Research Article

BIBLIOMETRIC ANALYSIS OF STUDIES ON MANUAL LYMPHATIC DRAINAGE WITH VOSviewer

Emine Cihan[1], Cansu Şahbaz Pirinççi[2]

Abstract

Aim: The aim of this study was to map the research on manual lymphatic drainage (MLD). The analysis was based on studies indexed in the Web of Science (WOS) database and published between 1989 and 2024.

Method: The studies retrieved using the keyword "manual lymphatic drainage" on WOS were analyzed quantitatively. The following data points were recorded for each article: publication year, article type, author, WOS category, mid-level citation topics, micro-level citation topics, WOS index, affiliations, publication titles, publication language, country, publishing house, and research area.

Findings: A total of 519 articles on MLD were identified. The year with the highest number of publications was 2022. This analysis reveals that Turkish researchers are keeping pace with the global popularity of this treatment method, ranking third in publications after the USA and Germany. The primary focus of research is on oncology and rehabilitation cases. Notably, foreign researchers are prominently featured in co-citation rankings. The majority of the works analyzed are published in English. The most frequently used keyword is "lymphedema".

Results: This study provides a comprehensive overview of manual lymphatic drainage research in healthcare, helping researchers, academic journals and practitioners to better understand the development of research in healthcare and its potential application implications.

Keywords: Manual Lymphatic Drainage, VOSviewer, Bibliometric Analysis

[1]: Corresponding Author: Assist. Prof. Dr., Selçuk University, Vocational School Of Health Services, Department of Therapy and Rehabilitation, Konya, Türkiye eminecihan@selcuk.edu.tr ORCID: 0000-0003-0699-3771

[2] Assoc. Prof. Dr., University of Health Sciences, Faculty of Physiotherapy and Rehabilitation, Department of Cardiopulmonary Physiotherapy and Rehabilitation, Ankara, Türkiye cansusahbaz@gmail.com ORCID: 0000-0002-3921-0721

Manuscript Received: *04.06.2024*
Manuscript Accepted: *25.06.2024*

Manuscript information: Cihan E., Şahbaz Pirinççi C. (2025). Bibliometric Analysis Of Studies On Manual Lymphatic Drainage With Vosviewer. *Selçuk Sağlık Dergisi,* 6(1), 1–11. https://doi.org/10.70813/ssd.1495953

Manuel Lenfatik Drenaj ile İlgili Çalışmaların VOSviewer ile Bibliyometrik Analizi

Öz

Amaç: Bu çalışmanın amacı, manuel lenfatik drenaj (MLD) üzerine yapılan araştırmaların bir haritasını çıkarmaktır. Analiz, Web of Science (WOS) veri tabanında indekslenen ve 1989-2024 yılları arasında yayınlanan çalışmalara dayanmaktadır.

Yöntem: WOS'ta "manuel lenfatik drenaj" anahtar kelimesi kullanılarak ulaşılan çalışmalar kantitatif olarak analiz edildi. Her makale için şu veriler kaydedildi: yayın yılı, makale türü, yazar, WOS kategorisi, orta düzey atıf konuları, mikro düzey atıf konuları, WOS indeksi, bağlantılar, yayın başlıkları, yayın dili, ülke, yayınevi ve araştırma alanı.

Bulgular: MLD ile ilgili toplam 519 makale belirlendi. En çok yayının yapıldığı yıl ise 2022 oldu. Bu analiz, Türk araştırmacıların bu tedavi yönteminin dünya çapındaki popülerliğine ayak uydurarak yayınlarda ABD ve Almanya'dan sonra üçüncü sırada yer aldığını ortaya koyuyor. Araştırmanın öncelikli odak noktası onkoloji ve rehabilitasyon vakalarıdır. Özellikle yabancı araştırmacılar ortak atıf sıralamasında ön plana çıkmaktadır. İncelenen eserlerin çoğunluğu İngilizce olarak yayınlanmaktadır. En sık kullanılan anahtar kelime "lenfödem"dir.

Sonuç: Bu çalışma, sağlık alanındaki manuel lenfatik drenaj araştırmalarına kapsamlı bir genel bakış sağlayarak araştırmacıların, akademik dergilerin ve uygulayıcıların sağlık alanındaki araştırmaların gelişimini ve potansiyel uygulama sonuçlarını daha iyi anlamalarına yardımcı olmaktadır.

Anahtar Kelimeler: Manuel Lenfatik Drenaj, VOSviewer, Bibliyometrik Analiz

1.INTRODUCTION

Lymphedema is a chronic condition characterized by the accumulation of protein-rich fluid between tissues, leading to swelling, discomfort, and potential complications. Complex Decongestive Therapy (CDT) is recognized as the gold standard in the treatment of lymphedema by the International Lymphedema Association (Lymphology, 2013). This treatment consists of two phases: the drainage phase and the protection phase. The drainage phase includes manual lymphatic drainage (MLD), skin care, compression therapy, and exercise, while the protection phase involves self-drainage, skin care, compression garments, and exercises. MLD treatment during the drainage phase can be applied as part of CDT or as a standalone treatment for various diseases (Bakar et al., 2014).

Manual lymphatic drainage is a specialized treatment that employs various hand techniques to stimulate the lymphatic system. The technique was first described by Vodder and has since been adapted and applied in various forms by different practitioners (Williams, 2010). As a general principle, the application involves gentle hand movements, starting from the proximal part of the affected area and progressing towards the distal part (Jenns et al., 2000). The application increases lymphangiogenesis, stimulates skin mechanoreceptors, regulates the sympathetic and parasympathetic nervous systems, and can achieve pain control (Chikly et al., 2014). Although initially used primarily for lymphedema patients, MLD has since been extended to various other disease groups. MLD can be applied as a standalone treatment or in conjunction with other treatment methods. The effectiveness of MLD treatment has been investigated in various conditions, including fibromyalgia, total hip/knee replacement, rheumatoid arthritis, axillary web syndrome, and subdural hematoma (Akdeniz Leblebicier et al., 2023; Cihan et al., 2021; Ekici et al., 2009; Gao et al., 2023; Lu et al., 2024).

Bibliometric analysis is a type of quantitative research that provides visual information about the current status of the researched topic. It offers insights into the most prolific countries and languages, the most frequently used keywords, existing gaps in the literature, preferred publishing houses, the most common types of published articles, and neglected topics (Donthu et al., 2021). It can be argued that bibliometric analysis is one of the most favored methodologies for establishing a foundation before designing a study on a particular subject. In addition to international databases such as PubMed, Web of Science (WOS), and Scopus, national databases like Dergipark, YÖK Thesis Center, and Ulakbim can also be explored to locate articles published on the specified subject (Erhan et al., 2023).

This study aims to offer the reader a novel perspective on the application of Manual Lymphatic Drainage (MLD) in diverse patient populations. It endeavors to demonstrate that MLD can serve as a

complementary therapy alongside conventional treatments for various patient groups. Furthermore, the study seeks to illustrate how MLD can be seamlessly integrated into treatment regimens founded upon contemporary, efficacious, interdisciplinary approaches tailored to individual patients.

2. METHOD

2.1 Purpose of the Study

The aim of this study was to map the research on manual lymphatic drainage (MLD).

2.2. Research Group

The analysis was based on studies indexed in the Web of Science (WOS) database and published between 1989 and 2024. WOS database (https://www.webofscience.com/wos/woscc/basic-search on May 3, 2024) was used for this study. A total of 519 articles in the field of MLD were accessed until 06.05.2024. During the research, all fields were selected from the WOS database and articles published with the keyword “manual lymphatic drainage” were accessed.

2.3. Data Collection and Analysis

The publications obtained as a result of the research include publication year, article type (research article, review, proceeding paper, meeting abstract, letter, editorial material, book chapters, early access), authors, WOS category (oncology, rehabilitation, surgery, physiology, medicine general internal), mid-level citation topics (Breast Cancer Scanning, Wounds & Ulcers, Orthopedics, Cosmetic Surgery, Dermatology-General), micro-level citation topics (Lymphedema, Varicose Veins, Abdominoplasty, Photoaging, Muscle Damage), WOS index [(Science Citation Index Expanded (SCI-EXPANDED), Emerging Sources Citation Index (ESCI), Social Sciences Citation Index (SSCI), Conference Proceedings Citation Index - Science (CPCI-S), Book Citation Index-Science (BKCI-S)], the affiliations of the corresponding authors (Vanderbilt University, Harvard University, University Of Texas System, Nova Southeastern University, Universidade De Sao Paulo), the publishers (Lymphatic Research And Biology, Lymphology, Supportive Care In Cancer, Archives Of Physical Medicine And Rehabilitation, Journal Of Clinical Medicine), language of publication (English, German, French, Polish, Portuguese), origin of the article (USA, Germany, Turkey, Brazil, Poland), publishing house (Springer Nature, Elsevier, Wiley, Lippincott Williams & Wilkins, Mary Ann Liebert, Inc), research field (Oncology Rehabilitation, Surgery, Physiology, General Internal Medicine).

While numbers and percentages were used to represent the evaluated data, VOSviewer (Centre for Science and Technology Studies, Leiden University, Leiden, The Netherlands) was used as a visualization tool.

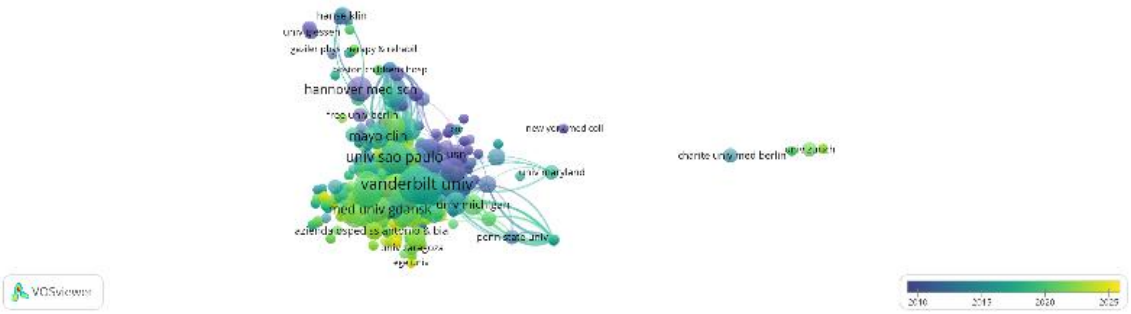
3. RESULTS

A total of 519 articles were found in the "Web of Science" database by selecting the keyword "manual lymphatic drainage". The 5 years with the most publications were 2022 (n=53), 2021 (n=49), 2020 (n=49), 2023 (n=39) and 2019 (n=36), respectively. Article types were research article (n=399), review (n=92), proceeding paper (n=20), meeting abstract (n=10), letter (n=8), editorial material (n=5), book chapters (n=3), early access (n=1). The top 5 authors with the most publications in this field were Koelmeyer Louise (n=8), Devoogdt Nele ((n=8), Mayrovitz Harvey N. (n=7), Armer Jane M. (n=7), Szuba Andrzej (n=7).

The articles included in the Web of Science (WOS) were categorized as follows: oncology (n=107), rehabilitation (n=88), surgery (n=72), physiology (n=61), and general internal medicine (n=53). The distribution of the articles across the WOS indices was as follows: Science Citation Index Expanded (SCI-EXPANDED) (n=412), Emerging Sources Citation Index (ESCI) (n=97), Social Sciences Citation Index (SSCI) (n=40), Conference Proceedings Citation Index- Science (CPCI-S) (n=24), and Book Citation Index - Science (BKCI-S) (n=3).

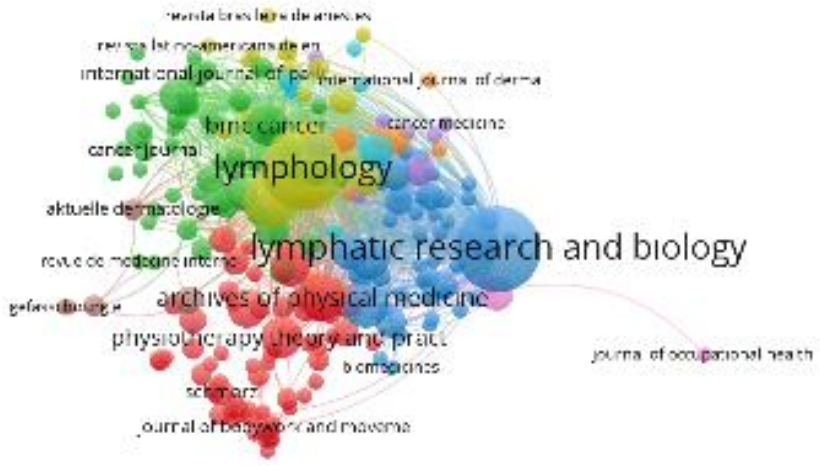
Medium level citation topics were Breast Cancer Scanning (n=387), Wounds & Ulcers (n=14), Orthopedics (n=12), Cosmetic Surgery (n=11), Dermatology-General (n=9); while micro level citation topics were Lymphedema (n=387), Varicose Veins (n=13), Abdominoplasty (n=8), Photoaging (n=7), Muscle Damage (n=7). While investigating the origin of the articles, the minimum number of published articles was based on 1 and it was concluded that there were 917 centers in total. Vanderbilt University (n=14), Harvard University (n=12), University Of Texas System (n=12), Nova Southeastern University (n=11), Universidade De Sao Paulo (n=11) are among the leading centers (Figure 1).

Figure 1. Origin of published articles



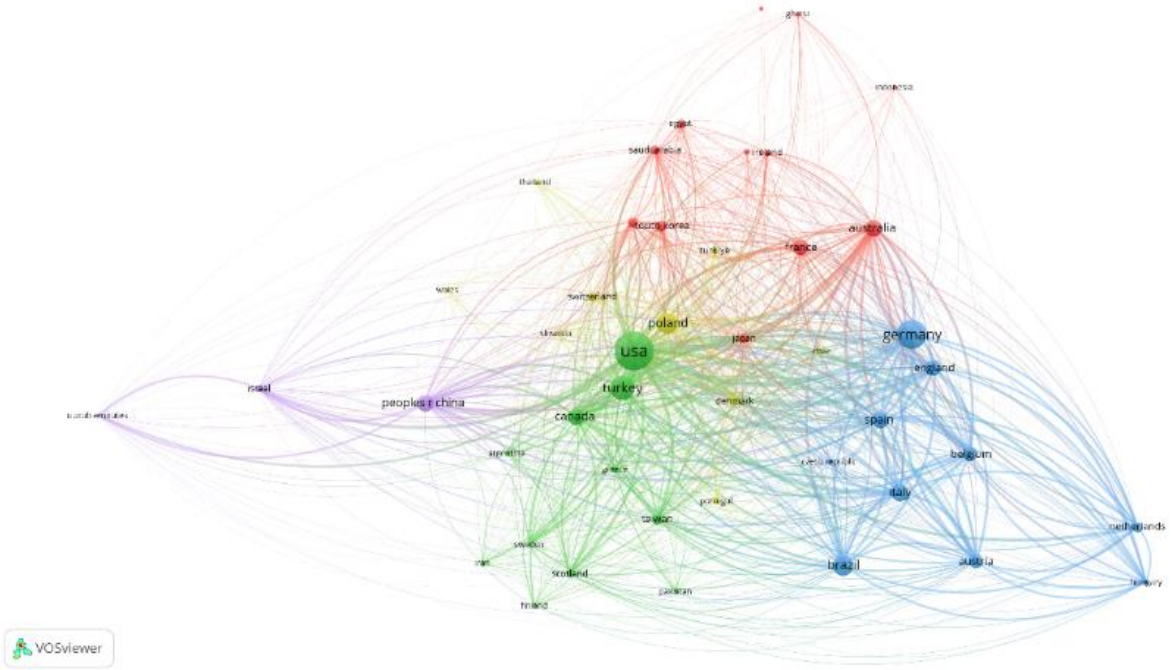
When the journals in which the articles were published were investigated, the minimum number of publications in a journal was set as 1. It was concluded that there were 267 publishers in total. The top 5 journals publishing the most articles in this field were Lymphatic Research And Biology (n=30), Lymphology (n=28), Supportive Care In Cancer (n=13), Archives Of Physical Medicine And Rehabilitation (n=9), Journal Of Clinical Medicine (n=8) (Figure 2); Springer Nature (n=79), Elsevier (n=63), Wiley (n=46), Lippincott Williams & Wilkins (n=37), Mary Ann Liebert Inc (n=33) were the top 5 publishers in this field (Figure 2).

Figure 2. Map of the journals where the articles were published



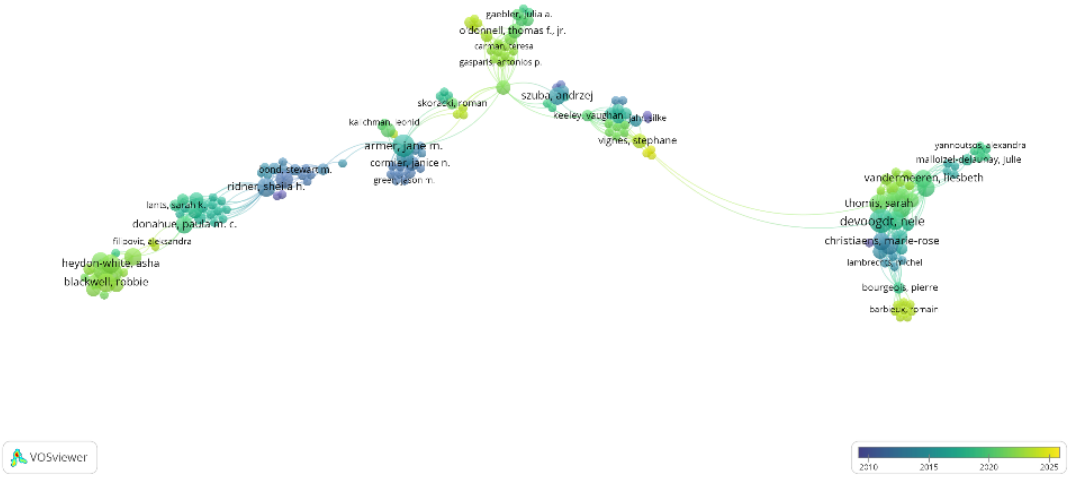
459 articles were written in English, 36 in German, 11 in French, 5 in Polish and 4 in Portuguese. Most articles were published in Oncology (n=107), Rehabilitation (n=88), Surgery (n=72), Physiology (n=61) General Internal Medicine (n=54). As a result of the analysis, it was concluded that publications were made in 48 different countries, of which 119 were made in the USA, 69 in Germany, 46 in Turkey, 34 in Brazil and 34 in Poland (Figure 3).

Figure 3. Origin of published articles



While investigating the cooperation of the authors with each other, it was taken as a basis that the author has at least 1 article and 1 citation in this field. As a result of the analysis made on a total of 2171, 1806 authors were found to meet these criteria. In this context, the top 5 authors with the highest collaboration rate were Nele Devoogdt, An De Groef, Sarah Thomis, Tessa De Vrieze, Jean Paul Belgrado (Figure 4).

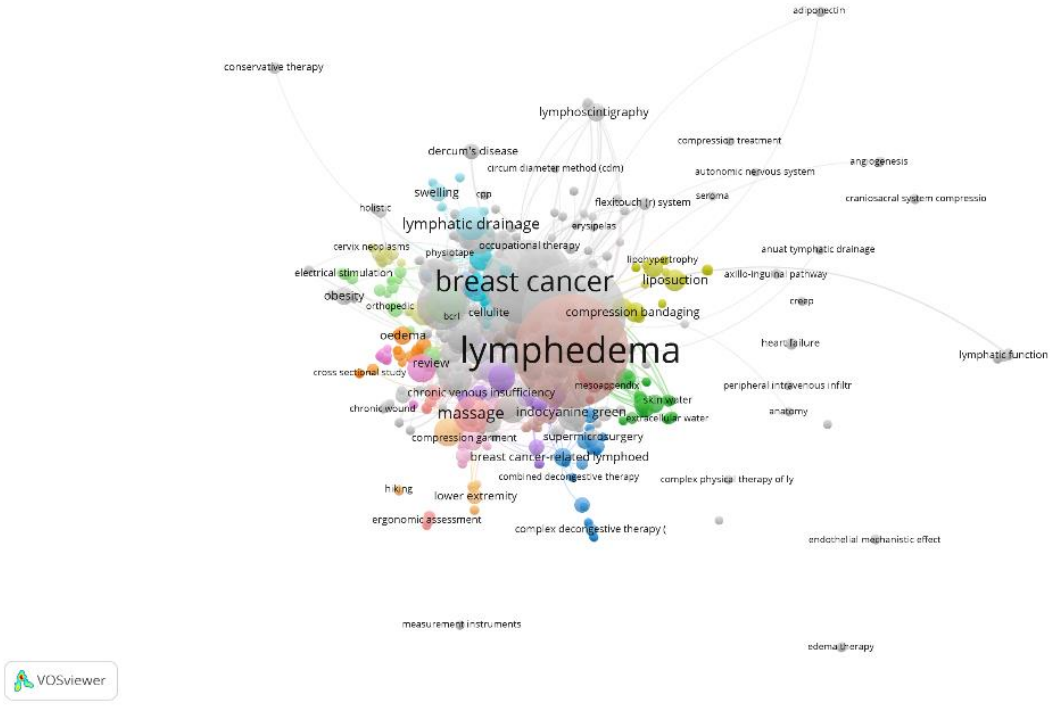
Figure 4. Co-author map showing the collaboration of authors



In the keyword analysis, 902 keywords were reached. It was concluded that the number of keywords in which a word was used at least 5 times was 50. Keywords used more than 5 times were lymphedema

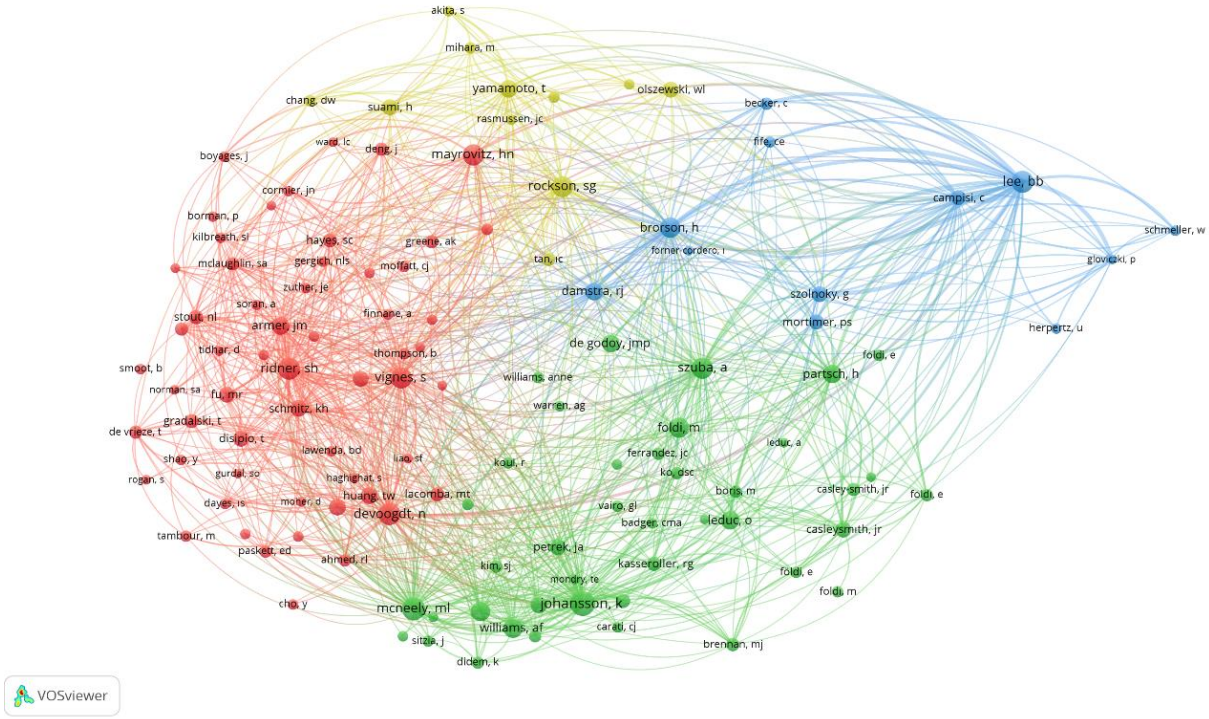
(n=161), manual lymphatic drainage (n=133), breast cancer (n=87), lymphoedema (n=36) and rehabilitation (n=31) (Figure 5).

Figure 5. Most frequently used keyword map



The number of co-citation (different sources cited) of the authors was selected as minimum 10 and 121 authors were reached according to the analysis made over 8190 authors. Karin I Johansson (n=127), Margaret L McNeely (n=111, Sheila H. Ridner (n=106), Byung Boong Lee (n=105), Nele Devoogdt (n=101) are the top 5 authors (Figure 6).

Figure 6. Co-citation rates of authors



4. CONCLUSION AND DISCUSSION

Although manual lymphatic drainage (MLD) is primarily associated with lymphedema-oriented therapies, it is currently employed in the treatment of various other pathologies. Our bibliometric analysis reveals that Turkish researchers are keeping pace with the global popularity of this treatment method, ranking third in publications after the USA and Germany. The primary focus of research is on oncology and rehabilitation cases. Notably, foreign researchers are prominently featured in co-citation rankings. The majority of the works analyzed are published in English, with "Lymphatic Research and Biology" being the journal with the highest number of publications.

The topic of MLD has seen increasing popularity from 2019 to 2022, though there was a slight decline in the number of articles published in 2023 compared to previous years. The journals predominantly published research articles, underscoring the ongoing interest and application of MLD in various medical fields.

The origin of manual lymphatic drainage (MLD) lies in enhancing the mobility and circulation of lymph fluid through customized manual techniques (Ayhan, 2016). Therefore, it is unsurprising that journals focusing on the lymphatic system, such as "Lymphatic Research and Biology" and "Lymphology,"

frequently publish related topics. When examining the "Most Read Articles" category in "Lymphatic Research and Biology," it is evident that the content primarily addresses lymphedema and techniques for controlling edema (G. Rockson, 2024).

Manual lymphatic drainage (MLD) is a component of complex decongestive therapy (CDT). The CDT technique was initially described by Emil Vodder and subsequently refined by others, including Földi, Leduc, and Kubik (Johnson, 2011; Williams, 2010). Consequently, it is unsurprising that most publications on this topic are in English and German, reflecting the origins and development of these techniques in these linguistic regions.

The fact that publications from Turkey rank 3rd in the global ranking indicates that Turkish researchers are closely following the subject and actively contributing to the literature. This achievement reflects the timely diagnosis and treatment of patients, underscoring the development of the country's healthcare system in this field. The high number of oncologists, physiatrists, and physiotherapists involved in the diagnosis and treatment of lymphedema is a significant factor in this accomplishment. Additionally, the diverse educational programs in Turkey have facilitated the training of researchers in this field, further supporting the increase in the number of publications (Şahbaz Pirinççi & Cihan, 2024).

This analysis provides a comprehensive overview of research on manual lymphatic drainage in the healthcare field, aiding researchers, academic journals, and practitioners in understanding the evolution of healthcare research and its potential applications. It may encourage researchers from the top three countries in terms of publications to consider citations, which are regarded as a measure of scientific achievement. Future research should focus on bridging the gaps between manual lymphatic drainage techniques and clinical practice, ensuring that theoretical advancements translate into practical healthcare improvements.

Funding

No funding is declared by the authors.

Conflict of Interest

No funding is declared by the authors.

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