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UNVEILING THE IMPACT OF SARCOMA CANCER RESEARCH: A SCIENTOMETRIC ANALYSIS OF PUBLICATIONS AND CITATIONS

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ABSTRACT

Sarcoma is a diverse group of cancers originating from connective tissues. Despite advancements in diagnosis and treatment, research in this area is relatively underexplored compared to other cancers. This scientometric analysis evaluates trends, impacts, and collaboration patterns in sarcoma research by examining publication volumes and citation trends over recent decades. It identifies key authors, influential journals, and prominent countries that contribute to sarcoma research, while also exploring research collaborations through citation networks. The findings indicate an accelerating pace of research driven by interdisciplinary collaborations and advancements in molecular biology and clinical oncology. However, disparities in funding and geographical contributions highlight areas for improvement. This analysis not only sheds light on current trends in sarcoma research but also provides a foundation for strategic planning and resource allocation to address knowledge gaps and foster future innovations in the field.

INTRODUCTION

Sarcoma is a rare and diverse type of malignant tumor that develops from mesenchymal tissues such as bone, cartilage, fat, muscle, and connective tissues. Despite being just 1% of adult malignancies, sarcomas pose a significant challenge to diagnose and treat because of their diverse histological subtypes and varying clinical behaviors. Sarcoma research has been characterized by a paradigm shift due to advancements in molecular oncology, targeted therapies, and immunotherapy over the past few years (2020-2024), which has emphasized precision medicine approaches. To gain insights into publication trends, citation impact, key contributors, and emerging research themes, a scientometric study thoroughly examines the research output within a particular domain. By using bibliometric tools, the study will assess the scientific landscape of sarcoma research worldwide from 2020 to 2024, identifying influential authors, prolific institutions, funding patterns, and trends in the field.

The importance of this analysis lies in understanding research trends, guiding future investigations, and optimizing resource allocation in sarcoma research. Our goal is to highlight the significance of collaborations across disciplines, the value of artificial intelligence in sarcoma diagnosis, and the potential for translation of novel therapeutic strategies through the process of mapping scientific contributions.

OBJECTIVES

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

- To examine for assess the sarcoma cancer disease output during the study period.
- To keep under surveillance the country-wise research output of sarcoma cancer disease research.
- To enquire the language-wise and institution-wise sarcoma cancer disease research publications said.
- To identify the source-wise sarcoma cancer disease research publications scrutinize.
- To think identify the relative growth rate.

METHODOLOGY

This study aims to analyze the trend in the growth of sarcoma cancer disease research in scientometrics. The analysis also focused to trace the past trends in the research of sarcoma cancer disease. The research publications in scientometrics based on the sample data. The study evaluates the contributions of countries to the growth pattern and development of research productivity in this discipline during the last few years.

DATA COLLECTION

The publication of research output on sarcoma cancer disease research in scientometrics study 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 experts from the web of science database. All the publications were retrieved from the web of science database on sarcoma cancer disease in a scientometrics study covering 2020 to 2024. Further, the researcher has downloaded the data in the form of notepad files; after that, the bibliographical details are converted in 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. Over all data retrieved by the researcher in HistCite software are 18988 records for analyzing the present study.

LIMITATIONS

The findings of this study apply only to sarcoma cancer disease studies in the fields related to Adenocarcinoma, Adjuvant therapy, Infection, and Large cell carcinoma disease. This study covers sarcoma cancer disease with respect to the medical field, brought under the purview of the study and no other themes. This study makes special attention only to the performance of research output in sarcoma cancer disease research. This study covers the years from 2020 to 2024 only.

ANALYSIS AND INTERPRETATION

Table 1: Year wise publication sarcoma cancer disease research (18988).

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

S. No.	Publication Year	Recs.	Percent	TLCS	TGCS
1	2020	3593	18.9	7918	43288
2	2021	4097	21.6	6043	36647
3	2022	4130	21.8	3213	22164
4	2023	3877	20.4	1496	9563
5	2024	3285	17.3	245	1914

The year-wise productivity of publications in sarcoma cancer disease research output from the year 2020 to 2024 is presented in table-1. It shows that the publication of output is gradually increased and decreased trend. In 2022 occupied the first position that the output is increased (21.8%) compared to 2020 and 2024. It is clearly stated that in the future the research productivity in sarcoma cancer disease research is increasing and decreasing manner.

Table 2: Sources wise output in sarcoma cancer disease research.

S. No.	Document Type	Recs.	Percent	TLCS	TGCS
1	Article	10988	57.9	14111	74524
2	Review	2791	14.7	3035	33815
3	Meeting Abstract	2711	14.3	101	881
4	Editorial Material	843	4.4	417	1189
5	Letter	569	3.0	384	1030
6	Unknown	498	2.6	325	107
7	Article; Early Access	243	1.3	0	210
8	Correction	101	0.5	9	45
9	Article; Proceedings Paper	70	0.4	447	1066
10	Review; Early Access	54	0.3	0	46

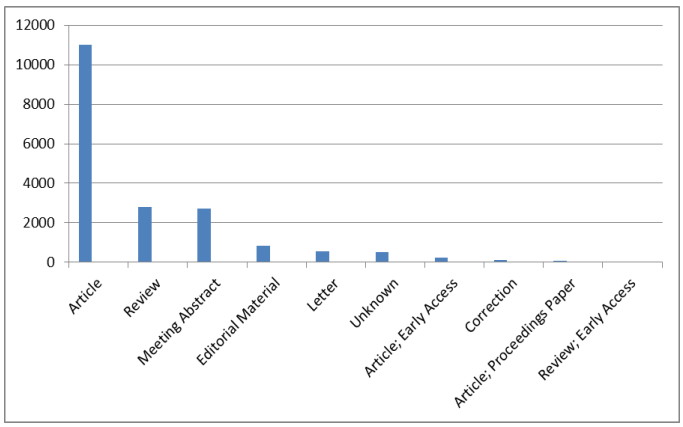

Fig. No. 1: Sources wise output in sarcoma cancer disease research.

The source wise output in level of sarcoma cancer disease research is given in table-2. It shows that the Article is occupies first position (57.9%), second is Review (14.7%), Meeting Abstract (14.3%) Editorial Material (4.4%) followed by Letter, Article; Early Access, and etc.

Table 3: Top 10 authors in sarcoma cancer disease research (Total 79938).

S. No.	Author	Recs.	Percent	TLCS	TGCS
1	Blay JY	211	1.1	1105	3357
2	Gronchi A	176	0.9	1499	3321
3	Wang J	136	0.7	103	735
4	Kawai A	129	0.7	590	1618
5	Zhang Y	120	0.6	87	906
6	Jones RL	119	0.6	820	2365
7	Italiano A	117	0.6	591	2673
8	Wang Y	105	0.6	69	472
9	Rutkowski P	104	0.5	703	1685
10	Le Cesne A	102	0.5	449	1590

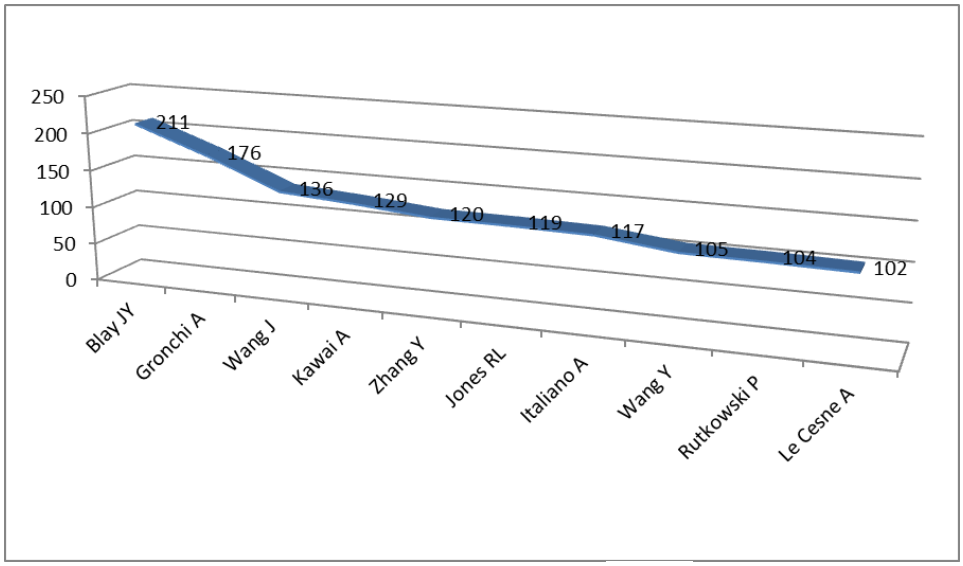

Fig. No. 2: Authors in sarcoma cancer disease research.

Table 3 shows that top 10 authors of sarcoma cancer disease research. It could be noted that the Blay JY occupied in first position (1.1%) compared to Gronchi A second position (0.9%) followed by Wang J and Le Cesne A occupied in last position (0.5%).

Table 4: Top 10 Journals in sarcoma cancer disease research (2180).

S. No.	Journal	Recs	Percent	TLCS	TGCS
1	Cancers	721	3.8	0	5528
2	Frontiers in Oncology	479	2.5	0	2625
3	Journal of Clinical Oncology	466	2.5	464	1575
4	Pediatric Blood & Cancer	442	2.3	2	1226
5	Cancer Research	277	1.5	89	383
6	Annals of Surgical Oncology	273	1.4	588	944
7	International Journal of Molecular Sciences	203	1.1	0	1750
8	Modern Pathology	202	1.1	584	1779
9	Annals of Oncology	196	1.0	295	783
10	Medicine	185	1.0	0	458

The Journal wise output of sarcoma cancer disease research is given in table-4. It could be noted that the Cancers Journal occupies in first position (3.8%) compared to Frontiers in Oncology (2.5%); third is Journal of Clinical Oncology (2.5%) followed by others.

Table 5: Top ten Country wise of sarcoma cancer disease research (143).

S. No.	Country	Recs.	Percent	TLCS	TGCS
1	USA	6167	32.5	9611	50978
2	Peoples R China	3184	16.8	1758	19600
3	Italy	1576	8.3	2987	15895
4	Germany	1483	7.8	2226	14996
5	Japan	1356	7.1	1593	9516
6	UK	1204	6.3	2811	14853
7	France	1136	6.0	3238	15581
8	Unknown	898	4.7	354	371
9	Canada	792	4.2	2283	10270
10	Spain	717	3.8	1142	7700

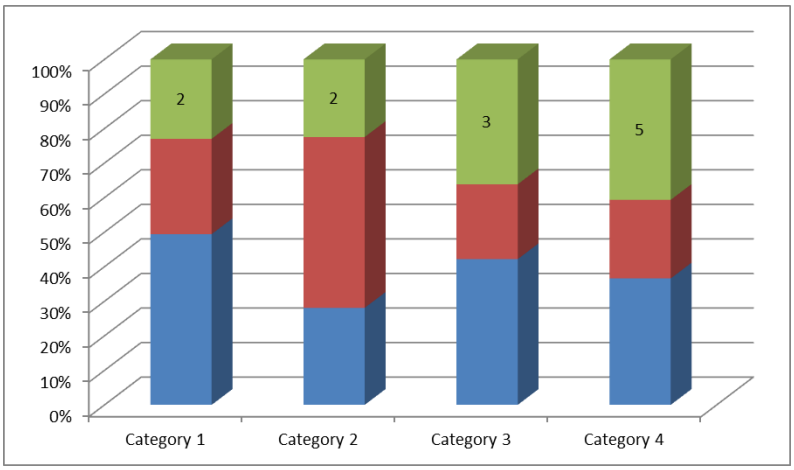

Fig. No. 3: Countries in sarcoma cancer disease research.

The country wise output in country level of sarcoma cancer research is given in table-5. It could be noted that the USA is occupies in first position (32.5%) compared to Peoples R China (16.8%); Italy (8.3%) followed by Germany and etc.

Table 6: Top ten Institutions wise of sarcoma cancer disease research (15547).

S. No.	Institution	Recs.	Percent	TLCS	TGCS
1	Unknown	835	4.4	353	313
2	Univ Texas MD Anderson Canc Ctr	514	2.7	1334	8888
3	Mem Sloan Kettering Canc Ctr	475	2.5	1753	9512
4	Harvard Med Sch	448	2.4	2067	7877
5	Mayo Clin	395	2.1	877	4848
6	Fdn IRCCS Ist Nazl Tumori	314	1.7	1705	4146
7	Ohio State Univ	287	1.5	530	3268
8	Univ Toronto	279	1.5	727	2963
9	Stanford Univ	266	1.4	1014	4538
10	NCI	259	1.4	782	3246

The Institution wise output in sarcoma cancer disease research is given in table-6. It could be noted that Unknown occupying in first position (4.4%); second Univ Texas MD Anderson Canc Ctr (2.7%) followed by Mem Sloan Kettering Canc Ctr etc.

Table 7: Language Wise of Sarcoma Cancer Disease Research.

S. No.	Language	Recs.	Percent	TLCS	TGCS
1	English	18200	95.9	18543	113302
2	Unknown	498	2.6	325	107
3	German	165	0.9	29	76
4	Spanish	55	0.3	4	28
5	French	44	0.2	11	48
6	Portuguese	8	0.0	0	2

7	Russian	6	0.0	0	3
8	Hungarian	4	0.0	2	3
9	Japanese	3	0.0	0	6
10	Czech	2	0.0	1	1

The language wise output of sarcoma cancer disease research is given in table-8. It could be noted that the English is occupies in first position (95.9%) compared to German (0.9%).

Table 7: Relative Growth Rate of Sarcoma Cancer Disease Research.

Year	R.o/p	CO % of Growth	Cum.o/p	CO % of Growth
2020	3593	18.92	3593	6.31
2021	4097	21.57	7690	13.52
2022	4130	21.78	11820	20.77
2023	3877	20.43	15697	27.04
2024	3285	17.30	18982	32.36
	18988	100	56888	100

It is observed cumulative rate is gradually increased from 2020 to 2024 with 18.92% to 17.30%. Collaborative growth in increasing and decreasing manner.

CONCLUSION

By conducting scientometric analysis of sarcoma research between 2022 and 2024, it is possible to gain critical insights into the evolving landscape of this rare but aggressive cancer. A substantial increase in publications, citations, and collaborative efforts shows the growing global interest in comprehending sarcoma pathogenesis, diagnostic advances, and innovative therapeutic strategies. Institutions, funding agencies, and high-impact journals are just some of the leading contributors who have played a key role in driving research progress.

Trends are indicating a transition to precision medicine, immunotherapeutic approaches, and AI-driven diagnostic tools, indicating a deeper integration of technology and molecular biology in sarcoma research. Furthermore, the growing interdisciplinary collaborations emphasize the importance of a multi-faceted approach to improve patient outcomes.

Despite these advancements, challenges such as limited clinical trial data, the rarity of sarcoma subtypes, and disparities in research funding remain critical barriers. Future research should emphasize translational applications, patient-centric therapies, and equitable access to novel treatments. By addressing these gaps, the global scientific community can pave the way for more effective management and improved survival rates for sarcoma patients.

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