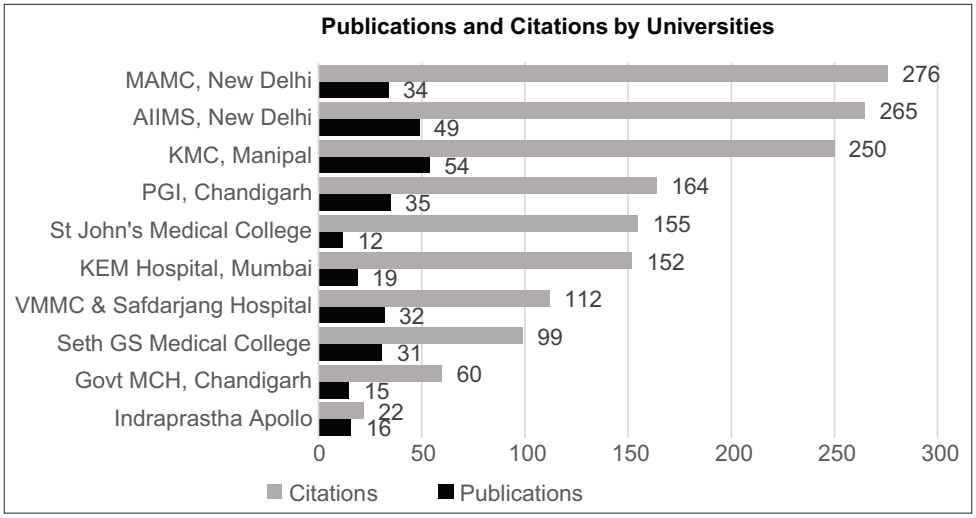

Figure 1: Top 10 Indian universities.

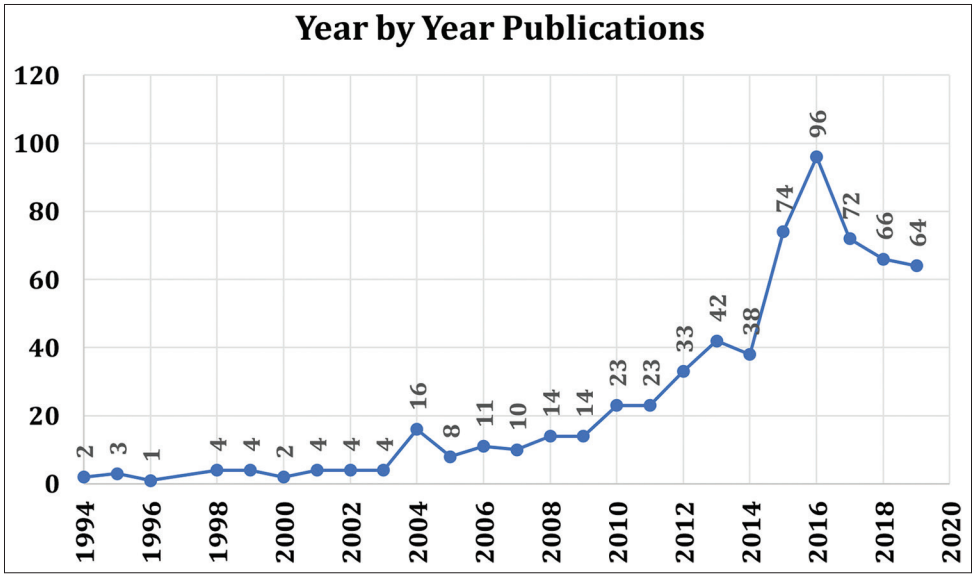

Figure 2: Yearly publications from Indian authors.

A previous publication on the most cited articles in arthroscopy from India over 10 years (2007–2017) found articles by the top two most cited authors in our study to be in the first three positions.[7] Another study in 2012 looked into the top 25 articles published on arthroscopy from Web of Knowledge (currently called WOS).[8] The search strategy used by the authors was "arthroscopy," which is likely to miss articles containing extensions of arthroscop* (ending with e, y, ic, ical, and ically) in article titles and keywords.

Recommendations

Eight of the top 10 universities belonged to just three cities – New Delhi, Mumbai, and Chandigarh and the gap between the top and last university in the table is very wide (270 vs. 60). Moreover, the majority (9/10) were government institutions. Since a lot of arthroscopic work is also being done in the private hospitals in India, more research contributions must come from this sector. More cities and universities need to publish more to dissipate the academic activity. Case report was the most commonly published type of article. More case series, randomized controlled trials (RCTs), and systematic reviews and meta-analysis are required to establish protocols in this population. An overwhelming majority were case reports (22.9% of total). High-quality studies such as RCT, systematic reviews, and meta-analyses together make up only 75 studies out of the total 632, which is 11.8%. Higher quality studies would increase the total citation counts of publications for this specialty and would increase the popularity of Indian

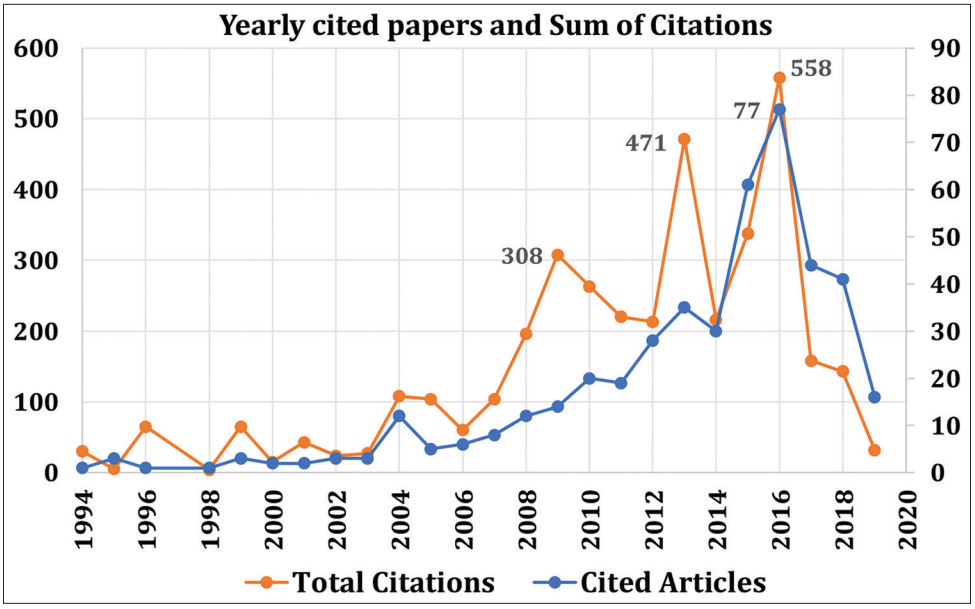

Figure 3: Indian publications – their total citations per year and number of cited articles per year.

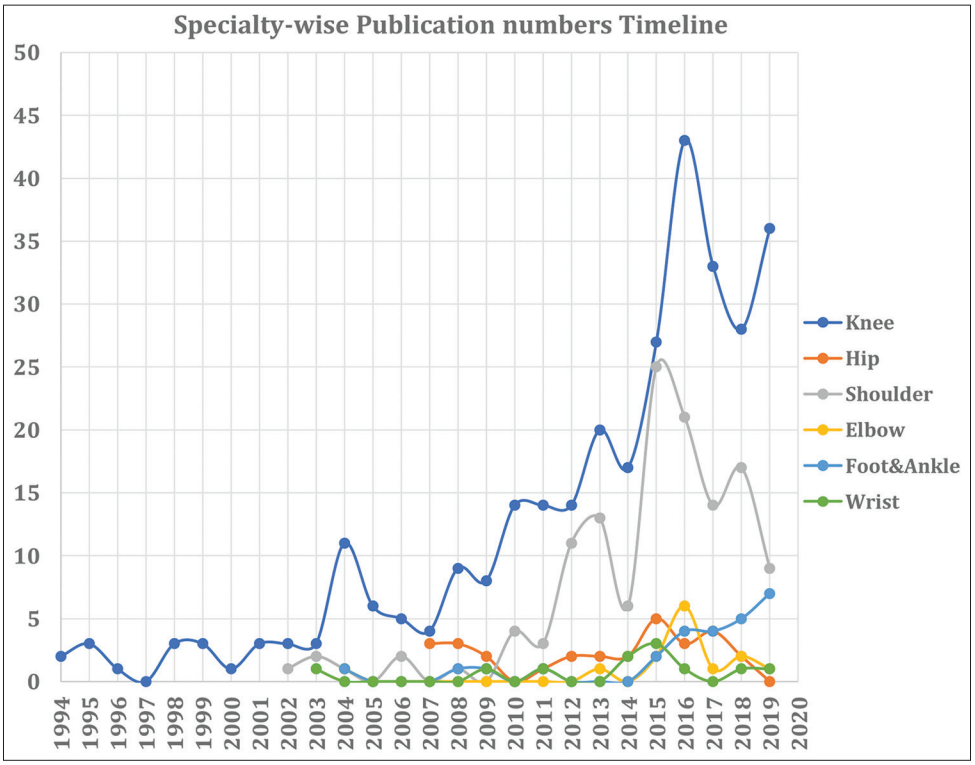

Figure 4: Timeline showing publication numbers in each subspecialty.

publications in the world scene. When compared with the worldwide publications (separate independent study submitted for publication), the total number in Scopus was 50373 starting from 1939 with a total citation count of 9,112,630 (search on January 4, 2020), the publications from India are very low. The corresponding numbers for Indian publications (search on September 8, 2020) were 632 (1.2% of world publications) starting from 1994 with a total citation count of 3770 (0.04% of world publications). One major reason is that Indian publications started very late in 1994, which is 55 years after the first publication in the world stage. Despite this, there is a healthy trend of

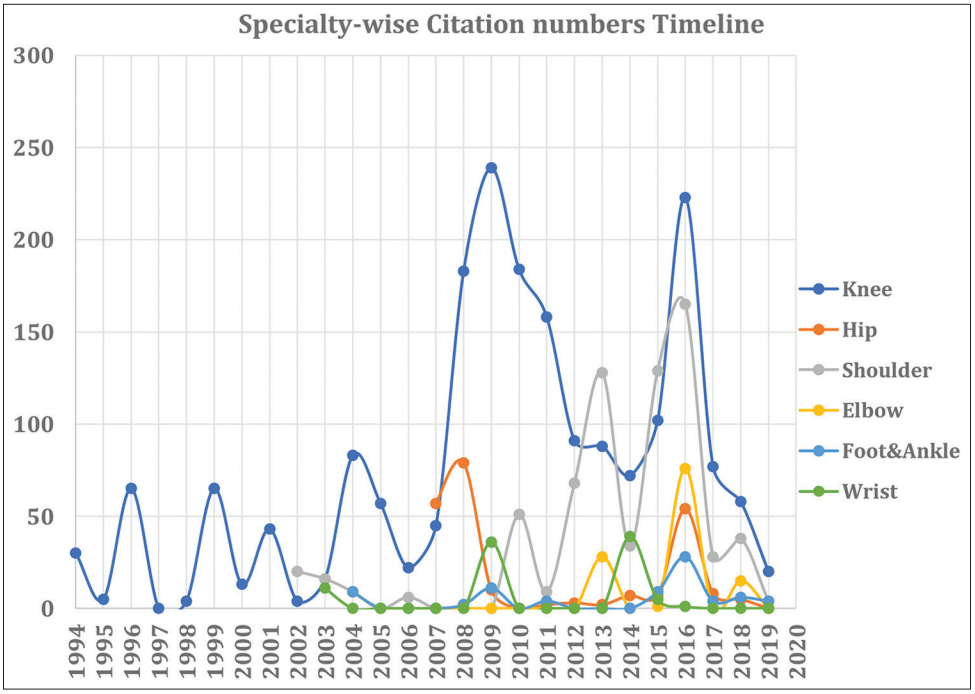

Figure 5: Timeline showing sum of citations in each subspecialty.

increasing publications by Indian authors. The trends from this study may be compared with other specialties but such a comparison has been discouraged because there could be wide variation of bibliometric data between specialties.[1]

Limitations

Limitations of this study were as follows: (1) It is a study from a single database. Given the nature of journals and the parameters listed in Scopus, we felt that this is the best database to analyze for this study. (2) While the trends are broadly predictive, they may not be accurate to the last number as there would be variability in the way studies which are registered by different authors and journals as acknowledged in our previous publications. (3) Limitations of bibliometric studies have been reviewed in detailed in the past,[1] but there are also significant strengths listed for these studies.

CONCLUSION

Recent years have seen a tremendous increase in interest in arthroscopic surgery in India with knee surgery leading the numbers starting from 2007. The proportion of articles published in India to the overall publications in arthroscopy has increased steadily. It must be borne in mind that the number of publications in arthroscopy has increased significantly. Higher quality studies are required in more numbers to increase the citations of this set of publications. More research contribution is needed from the private institutions of India.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

Conflicts of interest

Dr. Srinivas Kambhampati and Dr. Raju Vaishya are on the Editorial Board of the Journal.

REFERENCES

1. Agarwal A, Durairajanayagam D, Tatagari S, Esteves SC, Harlev A, Henkel R, *et al*. Bibliometrics: Tracking research impact by selecting the appropriate metrics. Asian J Androl 2016;18:296-309.
2. Kambhampati SB, Vaishya R. Trends in publications on the anterior cruciate ligament over the past 40 years on PubMed. Orthop J Sports Med 2019;7:1-8.
3. Kambhampati SB, Vaishya R. Publication trends of PCL in the last 40 years on PubMed. J Clin Orthop Trauma 2019;11 Suppl 3:S354-61.
4. Klein W, Shah N, Gassen A. Arthroscopic management of postoperative arthrofibrosis of the knee joint: Indication,

technique, and results. Arthroscopy 1994;10:591-7.
5. Rajan DV, Subramaniam S, Vinodh K. The role of arthroscopy in tuberculous synovitis of the knee. J Orthop Surg 1994;2:77-9.
6. Goyal D, Keyhani S, Lee EH, Hui JHP. Evidence-based status of microfracture technique: A systematic review of Level I and II studies. Arthroscopy 2013;29:1579-88.
7. Vaishya R, Patralekh M, Vaish A, Agarwal AK, Vijay V. The top 10 most cited Indian articles in arthroscopy in last 10 years. Indian J Orthop 2017;51:505-15.
8. Gheiti AJ, Downey RE, Byrne DP, Molony DC, Mulhall KJ. The 25 most cited articles in arthroscopic orthopaedic surgery. Arthroscopy 2012;28:548-64.

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