

## Scholarly Productivity in Physiotherapy from 1992 to 2022 in Pakistan: A Bibliometric Analysis Based on the Web of Science Database

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The best way to communicate and disseminate knowledge in a profession is through publications and research activities. Maintaining and developing the body of knowledge specific to physiotherapy is crucial for enhancing the current knowledge and supporting the idea of evidence-based physiotherapy practice. This study aimed to investigate the research output of physiotherapy professionals in Pakistan during the last three decades (1992-2022).

The bibliometric analysis technique was adopted to conduct this study. Data from the Web of Science (core collection) was extracted in November 2022 via electronic searching using the query: ALL= (Physical therapy AND Pakistan OR physiotherapy AND Pakistan OR manual therapy AND Pakistan OR physical rehabilitation AND Pakistan OR Exercise therapy AND Pakistan. The search yielded 2,390 articles that were published between 1992 and 2022. 508 relevant publications were finally selected for further analysis based on the study's inclusion criteria. The bibliometric analysis results highlighted that there has been a consistent rise in the number of published articles over the past 30 years, with the peak publication trend seen in 2020. The analysis also revealed the most productive authors, journals, and their co-authors' networking in this domain. The most frequently used author keywords and the most collaborative country in research with Pakistan were also identified. However, it was observed that there were specific clusters of research work; certain institutions and authors were very active in research, highlighting a somewhat non-diversified research activity in the profession. Furthermore, the articles were primarily published in Pakistan-based journals, indicating a limited spread of knowledge.

**Keywords:** physiotherapy; manual therapy research; citation analysis; research trends; bibliometric indicators; research productivity; low and middle-income countries

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## INTRODUCTION

The healthcare sector has evolved exponentially due to modernization and technological innovations in the medical field. Physiotherapy is a thriving profession that has shown tremendous evolution in terms of advanced clinical practice guidelines and academic proliferation (Tawiah et al., 2021). In Pakistan, the profession of physiotherapy has witnessed a remarkable shift, moving from a 2-year diploma program to a range of baccalaureate and post baccalaureate programs, including speciality certifications and advanced clinical practice training (Memon et al., 2016). According to Sana et al., the level of education has risen during the last decade in Pakistan, and there have been ample opportunities for research productivity in this profession (Sana et al., 2018).

Publishing research in peer-reviewed journals is one of the best ways to disseminate knowledge regarding various perspectives in physiotherapy. The scientific output of a particular profession indicates the research productivity of that discipline of study. Therefore, maintaining and developing the body of knowledge specific to physiotherapy is crucial for enhancing current knowledge related to the discipline and supporting the idea of evidence-based physiotherapy practice. An analysis of the scholarly productivity of physiotherapists can allow the researchers to define the basic indicators of knowledge and clinical practice guidelines in the profession. Numerous studies have highlighted the scholarly output in physiotherapy and other professions (Peter & Idhris, 2020; Ul Haq et al., 2020; Carballo-Costa et al., 2022). The scholarly productivity of four major Western and five Asian countries was evaluated using a bibliometric analysis technique by Man et al. They reported that the professors and associate professors affiliated with Australia, Canada, Hong Kong, and the United States of America were most productive regarding their research activities (Man et al., 2019).

Before the 1990s, the traditional and most consistent assessment tool for evaluating scholarly productivity was the evaluation of the quality of the scientific work of an individual researcher or the whole scholarly output of an institution. However, later, the trends of evaluation diverged towards quantitative analysis like scientometrics or bibliometrics (Bornmann & Leydesdorff, 2014). Bibliometric analysis can be defined as a “quantitative assessment technique that utilizes mathematical and statistical methods to assess the inter-relationships and impact of scientific work or publication in the respective area of the field as well as citation analysis” (Donthu et al., 2021). Bibliometric analysis can actively identify influential authors, journals, institutions, or countries most prominent in their contributions to the academic literature (Lee et al., 2020). Bibliometric analysis tools can also help researchers map the most entrenched and emerging research areas in a field (Koo, 2017). Bibliometric analysis has been extensively employed to assess the trends in physiotherapy research as well as the evolution of the field.

The latest bibliometric visualizations concluded that the United States of America, the United Kingdom, and Australia have been the most active research producers in this domain. At the same time, the Netherlands, Norway, and Sweden have led the way regarding citation impact (Carballo-Costa et al., 2023). Researchers have concluded that the number of published articles is not the only measure for identifying research activity; the impact of citations is also a metric to consider (Carballo-Costa, Quintela-Del-Río, et al., 2022). Another study was conducted by Australian authors who analyzed the physical therapy literature published over five decades. Based on their bibliometric analysis, they concluded that the research in physical therapy has evolved in quantity, collaboration, and standard over time. The research methodologies and designs have also improved and become more quantitative (Wiles et al., 2012). Few studies have been conducted in Pakistan in this context. The scholarly output of Army Medical College, Pakistan, was assessed using the bibliometric analysis technique, and it was concluded that although the institution had shown remarkable scholarly growth during the last decade, there was ample room for further research activities and international collaborations (Haq et al., 2020).

High-quality research is essential for advancing the field of physiotherapy and developing research-based practice guidelines in the profession (Bridges et al., 2007). In Pakistan, the clinical practice guidelines have not been streamlined with evidence-based practice (EBP), and various barriers hindering the inclusion of EBP in the day-to-day practice of physiotherapy have been identified (Jesrani et al., 2019). To the best of the author's knowledge, no studies have been conducted in Pakistan that provide insights into the overall research output and various influential aspects of researchers in this field. Hence, this study aimed to conduct a bibliometric analysis of the research productivity of physiotherapists in this part of the world over the past three decades (1992-2022). The Web of Science database was selected for this purpose.

### **Research Questions:**

1. How much scholarly work is being produced by Pakistani physiotherapists?
2. What are the influential aspects of the physiotherapy literature, i.e. top journals, top institutions, top authors, etc?
3. What are the key research streams in the physiotherapy literature?
4. Which countries are collaborating with Pakistan in physiotherapy research activity?

### **METHODOLOGY**

#### **Data sources**

Bibliometric data was retrieved using the Web of Science (WoS) to investigate the scientific output of physiotherapists in Pakistan. The WoS is considered the most encyclopedic scientific citation indexing system (Singh et al., 2021). Introduced by Elsevier, SCOPUS is also an excellent replacement for the

WoS with a broader range of multidisciplinary literary databases (Vieira & Gomes, 2009). However, in this research, the WoS database was preferred instead of SCOPUS as it covers the databases that date back to 1990 and are primarily written in English. SCOPUS covers several journals with lower impact and is limited to recent articles (Chadegani et al., 2013).

### **Data Screening**

The data from the WoS (core collection) was extracted in November 2022 through an electronic search using the following query:  
ALL=(Physical therapy AND Pakistan OR physiotherapy AND Pakistan OR manual therapy AND Pakistan OR physical rehabilitation AND Pakistan OR Exercise therapy AND Pakistan).

Indexes SCI-EXPANDED, ESCI. Period = 1992-2022

This search yielded the first set of required records consisting of 2390 articles published from 1992 till November 2022. Only original articles and review articles written in English were included. Further refining of the literature was carried out by excluding the irrelevant articles using the Web of Science categories (research areas). The relevant research areas, such as rehabilitation, orthopedics, pediatrics, and sports sciences, were included, and the irrelevant areas were excluded. This led to the exclusion of 1175 articles. The documents were further refined manually using EndNote X8. Each article was analyzed for its author affiliation, and it was ensured that each author had an affiliation with a Pakistani educational institute (public or private sector). The authors with double institutional affiliations were also included. The authors' names were counter-checked for their spellings and institutional affiliations, and any mistakes were rectified. Thus, the final count of papers was n=508, which were all relevant and met the study's inclusion criteria.

### **Data Analysis**

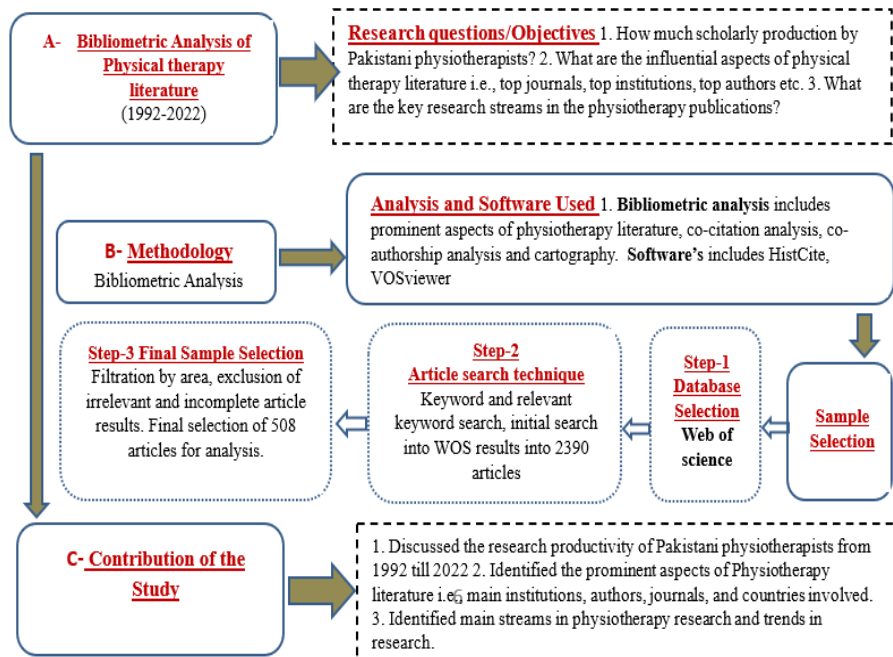
The extracted data from the WoS was further analyzed using MS Excel, HistCite, Visualization of Similarities (VOS) viewer version 1.6.18, and Biblioshiny software (RStudio). HistCite is free software that generates chronological maps of the bibliographic input from the Web of Science source and conducts a citation linkage analysis. The bibliographic input includes information regarding authors, institutions, journal sources, and cited references (Garfield et al., 2006).

VOSviewer creates visualization maps of the bibliometric data and their graphical representation. VOSviewer gives a fair picture of different clusters and networks of bibliometric data. It is used to visualize the relationships and collaborations between authors, countries, sources of journals, co-citations, and the most used keywords in the articles (Van Eck & Waltman, 2010). Microsoft Excel was also used to draw some graphs to present yearly research output of publications.

The data exported from the WoS database in ISI common export (ciw) format were imported into the VOSviewer to analyze various bibliometric parameters like co-occurrence of keywords, most productive authors and journals in the published articles. Biblioshiny was used to make a country collaboration map to analyze the countries collaborating most with Pakistan in this research area. The bibliometric approaches to objectively structure the physiotherapy research focused on many statistical indicators and in-depth reviews. HistCite software provided the number of publications or publication records (PPR), Global citation score (GCS), and local citation score (LCS) indicators to measure the research productivity of authors and journals. These indicators are well-known in Scientometrics and bibliometric work (Xu et al., 2021). The Global and local citation scores represent the impact index or actual impact of the research work in a particular field. The GCS indicates the number of citations the document received from all publication sources (the WOS, Google Scholar, Scopus, etc.). At the same time, the LCS shows the number of citations received by the articles in that specific field of research (Batista-Canino et al., 2023). In this research, the citation scores from the WOS database were considered. Figure 1 summarizes the search methodology used in this study.

**Figure 1**

*Search strategy for data collection from the WoS database*



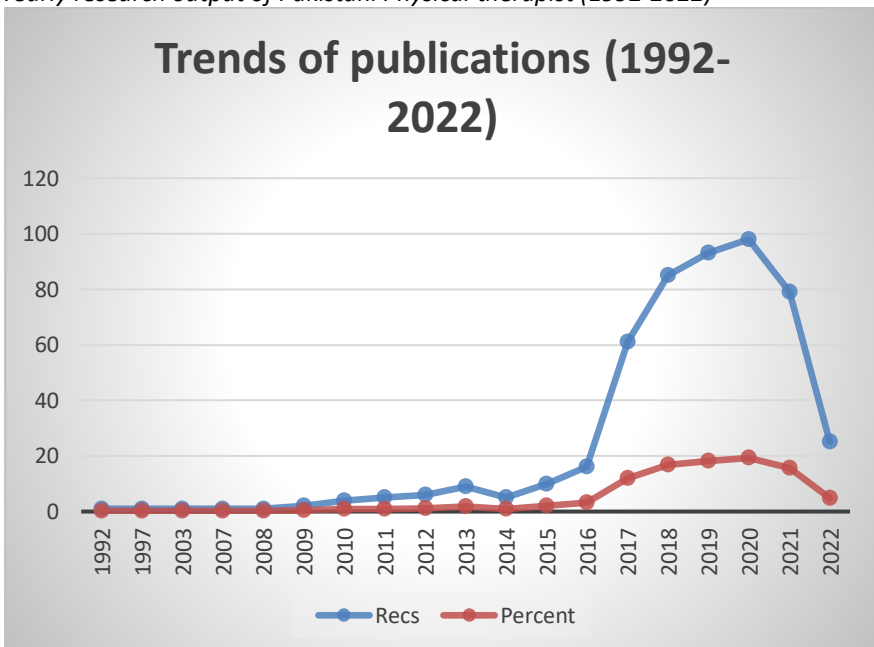
## RESULTS

### Global trends in studies exploring physiotherapy research over the past 30 years

The yearly output of literature by researchers in the physiotherapy discipline in Pakistan between 1992 and 2022 has been depicted in the following graphical representation (Figure2). The publishing trends can roughly be divided into three stages of development to understand the literature growth during different phases. The first stage, which can be considered the embryonic stage, lasted from 1992 to 2010 and had a negligible number of publications with no considerable growth in research productivity. In the second stage, from 2010 to 2016, an upward trend can be seen, as well as some growth along with some fluctuations. In the third stage, from 2016 to 2022, a significant spike in publications is observed, peaking in 2020 at 98 publications, followed by a sharp decline in 2022.

**Figure 2**

*Yearly research output of Pakistani Physical therapist (1992-2022)*

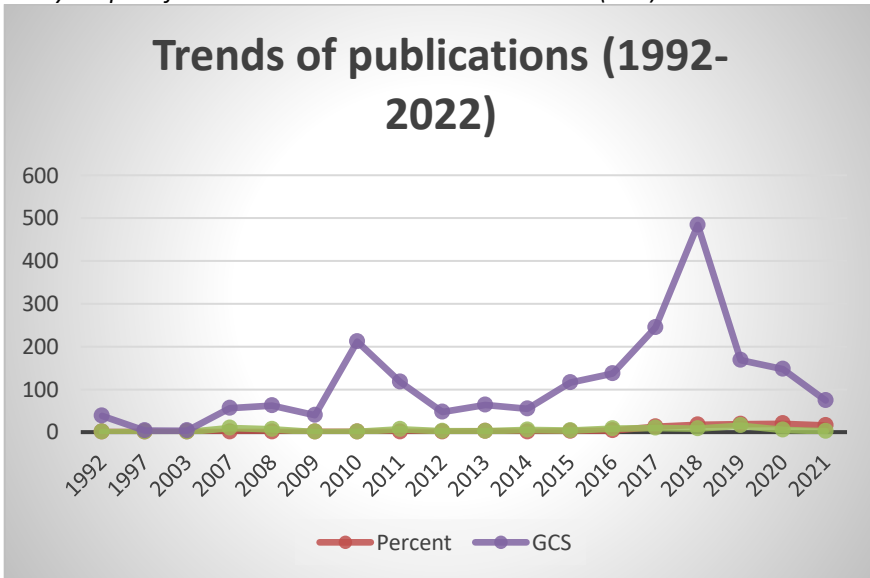


The real spike in published literature can be observed in the third phase, from 2016 to 2021. The research output of physical therapists was at its peak during 2018, 2019, and 2020, and the number of articles published during these years exceeded those in the previous years. Furthermore, the authors were most productive and produced 98 publications in 2020. However, as seen in Figure 3, the global citation score does not correspond with this trend (Figure3).

The highest number of cited articles were published in 2018. Eighty-five articles had a global citation score of 484, the highest-ever GCS score in the past 30 years. Some decline in productivity can be seen in 2021 and 2022, and the overall trend is promising.

**Figure 3**

*Yearly output of articles and their Global Citation Score (GCS)*



### **Most influential authors in physical therapy literature (1992-2022)**

Table 1 depicts the top 10 influential authors in the literature on physiotherapy during the past 30 years. The authors have been categorized based on their number of publications and global citations per year. Ashfaq Ahmad from the University of Lahore had the highest number of publications (n=57) and topped the list with a global citation score per year (GCS/t) of 16.8. Mohammad A Mohseni Bandpei is ranked second with 30 published articles in the WoS-indexed journals with a GCS of 50 per year, and Syed Amir Gillani is ranked third with 28 publications and a GCS/t of 20.

**Table 1***Most influential author in Physiotherapy Research in Pakistan*

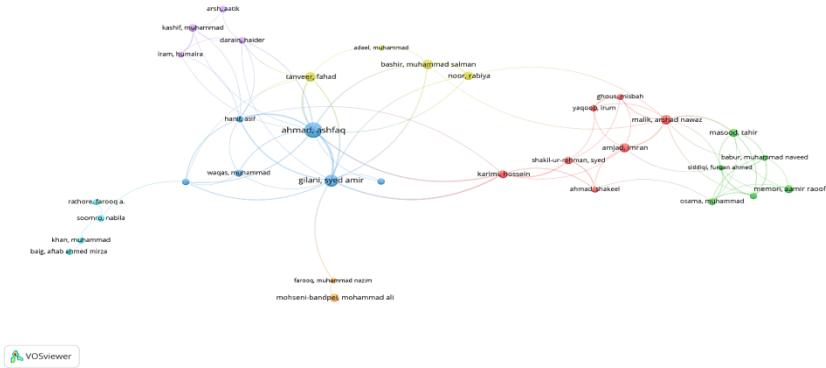
Rank	Name of author	Name of university/institution	PPR	GCS/t	LCS/t
1	Ashfaq Ahmad	University of Lahore, Pakistan	57	16.8	1.4
2	Mohammad A Mohseni Bandpei	University of Social Welfare and Rehabilitation Sciences, Iran	30	50	0.4
3	Syed Amir Gilani	University of Lahore, Pakistan	28	20	0.9
4	Muhammad Salman Bashir	Riphah International University, Pakistan	17	3	0.3
5	Farooq A Rathore	Armed Forces Institute of Rehabilitation Medicine, Pakistan	17	34	1.2
6	Fahad Tanveer	University of Lahore, Pakistan	17	5	0.6
7	Malik Arshad Nawaz	Riphah International University, Pakistan	16	5	0.0
8	Aamir Raof Memon	Peoples University of Medical & Health Sciences for Women, Pakistan	15	24	1.2
9	Faiza Sharif	University of Lahore, Pakistan	14	4	0.3
10	Imran Amjad	Riphah International University, Pakistan	14	13	0.0

PPR= Publication record, GCS/t= Global citation score/year, LCS/t = Local citation score/year

### Co-authorship network analysis using VOS viewer maps

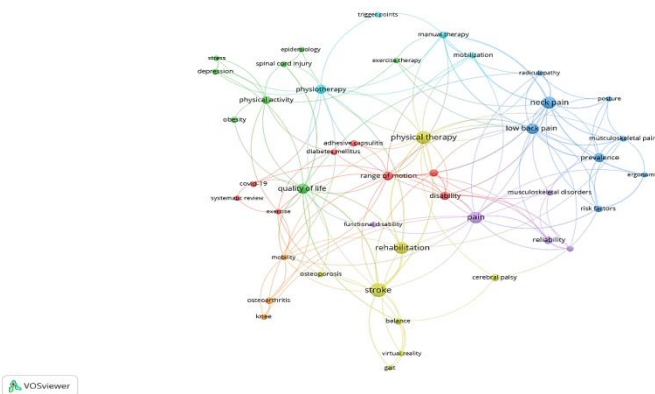
The VOS viewer was used to analyze the co-authorship networks. A minimum of 6 co-authored publications with a minimum 6-citation score was set as the criteria. Out of 1427 authors, only 35 met the threshold and were included in the co-author clustering. Figure 4 presents the resultant clusters. In total, 7 clusters were formed, which were closely knitted together in co-authorship. The most extensive network was formed by Ashfaq Ahmed and 12 authors and had the most collaborated research activity. Syed Amir Gilani made the most robust co-author network in this cluster with Ashfaq Ahmed, with a link strength of 21. The second major cluster was webbed by Arshad Nawaz Malik, who shared a co-authorship with nine more authors, including Masood Tahir, Imran Amjad, Salman Bashir, and others.



**Figure 4***Co-authorship network analysis of physiotherapy literature (1992-2022)*

### Analysis of most frequently used author keywords in physiotherapy publications (1992-2022):

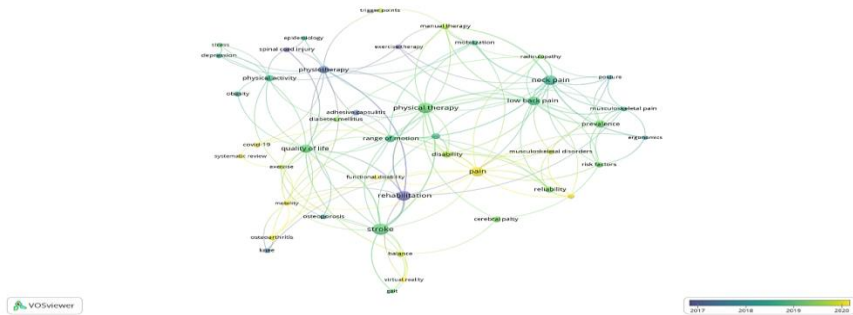
The analysis of the author keywords depicts the most researched and common areas of interest for authors. The minimum occurrence of a keyword was set at six times. After running the software, an interesting overview of the areas of most frequent publications during the past 30 years was observed. Of the 1357 keywords, only 44 met the set criterion. The most utilized keyword was 'stroke', which occurred 35 times, followed by 'physiotherapy', which occurred 30 times. Others were 'neck pain' (27 times), 'rehabilitation' (25 times), 'low back pain' (21 times), and 'quality of life' (19 times). The cluster formation is presented in Figure. 5

**Figure 5***Visualization of author keywords in Physiotherapy publications (1992-2022)*

The overlay visualization of author keywords can be seen in Figure 6. This overlay image groups the selected keywords based on the time frame (with the help of varied colors). This visualization portrays the utilization of keywords by authors and their average publication years. This can be divided into three groups to make understanding this linkage between keyword and publication year easier. During 2017-2018, the research aimed more toward rehabilitation, spinal cord injury, and adhesive capsulitis. However, during 2018-2019, the most attention was focused on areas such as stroke, quality of life, neck and lower back pain. Lastly, the authors have published more about COVID-19, virtual reality, osteoarthritis, and pain management since 2019.

**Figure 6**

*Overlay Visualization map of author keywords (1992-2022)*



**Countries research collaboration map with Pakistani Authors of Physical therapy literature (1992-2022)**

The country collaboration map was drawn using Biblioshiny software. During the dataset input, the minimum edge was kept at 5, which means that only the countries with a minimum of 5 collaborations were counted. The most collaborative pair was Pakistan-Iran, with a frequency of 33, followed by Pakistan-USA and Pakistan-Saudi Arabia, sharing collaborations of 19 and 13, respectively. The map is presented in Figure7.

**Figure7**

*Country research collaboration map of Pakistani authors in physiotherapy research (1992-2022)*



### Most influential journals in Physiotherapy literature in Pakistan (1992-2022)

This bibliometric analysis categorized the most influential journals based on their number of publications and total global and local citation scores. Regarding the number of articles (PPR), the journal with the most publications was the Rawal Medical Journal (RMJ), with 135 articles indexed in the WoS database during the past 30 years. The Journal of Pakistan Medical Association (JPMA) and Pakistan Journal of Medical Sciences (PJMS) followed with 57 and 37 publications, respectively. The published resources were refined by ordering them according to their global citation score (TGC/t). According to this classification, PJMS was ranked at the top, with a 46.7 citation score. The Lancet and JPMA were next, scoring 43.6 and 32, respectively. Based on their local citation scores (TLC/t), the top influential journals were Rawal Medical Journal, Journal of Pakistan Medical Association, Pakistan Journal of Medical Sciences, and Journal of Back and Musculoskeletal Rehabilitation, with scores of 2.7, 2.3, 2.3, and 1.5, respectively (Table 2).

**Table 2**

*Most influential journals for Physiotherapy Research in Pakistan*

Rank	Name of journal <sup>1</sup>	P <sub>PR</sub>	Name of journal <sup>2</sup>	TGC/t	Name of journal <sup>3</sup>	TLC/t
1	RMJ	135	PJMS	46.7	RMJ	2.7
2	JPMA	57	LANCET	43.6	JPMA	2.3
3	PJMS	37	JPMA	32.0	PJMS	2.3
4	PJMHS	30	RMJ	20.2	JBMR	1.5
5	Annals KEMU	18	PM&R	15.3	APMR	0.9
6	IAJPS	17	JCPSP	13.8	SC	0.7
7	JCPSP	15	APMR	11.6	AnnalsKEMU	0.5
8	KMUJ	14	JBMR	10.8	DRAT	0.5
9	PMRK	13	JBMT	8.2	PMRK	0.5
10	JBMT	12	CUREUS	8.0	CRR	0.5

The table shows the ranking of 10 influential journals based on various classifications. 1=journals sorted based on the number of published papers in the period selected, 2=journals sorted based on TGC/t, 3=journals sorted based on TLC/t. PPR=Publication record, GC/t= Total global citation/year, TLC/t= Total local citation/year

### DISCUSSION

Bibliometric analysis has been progressively used to review trends and progress in different fields and areas of medical research (Kokol et al., 2021). The research plays a significant role in helping academics recognize the knowledge gaps through critically appraising the available literary work. The publication procedure allows the researchers to pass through a peer-review process that scrutinizes and values their work and contribution to the area.

The current data analysis uses the Web of Science database to present different dimensions of physiotherapy research in Pakistan, including top authors, journals, and organizations during the last thirty years. In the current study, the trend of publishing physiotherapy-focused articles has grown exponentially over the past three decades. In India, a study analyzed the MEDLINE database (2000-2014) and observed a similar uptrend in the scientific output of Indian physiotherapy researchers (Hariohm et al., 2016). The consistent rise in the publication output depicts the better academic standing of Pakistani researchers among other contributing countries. In the current analysis, the maximum scholarly productivity was observed during the past five years. In 2020, a maximum number of articles were published. However, their global citation impact was not prominent. In comparison, in 2018, although the number of publications was less, it was the best in terms of citation score. Since the post-COVID period, the publishing trend has declined again, which needs some attention from the researchers.

The analysis shows that the primary reason behind this epic research growth might be the recent growth of physiotherapy institutes in Pakistan. The profession started as a 2-year diploma program from the Jinnah Postgraduate Medical Centre in 1956, which now has become a significant profession with more than 70 institutes offering various physical therapy programs, including postgraduate degrees (Memon et al., 2016). The formation of a representative body (Pakistan Physical Therapy Association) in 2008 and its collaboration with the World Confederation for Physical Therapy in 2011 have significantly contributed to the incredible growth of the profession over the last decade (Memon et al., 2019). The present study's findings suggest that the most significant contribution to physiotherapy literature in terms of the number of articles was made by Ashfaq Ahmed (University of Lahore), who had 57 articles (GCS=16.8). Mohammad A Mohseni Bandpei was ranked second in terms of publication records. However, he was the globally highest-cited (GCS=50) author in the top 10 ranked authors. So, in terms of bibliometric indicators, it was observed that the research work of Mohammad A Mohseni Bandpei was impactful in a multidisciplinary way, and his work garnered attention even from outside of the area of study. The research activity of Ashfaq Ahmed has been influential in the specific field of research and received citations within the field of study as his LCS was the highest among other authors. Furthermore, Syed Amir Gillani occupied the third slot with 20 publications in peer-reviewed journals, and his GCS was calculated as 20, which indicates that his scholarly work was also getting attention from multiple fields of study (Table 1). In this study, another author, Farooq A Rathore, received high global citations (GCS=34), although his number of publications was low (n=17). Thus, based on this analysis, it can be inferred that the impact and quality of research work cannot merely be the number of publications; other bibliometric indicators are

also necessary to unveil an accurate picture. The keywords authors use are one of the three pillars of a biomedical research publication. The correct use of keywords enables cross-indexing and broader visibility of the popular research areas (Dash, 2016). The current study reveals that the researchers used stroke, physical therapy, and neck pain as the most commonly used keywords in the database. These findings differ from another bibliometric study conducted in India, according to which management, exercise, and reliability are the most used keywords by Indian authors (Subbarayalu et al., 2020). Emami Z. also examined the scientific output of the physiotherapy profession and examined in her co-word analysis that disability, treatment, physiotherapy, treatment outcome, children, pain, exercise, physical therapy, and disease prevalence were among the most impacting keywords (Emami, 2020).

A further predominant aspect of this bibliometric study has been to discern the research collaboration of Pakistani authors with other countries. Earlier studies have emphasized the importance of this international research alliance as it indicates the quality and spread of scientific knowledge from developed to newly developing countries (Freshwater et al., 2006). According to the present study, Iran was the most collaborative and associated in research with Pakistan. The reason might be Mohammad A Mohseni Bandpei's double affiliation with the University of Social Welfare and Rehabilitation Sciences, Iran, and the University of Lahore, Pakistan. Other collegial countries, the USA and Saudi Arabia, are collaborating with Pakistani authors. Interestingly, in context with a bibliometric analysis of Indian research output, the Indian authors strongly ally with USA and KSA authors (Subbarayalu et al., 2020).

This study also identified the most influential and prominent journals by analyzing the published literature. Identifying significant journals may help the authors submit their articles to renowned sources and help the readers guide their interests. According to the results of this study, Pakistani authors have a significant part of their published work in Pakistani journals, including the Rawal Medical Journal (RMJ), Journal of Pakistan Medical Association (JPMA), and Pakistan Journal of Medical Sciences (PJMS). However, international journals were not very prominent in the list. The affinity of Pakistani researchers for Pakistan-based journals could be due to the nature of the research work or their personal choice. Generally, the researchers tend to choose a journal based on the journal's impact factor, value of peer review, acceptability ratio, reputation in the research community, and publishing charges (Pepermans & Rousseau, 2016). The actual reasoning behind the authors' choice of journals could not be addressed in this study, and further research is needed in this regard. Pakistani authors need to expand their interests and benefaction in high-quality international journals. One of the vital and fundamental pillars of any medical speciality is generating and disseminating scientific knowledge through scientific publications. Conversely,

high productivity does not always lead to high-quality research. One must consider the impact of citations. The present bibliometric analysis and visualizations have provided insight into physiotherapy research for the past 30 years. The authors are unaware of any bibliometric analysis of physiotherapy literature conducted in Pakistan. Few studies were found evaluating the research productivity of a specific journal or institution. Hence, this article is a valuable addition to the literature in providing an overview of the scholarly production of Pakistani physiotherapists.

The current study possesses certain limitations. Only one database (the Web of Science) was used for data extraction. Other data sources, like Scopus, MEDLINE, etc., could also be used to expand the results of this study further. It also limits the utility of the database for citation analysis. Moreover, the data extraction was conducted in November 2022; later publications have been thus excluded. Furthermore, the utilization of VoSviewer software could be varied in network analysis and clustering of various authors and co-citations. So, it is recommended for future researchers to perform bibliometric analysis using various databases and visualization software to deduce the results comprehensively.

### CONCLUSION

To conclude, this study used bibliometric methods to identify the research trends in physiotherapy in Pakistan over the past three decades. A consistent rise in publications has been noted, except in 2021 and 2022. Authors have primarily published in Pakistan-based journals, limiting the diversification of Pakistani physiotherapy literature. The analysis of authors and co-citations has shown that research activity has been clustered around two or three significant authors and their institutional affiliations. Lastly, the analysis of the keywords might help researchers in their research endeavours in the future and help fill knowledge gaps in the literature.

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**APPENDIX****Abbreviations used for journals**

<b>Abbreviation</b>	<b>Name of journal</b>	<b>Abbreviation</b>	<b>Name of journal</b>
RMJ	Rawal Medical Journal	LANCET	The Lancet
JPMA	Journal of the Pakistan Medical Association	PM&R	PM&R Journal
PJMS	Pakistan Journal of Medical Sciences	APMR	Archives Of Physical Medicine and Rehabilitation
PJMHS	Pakistan Journal of Medical and Health Sciences	JBMR	Journal Of Back and Musculoskeletal Rehabilitation
Annals KEMU	Annals of King Edward Medical University	CUREUS	Cureus Journal of Medical Science
IAJPS	Indo-American Journal of Pharmaceutical Sciences	SC	Spinal Cord
JCPSP	Journal of College of Physicians and Surgeons Pakistan	DRAT	Disability And Rehabilitation-Assistive Technology
KMUJ	Khyber Medical University Journal	CRR	Current Rheumatology Reviews
PMRK	PhysikalischeMedizin Rehabilitationsmedizin Kurortmedizin	JBMT	Journal Of Bodywork and Movement Therapies