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Research Article

Visualising Quality Assurance Research in Healthcare: A Bibliometric Perspective

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Abstract

This study presents a comprehensive bibliometric analysis aimed at exploring the scientific landscape of quality assurance in healthcare. Utilizing data from the Web of Science Core Collection, an initial pool of 1,845 records was systematically screened using the PRISMA flow diagram, resulting in 366 English-language, open-access research articles published between 2000 and 2024. VOSviewer software was employed to visualize and analyze co-authorship networks, keyword co-occurrence, national collaborations, and bibliographic coupling. The findings demonstrate a notable increase in the number of publications and citations after 2015, indicating growing academic and policy interest in healthcare quality assurance. Jeffrey Braithwaite was identified as the most prolific author, while the United States emerged as the leading contributor in terms of national research output. Frequently occurring keywords such as "Quality Assurance," "Patient Safety," "Quality Improvement," and "Healthcare" highlight the field's thematic emphasis on safety, efficiency, and system performance. In terms of scholarly influence, Jaffe (2013) ranked highest in bibliographic coupling, and JAMA – Journal of the American Medical Association was the most cited journal. Overall, this bibliometric study provides valuable information on the development, thematic orientations and collaborative structure of research in healthcare quality assurance, highlighting the interdisciplinary development of this field and its strategic importance within initiatives towards a global quality assurance focus.

Keywords: Quality, Quality Assurance, Healthcare, Bibliometric Perspective, VOSviewer

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1. Introduction

Quality service is essential across all sectors, particularly in healthcare, where it directly impacts patient care and societal well-being. High-quality healthcare processes not only improve individual health outcomes but also contribute to the sustainability of national health systems (Damberg & Baker, 2016). The increasing complexity and diversity of healthcare services, coupled with advancements in medical technology and evolving patient expectations, have reshaped perceptions of quality in healthcare. Consequently, developing and implementing effective quality assurance mechanisms has become imperative (Sreedharan et al., 2022). WHO (The World Health Organization), emphasizes the importance of quality, effective, and accessible healthcare services within its Sustainable Development Goals, aiming for universal health coverage by 2030 (Braithwaite et al., 2018). The significance of quality in healthcare has been consistently highlighted in studies, both historically and in contemporary research (Fatima et al., 2019). Establishing a universal health coverage system is crucial for delivering high-quality patient care and ensuring the sustainability of healthcare processes (Abuosi & Atinga, 2013). The existence of quality in hospital functioning processes is closely related to the monitoring of plans and practices, especially in the treatment and care stages (Donabedian, 1988). For example,

preparing clinical protocols in the hospital that align with evidence-based principles and cooperating with professionals from different disciplines, including all healthcare professionals, play a key role in improving the quality of care provided to the patient (Akachi & Kruk 2016; Fatima et al., 2019). With the formation of this cooperation, quality helps the development of a patient safety culture and strengthens communication within the hospital; on the other hand, it also contributes to the early detection of possible medical errors and complications (Shekelle et al., 2011; Antony et al., 2024). The development of quality in health services has been parallel to both scientific advances in medical developments and innovations in management (Bruce, 1990). While in the early periods, the concept of quality was shaped based on the individual knowledge, experience, and observations of experienced physicians and nurses in health care, over time, especially from the second half of the 19th century onwards, patient-focused approaches, improvement of hygiene conditions in hospital environments and monitoring of mortality rates have constituted the first steps of quality-focused thinking (Ovretveit, 2000). In the 1980s and 1990s, it was observed that approaches such as total quality management and continuous quality improvement were intensively transferred to the health field. In the 20th century, quality control approaches were adapted from industrial processes and transferred to the health system; thus, planning, control, and continuous improvement became increasingly important in health services (McLaughlin & Kaluzny, 2006). During this period, the determination of important care standards for the patient, regular monitoring, and standardization of performance indicators formed the institutional quality culture (Xie et al., 2024). In the same period, the increasingly widespread accreditation and certification practices and compliance with nationally or internationally accepted criteria in health showed the importance of quality assurance in health. Today, quality assessment and improvement processes have become global and real-time, targeting a more patient-centered approach (Kruk et al., 2018; Alkhatib & Aloqaily, 2024). Achieving quality targets in clinical and administrative processes has become easier (Kringos et al., 2015). The historical progression of quality in health services can be summarized as a continuous transformation from simple observational practices to adopting a multidisciplinary and technology-supported comprehensive institutional approach to health (Endeshaw, 2021). Since the 1980s, quality has emerged as a central focus in management across various sectors, driven by increasing competition and evolving customer expectations. The foundation of any quality system lies in customer satisfaction and meeting their needs (Beylik, 2018). In healthcare, this system is referred to as the "quality assurance system," which ensures that services meet established standards through systematic and planned activities (Donabedian, 1996). Quality assurance in healthcare aims to enhance patient safety, improve service effectiveness and efficiency, and continuously refine the outcomes of healthcare institutions (Agyei et al., 2024). It encompasses not only treatment services but also preventive healthcare, hospital management, patient satisfaction, and employee safety (Williams, 2016). However, implementing quality assurance in healthcare faces numerous challenges, including shifting patient expectations, technological adaptation, limited resources, and issues of access and equity (Cookson et al., 2018; Saini et al. 2022).

Quality assurance (QA) involves a series of systematic activities designed to ensure that products or services meet predefined quality criteria (Badrick, 2021). In healthcare, a key aspect of QA is the clear definition of care quality and the establishment of a shared understanding among stakeholders (Smith et al., 2024). This process provides a foundation for evaluating compliance with standards and identifying opportunities for continuous improvement (Baker & Solano, 2020). QA in healthcare not only enhances service delivery but also strengthens the accountability of healthcare institutions to society. It relies on active and transparent evaluation mechanisms, supported by continuous feedback. Effective communication between patients and healthcare professionals is central to QA, improving both the effectiveness and accessibility of healthcare services (Zhang et al., 2018). QA systems promote efficient resource utilization by identifying areas for improvement at every stage of service delivery (Bilawka & Craig, 2003). Moreover, establishing structures that continuously monitor and evaluate compliance with standards enables healthcare services to be delivered in a patient-centered, evidence-based manner (Peters 2006). In healthcare, quality assurance refers to a systematic approach aimed at ensuring that medical and administrative processes adhere to predetermined standards (Jha, 2018; Pothirat et al., 2016). Compliance with standards and accreditation enhances the quality of healthcare institutions, improving patient safety, satisfaction, and employee engagement (Flyger et al., 2024). To build a robust quality assurance system, it is essential to increase commitment to quality tools such as accreditation (Halpren-Ruder et al., 2019). QA in healthcare is strategically important for achieving better health outcomes and ensuring the sustainability of healthcare systems (Peltonen et al., 2023). It not only maintains current service performance but also prepares healthcare systems to address future challenges (Yang et al., 2022). In addition, performance measurement and evaluation and feedback mechanisms carried out within the system within the quality assurance framework enable identifying weak points in hospital processes and directing improvement efforts. In particular, the management's systematic monitoring of criteria such as increased infection rates, waiting times, patient satisfaction rates, and medical error incidents in hospitals and regular sharing of the results are also carried out with a continuous improvement approach (Ferreira & Marques, 2021). In addition, hospitals involved in quality and accreditation processes can pay due

attention to quality assurance in service delivery by comparing in-hospital quality standards with international guidelines (Kruk et al., 2018). In this way, quality assurance contributes to the more efficient use of hospitals' scarce resources, the professional development of employees, adopting a patient safety culture, and thus improving patient care outcomes in the long term (Endeshaw, 2021; Agyei et al., 2024). In conclusion, quality assurance in hospital processes is a strategic element that improves the effectiveness of care for patients and positively affects the health system's reputation, economic performance, and service experience. Quality assurance practices can significantly reduce unexpected outcomes in healthcare and increase patient satisfaction (Yang et al., 2022). For example, when the data of the World Health Organization are examined, it is seen that nearly 50% of the adverse events in hospitals are preventable; it is striking that quality assurance initiatives affect the reduction of these events (WHO, 2019). Likewise, the fact that the medical errors mentioned in the 'To Err is Human' report cause high mortality shows that quality is a managerial responsibility and an ethical obligation (IOM, 2000). In this framework, quality assurance tools such as accreditation practices, standardized care protocols, and regular performance monitoring offer effective directions to reduce disruptions in service delivery. In conclusion, quality assurance approaches are an important element affecting the future of healthcare organizations (Ferreira & Marques, 2021).

This study examines the concept of quality assurance in healthcare, its impact on service delivery, and strategies to enhance QA. It emphasizes the importance of ensuring quality across all aspects of healthcare services for both individual patient satisfaction and the sustainability of healthcare systems. The research addresses the following questions:

- What is the trend in the number of publications and citations related to health quality assurance over time?
- Who are the most cited authors and institutions in the field of health quality assurance?
- Which authors collaborate most frequently in health quality assurance research?
- Which countries collaborate most frequently in health quality assurance research?
- What are the most commonly used keywords in health quality assurance studies?
- What is the bibliographic coupling in terms of journals and texts?

2. Material and Method

In the field of social sciences, bibliometric analysis has become an increasingly popular research method. The bibliometric analysis method evaluates scientific studies published in a particular field using mathematical methods and visual mapping (Donthu et al., 2021; Antony et al., 2024). Bibliometric analysis is a valuable tool for evaluating academic literature, measuring scientific productivity, and understanding research trends. It helps identify gaps in the literature and guides future studies. Common indicators used in bibliometric analyses include publication counts, citation patterns, keyword maps, and collaboration networks. VOSviewer is an effective tool for bibliometric analysis planning and data visual mapping (Dereli, 2024). Using VOSviewer software, author collaboration networks, keyword clustering, citation analysis, and bibliographic coupling analysis are conducted. This study seeks to investigate the evolution of research on quality assurance in healthcare by analyzing scientific publications over time. By examining trends in academic output, the research aims to provide insights into the growth, focus areas, and intellectual dynamics of this field across different periods.

2.1. Purpose and Type of Research

The purpose of this study is to explore the intellectual structure, publication trends, and collaborative dynamics within the field of healthcare quality assurance (HQA) through a bibliometric lens. By analyzing a wide range of scholarly publications, the study aims to uncover the evolution of research topics, the most influential authors, institutions, and countries, and the network of scientific collaborations shaping the domain. Additionally, the study identifies emerging keywords and conducts bibliographic coupling to examine thematic convergence across journals and texts.

2.2. Data Collection and Analysis

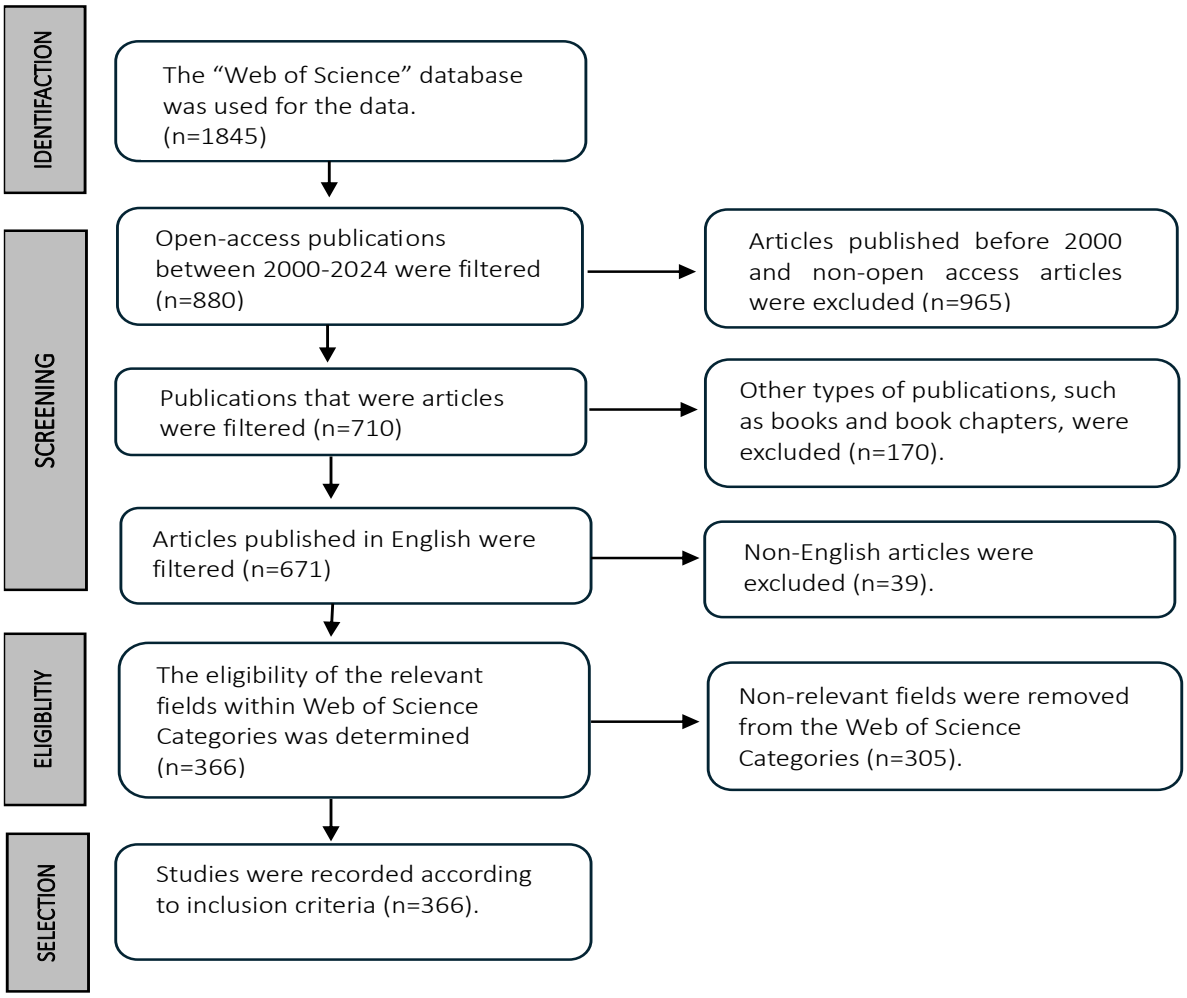
Web of Science (WoS), Scopus, and PubMed are commonly used databases in bibliometric studies (Hou et al., 2025). Web of Science is preferred by researchers conducting this type of study due to its comprehensive and detailed information (Dereli, 2024). In this study, the Web of Science Core Collection was selected as the database for data collection and analysis. The publication search of the research was carried out on October 12, 2024, from the Web of Science database. During the search on Web of Science, the keywords 'quality assurance' and 'health' were used through the conjunction "and". On the other hand, within the framework of the inclusion criteria, only open-access and

English-language publications in the form of research articles were considered. The search covered publications between 2000 and 2024. As a result of the search, a total of 1066 records were accessed and downloaded in the 'tab-delimited file' format for further analysis. The data were analyzed using VOSviewer 1.6.19 software, which is a widely used bibliometric analysis tool. Figures and maps were created by analyzing the prominent keywords in the publications, scientific collaboration networks, influential authors, country distributions, referring sources, and organizations regarding quality assurance in health. The results obtained through the bibliometric analysis method are reported in the findings section.

2.3. PRISMA Flow Diagram

In the process of determining the scientific studies included in the research, the PRISMA scheme developed by Page et al. (2021) was utilized. This scheme, a flow of included and excluded criteria, is presented in detail in Figure 1.

Figure 1. PRISMA Model Flow Chart



Kaynak: Page et al. 2021

Figure 1, which shows the PRISMA flowchart, presents the inclusion and exclusion criteria of health quality assurance publications because of a search on Web of Science. Firstly, the identification part emphasizes that detailed search is carried out on the Web of Science. The screening section emphasizes that the criteria for the relevant publications to be open access, English, and document-wise articles dated between 2000-2024 are considered, and publications that do not meet these criteria are excluded. On the other hand, the relevance of the publications with the subject was determined, and 366 publications were selected and saved for analysis in the VOSviewer 1.6.19 program.

2.4. Limitations of the Study

This bibliometric study, covering the years 2000–2024, is limited to English-language, open-access research articles indexed in the Web of Science Core Collection. Therefore, studies published in other databases or in different languages

were excluded, which may affect the comprehensiveness of the results. Moreover, the analysis relies solely on quantitative indicators such as citation frequency and co-authorship networks, without assessing the methodological quality or contextual depth of individual studies.

2.5. Ethical Aspects of the Research

In this study, secondary sources were utilized for data collection and analysis. Since no primary data collection involving human participants was conducted, there was no requirement for obtaining ethical approval from an ethics committee.

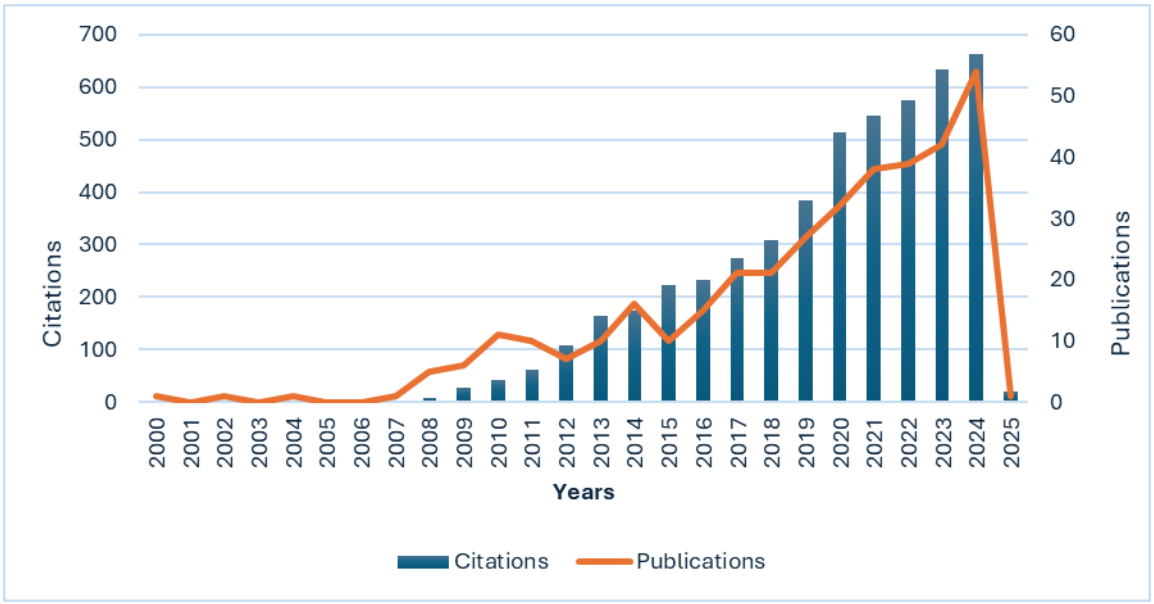
3. Result and Discussion

Times This section presents the findings of the bibliometric analysis, which was carried out utilizing VOSviewer software and drawing on data extracted from the Web of Science database. The analysis provides a comprehensive visualization and interpretation of the research landscape, highlighting key trends, patterns, and relationships within the dataset.The analysis includes co-authorship among authors and countries, author citation patterns, institution citation analysis, keyword usage, and bibliographic coupling (text and journals). In the network maps, the size of the nodes represents the number of publications related to health quality assurance, with larger nodes indicating more studies. The thickness of the connecting lines between nodes reflects the strength of the connection, while the color of the nodes and lines indicates the similarity of topics (Cao et al. 2023).

3.1. Distribution of Publications and Citations on Health Quality Assurance By Year

The trend in the volume of academic publications and citations related to "Quality Assurance" from 2000 to 2024 is illustrated in figure 2. During the period from 2000 to 2009, both the publication and citation counts remained at comparatively modest levels, reflecting a limited scholarly focus on quality assurance within the healthcare domain during these years. However, beginning in 2010, a marked increase in the number of publications was observed, with a particularly pronounced surge occurring between 2015 and 2020. This upward trajectory suggests a growing academic interest and heightened research activity in the field of quality assurance during this decade.Citation numbers also rose after 2013, with a notable increase after 2020. The period 2023-2024 saw a peak in citation numbers, reflecting the growing influence and interest in previous publications. The graph clearly demonstrates the increasing importance of quality assurance studies in academia over the years.

Figure 2. Distribution of Publications and Citations By Year (2020-2024)



3.2. Co-authorship Network Analysis of Authors

The co-authorship analysis identifies the collaborative structure among researchers by examining their co-publication patterns. Figure 3 presents the co-authorship network, highlighting authors with the most frequent connections and collaborations in the field. The dataset was extracted from the Web of Science database, using the keywords "quality assurance" and "health" within a timespan of 2000-2024. The analysis included authors with at least one publication and one citation, resulting in a network of 40 authors grouped into four clusters, with a total of 284 connections and a

total connection strength of 404. Jeffrey Braithwaite was the most prolific author with six publications and 58 citations, demonstrating his central role in the collaborative research landscape. The top three most cited authors were "Levin, Theodore" (204 citations with 2 publications), "Wensing, Michel" (158 citations with 3 publications), and "Beck, Dennis" (129 citations with 1 publication). The network reveals strong collaborative ties among core authors, with Braithwaite positioned as a central figure connecting multiple research groups. The distribution of clusters suggests interdisciplinary collaboration, where authors from different research backgrounds contribute to the development of health quality assurance studies. Table 1 provides detailed insights into the number of publications, citations, and total connection strength of the most collaborative authors. The connection strength metric highlights the influence of each author within the co-authorship network, reflecting the extent of their collaborations. This analysis underscores the importance of co-authorship in shaping the research agenda in health quality assurance, facilitating knowledge exchange and interdisciplinary advancements.

Figure 3. Co-authorship Analysis of Authors

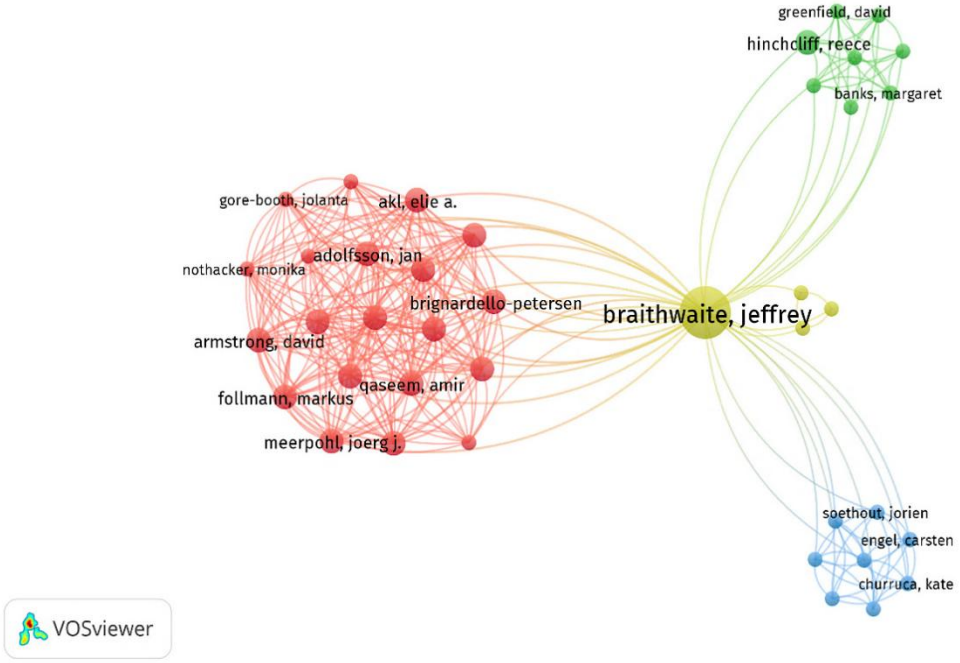


Table 1. Authors With the Most Co-Authorship

Authors	Number of Publication	Number of Citation	Total Connection Strength
Braithwaite, Jeffrey	6	58	54
Buja, Alessandra	3	8	41
Adolfsson, Jan	2	15	35
Akl, Elie	2	15	35
Armstrong, David	2	15	35
Brignardello-Petersen, Romina	2	15	35
Follmann, Markus	2	15	35
Langendam, Miranda	2	15	35
Follmann, Markus	2	15	35

3.3. Analysis of Co-Authorship Networks Among Countries

Analysis of Co-authorship networks among countries, identified the countries with the most connections and collaborations. The co-authorship network analysis of countries is presented in Figure 4. The analysis included countries with at least one publication and one citation. The network analysis revealed 70 countries grouped into 12 clusters, with a total of 285 connections and a total connection strength of 452. The most cited countries were the USA, the UK, the Netherlands, and Australia. Clusters shown in different colors indicate geographically or thematically based cooperation groups. For example, while there is a strong network of collaboration between European countries, Asian and African countries have smaller collaborations. This indicates that certain regions are more active in collaboration, while other regions need more collaboration. These countries also had the highest connection strength. The number of publications, citations, and connection strength for each country are presented in Table 2.

Figure 4. Co-Authorship Analysis of Countries

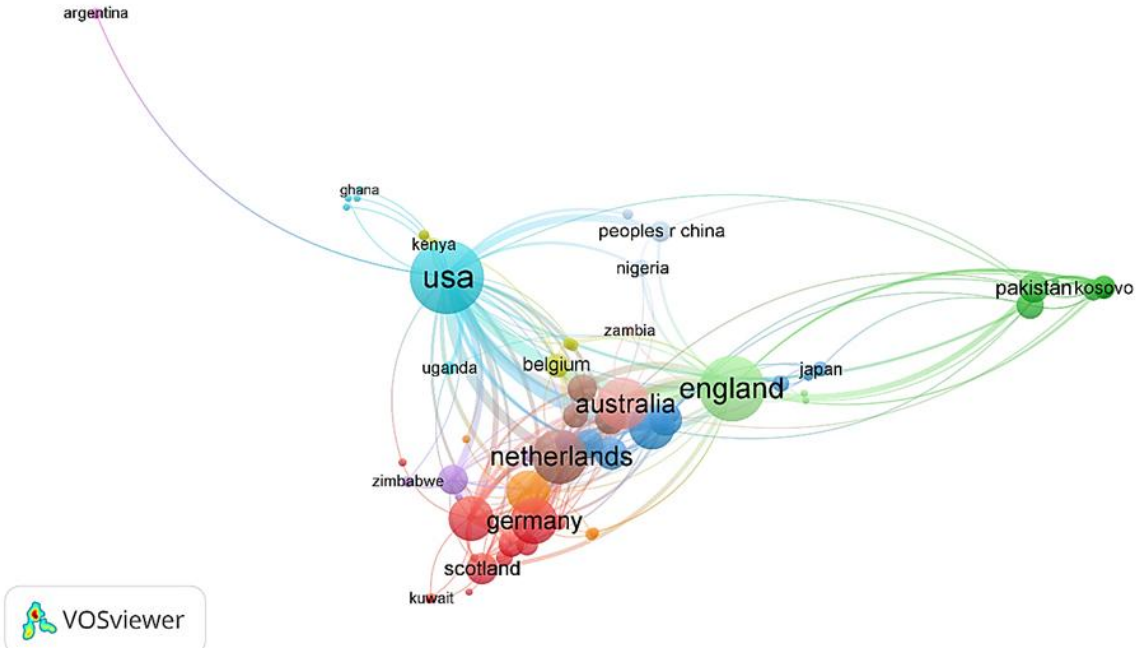


Table 2. Countries With The Most Co-Authorship

Countries	Number of Publication	Number of Citation	Total Connection Strength
USA	104	2519	98
England	54	772	80
Netherlands	20	422	57
Australia	41	546	53
Germany	30	424	43
Canada	24	266	41
Switzerland	18	155	40
Sweden	15	258	37
Italy	10	46	23

3.4. Bibliometric Analysis of Author Citation Networks

The bibliometric analysis of author citation networks is presented in Figure 5. Citation analysis provides insights into the intellectual impact and collaboration dynamics of researchers in a given field. The analysis included authors with at least one publication and one citation, resulting in a network of 25 authors grouped into 14 clusters, with a total of 154 connections. The most cited authors were "Levin, Theodore" (2,519 citations), "Burley, Daniel" (772 citations), and

"Caldwell, Cindy" (422 citations). However, these authors did not rank highest in terms of total connection strength, which represents the overall influence of an author within the research network. The visual representation of author connections suggests that there is a highly interconnected network, where central authors maintain strong collaborative ties with multiple researchers. These links indicate that the core authors play a crucial role in fostering research collaborations both within their respective groups and across different institutions. The total connection strength rankings, which highlight the most influential authors in terms of network impact, are presented in Table 3.

Figure 5. Citation Analysis of Authors

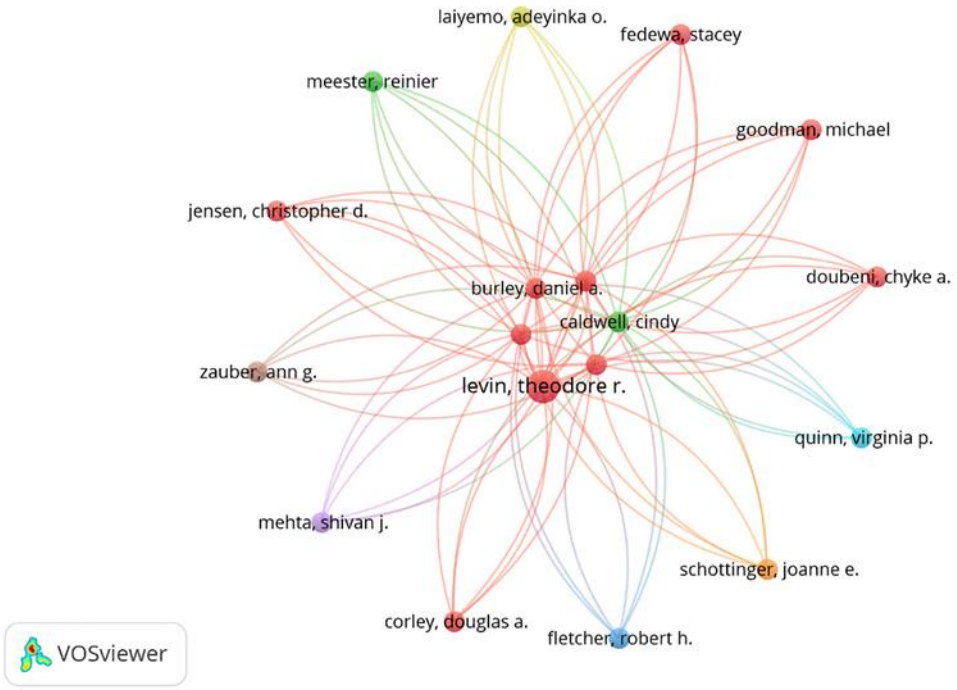


Table 3. Most Cited Authors With High Total Connection Strength

Authors	Number of Publication	Number of Citation	Total Connection Strength
Levin, Theodore	104	2519	98
Burley, Daniel	54	772	80
Caldwell, Cindy	20	422	57
Jamieson, Laura	41	546	53
Oehrli, Michael	30	424	43
Reyes, Juan	24	266	41

3.5. Citation Network Analysis of Institutions

The citation network analysis of institutions is presented in Figure 6. The analysis included institutions with at least one citation and one publication. The analysis of 844 units resulted in three clusters, 55 connections, and a total connection strength of 56. The most cited institutions were Northwestern University (480 citations), the University of San Francisco (420 citations), and Kaiser Permanente Northern California (387 citations). The institutions with the most publications were the Ministry of Health (11 publications), Monash University (9 publications), and the Karolinska Institute (9 publications). This citation analysis demonstrates the academic impact and collaborative relationships of organizations. Institutions such as Harvard Medical School, Johns Hopkins University and Mayo Clinic are leaders in citation and collaboration in the international literature. Institutions such as Kaiser Permanente and the Chinese Academy of Medical Sciences have established specific collaborations and citation relationships by focusing on a specific research area. The total connection strength rankings are presented in Table 4.

Figure 6. Citation Analysis of Institutions

Table 4. Most Cited Authors With High Total Connection Strength

Organizations	Number of Publication	Number of Citation	Total Connection Strength
Johns Hopkins University	104	2519	98
Mayo Clinic	54	772	80
Massachusetts Institute of Technology	20	422	57
Kaiser Permanente Northern California	41	546	53
Permanente Medical Groups	30	424	43
Harvard Medical School	24	266	41

3.6. Keyword Citation Connection Network Analysis

The keyword network analysis of studies related to quality assurance is presented in Figure 7. Keywords play a crucial role in bibliometric analyses as they reflect the thematic focus and interconnectedness of research areas. The analysis included 159 units with at least two repetitions and connections, resulting in nine clusters, 178 connections, and a total connection strength of 240. The most frequently occurring keywords in the dataset were "Quality Assurance" (61 occurrences), "Patient Safety" (21 occurrences), "Quality Improvement" (16 occurrences), "Healthcare" (13 occurrences), and "Healthcare Quality Assurance" (11 occurrences). These keywords also exhibited the highest total connection strength, indicating their central role in the research domain. The visual representation of keyword connections suggests that "Quality Assurance" occupies a core position, with interconnected subfields such as patient safety, quality management, digital health, artificial intelligence, and outcome-driven healthcare research forming significant thematic clusters. This mapping highlights the interdisciplinary nature of research in healthcare quality assurance, demonstrating the convergence of various fields toward improving healthcare services. Table 5 provides a detailed overview of the connection sizes of the most frequently used keywords in this domain.

Figure 7. Keyword Analysis

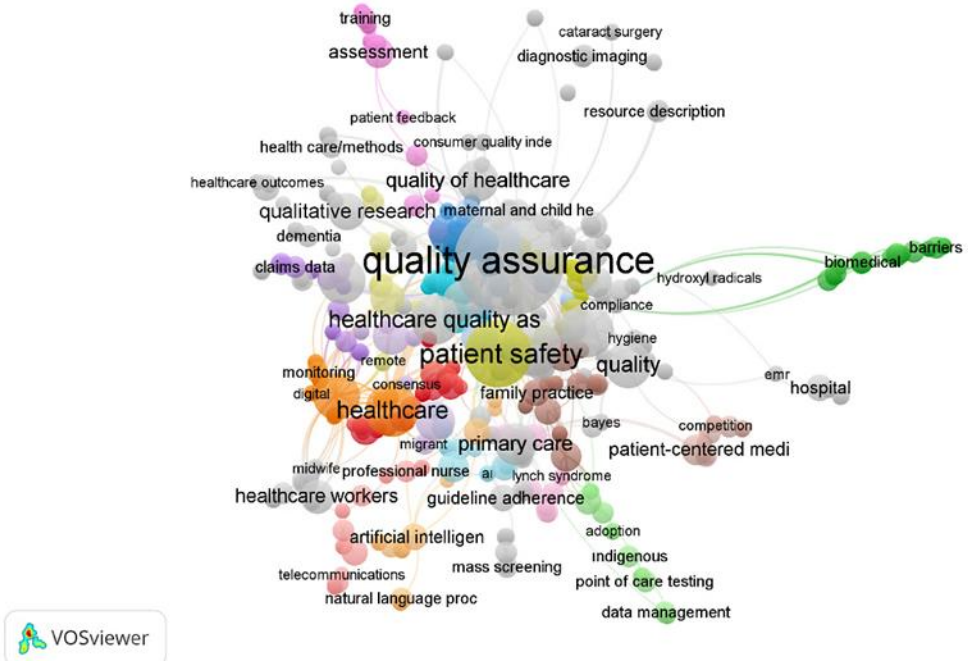


Table 5. Most Repeated Keywords

Keywords	Frequency	Total Connection Strength
Quality Assurance	61	124
Patient Safety	21	53
Healthcare	13	42
Quality Improvement	16	35
Accreditation	9	25
Quality of Healthcare	10	21
Covid-19	10	20
Healthcare Quality Assurance	11	18
Primary Healthcare	7	18
Quality Assessment	5	15
Quality Indicators	5	15

3.7. Bibliographic Coupling Network Analysis of Texts

The bibliographic coupling network analysis of texts is presented in Figure 8. Bibliographic coupling occurs when two independent sources cite a common reference, providing insights into the intellectual linkages and thematic evolution within a research field (Dirik *et al*. 2023). The analysis included 289 units with at least one citation, extracted from the Web of Science database, using the keywords "quality assurance" and "health" with a timespan of 2000-2024. The publications with the highest bibliographic coupling were "Jaffe (2013)" with 364 citations, "Dranove (2010)" with 351 citations, "Levin (2011)" with 156 citations, and "Snow (2009)" with 129 citations. In terms of total connection strength, "Shawahna (2020a)," "Shawahna (2020b)," and "Diaz-Navarro (2024)" emerged as the most influential sources. This bibliographic mapping analysis reveals that the literature is structured around several core clusters, where authors within clusters exhibit a high degree of co-citation and shared research focus. Conversely, outliers and peripheral studies indicate specialized or emerging subfields. The total connection strength rankings, which highlight the most influential studies based on their bibliographic coupling links, are presented in Table 6. Moreover, Table 6 presents journals with the highest connection strength, indicating their central role in the research network. Notably, "BMC Health Services Research" (94 connection strength) and "Plos One" (73 connection strength) serve as pivotal publication sources in this field.

Figure 8. Bibliographic Coupling Analysis of Texts

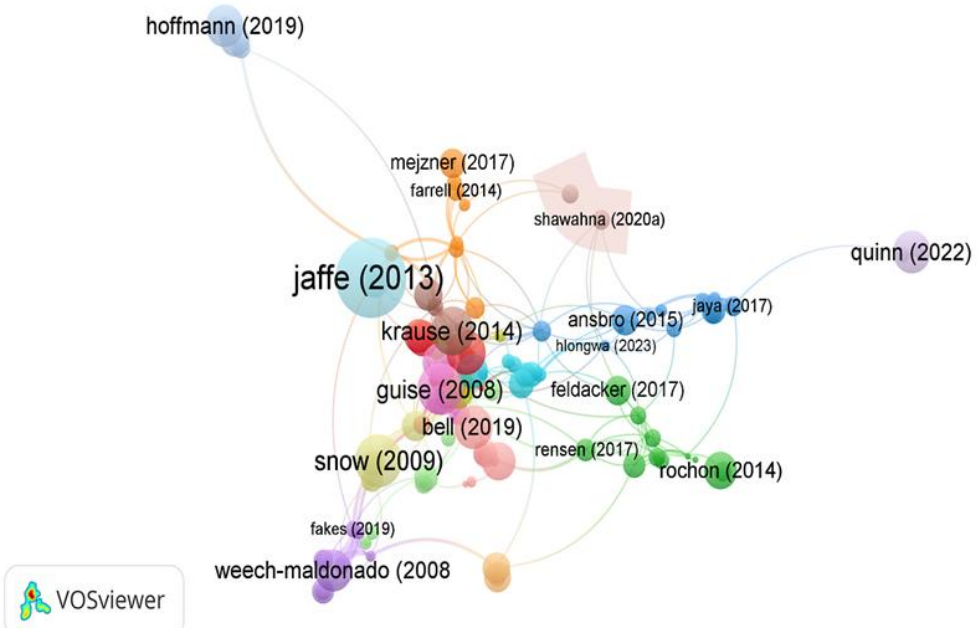


Table 6. Texts with High Total Connection Strength

Documents	Number of Documents	Total Connection Strength
Shawahna (2020a)	12	41
Shawahna (2020b)	11	39
Diaz-navarro (2024)	5	27
Cristina (2024)	1	27
Katoue (2021)	6	22
Kredo (2020)	9	21
Noest (2014)	32	16

3.8. Bibliographic Coupling Network Analysis of Journals

The bibliographic coupling network analysis of journals is presented in Figure 8. The analysis included 165 units with at least one citation. The network analysis revealed 17 clusters, 313 connections, and a total connection strength of 521. The journals with the highest bibliographic coupling were JAMA - Journal of the American Medical Association (364 citations), Journal of Economic Literature (351 citations), Plos One (264 citations), and Implementation Science (181 citations). In summary, this bibliographic coupling analysis organizes the literature based on shared citations, illustrating that while journals centered on general and interdisciplinary health services cluster in the middle, those devoted to more specific thematic areas such as simulation, public health, diagnostics, and laboratory applications, and family medicine form their subgroups. The connections among these clusters further highlight the methodological or theoretical proximity across these domains. The total connection strength rankings for journals are presented in Table 7.

Figure 9. Bibliographic Coupling Analysis of Journals

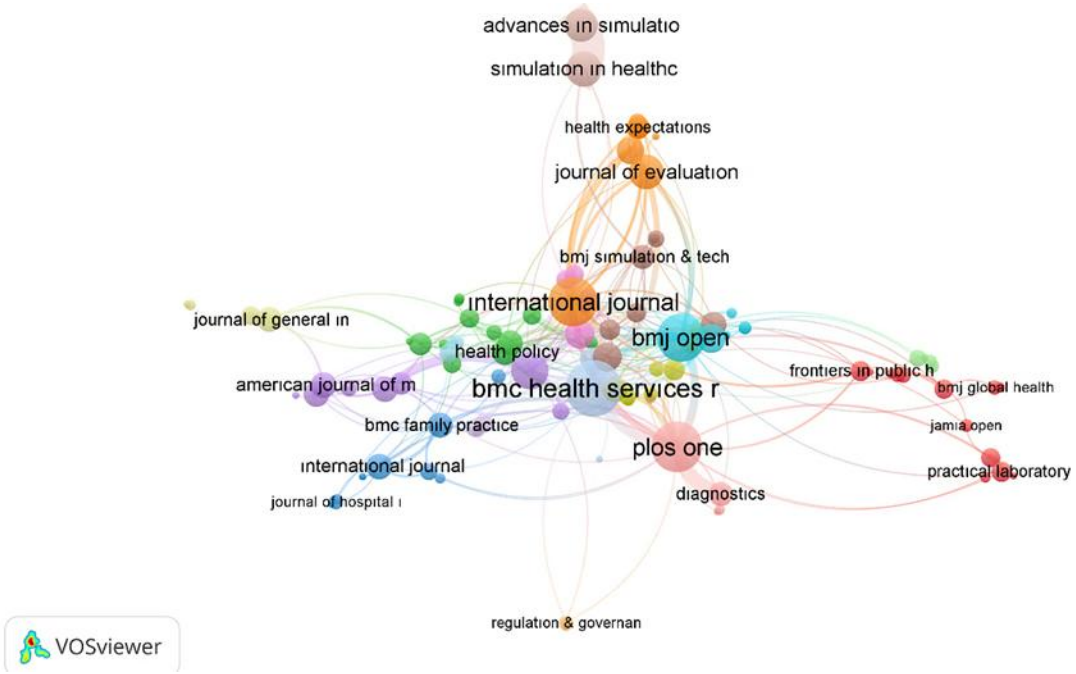


Table 7. Journals with High Connection Strength

Journals	Number of Documents	Total Connection Strength
BMC Health Services Research	25	94
Plos One	24	73
International Journal for Quality in Health Care	10	68
BMJ Open	12	66
BMC Medical Education	5	35
Society for Simulation in Healthcare	2	32
Journal of Evaluation in Clinical Practise	2	31
BMJ Open Quality	6	21

4. Conclusion

Quality assurance in healthcare is vital for improving service effectiveness, patient safety, and satisfaction. It ensures that healthcare services comply with national and international standards, supporting the sustainability of healthcare systems. This process involves identifying risks in advance and implementing preventive measures to safeguard both patients and employees. Additionally, it provides a framework for detecting and addressing service deficiencies, optimizing resource utilization, and continuously improving clinical outcomes. Quality assurance not only enhances the quality of current healthcare services but also lays the foundation for reliable and accessible future healthcare systems.

In this study, the bibliometric analysis examined the network connections of authors, countries, keywords, and texts. The co-authorship network analysis identified 40 authors grouped into four clusters, with a total of 284 connections and a total connection strength of 404. The most prolific and cited author was "Braithwaite Jeffrey," highlighting the central role of certain authors in knowledge production. However, the limited size of collaboration networks suggests the need for broader interaction among researchers. The co-authorship network analysis of countries identified 70 countries with 285 connections and a total connection strength of 452. The USA, the UK, and the Netherlands were the most cited countries, reflecting the greater contributions of developed nations due to their resources and collaboration

opportunities. However, the underrepresentation of developing countries indicates a need for greater global inclusivity in health quality assurance research.

The citation network analysis identified 25 authors grouped into 14 clusters, with a total of 154 connections. The most cited authors were "Lee Grace," "Sidney Stephen," and "Young Joseph," each with 364 citations. The keyword analysis revealed that the most frequently repeated keywords were "Quality Assurance" (61 repetitions), "Patient Safety" (21 repetitions), and "Quality Improvement" (16 repetitions), with a total of nine clusters, 178 connections, and a total connection strength of 240. However, the underrepresentation of certain topics, such as digital health and sustainability, suggests gaps in the literature. The bibliographic coupling network analysis of texts identified 289 units, with the most coupled publications being "Jaffe (2013)" with 364 citations and "Dranove (2010)" with 351 citations. In terms of total connection strength, "Shawahna (2020a)," "Shawahna (2020b)," and "Diaz-Navarro (2024)" were the most prominent. The bibliographic coupling network analysis of journals identified 17 clusters, 313 connections, and a total connection strength of 521. The journals with the highest bibliographic coupling were JAMA, Journal of Economic Literature, Plos One, and Implementation Science. These analyses provide detailed insights into collaboration, citation patterns, and thematic focus areas in the literature, contributing to a better understanding of the current state of research in health quality assurance.

Based on these findings, several recommendations can be made to advance the field of health quality assurance. First, fostering international collaborations, particularly by enhancing the contributions of developing countries, will help create a global knowledge network. Additionally, more research should be encouraged in understudied areas such as digital health and sustainable quality management. In addition to our findings, another missing point in the literature is the studies on integrating quality assurance practices in healthcare with environmental sustainability. More research is needed on the interaction between quality and environmental performance, especially in areas such as more efficient use of hospital resources, the green hospital concept, and waste management (Mortimer et al., 2018). Developing countries with low representation rates due to co-authorship analysis may have quality practice problems that differ in terms of local needs and conditions (George et al., 2023). Therefore, research funds and capacity-building programs can be restructured to collaborate with researchers in these countries. In addition to the identified research gaps, the impact of leadership approach and organizational culture on quality assurance should also be examined (Weaver et al., 2013). Leadership styles enable more effective participation of healthcare professionals in quality improvement, resulting in positive outcomes in patient safety and service sustainability. Establishing networks among researchers to facilitate knowledge sharing can strengthen collaborations. Training programs and funding support should be provided to enhance research capacity in developing countries. Finally, improving access to high-impact journals will enable the dissemination and impact of quality research. These recommendations will contribute to a more inclusive, balanced, and accessible body of knowledge in the field of health quality assurance.

Ethical Declaration

It is declared that scientific and ethical principles were adhered to during the execution and writing of this study, and that all sources used have been appropriately cited.

Declaration Regarding the Use of Artificial Intelligence

The authors commit to adhering to ethical principles, transparency, and responsibility in the use of artificial intelligence tools, ensuring their academic responsibility.

Declaration of Conflicting Interests

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