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Global Research Trends in Artificial Intelligence for Joint Diseases: A Bibliometric and Visualization Study

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Abstract: *In recent years, research on artificial intelligence in joint diseases has become an increasingly popular field. This study aimed to investigate the global status and trends in this field and to identify research trends and hotspots in the application of artificial intelligence to joint diseases, thereby providing better guidance for clinical practice and scientific research. Research articles related to artificial intelligence in joint diseases were retrieved from the Science Citation Index Expanded (SCI-E) of Web of Science from January 01, 2006 to March 02, 2026. Bibliometric analysis was used to analyze and index the source data. VOSviewer software was used for bibliographic coupling, co-authorship, co-citation, and co-occurrence analyses to analyze publication trends in research on artificial intelligence in joint diseases. A total of 785 publications were included. Globally, research interest and the number of publications related to this field increased annually. The United States made the greatest contribution to global research, received the most citations, and had the highest h-index. JOURNAL OF ARTHROPLASTY had the largest number of publications. Shanghai Second Medical University, Johns Hopkins University School of Medicine, Perelman School of Medicine at the University of Pennsylvania, Johns Hopkins Medicine, and Perelman School of Medicine at the University of Pennsylvania were the institutions making the greatest contributions. Global bibliometric trends indicate that research output at the intersection of artificial intelligence and joint diseases will continue to increase. The United States remains in the leading tier by virtue of its total publication output and institutional innovation capacity, and is the most important contributor to global research in this field. Current research is highly concentrated on AI-enabled precision diagnosis and treatment of joint diseases and perioperative prognostic risk management. This direction has substantial potential for continued expansion and may become a core frontier hotspot in the medium to long term.*

Keywords: *Artificial Intelligence, Joint Diseases, Global Trends, Bibliometrics, Visualization Research*

1. Introduction

Joint diseases are a general term for a group of conditions characterized primarily by structural lesions involving articular cartilage, synovium, ligaments, tendons, bones, and other structures. They encompass various types, including osteoarthritis, rheumatoid arthritis, traumatic arthritis, and developmental joint diseases. These diseases have a very high prevalence worldwide and are among the major causes of chronic pain and functional impairment in middle-aged and older adults. With the acceleration of population aging, the medical burden and socioeconomic impact associated with joint diseases have become increasingly prominent [1,2]. Traditionally, the diagnosis and assessment of joint diseases have mainly relied on clinical symptoms, physical examination, laboratory indicators, and medical imaging, such as X-ray, MRI, and ultrasound. However, because early joint lesions may be clinically subtle, imaging features are complex, and substantial interindividual variation exists, clinical practice still faces challenges including low rates of early recognition, difficulty in predicting disease progression, and a lack of precise evidence for developing individualized treatment plans [3,4]. In recent years, the rapid development of artificial intelligence (AI) technologies, particularly machine learning and deep learning methods, has provided new opportunities for precision diagnosis and treatment of joint diseases [3]. AI can efficiently process massive amounts of multimodal medical data and has demonstrated substantial potential in automated segmentation and quantitative analysis of medical images, early disease screening and diagnosis, prediction of disease progression, assessment of treatment efficacy, and design of personalized rehabilitation programs. For example, deep learning models have

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made significant progress in radiographic grading of knee osteoarthritis, measurement of cartilage thickness, and identification of joint-space narrowing, with some models even demonstrating performance superior to that of clinical experts [5,6]. In addition, AI can integrate genomics, proteomics, and clinical data to promote the development of molecular subtyping and precision treatment strategies for joint diseases. By constructing multidimensional and interpretable predictive models, AI may enable individualized risk stratification and whole-course management of patients with joint diseases [7]. However, the current application of artificial intelligence in joint diseases still faces many challenges, including insufficient data standardization, limited model generalizability, poor clinical interpretability, and ethical and regulatory issues. Therefore, constructing high-quality datasets, developing robust and interpretable AI models, and promoting their validation and implementation in real-world clinical settings are important directions for current research [8][9]. This study aims to systematically review the research progress, current status, and trends of artificial intelligence in common joint diseases.

2. Materials and Methods

2.1 Data Source

Bibliometric analysis was based on the Science Citation Index Expanded (SCI-E) of Web of Science (WoS), which is considered the best database for bibliometric research.

2.2 Search Strategy

All publications from January 01, 2006 to March 02, 2026 were searched in WoS. In this study, the search criteria were: Topic = joint diseases AND Topic = artificial intelligence AND Publication Years = (2006-2026) AND Language = (English) AND Document Types = (Article or Review). We also refined the search for specific countries or regions by indexing countries/regions in WoS.

2.3 Data Collection

The complete records of each publication, including title, publication year, author names, nationality, affiliations, journal name, keywords, and abstract, were downloaded from the WoS database and imported into Microsoft Excel in TXT format. Three authors (Xiangsen Xu, Tao Wu, and Tianhao Sun) independently screened and extracted the data entries and collections. Any discrepancies were resolved through discussion to reach consensus. Finally, the three authors manually cleaned and analyzed the data in Microsoft Excel.

2.4 Bibliometric Analysis

The built-in functions of WoS were used to describe the basic characteristics of the eligible publications. The h-index was used to measure scientific research impact. The h-index indicates that a scholar or country has published h papers, each of which has been cited by other publications at least h times. Therefore, the h-index reflects both the number of publications and the number of citations received by each publication [10]. R software (version 3.1.3) was used to construct a logistic growth model.

$$f(x) = c/[1 + a \cdot e^{(-b(x-1983))}] \quad (1)$$

This model was used to fit the temporal variation in annual publications in this field, where x is the year and f(x) is the annual number of publications. The inflection point of the curve was calculated using the following equation:

$$T = \ln(a)/b + 1983 \quad (2)$$

This value represents the critical time when the annual publication growth rate changes from acceleration to deceleration. Based on nonlinear fitting of the observed data from 2006–2026, the model was extrapolated to 2035 to predict publication volume, and a temporal growth curve was plotted to illustrate historical evolution and future trends [11].

2.5 Visualization Analysis

VOSviewer (Leiden University, Leiden, Netherlands) was used to visualize the publications. In this

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study, VOSviewer was used for bibliographic coupling, co-authorship, co-citation, and co-occurrence analyses [12].

3. Results

3.1 Trends

3.1.1 Global Publication Trends

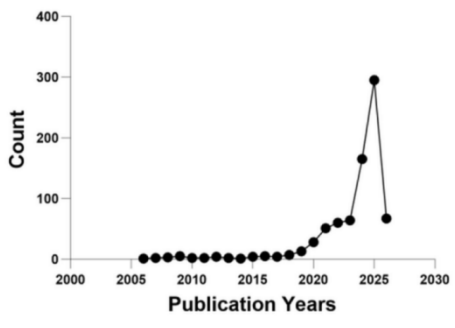
A total of 785 articles meeting the search criteria were published worldwide from 2006-2026. When annual publication output was examined, the largest number of studies was published in 2025 (295 articles, 37.58%). From 2006 to 2026, the total number of global publications showed an overall upward trend each year, and research interest in this field increased annually (Fig. 1a).

3.1.2 Country Contributions

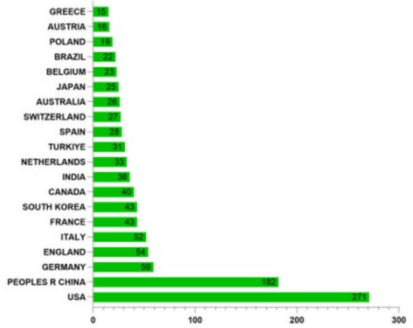
A total of 80 countries and regions contributed to this field. Among these countries, the United States published the largest number of related articles (271, 34.52%), followed by China (182, 23.18%), Germany (59, 7.52%), England (54, 6.88%), and Italy (52, 6.62%) (Fig. 1b, 1c).

3.1.3 Forecast of Global Publication Trends

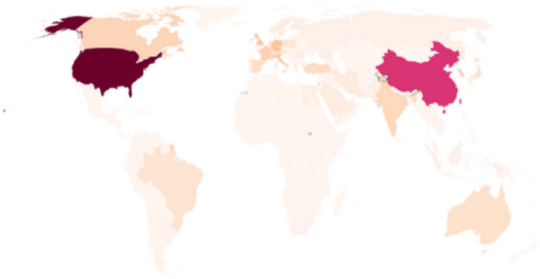
A time curve of publication numbers was created using a logistic growth model to predict future trends [13]. Fig. 1d shows the model-fitted curve predicting the growth trend in the global number of publications in this field over the coming years.



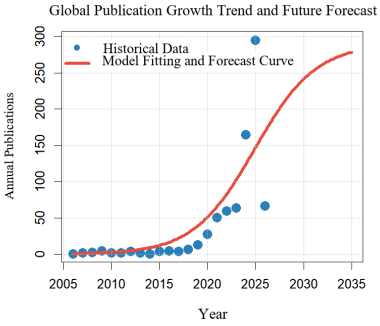
(1a)



(1b)



(1c)



(1d)

Figure 1: (a) Annual number of global publications related to artificial intelligence and joint diseases; (b, c) number of publications and heat map of publications by country related to artificial intelligence and joint diseases; (d) model-fitted curve predicting the growth trend of global publications in the field of artificial intelligence and joint diseases over the coming years.

3.2 Publication Quality by Country

3.2.1 Total Citations

Papers from the United States had the highest total number of citations (4243). China ranked second in total citations (2049), followed by England (1509), Italy (1181), and Germany (1145) (Fig. 2a).

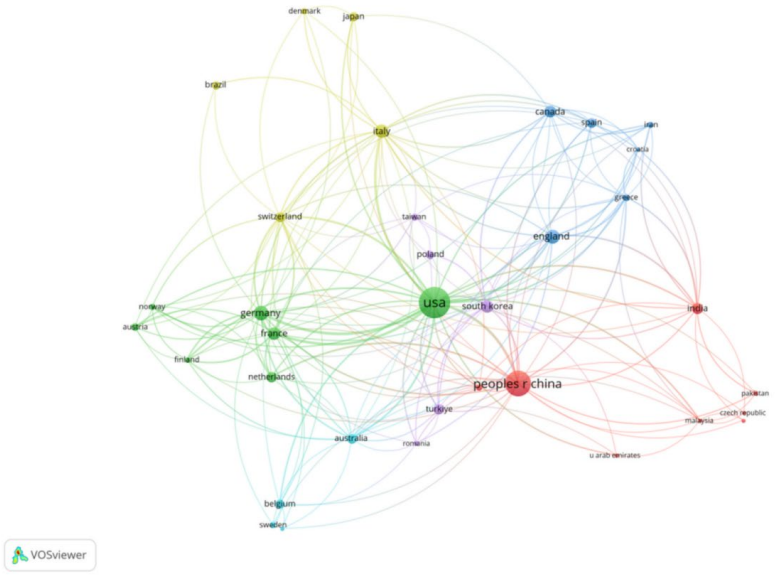
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3.2.2 Average Citations

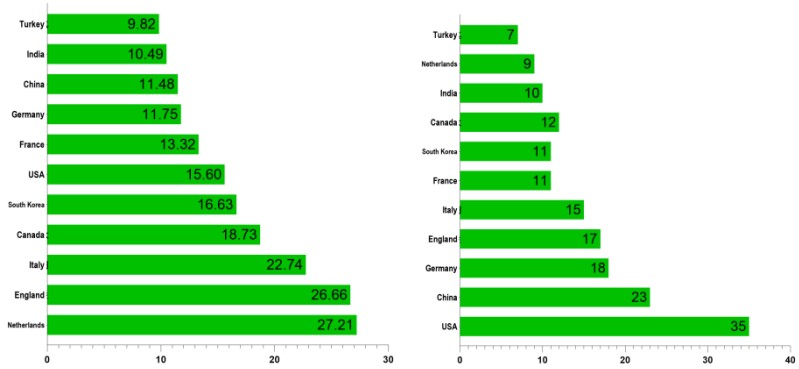
Publications from the Netherlands had the highest average number of citations (27.21). England ranked second in average citations (26.66), followed by Italy (22.74), Canada (18.73), and South Korea (16.63) (Fig. 2b).

3.2.3 h-index

The United States had the highest h-index for related papers (35), followed by China (23), Germany (18), England (17), and Italy (15).



(2a)



(2b) *(2c)*

Figure 2: (a) Link strength based on total citation frequency for research on artificial intelligence in joint diseases by country; (b) average citation frequency of publications on artificial intelligence and joint diseases by country; (c) h-index of publications on artificial intelligence and joint diseases by country.

3.3 Global Publication Analysis

3.3.1 Journal Analysis

There were 47 articles on artificial intelligence research in joint diseases published in JOURNAL OF ARTHROPLASTY (IF=3.8, 2025), 45 articles in JOURNAL OF SHOULDER AND ELBOW SURGERY (IF=2.9, 2025), 15 articles in OSTEOARTHRITIS AND CARTILAGE (IF=9, 2025), 13 articles in DIAGNOSTICS (IF=3.3, 2025), and 12 articles in FRONTIERS IN MEDICINE (IF=3, 2025). Fig. 3a lists the top 20 journals with the largest number of published studies.

3.3.2 Research Directions

Fig. 3b shows the distribution of research directions among publications related to posterior surgery

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for adolescent idiopathic scoliosis. The most popular research fields were orthopedics, surgery, engineering, rheumatology, and sports science.

3.3.3 Institutional Output

The 20 institutions with the highest output are listed in Fig. 3c. Shanghai Second Medical University published the largest number of papers (15); Johns Hopkins University School of Medicine and Perelman School of Medicine at the University of Pennsylvania ranked second (12); Johns Hopkins Medicine ranked third (11); and the Perelman School of Medicine at the University of Pennsylvania ranked fourth (10).

3.3.4 Funding Sources

The top 20 funding agencies supporting this research field are shown in Fig. 3d, with a total of 589 funded studies. Among them, the National Natural Science Foundation of China (NSFC) funded 81 studies (ranked first), the National Institutes of Health (NIH; USA) funded 58 studies (ranked second), the U.S. Department of Health and Human Services funded 58 studies (tied for second), the National Research Foundation of Korea funded 15 studies (ranked fourth), and the European Union funded 14 studies (ranked fifth). Fig. 3d shows the top 20 funding agencies.

3.3.5 Authors

The top 20 authors published a total of 89 papers, accounting for 11.34% of all papers in this field (Fig. 3e). In the field of posterior surgery for adolescent idiopathic scoliosis, the three authors with the largest number of publications were Roemer, Frank (9 papers), followed by Guermazi, Ali (8 papers) and Heckmann, Nathanael (6 papers).

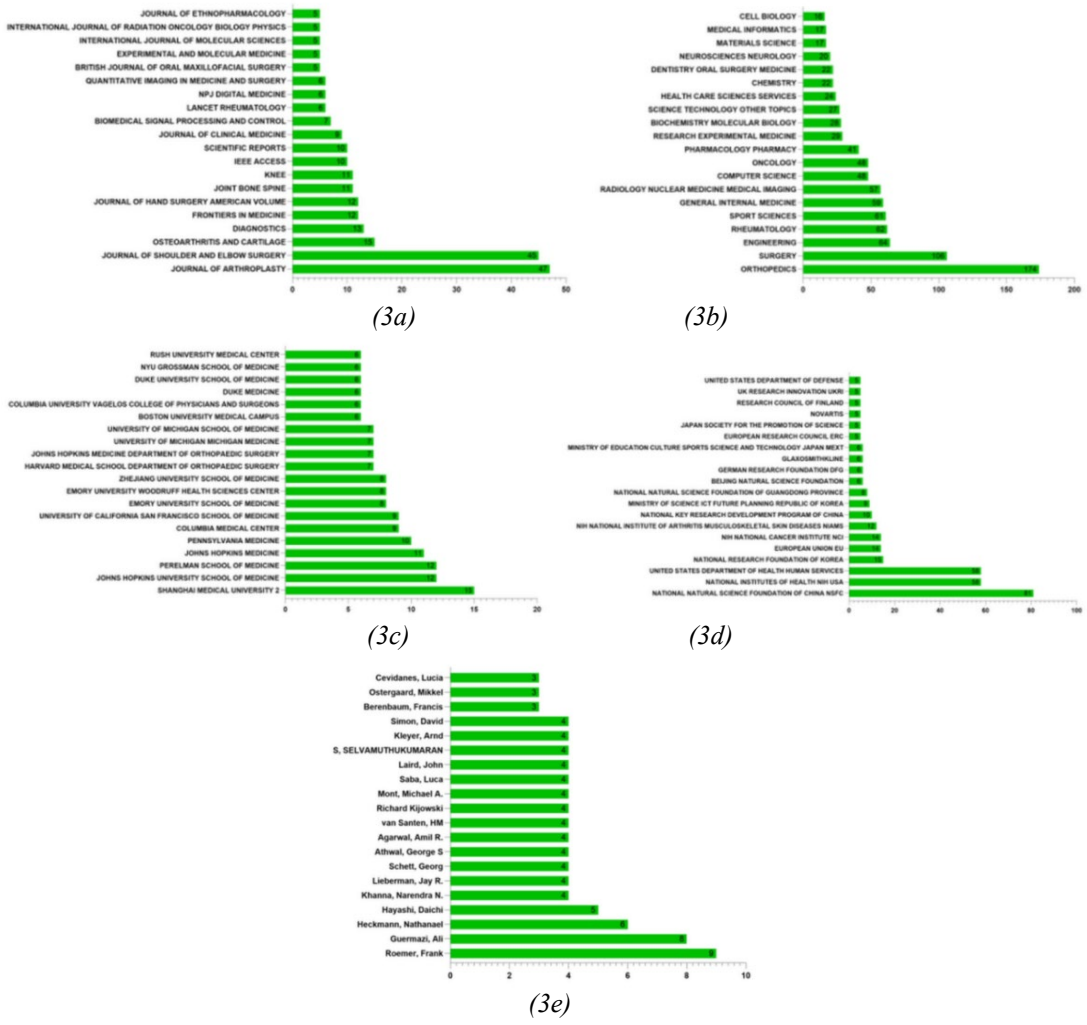


Figure 3: (a) Number of publications in different journals related to artificial intelligence and joint diseases; (b) number of publications in different research directions related to artificial intelligence and

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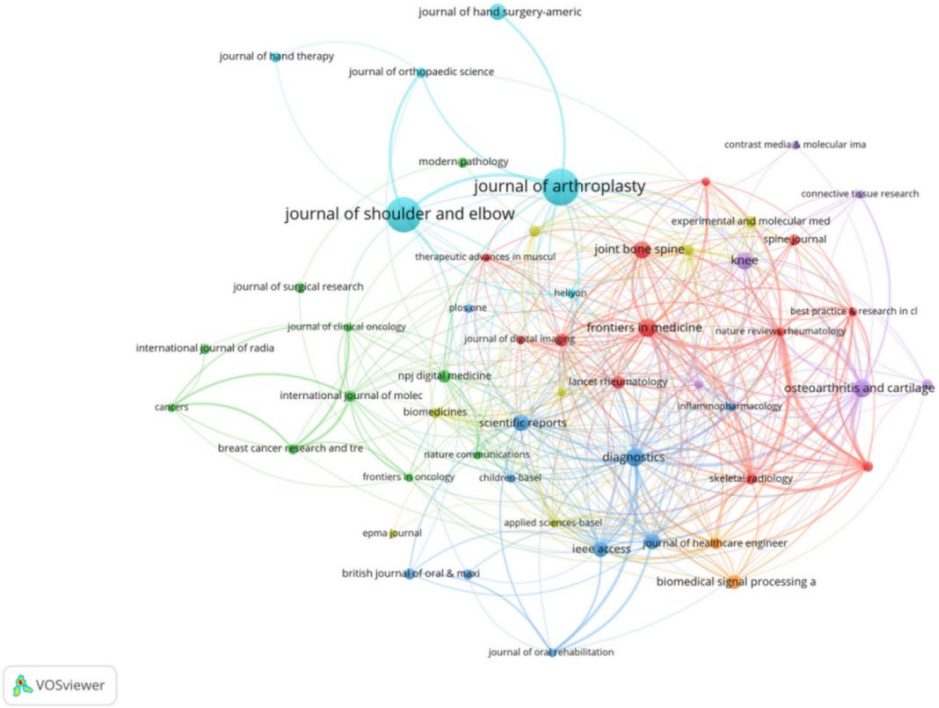
joint diseases; (c) number of publications from different institutions related to artificial intelligence and joint diseases; (d) number of projects supported by different funding sources related to artificial intelligence and joint diseases; (e) authors with the largest number of publications in this field.

3.4 Bibliographic Coupling Analysis

Bibliographic coupling is a measurement method that uses citation analysis to establish similarity relationships between publications. VOSviewer was used to analyze journal names among the total publications.

3.4.1 Journals

As shown in Fig. 4a, A total of 55 identified journals were included in the total link strength analysis (defined as journals with at least 3 publications). The top five journals ranked by total link strength were: diagnostics (total link strength = 331), nature reviews rheumatology (total link strength = 322), osteoarthritis and cartilage (total link strength = 309), frontiers in medicine (total link strength = 287), and seminars in musculoskeletal radiology (total link strength = 248).



(4a)

Figure 4a: Link strength of 55 identified journals in the field related to artificial intelligence and joint diseases.

3.4.2 Institutions

VOSviewer was used to analyze publications from 64 identified institutions (defined as organizations with at least 5 publications) (Fig. 4b). The top five institutions ranked by total link strength were: Boston University (total link strength = 8542), Harvard Medical School (total link strength = 6361), University of California, San Francisco (total link strength = 5772), University Hospital Erlangen (total link strength = 5570), and Tufts University (total link strength = 5070).

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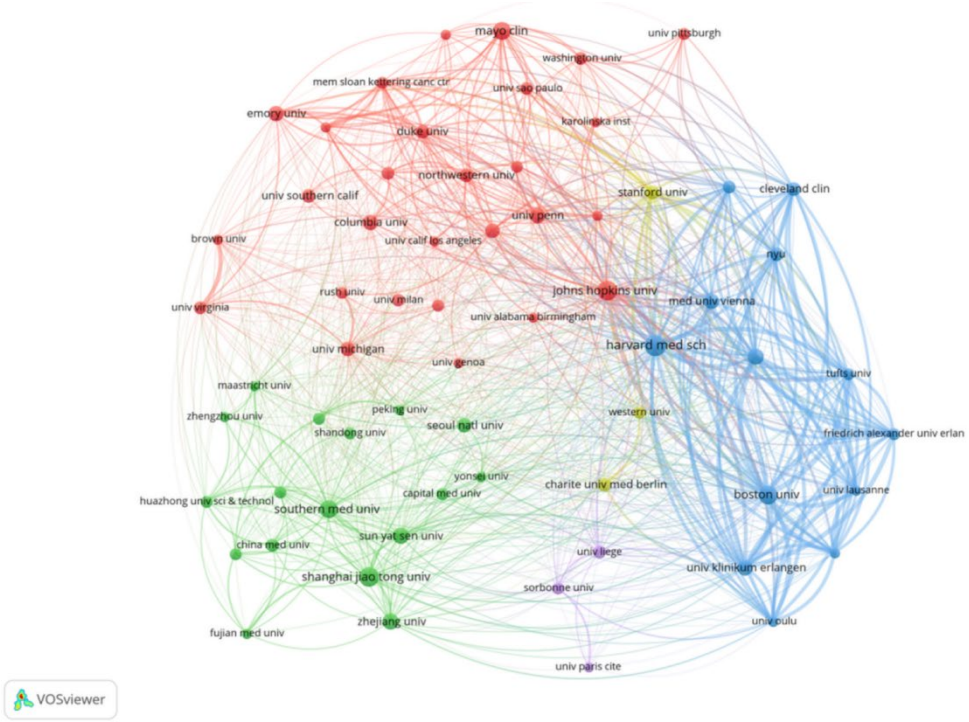


Figure 4b: Schematic Diagram of Link Strength Among 64 Institutions in the Field of Artificial Intelligence for Joint Diseases.

3.4.3 Countries

VOSviewer (Fig. 4c) was used to analyze publications from 50 identified countries (defined as countries with at least 3 publications). The top five countries ranked by total link strength were: the United States (total link strength = 35626), Italy (total link strength =22650), Germany (total link strength = 22195), England (total link strength =21883), and the Netherlands (total link strength =18019).

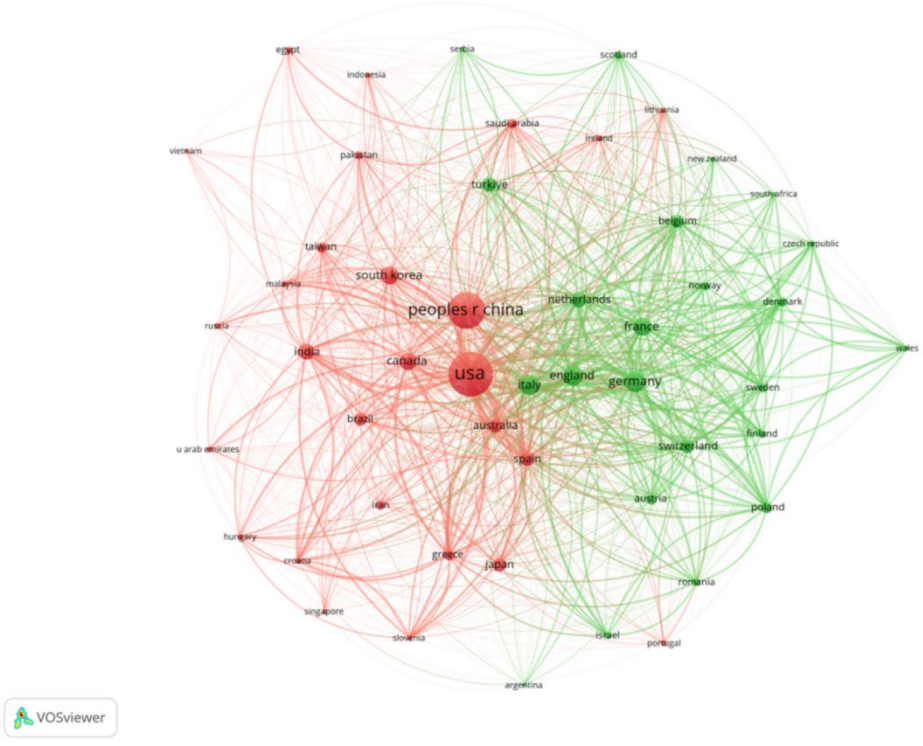


Figure 4c: Link strength of 50 countries in research related to artificial intelligence and joint diseases.

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3.5 Co-Citation Analysis

3.5.1 Publications

VOSviewer was used to analyze 152 publications (defined as publications with more than 6 citations) (Fig. 5a). The five studies with the highest total link strength were as follows: Tiulpin A, 2018, Scientific Reports, v8, doi: 10.1038/s41598-018-20132-7 (total link strength = 287) [14]; Kellgren J H, 1957, Annals of the Rheumatic Diseases, v16, p494, doi: 10.1136/ard.16.4.494 (total link strength = 150) [15]; Liu F, 2018, Radiology, v289, p160 (total link strength = 139) [16]; He K, 2016, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, p770, doi: 10.1109/CVPR.2016.90 (total link strength = 136) [17]; and Pedoia V, 2019, Journal of Magnetic Resonance Imaging, v49, p400, doi: 10.1002/jmri.26246 (total link strength = 133) [18].

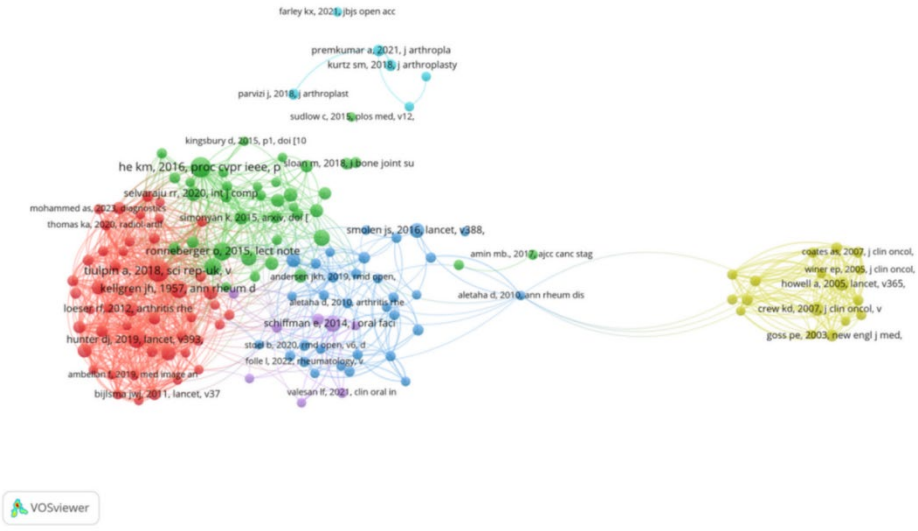


Figure 5a: Link strength based on citation frequency of 152 publications in the field related to artificial intelligence and joint diseases.

3.5.2 Journals

VOSviewer was used to analyze the journal names in the co-citation analysis (the journal was defined as a source with more than 40 citations). As shown in Fig. 5b, 189 identified journals appeared in the total link strength analysis. The top five journals ranked by total link strength were: Annals of the Rheumatic Diseases (total link strength = 44166), Osteoarthritis and Cartilage (total link strength = 31509), Scientific Reports (total link strength = 24596), Rheumatology (total link strength = 19511), and PLoS One (total link strength = 17735).

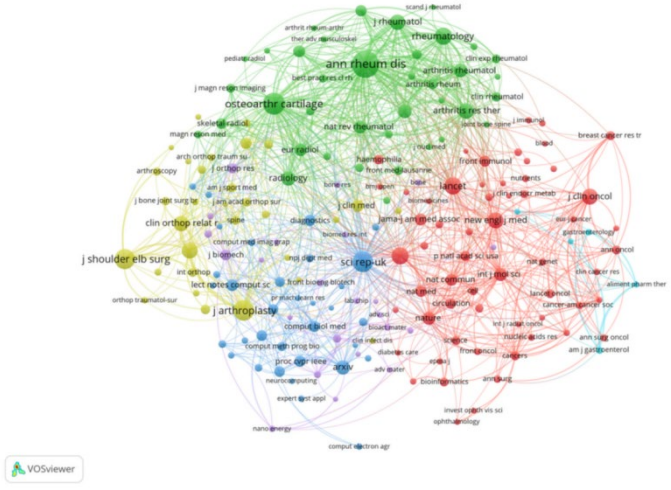


Figure 5b: Link strength based on citation frequency of 189 journals in the field related to artificial intelligence and joint diseases.

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3.6 Co-Occurrence Analysis

VOSviewer color-coded keywords according to their average time of occurrence across all included publications (defined as terms used more than 10 times in the titles and abstracts of all publications; 94 keywords met the criteria) (Fig. 6). Purple indicates that keywords appeared earlier, whereas yellow indicates that they appeared later. In the early stage before 2022, research focused on traditional clinical topics. In the middle stage, AI technologies (machine learning, deep learning) rapidly emerged and became integrated with diagnosis. The integration of AI technologies with clinical diagnosis and surgical prognosis is becoming the fastest-growing research direction in terms of co-occurrence frequency, suggesting that future research will increasingly focus on AI-driven precision diagnosis, treatment, and prognostic management.

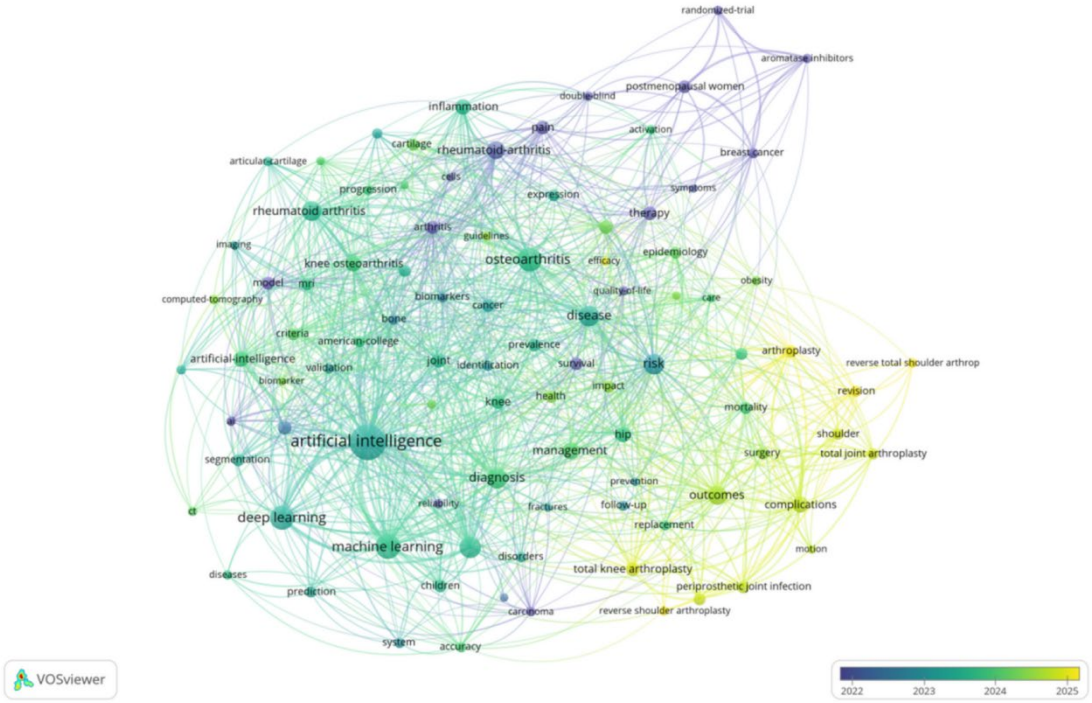


Figure 6 Temporal distribution of 94 keywords in the field related to artificial intelligence and joint diseases.

4. Discussion

4.1 Development Trends of Artificial Intelligence in Joint Diseases

Bibliometric and visualization analyses can systematically present the current status and future trends of a research field. This study aimed to comprehensively evaluate the research landscape of artificial intelligence in joint diseases, including contributing countries, core institutions, funding sources, and research priorities. In recent years, research on artificial intelligence in joint diseases has progressed rapidly and produced substantial results. The data from this study show a significant upward trend in the annual number of publications in this field, with research attention increasing sharply over the past several years, and 80 countries worldwide having participated and published relevant findings. Based on trend analysis of the existing bibliographic data, we predict that this field will continue to grow rapidly in the coming years, with more high-quality and in-depth research findings continuing to emerge. This positive trend will further encourage researchers worldwide to engage in high-level research at the intersection of artificial intelligence and joint diseases.

4.2 Quality and Status of Global Publications

Total citations and the h-index are core indicators for measuring a country's academic influence and research quality. The data show that the United States ranked first with a total of 271 publications and performed strongly in both total citations and the h-index, establishing its leading position in this field

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globally. China followed in publication output (182) and ranked second in both total citations and the h-index, reflecting the dual improvement in research quantity and quality in recent years. With continued increases in research funding, including support from the National Natural Science Foundation of China, the quality of research in this field in China is expected to improve further and substantially.

JOURNAL OF ARTHROPLASTY, JOURNAL OF SHOULDER AND ELBOW SURGERY, OSTEOARTHRITIS AND CARTILAGE, DIAGNOSTICS, and FRONTIERS IN MEDICINE published more studies on artificial intelligence in joint diseases. However, the number of papers published in JOURNAL OF ARTHROPLASTY and JOURNAL OF SHOULDER AND ELBOW SURGERY accounted for nearly half of the total publications among the top 20 journals; therefore, further research findings in this field are most likely to appear first in these higher-ranked journals.

The research institutions in these top five countries are at the forefront of research on posterior surgery for adolescent idiopathic scoliosis, which is consistent with their leading position in global publications. Moreover, almost all of the top 20 universities are located in these five countries. These findings suggest that the academic strength of a country is closely associated with the development of world-class universities and research institutions. We also identified the authors with the highest publication output in this field, whose future research may provide further insights into the latest developments in artificial intelligence and joint diseases.

This study established similarity relationships among publications in terms of journals, institutions, and countries through bibliographic coupling analysis. Bibliographic coupling occurs when two works cite the same third work in their bibliographies [19]. These data indicate that Diagnostics is the journal most closely related to this field and that the United States is the leading country in this field. Co-citation analysis aims to investigate research impact by calculating the number of times studies are cited together. The current results indicate that complications and clinical outcomes have relatively high total co-citation frequencies among landmark studies of artificial intelligence in joint diseases and are also currently among the more frequently cited and prominent keywords in this field.

In summary, this study demonstrates global development trends in artificial intelligence in joint diseases. The United States and China are the largest contributors to this research and occupy leading positions in global research in this field. JOURNAL OF ARTHROPLASTY published the largest number of related articles. We predict that more studies on artificial intelligence in joint diseases will be published in the coming years. In particular, research on complications and clinical outcomes in the application of artificial intelligence to joint diseases is expected to receive increasing attention and become a future research hotspot [20–22].

References

[1] Scanzello CR, Loeser RF. Editorial: inflammatory activity in symptomatic knee osteoarthritis: not all inflammation is local. Arthritis Rheumatol. 2015 Nov;67(11):2797-800. doi: 10.1002/art.39304. PMID: 26246460; PMCID: PMC5093334.

[2] Hunter, D. J., & Bierma-Zeinstra, S. (2019). Osteoarthritis. The Lancet, 393(10182), 1745-1759. doi:https://doi.org/10.1016/S0140-6736(19)30417-9

[3] Ou J, Zhang J, Alswadeh M, Zhu Z, Tang J, Sang H, Lu K. Advancing osteoarthritis research: the role of AI in clinical, imaging and omics fields. Bone Res. 2025 Apr 22;13(1):48. doi: 10.1038/s41413-025-00423-2. PMID: 40263261; PMCID: PMC12015311.

[4] Jiang T, Lau SH, Zhang J, Chan LC, Wang W, Chan PK, Cai J, Wen C. Radiomics signature of osteoarthritis: Current status and perspective. J Orthop Translat. 2024 Mar 16;45:100-106. doi: 10.1016/j.jot.2023.10.003. PMID: 38524869; PMCID: PMC10958157.

[5] Luo G, Tan S, Luo L, Hu K. Artificial intelligence and multimodal imaging in orthopaedics: from technological advances to clinical translation. Front Med (Lausanne). 2026 Jan 9;12:1728248. doi: 10.3389/fmed.2025.1728248. PMID: 41585271; PMCID: PMC12827539.

[6] Ming W, Liu T, Hu R, He W, Yang Y. Progress in machine learning-assisted medical imaging for osteoarthritis and osteoporosis diagnosis: a narrative review. Quant Imaging Med Surg. 2026 Apr 1;16(4):320. doi: 10.21037/qims-2025-aw-2168. Epub 2026 Mar 30. PMID: 41972027; PMCID: PMC13066848.

[7] Li C, Zhong Z, Zhang N, et al. Artificial intelligence in bone biology: Transforming basic research into advanced therapeutics. The Innovation Life. 2026;4:100186.

[8] Song J, Wang G, Wang S, et al. Artificial intelligence in orthopedics: fundamentals, current applications, and future perspectives. Military Medical Research. 2025;12:42.

ISSN 2618-1584 Vol. 8, Issue 5: 23-33, DOI: 10.25236/FMSR.2026.080503

[9] Progress of artificial intelligence and machine learning models in predicting postoperative outcomes after joint replacement. Chinese Journal of Clinicians (Electronic Edition), 2025, 19(6): 513-518.
[10] Brandt J S, Hadaya O, Schuster M, et al. A Bibliometric Analysis of Top-Cited Journal Articles in Obstetrics and Gynecology[J]. JAMA Network Open, 2019, 2(12): e1918007.
[11] Lan Yuexin. Research on the Law of Literature Growth Based on Dynamic Logistic Model[J]. Information Science.2014, 32(3): 86-89
[12] Synnestvedt M B, Chen C, Holmes J H. CiteSpace II: visualization and knowledge discovery in bibliographic databases[J]. AMIA ... Annual Symposium proceedings. AMIA Symposium, 2005, 2005: 724–728.
[13] Christodoulou E, Ma J, Collins G S, et al. A systematic review shows no performance benefit of machine learning over logistic regression for clinical prediction models[J]. Journal of Clinical Epidemiology, 2019, 110: 12–22.
[14] Tiulpin A, Thevenot J, Rahtu E, et al. Automatic Knee Osteoarthritis Diagnosis from Plain Radiographs: A Deep Learning-Based Approach. Scientific Reports, 2018, 8: 1727.
[15] Kellgren J H, Lawrence J S. Radiological assessment of osteo-arthrosis. Annals of the Rheumatic Diseases, 1957, 16(4): 494–502.
[16] Liu F, Zhou Z, Samsonov A, Blankenbaker D, Larison W, Kanarek A, Lian K, Graf B, Rosas H, Kijowski R. Deep Learning Approach for Evaluating Knee MRI in Patients with Osteoarthritis. Radiology. 2018;289(1):160-169.
[17] He K, Zhang X, Ren S, et al. Deep Residual Learning for Image Recognition. In: Proceedings of the 2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR). Las Vegas: IEEE; 2016: 770-778.
[18] Pedoia V, Norman B, Mehany S N, et al. 3D Convolutional Neural Networks for Detection and Severity Staging of Meniscus and PFJ Cartilage Morphological Degenerative Changes in Osteoarthritis and Anterior Cruciate Ligament Subjects. Journal of Magnetic Resonance Imaging, 2019, 49(2): 400–410.
[19] Zhang J, Yu N, Wang B, et al. Trends in the Use of Augmented Reality, Virtual Reality, and Mixed Reality in Surgical Research: a Global Bibliometric and Visualized Analysis[J]. The Indian Journal of Surgery, 2022, 84(Suppl 1): 52–69.
[20] LU Y, SU Z, LAN T, et al. Scientometric Analysis of Artificial Intelligence Applications in Orthopedic Surgery: Global Research Trends and Emerging Hotspots[J]. Annals of Medical And Clinical Case Reports, 2025.
[21] XU P, TAN F, HU Y, et al. Artificial intelligence in joint arthroplasty: A bibliometric analysis of global research trends (2001–2025)[J]. Medicine, 2025, 101(35): e44136.
[22] LI Z, MAIMITI Z, FU J, et al. Global research landscape on artificial intelligence in arthroplasty: A bibliometric analysis[J]. Digital Health, 2023, 9: 20552076231184048.