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Bibliometric analysis of medical malpractice literature in forensic medicine from 2000 to 2024: a scopus-based study

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ABSTRACT

Aims: Forensic medicine, a multidisciplinary field integrating medicine and law, provides an essential framework for examining the evolution of medical malpractice research. Understanding shifts in forensic practices, patterns of institutional collaboration, and emerging research trends is crucial for evaluating developments within the discipline. This study aimed to conduct a bibliometric analysis of the global literature on medical malpractice examined within medico-legal and forensic medicine contexts between 2000 and 2024, in order to identify publication trends, citation patterns, collaboration networks, and thematic developments.

Methods: Data were retrieved from the Scopus database on October 15, 2025, using the search terms "medical malpractice," "medical negligence," "malpractice," and "forensic medicine." A total of 189 English-language research articles published between 2000 and 2024 were included. Descriptive analyses and network visualizations were performed using R Bibliometrix and VOSviewer (v1.6.20).

Results: An average annual growth rate of 4.3% in publication counts was observed. Journal of Forensic and Legal Medicine was the most productive journal, while Italy, Turkiye, and China were identified as the leading contributing countries. In institutional collaboration networks, Università degli Studi di Milano and Sapienza Università di Roma held central positions. The Ministry of Justice of the Republic of Turkiye demonstrated the highest connection strength among institutions, reflecting an increase in the country's research capacity in forensic medicine. The most frequently used keywords were "forensic medicine," "autopsy," and "liability."

Conclusion: Medical malpractice research examined within medico-legal and forensic medicine contexts showed a consistent upward trend between 2000 and 2024. European countries continued to occupy central positions in international collaboration networks. Overall, the findings indicate that institutional and interdisciplinary collaboration in forensic medicine research is progressively strengthening worldwide.

Keywords: Forensic medicine, medical malpractice, bibliometrics, international collaboration, medico-legal

INTRODUCTION

Forensic medicine is a subdiscipline that applies medical science to legal proceedings with the aim of elucidating how and by whom an unlawful act was committed.[1] To clarify an event and enable courts to make accurate assessments of technical matters, expert witness services are essential. For this reason, forensic medicine is situated at the intersection of medical and legal practice and functions as a multidisciplinary field. Institutions operating in this domain are responsible for conducting crime scene investigations through court-appointed experts, determining causes of death, and providing scientific input for the resolution of legal cases.[2,3] Accordingly, forensic medicine can be defined as an interdisciplinary field that bridges medicine, natural sciences, and law.

In recent years, medical malpractice has emerged as an increasingly important concern for healthcare systems worldwide, with international reports and empirical studies indicating growing pressure on medical liability systems and an increasing volume of malpractice claims in many countries.[4,5] The evaluation of alleged malpractice cases is not limited to legal professionals alone; rather, it typically involves multidisciplinary processes in which expert reports prepared by commissions established under the Ministry of Health or the Council of Forensic Medicine-comprising relevant clinical specialists and forensic medicine experts-play a central role in the decision-making process. Medical malpractice represents a critical issue not only because of its legal implications but also due to its broader effects on physicians and society. Concerns

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related to malpractice litigation have been associated with increased psychological stress among physicians and heightened fear of legal consequences, which may influence clinical decision-making and contribute to the practice of defensive medicine.[6,7] Defensive medical practices, in turn, have been linked to increased healthcare utilization, rising expenditures, and systemic inefficiencies, potentially affecting the quality and accessibility of medical care.[8,9]

Although forensic sciences encounter fewer malpractice cases compared with clinical medical specialties, the field constitutes an important point of reference in judicial processes. Several studies have examined the relationship between medical malpractice and forensic sciences. Warren (1988) published a comprehensive review on strategies for coping with malpractice,[10] while other research has explored the interaction between litigation processes and medical practice.[11-14] Furthermore, Ferrara et al.,[15] approaching the topic from a forensic pathology perspective, aimed to define medical errors in a more objective manner.

The importance and reputation of scientific journals are closely linked to the number of citations their published articles receive and the degree to which they are referenced in subsequent research. In this context, bibliometric analysis serves as a powerful tool for identifying research trends, influential authors, leading institutions, and contributing countries within a particular field.

The aim of this study is to conduct a bibliometric analysis of medical malpractice literature examined within medico-legal and forensic medicine contexts, indexed in the Scopus database between 2000 and 2024, in order to identify research trends, the most frequently cited studies, contributing countries, and to present findings that may guide future research.

METHODS

Ethics

This study is a bibliometric analysis based on data obtained from publicly accessible databases. As the research does not involve human participants, personal data, or any clinical intervention, ethical approval was not required. All procedures were conducted in accordance with ethical standards and research integrity principles.

Data Collection

Within the scope of this research, a systematic literature search on medical malpractice and forensic medicine was conducted in the Scopus database on October 15, 2025. The Scopus database, which is widely used in academic research, formed the methodological foundation of the study due to its comprehensive content and reliable structure. Within the scope of the research, terms related to medical malpractice and forensic medicine located in the "article, title, abstract, keywords" sections were systematically searched.

The search criteria used were as follows: TS 1: "medical malpractice", "medical negligence", "malpractice", TS: "forensic medicine". The selected keywords were determined to ensure high relevance in search results and to maximize the expansion of the research scope.

As a result of the search, a total of 792 documents were identified. The number of records published between January 1, 2000, and December 31, 2024, was reduced to 462. Among these sources, 189 documents that were prepared in English and possessed the characteristics of original research in the field of medicine were included in the analysis (Figure 1).

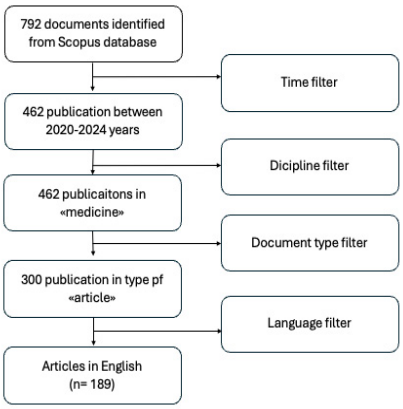

Figure 1. Flowchart of the study.

The study scope did not include documents not in English, publications outside the field of medicine, and publication types other than research articles such as review articles, conference abstracts, book chapters, or editorial commentaries.

Statistical Analysis

Within the scope of this research, data analysis was performed on 189 documents compiled during the 2000-2024 period. All sources were recorded in computer-processable format (CSV).

The primary objective of this research was to deeply examine the development of publication output within time series, citation metrics and publication outlets, and the position of scientists and academic institutions within the field. Furthermore, authorship relationships and collaboration dynamics among researchers, institutional structures of prominent researchers, and transnational academic networks were addressed in detail. Bibliographic reference links and citation networks were examined to reveal the connection structures between publications, researchers, and cited sources. Word analysis conducted on selected terms was used to identify core topics within the discipline and emerging research areas. The global distribution of studies was mapped and scientific production contributions were comparatively evaluated on a continental and country basis.

Two different software platforms were applied in combination during the data processing phase. The research was conducted through simultaneous implementation of R Bibliometrix and VOSviewer 1.6.20 tools. R Bibliometrix software was assigned to transfer bibliographic information to the system, visual map analysis, and descriptive statistical reporting. VOSviewer 1.6.20 application, based on Java technology, worked in compatibility with R Bibliometrix to provide graphical representation of co-authorship relationships, citation links, and collaboration networks among researchers, institutions, and countries.

RESULTS

A search conducted in the Scopus database using terms such as "medical malpractice," "medical negligence," "malpractice," and "forensic medicine" for the period 2000–2024 identified 189 English-language documents. The findings of this bibliometric examination can be summarized as follows: the research utilized 99 different sources; 722 authors contributed; the studies contained a total of 519 keywords; and 1,440 references were used. An annual average increase of 4.31% was recorded in publication volume. International-level collaborations accounted for 6.87% of all studies. Each document received an average of 6.74 citations, and an average of 4.3 authors participated in the writing of each article.

Annual Publication Output and Citations

Our study demonstrates that research on medical malpractice examined within medico-legal and forensic medicine contexts was limited before 2008, with an average of three articles per year. Publication activity began to increase notably after 2009, with a marked acceleration that peaked in 2013. Between 2020 and 2024, the publication trend maintained a steady pace (Figure 2A, Table 1).

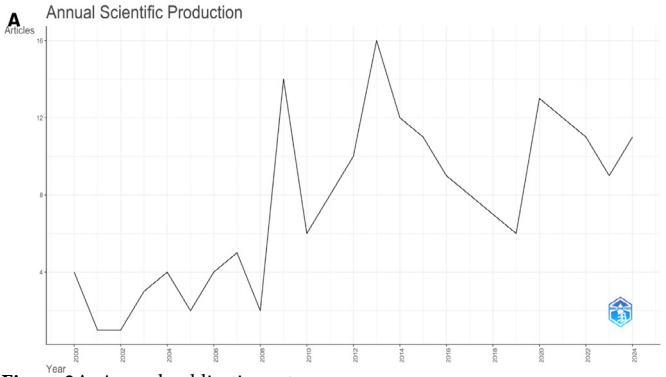

Figure 2A. Annual publication rates

Table 1. Publication statistics of selected years

	Article count	Total citation rank	Mean of the citations
2000	4	67	16.75
2009	14	199	14.21
2013	16	207	12.94
2020	13	82	6.31

When annual citation rates were examined, the average number of citations varied by year, with an overall mean of 6.74 citations per article. Citation averages in the most recent three-year period were lower compared with previous years (Figure 2B). The article receiving the highest number of citations was "Malpractice and medical liability: European Guidelines on Methods of Ascertainment and Criteria of Evaluation" by Ferrara et al.,[15] published in 2013 in the International Journal of Legal Medicine, with a total of 72 citations (Figure 3).

Journals and Their Citations

Publications on medical malpractice within the field of forensic medicine are concentrated in a limited number of

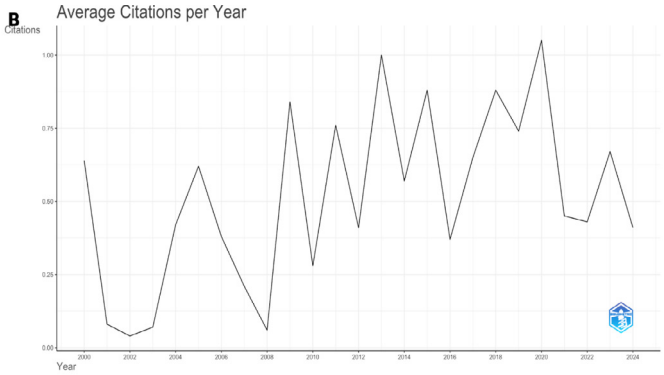

Figure 2B. Average citations by year.

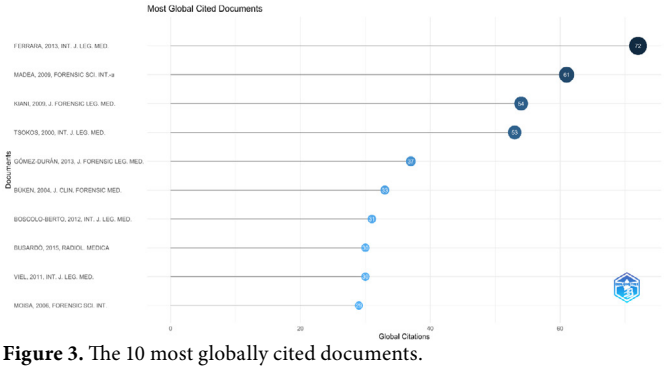

Figure 3. The 10 most globally cited documents.

journals. Journal of Forensic and Legal Medicine ranks first among the journals publishing research on this topic, followed by Legal Medicine and Forensic Science International. The top five journals together account for 30.2% (n = 57) of all articles published in this field. The total publication counts, quartile distributions, and impact factors of these journals are presented in Table 2 and Table 3.

Table 2. Top five journals by publication count, quartile rankings, and impact factors

Journal	Article count	Indexing/quartiles	Impact factor
Journal of forensic and legal medicine	25	SCIE/ Q3	1.2
Legal medicine	11	SCIE/ Q3	1.4
Forensic science international	9	SCIE/ Q1	2.5
International journal of legal medicine	6	SCIE/ Q2	2.3
Romanian journal of legal medicine	6	Scopus	0.4

*SCIE: Science Citation Indexing Expanded

Most Productive Countries, Institutions, and Authors

A global evaluation of articles published between 2000 and 2024 in the field of medical malpractice and forensic medicine shows that Italy (n=178) ranks first, followed by Turkiye (n=102) and China (n=88). Yearly changes in publication output by country are shown in detail in Figure 4A. Institutional productivity largely parallels this national ranking, with Università degli Studi di Milano (n=33) being the most productive institution, followed by Sapienza Università di Roma (n=28) and China University of Political Science (n=21). The top ten institutions contributing the highest number

Table 3. Details of the most cited articles on medical malpractice

Authors	Article title	Journal name	Year	Citation count
Ferrara SD et al.[15]	Malpractice and medical liability. European guidelines on methods of ascertainment and criteria of evaluation	International journal of legal medicine	2013	72
Madea B et al.[3]	Medical malpractice as reflected by the forensic evaluation of 4450 autopsies	Forensic science international	2009	61
Kianı et al.	A five-year survey for dental malpractice claims in Tehran, Iran	Journal of forensic and legal medicine	2009	54
Tsokos et al.	Pressure sores: epidemiology, medico-legal implications and forensic argumentation concerning causality	International journal of legal medicine	2000	53
Gomez-Duran et al.	Analysis of obstetrics and gynecology professional liability claims in Catalonia, Spain (1986-2010)	Journal of forensic and legal medicine	2013	37

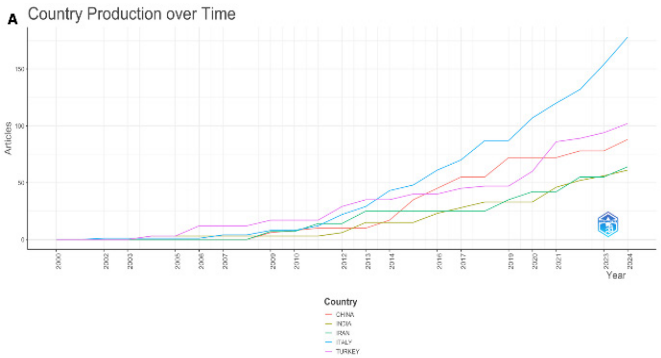

Figure 4A. Changes in the number of articles published by countries over the years.

of publications in this field are shown in Figure 4B, while temporal changes in institutional publication output are presented in Figure 4C.

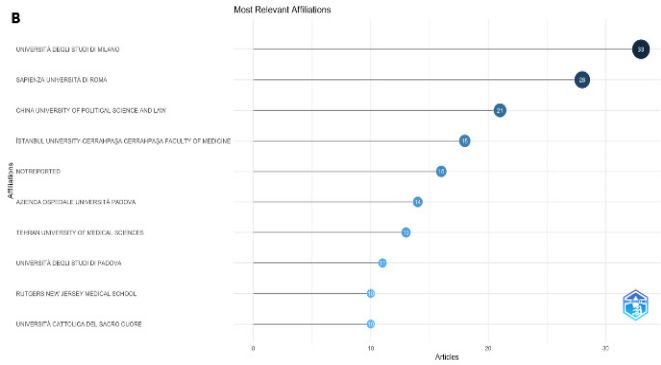

Figure 4B. Top 10 institutions publishing the highest number of articles in the fields of malpractice and forensic medicine.

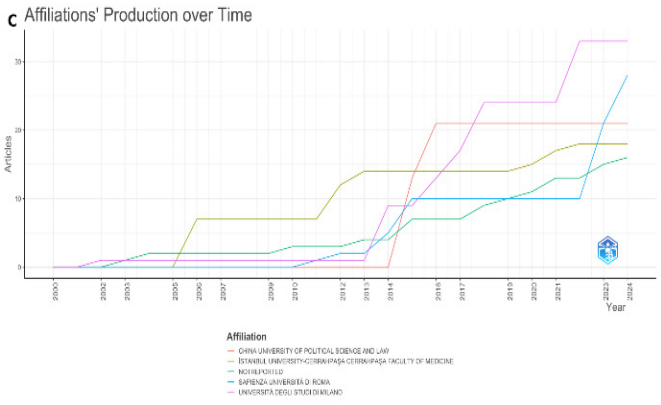

Figure 4.C. Changes in the number of articles published by affiliations over the years.

A total of 722 authors contributed to the publications identified in this field. Examination of the most active authors and their publication counts shows that the top five contributors are Madea B. (n=5), Frati P. (=4), Casali M.B. (n=4), Genovese U. (n=4), and Viel G. (n=4). On average, 4.30 authors contributed to each article. These authors are prominent researchers in forensic medicine and demonstrate high publication productivity. The top ten most productive authors are shown in detail in Figure 4D.

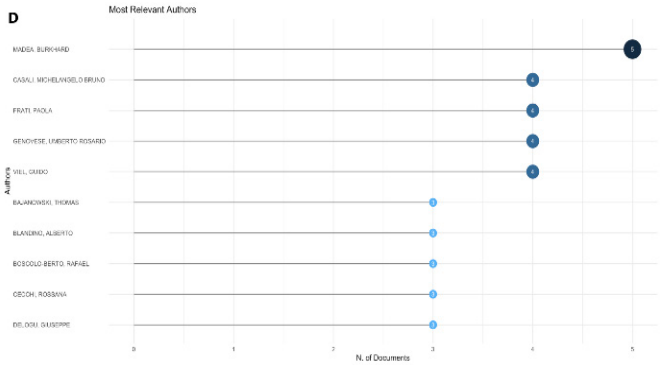

Figure 4D. The 10 most productive authors in the fields of malpractice and forensic medicine.

Research Topics and Keywords

An examination of the topics addressed in articles published in the field of medical malpractice and forensic medicine between 2000 and 2024 shows that "defensive medicine," "healthcare personnel," and "professional liability" have ranked among the top themes in recent years. These are followed by "plastic surgery," "age," and "legal liability" (Figure 5A). A total of 519 keywords were identified across

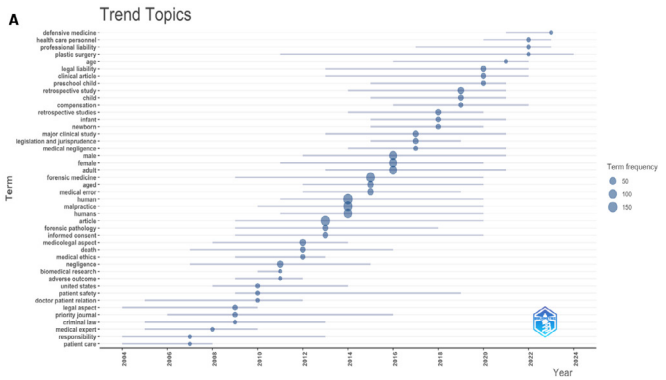

Figure 5A. Research trends and topics in the fields of malpractice and forensic medicine.

the 189 articles retrieved from the Scopus database. Analysis of the most frequently used keywords and their total link strength showed that the top five were "malpractice" (n=42), "forensic medicine" (n=35), "medical malpractice" (n=29), "autopsy" (n=16), and "liability" (n=10). The co-occurrence network of these keywords is shown in detail in Figure 5B.

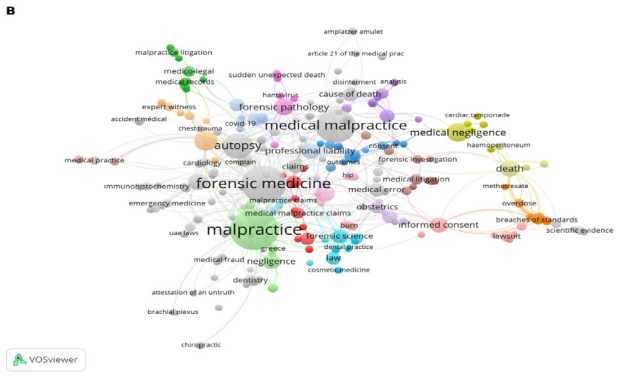

Figure 5B. Co-occurrence network of keywords in the studies.

Collaboration Between Countries, Institutions, and Authors

Collaboration between countries, institutions, and authors in articles published in the field of medical malpractice and forensic medicine between 2000 and 2024 was evaluated using VOSviewer. Based on total link strength, Italy ranks first in international collaboration, followed by Germany, Portugal, and the United Kingdom. International collaboration patterns are shown in Figure 6A.

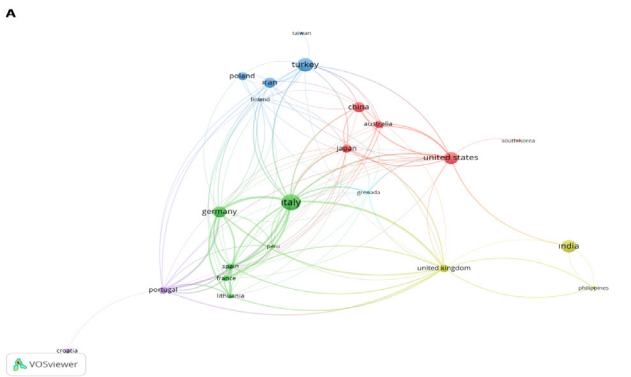

Figure 6A. Country collaboration network showing co-authorship patterns across nations

In terms of institutional collaboration, the Ministry of Justice of the Republic of Turkiye ranks first, followed by Università degli Studi di Padova and Sapienza Università di Roma. Institutional collaboration networks according to total link strength are presented in Figure 6B.

Regarding author collaboration, the top three most interconnected researchers are Viel G., Bajanowski T., and Boscolo-Berto R.

DISCUSSION

This study determined that publications in the field of forensic medicine and medical malpractice between 2000 and 2024

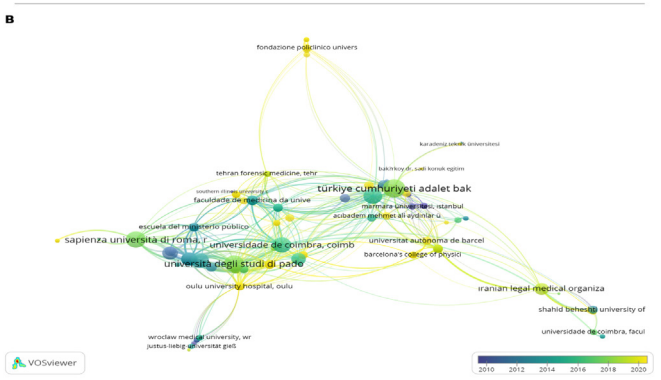

Figure 6B. Institutional collaboration network displaying research partnerships among universities and organizations.

exhibited a steady upward trend. The annual average growth rate of 4.31% reflects the field's increasing scientific visibility and the heightened awareness of medical practice errors within legal contexts. Notably, the sharp rise observed after 2009 parallels global efforts to restructure health systems with regard to accountability, patient safety, and ethical standards. During this period, the inclusion of medical error and patient safety topics on the policy agenda of the World Health Organization and the European Union served as an important driver supporting scientific production.[15,16]

The peak in publication volume observed in 2013, together with the high citation count (72 citations) of the Ferrara et al.[15] study published in the same year, indicates a period in which scientific interest in harmonizing medico-legal standards across Europe intensified. This study represented one of the earliest guideline initiatives of the European Academy of Forensic Sciences concerning medical liability and evaluation criteria[9] and is regarded as a landmark contribution to the field.

The stability observed after 2020 indicates sustained interest in the field despite structural changes in forensic medicine practices during the COVID-19 pandemic and delays in court proceedings, which somewhat slowed scientific output. As noted by Pranckutė[17] and Tennant,[18] this trend can be explained by the pandemic's short-term fluctuations in publication numbers, while in the longer term, the expansion of digital research infrastructures contributed to increased bibliometric visibility.

According to the citation analysis, the average of 6.74 citations per article suggests that research on malpractice in forensic medicine generates a limited yet consistent academic impact compared with other medical disciplines. The lower citation averages observed over the past three years are expected, as recently published articles have not yet had sufficient time to accumulate citations.[19,20]

The multi-authored publication structure, with an average of four authors per article, reflects the multidisciplinary nature of the field. Collaboration among different specialty areas-such as forensic medicine, law, pathology, and ethics-naturally broadens research networks; however, the relatively low international collaboration rate of 6.87% indicates that the field continues to develop primarily at a regional level. This finding is consistent with the "co-authorship

bias" phenomenon frequently discussed in the bibliometric literature.[17,21]

The findings of this study demonstrate that publications in the field of medical malpractice and forensic medicine are concentrated in a limited number of high-impact journals. This concentration reflects the presence of a core journal structure in the field and aligns with Bradford's Law, which predicts that the majority of publications within a given research area are clustered in a relatively small number of journals.[22]

In particular, the prominent positions of Journal of Forensic and Legal Medicine, Legal Medicine, and Forensic Science International indicate that these journals serve as the primary publication venues shaping the scientific direction of the field. By publishing studies that encompass both clinical and legal dimensions, these journals occupy a central position in medical malpractice-related research within the forensic medicine literature. This finding supports the role emphasized by Ferrara et al.,[15] who noted that guideline-level studies published in high-impact journals such as the International Journal of Legal Medicine play a crucial role in directing the orientation of the discipline.

A similar pattern was reported by Shi et al.[16] in their study titled "Bibliometric Analysis of Medical Malpractice Literature in Legal Medicine from 1975 to 2018." In their Web of Science–based analysis, the authors observed that medical malpractice literature was particularly concentrated in Legal Medicine and Journal of Forensic and Legal Medicine, and that these journals constituted the core centers of scientific production in the field. This parallel finding indicates that the knowledge structure of the field develops in similar patterns across both the Scopus and Web of Science databases.

Most of these journals are indexed in the Science Citation Index Expanded (SCIE) and fall within the Q1-Q3 quartiles, holding leading positions in the field due to their high impact factors. The high average impact factors enhance the international visibility of published studies and contribute to increased citation rates. In particular, the rising citation trajectory of the Journal of Forensic and Legal Medicine in recent years indicates that the discipline is reaching a broader readership through both methodological and ethical contributions. Likewise, the sustained high citation of influential works-such as the European guidelines published by Ferrara et al.[15] in the International Journal of Legal Medicine-shows that these journals serve not only as publication outlets but also as important sources that help shape scientific standards in forensic medicine.

Furthermore, as emphasized by Tennant and Ross-Hellauer[18] and Pranckutė,[17] advances in open access and digital peer review practices have increased journal visibility and contributed to higher citation counts.[17,18] Particularly after 2020, the rise in open access rates in Forensic Science International and Legal Medicine appears to have significantly influenced the citation performance of medical malpractice-related articles. Therefore, these findings suggest that citation impact in the medical malpractice field is shaped not only by the scientific quality of the studies but also by the access policies of the journals in which they are published.

In conclusion, this study demonstrates that scientific production in the field of medical malpractice is shaped around a limited number of high-profile journals, which have become strategic focal points determining the academic visibility of the discipline. This finding indicates that, throughout the maturation of the field, a publication channel–centered knowledge ecosystem has emerged.[23]

The results of this study also show that Italy, Turkiye, and China were the most productive countries in forensic medicine and medical malpractice research between 2000 and 2024. Italy's prominent position can be attributed to its longstanding medico-legal tradition and well-established forensic medicine education system. Italian research institutions-particularly Università degli Studi di Milano and Sapienza Università di Roma-secured leading positions in the literature through high rates of international collaboration and consistent publication practices.[15,16]

Turkiye's position as the second most productive country is similarly noteworthy. The rise in medical malpractice cases in Turkiye over the past 15 years and the corresponding demand for forensic reporting have stimulated academic output. In addition, Turkiye's regular contributions to journals such as Legal Medicine and the Journal of Forensic and Legal Medicine have strengthened its regional visibility in the literature. Shi et al.[16] likewise reported a recent increase in forensic medicine publications across Asian and Middle Eastern countries, with Turkiye and China emerging as key contributors to this trend.

At the institutional level, the high productivity of Università degli Studi di Milano and Sapienza Università di Roma-ranking first and second-reflects the centralized structure of forensic medicine education in Italy. These institutions form the core of medico-legal networks in Europe and play active roles in the majority of international collaborative publications.[24] The inclusion of China University of Political Science and Law among the top three institutions further illustrates the emergence of a new model based on the integrated functioning of legal and medical disciplines.

When evaluated at the author level, the fact that all of the most active researchers (Madea, Frati, Casali, Genovese, and Viel) are affiliated with Italian institutions indicates that country-level leadership is reflected in individual productivity. These researchers are known for their frequent publications in Legal Medicine and the International Journal of Legal Medicine and are recognized for their contributions to studies on medical liability and ethics. At the same time, the density of author collaboration networks-an average of 4.3 authors per article-demonstrates the multidisciplinary nature of the field and the team-based structure of research production.[19,20]

In conclusion, these findings show that Europe-centered productivity continues to dominate forensic medicine and medical malpractice research; however, the rapidly increasing contributions of Asian countries-particularly China and Turkiye-are reshaping the global landscape of the field. This suggests that multinational collaboration models will likely

expand in future forensic medicine research, leading to a more balanced distribution of knowledge production.[17,23]

The thematic analysis of studies published between 2000 and 2024 reveals that the concepts of "defensive medicine," "healthcare personnel," and "professional liability" are prominent within the medical malpractice literature. These themes indicate that the "defensive medicine" approach-describing healthcare professionals' more cautious clinical behavior driven by legal liability concerns-has gained global importance. Similarly, Shi et al.[16] reported in their review covering 1975-2018 that the themes of "professional liability" and "medical error" were dominant, and that concepts such as defensive medicine and healthcare worker responsibility became increasingly prominent after 2010.

The frequent recurrence of the term "plastic surgery" can be associated with the rising number of malpractice cases in aesthetic surgery. This pattern stems from higher rates of forensic reporting, as aesthetic interventions tend to come to prominence through patient satisfaction dynamics and ethical controversies rather than medical complications alone.[15] The strong linkages observed for the concepts "autopsy" and "liability" in the network analysis further indicate that medical errors are closely associated with postmortem evaluations, and that autopsy continues to serve as a fundamental tool in clarifying malpractice cases.

In the analysis utilizing a total of 519 keywords, the central positioning of the terms "malpractice," "forensic medicine," and "medical malpractice" reflects the thematic continuity of the field. This structure highlights the sustained influence of the medico-legal evaluation framework introduced by the European guidelines of Ferrara et al.[15] in the literature. Additionally, in a bibliometric study conducted by Wang et al.[25] in Forensic Science International, the most frequently used keywords in recent forensic medicine research were reported as "forensic science," "autopsy," and "injury". Similarly, an analysis of studies published in Turkiye showed that "forensic medicine," "autopsy," and "liability" were among the most frequently used concepts.[26] These findings demonstrate that autopsy-based investigations and medico-legal liability have increasingly come to the forefront in forensic medicine, aligning closely with the results of the present study.

In the international collaboration analysis, Italy's leading position confirms the country's longstanding influence on scientific networks within the forensic medicine field. The notable engagement of Germany, Portugal, and the United Kingdom following Italy reflects the presence of well-developed and harmonized collaboration structures among forensic medicine and justice sciences institutions across Europe. These network patterns, mapped using VOSviewer in the present study, are consistent with literature emphasizing standardized multidisciplinary practices at the European level.[19,27,28]

The fact that the Ministry of Justice of the Republic of Turkiye possesses the highest connection strength in the inter-institutional collaboration network indicates an increase in Turkiye's institutional research capacity, particularly in areas related to forensic reporting and health law. This finding reflects the influence of recent changes in Turkiye's medical liability legislation and forensic autopsy practices on academic productivity. The prominence of Europe-based researchers such as Viel G., Bajanowski T., and Boscolo-Berto R. in the author collaboration analysis further demonstrates that publication activity in the field maintains a collective and transnational character.

Overall, the keyword and collaboration analyses show that medical malpractice research has acquired a multidisciplinary, international, and ethics-oriented character, and that in recent years, the concepts of "defensive medicine" and "professional responsibility" have shaped a new research axis within the literature.[17,18]

By examining the literature published between 2000 and 2024 through bibliometric methods, this study has identified research trends, leading countries, institutions, authors, and thematic orientations in forensic medicine and medical malpractice. The findings indicate that medical malpractice has become an increasingly prominent topic in the forensic medicine literature and has demonstrated a steady upward trend over the past twenty years.

The increase observed in annual publication output shows that medical error and professional responsibility issues are being discussed more extensively on a global scale. Particularly after 2010, the concepts of "defensive medicine," "professional obligation," and "patient safety" have gained heightened visibility. The European guidelines published by Ferrara[15] and colleagues in 2013 contributed to methodological standardization in the field of forensic medicine and represent a landmark study that has received high citation counts in the literature.

Analysis of country and institutional contributions revealed that Italy maintains clear leadership, while Turkiye and China have shown a marked rise in recent years. These findings indicate that although Europe continues to hold its historical influence in medico-legal research, the rapidly increasing contributions of Asian countries have led to a geographical expansion and diversification of the field.

Limitations

Keyword and thematic analyses show that medical malpractice research has evolved into a multidisciplinary structure, concentrating in intersectional areas linking healthcare services, law, and ethics. In particular, the central positioning of the concepts "autopsy," "liability," and "forensic medicine" within the network indicates that forensic medicine continues to function as a bridge in scientific knowledge production through both its clinical and judicial dimensions. In addition, the inclusion of only English-language publications may have resulted in the exclusion of relevant studies published in other languages, which should be considered when interpreting the findings.

CONCLUSION

In conclusion, this study demonstrates that scientific production in the medical malpractice field has increased markedly over the past twenty years, with research becoming

geographically and thematically diversified, although scientific influence remains concentrated in specific centers. In the future, expanding international collaborations, broadening open access practices, and strengthening interdisciplinary research networks are expected to contribute to more balanced global scientific visibility in this field.

ETHICAL DECLARATIONS

Ethics Committee Approval

This study is a bibliometric analysis based on data obtained from publicly accessible databases. As the research does not involve human participants, personal data, or any clinical intervention, ethical approval was not required.

Informed Consent

As this study was a bibliometric analysis based on data obtained from publicly accessible databases, formal written informed consent was not required and was therefore not obtained.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

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Author Contributions

Concept: F.E.Ç., A.B.; Design: F.E.Ç., A.B.; Control: H.A.; Data collection and/or processing: F.E.Ç., A.B.; Analysis and/or interpretation: A.B., F.E.Ç.; Literature review: F.E.Ç., A.B.; Article writing: F.E.Ç., A.B.; Critical review: All authors.

REFERENCES

1. Payne-James J, Busuttil A, Smock W, eds. Forensic Medicine: Clinical and Pathological Aspects. Cambridge University Press; 2003.
2. Payne-James J, McGovern C, Jones R, et al. Simpson's forensic medicine. 13th ed. CRC Press; 2014.
3. Madea B, Saukko P. Future in forensic medicine as an academic discipline-focussing on research. *Forensic Sci Int*. 2007;165(2-3):87-91. doi:10.1016/j.forsciint.2006.05.030
4. Medical Malpractice: prevention, Insurance and coverage options, policy issues in insurance, no. 11. *OECD Publishing Paris*. doi:10.1787/9789264029057-en.
5. Mello MM, Studdert DM, Kachalia A. The medical liability climate and prospects for reform. *JAMA*. 2014;312(20):2146-2155. doi:10.1001/jama.2014.10705
6. Studdert DM, Mello MM, Sage WM, et al. defensive medicine among high-risk specialist physicians in a volatile malpractice environment. *JAMA*. 2005;293(21):2609–2617. doi:10.1001/jama.293.21.2609
7. Carrier ER, Reschovsky JD, Katz DA, Mello MM. High physician concern about malpractice risk predicts more aggressive diagnostic testing in office-based practice. *Health Aff (Millwood)*. 2013;32(8):1383-1391. doi:10.1377/hlthaff.2013.0233
8. Jena AB, Seabury S, Lakdawalla D, Chandra A. Malpractice risk according to physician specialty. *N Engl J Med*. 2011;365(7):629-636. doi: 10.1056/NEJMsa1012370
9. Kessler D, McClellan M, Do doctors practice defensive medicine?, *The Quarterly Journal of Economics*. 1996;111(2):353-390, doi:10.2307/2946682
10. Warren D. Malpractice: a guide to avoidance and treatment. *J Health Polit Policy Law*. 1988;13.
11. Brennan TA. Practice guidelines and malpractice litigation: collision or cohesion?. *J Health Polit Policy Law*. 1991;16(1):67-85. doi:10.1215/036168 78-16-1-67
12. Hyams AL, Shapiro DW, Brennan TA. Medical practice guidelines in malpractice litigation: an early retrospective. *J Health Polit Policy Law*. 1996;21(2):289-313. doi:10.1215/03616878-21-2-289
13. Matthews JR. Practice guidelines and tort reform: the legal system confronts the technocratic wish. *J Health Polit Policy Law*. 1999;24(2):275-304. doi:10.1215/03616878-24-2-275
14. Mehlman MJ. Medical practice guidelines as malpractice safe harbors: illusion or deceit?. *J Law Med Ethics*. 2012;40(2):286-300. doi:10.1111/j.1748-720X.2012.00664.x
15. Ferrara SD, Baccino E, Bajanowski T, et al. Malpractice and medical liability. European guidelines on methods of ascertainment and criteria of evaluation. *Int J Legal Med*. 2013;127(3):545-557. doi:10.1007/s00414-013-0836-5
16. Shi G, Liu N, Yu X, et al. Bibliometric analysis of medical malpractice literature in legal medicine from 1975 to 2018: web of science review. *J Forensic Leg Med*. 2019;66:167-183. doi:10.1016/j.jflm.2019.07.002
17. Pranckutė R. Web of Science (WoS) and Scopus: the titans of bibliographic information in today's academic world. *Publications*. 2021;9(1):12. doi:10.3390/publications9010012
18. Tennant JP, Ross-Hellauer T. The limitations to our understanding of peer review. *Res Integr Peer Rev*. 2020;5:6. doi:10.1186/s41073-020-00092-1
19. van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*. 2010;84(2):523-538. doi:10.1007/s11192-009-0146-3
20. Aria M, Cuccurullo C. Bibliometrix: an R-tool for comprehensive science mapping analysis. *J Informetrics*. 2017;11(4):959–75. doi:10.1016/j.joi.2017.08.007
21. Archambault É, Campbell D, Gingras Y, Larivière V. Comparing bibliometric statistics obtained from the Web of Science and Scopus. *J Assoc Inf Sci Technol*. 2009;60(7):1320–6. doi:10.1002/asi.21062
22. Fernandez-Llimos F. Bradford's law, the long tail principle, and transparency in journal impact factor calculations. *Pharm Pract (Granada)*. 2016;14(3):842. doi:10.18549/PharmPract.2014.03.842
23. Bornmann L, Leydesdorff L. Scientometrics in a changing research landscape: bibliometrics has become an integral part of research quality evaluation and has been changing the practice of research. *EMBO Rep*. 2014;15(12):1228-1232. doi:10.15252/embr.201439608
24. Öner BS, Orbay M. Assessing the publication output in the field of forensic science and legal medicine using Web of Science database from 2011 to 2020. *Forensic Sci Res*. 2022;7(4):748-760. doi:10.1080/20961790.2021.2002525
25. Wang WY, Zhang L, Chen J, Huang Y. A bibliometric analysis on traumatic brain injury in forensic science. *Forensic Sci Int*. 2023;345:111529.
26. Zeybek V. Bibliometric analysis of publications in the field of legal medicine from Türkiye. *Adli Tıp Bülteni*. 2022;27(3):1587-1596. doi:10.17986/blm.1587
27. Cecchi R, Cusack D, Ludes B, et al. European Council of Legal Medicine (ECLM) on-site inspection forms for forensic pathology, anthropology, odontology, genetics, entomology and toxicology for forensic and medico-legal scene and corpse investigation: the Parma form. *Int J Legal Med*. 2022;136(4):1037-1049. doi:10.1007/s00414-021-02734-5
28. Zampa F, Bandey H, Bécue A, et al. ENFSI 2022 multidisciplinary collaborative exercise: organisation and outcomes. *Forensic Sci Int Synerg*. 2024;8:100465. doi:10.1016/j.fsisyn.2024.100465