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Value Co-Creation through Patient Engagement in Health Care: A Bibliometric Analysis

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Abstract

This bibliometric study aims to provide an updated analysis of the global research conducted on value co-creation in healthcare. The methodology involved a comprehensive search of the Dimensions and PubMed databases to retrieve peer-reviewed publications up to March 2024. The search terms used were related to value co-creation, patient engagement, shared decision-making, and other relevant topics. A total of 1,588 relevant publications were identified and analysed. Service-dominant logic was used as the theoretical framework to examine value co-creation. The results show a significant rise in scholarly output since 2010, indicating growing research interest in value co-creation. After analysing the results, several countries stand out as the most active, including the United States, United Kingdom, Canada, and Australia. Hence, universities like the university of Toronto are weighed very high in terms of productivity. Journals like the Journal of Service Research and Journal of Medical Internet Research feature prominently. Authors like Janet R. McColl-Kennedy receive high citations. All in all, the study gives an inferred result comprising the tendencies of the research in the specified subject area, influential contributors, and their articles, and identifying the significant advancements in the field. Although, some limitations consist in possible biases and missing works that are not published or written in languages other than English. In conclusion, the bibliometric analysis provides an all-round vision of the emerging research frontiers to contribute to the understanding of what types of research still require more attention on the subject of value co-creation in healthcare.

Keywords: Value Co-creation, Healthcare, Bibliometric Analysis, Service-dominant Logic, Collaboration Networks

Introduction

The importance and essential nature of involving patients throughout the process of drug development and the lifespan of medications are becoming more widely acknowledged (Partridge et al., 2020). Numerous individual initiatives have been launched, each with its

focus, often tailored to a particular stage of drug development, such as clinical trials, regulatory processes, or health technology assessments, as well as specific to particular geographical regions (Kiriiri et al., 2020). Participation of patients in the design and conduct of research may help enhance the transfer of findings to clinical settings. All things considered, there is increasing agreement regarding the critical role that patient participation plays in research, which could raise the field's potential worth (Dijk et al., 2020).

Value co-creation, a concept that has garnered significant scholarly interest in recent years, refers to collaboration among various stakeholders (Saha et al., 2022). Serving as the primary theoretical underpinning of value co-creation, service-dominant logic (SDL) posits that value creation should not solely be the responsibility of the service provider; rather, service recipients also can participate in co-creating value alongside service providers (Vargo et al., 2020). These issues are mostly caused by opposing ideas and aims, which are becoming more and more problematic in the healthcare industry. As a potential means of navigating these challenges, co-creation strategies advocate for a systemic approach instead of focusing on specific goals that could unintentionally compromise other facets of healthcare delivery.

The idea of value and the services offered in the healthcare industry are usually focused on enhancing the patient's state of health, suggesting that the patient is the main target of the services. However, this strategy could unintentionally convey that the client or patient is the main emphasis. Meeting client demands receives less attention in service planning than other elements, which frequently centre around production capacities, cost control, medical science developments, and the experience of the medical organisation (Vogus et al., 2020). Historically, the evolution of healthcare services has been more concerned with cost-effectiveness and medical developments than it has with client expectations. As a result, the perspective of the service provider has mostly been used to define service production and related procedures (Damman et al., 2020).

Bibliometric analysis stands as a pivotal approach for managing extensive datasets and pinpointing areas lacking information and research lacunae. Prior studies underscore the significance of monitoring gaps in literature, particularly in the context of various outbreaks (Salajan et al., 2020). In light of these considerations, our objective is to conduct an updated bibliometric investigation concentrating on publications related to value co-creation. Apart from bridging existing research gaps, this endeavour aims to catalyse action among academics, community stakeholders, and policymakers.

Our primary aim is to explore the evaluation of published findings and the scientific comprehension of value co-creation. Through a comprehensive analysis, we endeavour to identify recurring trends and underscore areas necessitating further exploration. This endeavour is anticipated to foster heightened interest, collaboration, and attention from academic, practitioner, and policymaker communities. Employing a holistic approach, we aspire to enhance understanding and stimulate innovative advancements in the field of value co-creation research.

Research Methodology

Our methodology for conducting comprehensive bibliometric analysis in the realm of value co-creation in healthcare research is meticulously outlined below. This systematic approach

consists of various components, including database selection, data collection and export, tool utilisation for analysis, search strategy, bibliometric indicators, exclusion criteria, and the three-tier bibliometric analysis.

Database Selection

To ensure the comprehensiveness and accuracy of our bibliometric study, the selection of appropriate electronic databases is of utmost importance. In this regard, two renowned databases, Dimensions and Medline via PubMed, have been carefully chosen. Medline via PubMed is highly regarded for its extensive coverage and robust search capabilities, making it an ideal choice for accessing relevant literature in healthcare research (Damarell et al., 2020). Its comprehensive nature allows for a wide-ranging approach to gathering relevant articles pertaining to value co-creation in the healthcare domain. In addition to Medline via PubMed, Dimensions serves as a supplementary data source. Although it has more basic search functions, Dimensions offers additional insights that are sometimes overlooked by specialised databases. This dual approach, combining the strengths of Medline via PubMed and Dimensions, aims to enhance the comprehensiveness of our bibliometric analysis (Luo et al., 2022). By utilising both databases, we aim to capture a holistic view of value co-creation in the healthcare field, ensuring that no relevant literature is overlooked.

Data Collection and Export

A structured approach was employed for data collection and export procedures to ensure systematic handling of bibliographic information. Specific inclusion criteria, including publication year, language, journal details, authorship information, keywords, and document type, were established. The collected data was meticulously organised and exported into a CSV file format to facilitate further analysis. Articles published up to March 2024 were considered to capture the latest trends and developments in value co-creation research within the healthcare sector.

Tool for Analysis: VOSviewer

The principal analytical tool was determined to be VOSviewer due to its capacity to show and analyse intricate network structures present in bibliometric data. VOSviewer was used to investigate a number of topics, including co-citation studies, citation relations, word co-occurrence, subject grouping, and collaboration networks. This method made it easier to find topic clusters pertaining to value co-creation in healthcare, author cooperation networks, word co-occurrence patterns, and citation trends.

Search Strategy

To ensure a systematic and comprehensive review of relevant literature on value co-creation in healthcare, a structured literature search strategy was carefully developed. This strategy incorporated the utilisation of Medical Subject Heading (MeSH) terms, covering a wide range of subjects related to value co-creation, patient engagement, shared decision-making, healthcare collaboration, and other relevant topics.

By incorporating these MeSH terms, our search strategy aimed to capture diverse perspectives and insights from scholarly literature in the field of healthcare. The MeSH terms employed included Value and Co-creation, Co-creation and Healthcare, Patient Engagement, Shared Decision-making, Patient-centred Care, Participatory Medicine, Healthcare

Collaboration, User Involvement in Healthcare, Co-production in Healthcare, Health Information Technology, Patient Empowerment, Patient Experience, Healthcare Communication, Patient Involvement in Healthcare Decision-making, Healthcare Outcomes, Patient Feedback in Healthcare, Consumer Health Informatics, Health Literacy, Patient Satisfaction with Health Services, and Social Media as Channels of Communication.

Bibliometric Indicators

Utilising bibliometric markers, a methodical approach was used to examine the retrieved publications systematically. After the articles were exported to the Zotero desktop, it was easier to arrange the gathered papers and get rid of any duplicates. Each article was then checked for relevancy in accordance with the pre-set inclusion criteria. This procedure made sure that the study only contained papers that were directly relevant to the research issue of interest, in this case value co-creation in healthcare. In instances where there were disagreements between the reviewers regarding the relevance of certain articles, discussions were held to reach a consensus. These discussions were vital in maintaining the accuracy and applicability of the research findings, as they allowed for careful consideration of differing viewpoints and perspectives.

Exclusion Criteria

A meticulous selection procedure was used to omit publications without MeSH (Medical Subject Headings) terms from the bibliometric analysis in order to preserve the validity and relevance of the study. This strategy attempted to ensure that only papers that were specifically on value co-creation in healthcare were included. The study avoided any potential dilution of the research findings by keeping the analysis narrow and focused by excluding papers that did not include MeSH keywords.

Three-Tier Bibliometric Analysis

The bibliometric analysis was carried out in three stages: Data acquisition and archiving, assessment and identification of publications considered worthwhile, and bibliometric analyses using VOSviewer. Each step was performed carefully, with the emphasis on building credibility and comprehensiveness of the systematic review of the academic literature on value co-creation in healthcare. This technique enabled the identification of missing research literature, discovering new knowledge, and gaining a better understanding of the value co-creation process within the context of the healthcare sector.

Theoretical Framework

In line with the theoretical propositions formulated in this paper, service-dominant logic (SDL) is the theoretical framework through which value co-creation in the context of healthcare is examined. SDL postulates that value is created interactively and cooperatively in a reciprocal manner between service sellers and buyers or receivers (Constandache, 2020). Whereas GDV perceptions of embedded value SDL has put it clearly that value is discovered only in those service systems that are being co-produced by multiple actors, who are integrating resources. In the context of healthcare, SDL reveals that value is created when the providers, patients and possibly other stakeholders are the resource integrators (Shulga & Busser, 2021). Instead of being mere recipients of normalised therapies, patients are acknowledged for their abilities, knowledge, and situations that shape patient processes and results. SDL highlights

the value of patients acting as co-producers of health through capturing patient resources and responding to their reported and perceived needs (Sinton, 2020).

Value co-creation can be encouraged by communication and information sharing, participation in decision making, and transparency between providers and patients. This moves the emphasis from individual outputs to co-activities and social interactions between the parties (Rezaei Aghdam et al., 2020). It regards patients as value defining stakeholders relevant to the development of health services. This study will therefore employ the SDL framework with the aim of identifying the factors relating to co-creation of value in the healthcare systems.

Results and Discussion

4,892 papers were found in the first part of our bibliometric investigation, which involved a thorough search of all the databases. After 335 reports were deemed unavailable, we proceeded to assess the eligibility of the 4,557 remaining reports. 576 records were removed before the screening process started for a variety of reasons, such as the discovery and elimination of duplicate entries, the judgment that they had no bearing on the subject of the article, and the identification of studies without Medical Subject Heading (MeSH) keywords. A comprehensive screening procedure was then carried out, leading to the assessment of 2,115 reports to determine their eligibility. After implementing the ultimate set of inclusion criteria, 1,588 publications satisfying the particular demands of our bibliometric evaluation were chosen. This process's flow is visual. The flow of this process is visually represented in the PRISMA flow chart presented in Figure 1.

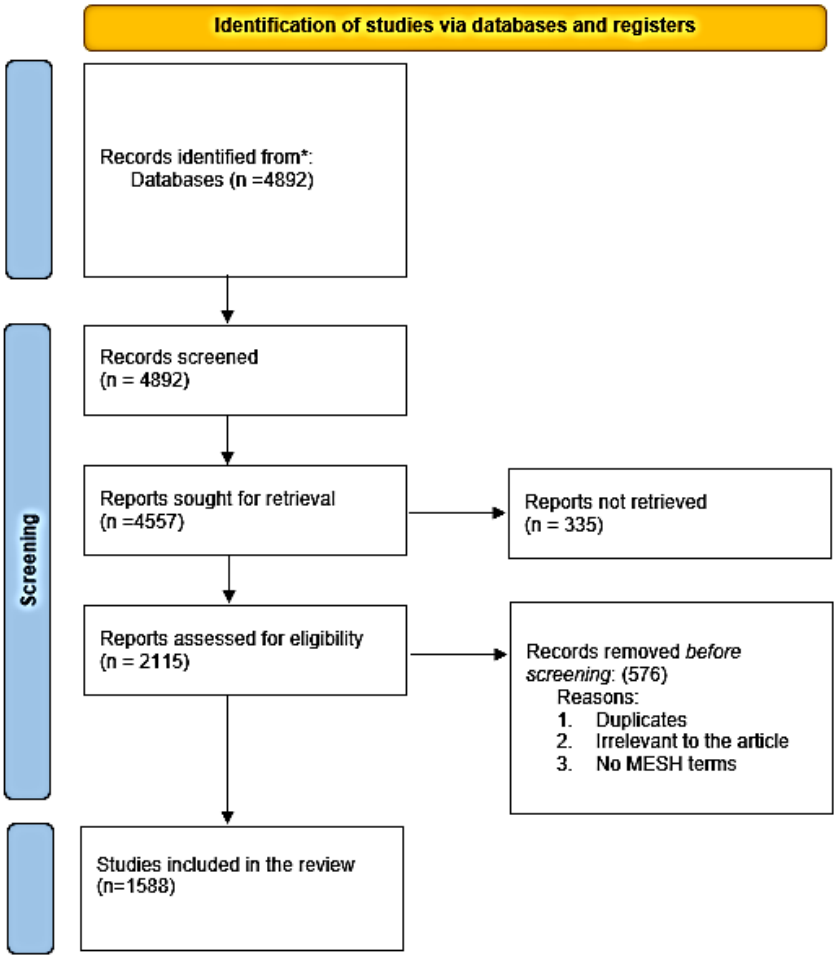

Figure 1. A summary of the Literature Searches through PRISMA Flowchart

Figure 1 charts the procedure of accumulating applicable experimental writings starting with an extensive database inquiry. It depicts removing unsuitable based on relevance following abstract screening. Finally, incorporated articles are subjected to analytical stages comprising data aggregation, investigation, and conclusions.

Trends in Publication Years

Figure 2 shows a distinct upward trend in value co-creation in healthcare (VCCH) research since 2010, suggesting a rise in scholarly interest and the prominence of VCCH as a field of study. As shown in figure 2, research production was generally low from the late 1980s to the early 2000s, with occasional spikes in the number of publications. But starting in 2010, there was a noticeable increase in publications, indicating an era of significant expansion for VCCH research. This growth persisted throughout the 2010s, with publications rising most noticeably between 2014 and 2019. The highest number of publications in 2022 (525) indicates a recent emphasis on VCCH.

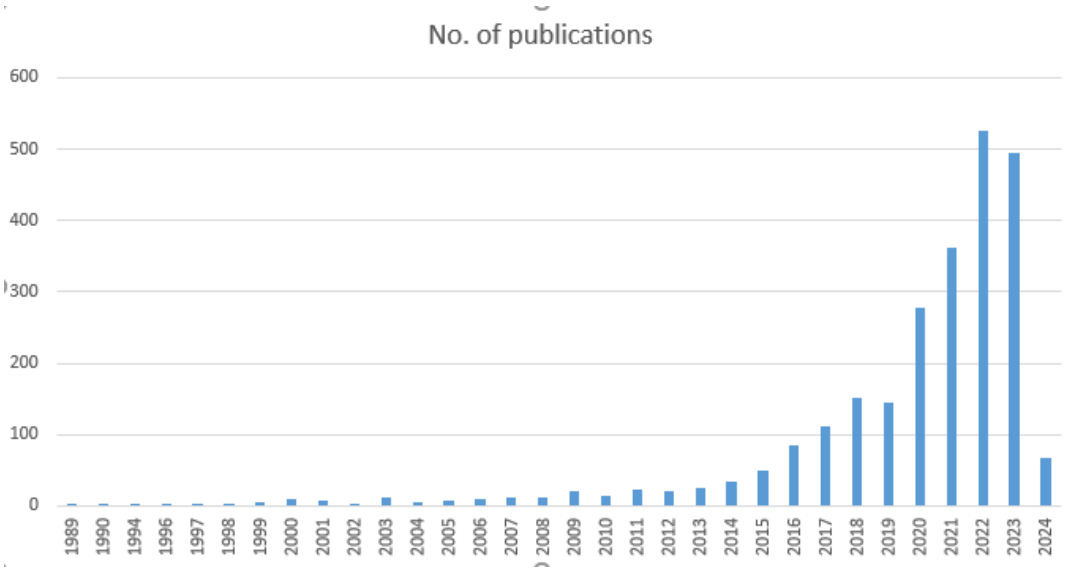

Figure 2. Year-Wise Trend in the Number of Publications

This trend aligns with initiatives launched during this period to actively engage patients in various stages of healthcare. For example, the Patient-Centred Outcomes Research Institute (PCORI) was established in 2010 in the U.S. to fund comparative effectiveness research that considers patient viewpoints (Ellison et al., 2022). PCORI's work demonstrates growing recognition of patient engagement as critical for improving outcomes.

Distribution Based on Active Countries

The bibliometric output of the top 10 nations is displayed in Table 1 according to the quantity of documents generated. With 654 documents, the United States tops the world in research presence, supported by a high number of citations (18426). Closely behind, the UK exhibits a high level of academic engagement with 438 documents and a significantly higher overall link strength of 563, indicating active cooperation among researchers. With 303 and 255 publications, respectively, Canada and Australia have a high level of research production, highlighting their active participation in academic pursuits. Though at differing degrees of productivity and influence, the other nations on the list including the Netherlands, Sweden, Germany, and Norway also contribute to the global research landscape of value co-creation in healthcare.

Table 1
Distribution of Published Papers and Citations among Top 10 Leading Countries in Healthcare Value Co-Creation Research

Rank	Country	Documents	Citations	Total link strength
1	United States	654	18426	514
2	United Kingdom	438	12018	563
3	Canada	303	5848	236
4	Australia	255	7592	291
5	Netherlands	246	6520	235
6	Sweden	139	4217	175
7	Germany	109	1631	239
8	Norway	105	1843	150
9	Spain	86	851	147
10	Denmark	91	957	118

Source: By authors

Table 1 summarises the distribution of published papers and citations among the top 10 leading countries in value co-creation healthcare research based on document count. The United States had the highest number of documents at 654, along with the highest citation count of 18,426. The UK and Canada followed closely behind the US in terms of documents.

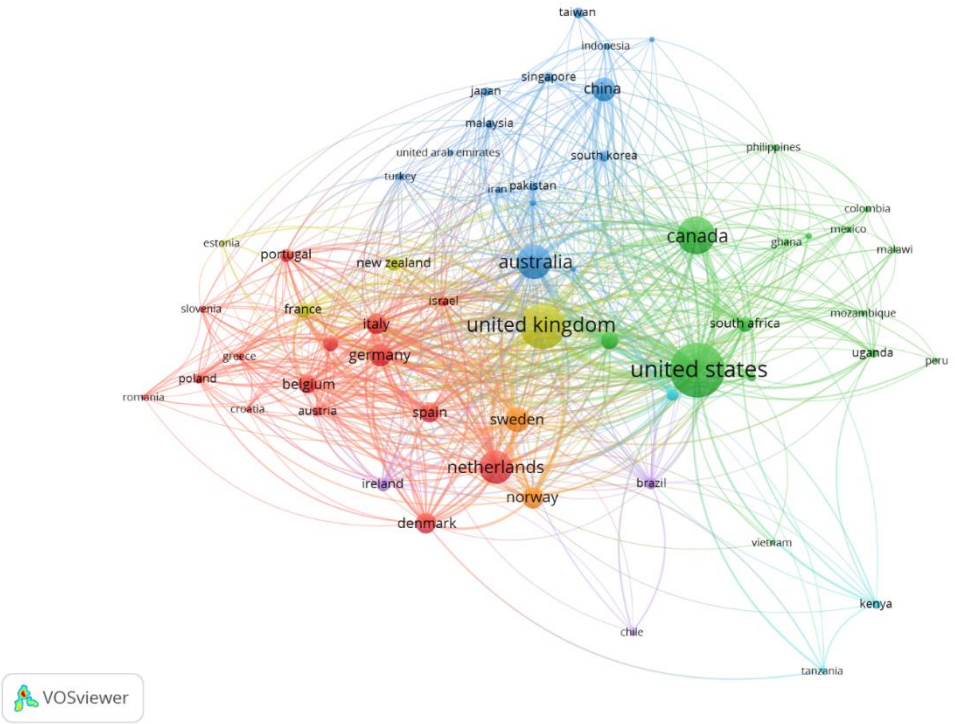

Figure 3. Geographical Distribution of Documents based on Countries

According to Figure 3, the US produced the most papers followed by UK, Canada, and Australia. Published works were distributed broadly across regions with the highest concentration in North America and Europe.

Distribution Based on Institutions

With 78 papers, the University of Toronto is in first place. With 46 and 43 documents, respectively, the University of British Columbia and Maastricht University follow. According to research output, the University of Melbourne and University College London are in the top 10 universities with 39 and 36 contributions, respectively. The remaining colleges on the list demonstrated their varying degrees of research effort by producing between 25 and 34 papers. The large number of documents these universities have reflect a high level of research effort. Notably, Institutions such as the University of Toronto, University of Melbourne, and University College London emerge as key contributors, with significant research output and citations. These universities demonstrate success with interdisciplinary collaboration and knowledge-sharing across sectors to address complex healthcare challenges (WHO, 2021).

Table 2

Distribution of Articles and Citations by Top 10 Active Institutes in Value Co-creation Research in Healthcare

Rank	Organisations	Documents	Citations	Total link Strength
1	University of Toronto	78	1944	181
2	University of British Columbia	46	812	94
3	Maastricht University	43	758	88
4	University of Melbourne	39	1082	83
5	University College London	36	830	87
6	Vrije Universiteit Amsterdam	36	694	97
7	Karolinska Institutet	34	268	77
8	London School of Hygiene & Tropical	32	297	68
9	University of Oxford	31	1504	71
10	Monash University	30	2237	41

Source: By authors

Table 2 shows the distribution of articles and citations by the top 10 active institutes. The University of Toronto published the most documents at 78. It was followed by the University of British Columbia and Maastricht University. Total link strength, which indicates collaboration, is also provided.

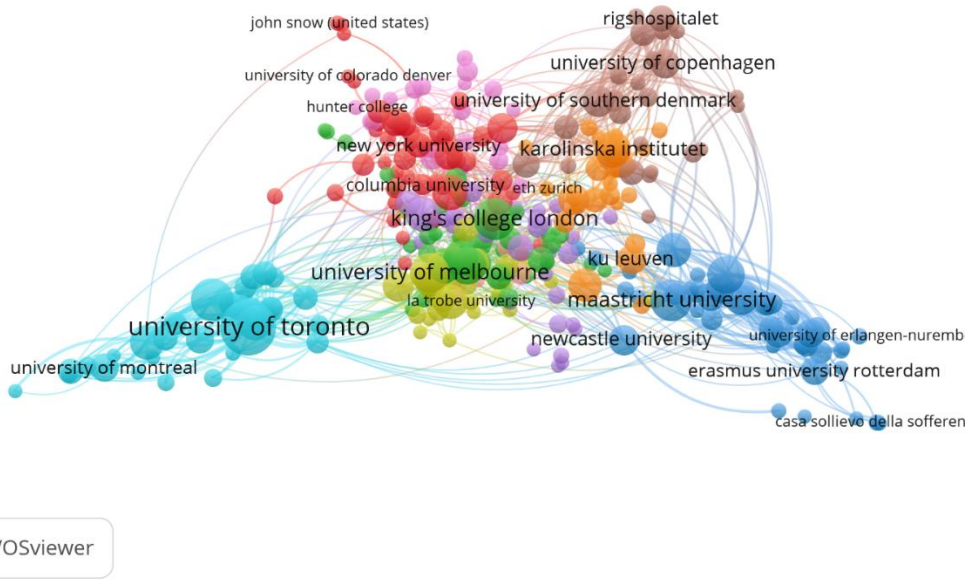

Figure 4. Visualisation of Institutional Networks in Bibliometric Analysis

The map in Figure 4 depicts global contributions by documenting healthcare value co-creation research outputs across nations, with the United States as the foremost producer followed by other leading countries like the United Kingdom and Canada.

Citation Analysis

Active Journals and Citations

The Journal of Service Research emerges as the top journal in terms of citations, with 3289 citations attributed to its 15 documents, indicating significant scholarly impact. Following closely behind is the Journal of Medical Internet Research, with 76 documents and 2357 citations, reflecting its substantial influence in the field of medical research and internet-based studies. Public Management Review holds a notable position with 1677 citations spread across 8 documents, highlighting its relevance and contribution to the discourse on public management practices. Qualitative Health Research, despite having a smaller number of documents (27), garners considerable attention with 1591 citations, showcasing the importance of qualitative methodologies in health-related studies. BMJ Open and Health Research Policy and Systems exhibit robust citation counts, underscoring their significance in disseminating open-access research and advancing health policy discussions. Moreover, Nursing Science Quarterly, despite having the highest document count (105), receives relatively fewer citations, indicating potential variations in citation patterns across different research fields. Other journals in the top 10, such as BMJ Quality & Safety, JMIR mHealth and uHealth, and BMC Health Services Research, contribute significantly to their respective domains, further enriching the scholarly landscape with their research outputs and impact.

Table 3
Analysis of Publication Frequency by Leading Journals: Top 10 Active Journals in Value Co-Creation Research

Rank	Source	Documents	Citations	Strength
1	journal of service research	15	3289	174
2	journal of medical internet research	76	2357	123
3	public management review	8	1677	83
4	qualitative health research	27	1591	6
5	BMJ open	78	1523	79
6	health research policy and systems	21	1057	52
7	BMJ quality & safety	6	984	42
8	nursing science quarterly	105	930	1
9	jmir mhealth and uhealth	24	766	34
10	bmc health services research	33	732	98

Source: By authors

Table 3 lists the top 10 active journals based on the number of documents, citations, and total link strength. The Journal of Service Research topped the list in terms of citations. The Journal of Medical Internet Research had the second highest citation count despite having the most documents. This has been shown in the map in Figure 5.

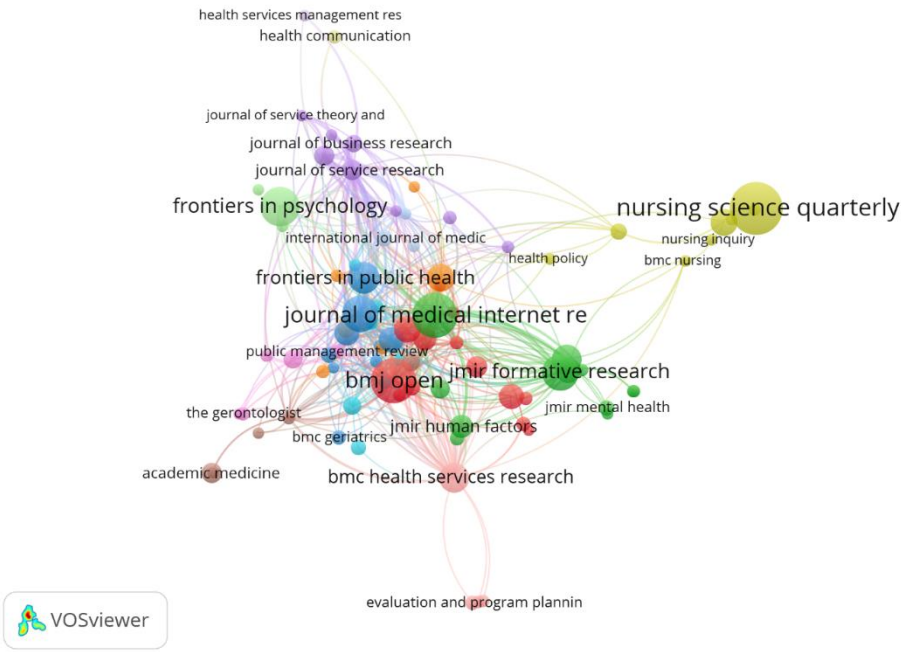

Figure 5. Visualisation of Bibliographic Coupling and Co-citation Patterns: Mapping Source Interconnections

Most Frequently Cited Authors

The analysis of author co-citation reveals the most frequently cited authors in the dataset. Janet R. McColl-Kennedy emerges as the most cited author, with 1484 citations to her name, followed closely by Lia Patricio with 1384 citations. Glenn Robert, Ian D. Graham, and Rosemarie Rizzo Parse also feature prominently among the most cited authors, with 857, 549, and 413 citations, respectively. These findings underscore the significant impact and influence

these authors have had within their respective fields, as evidenced by their citation frequencies. The diverse range of disciplines represented among the top-cited authors highlights the breadth of research interests and contributions within the scholarly landscape.

Table 4
The Number of Citations by the Top 10 Authors

Rank	Author	Citations	Total link strength
1	Janet R. McColl-Kennedy	1484	33
2	Lia Patricio	1384	15
3	Glenn Robert	857	13
4	Ian D. Graham	549	2
5	Rosemarie Rizzo Parse	413	19
6	Greet Cardon	245	9
7	James W. Peltier	155	27
8	Andrew J. Dahl	139	27
9	Marleen De Mul	123	16
10	Maiken Hjerming	122	198

Source: By authors

The citation analysis of author co-citation is presented in Table 4, which shows the number of citations received by the top 10 authors. Most cited author is Janet R. McColl-Kennedy with 1484 citation. The rest of the top three most cited authors are Lia Patricio and Glenn Robert. Figure 6 also presents the distribution of the density of the received citations of the prominent authors in the field sorted in descending order, where Janet R. McColl-Kennedy is cited most often.

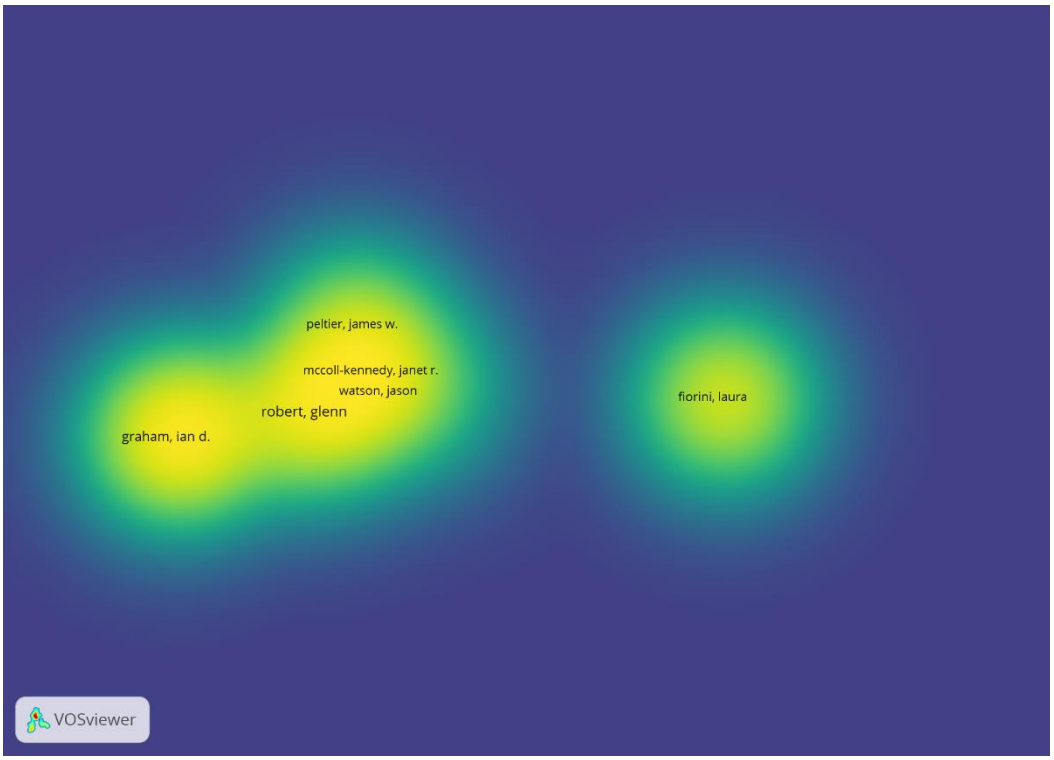

Figure 6. Density Visualisation Map for Citation of Authors

Bibliometric Discussion

Value co-creation in health care (VCCH), based mainly on the logic of service dominance, implies the involvement of both patients and doctors in the process of value creation in the sphere of health care. According to El Masri et al. (2022), VCCH plays a crucial role in enhancing doctor-patient relations and attaining value-based health care. Consequently, it is essential to have a thorough grasp of VCCH. This bibliometric analysis was carried out to analyse and provide an overview of the current published literature and offer valuable insights into the research landscape surrounding value co-creation in healthcare. In order to report the findings of this study, we have prospectively searched the databases for keywords related to this domain and reviewed the results of the systematic analysis thoroughly in order to discover trends, potential gaps, and directions for future research.

With regard to the role of value co-creation in improving health care services delivery, the following remain as the challenges for the effective application of this idea. Interdisciplinary collaboration is essential, but there are challenges due to conflicting objectives, schedules, and sometimes authorities in every participating field (Heckert et al., 2020). For this purpose, stakeholder relations with shared leadership and non-industry mediators can be helpful. Also, data privacy and security of other sensitive patient information being exchanged longitudinally is an issue that cannot be overlooked (White et al., 2022). Blockchain offers a solution through a decentralised and robust digital database that can help in analytics while respecting the patient's right to approve their data usage. However, standards also require improvement for the data usage agreements between partners. Furthermore, resource limitation of current healthcare systems affects scaling. More specifically, value-based reimbursement for the performance of prevention measures and non-material resource sharing partnerships for achieving the highest amount of benefit from scarce inputs could answer this (Virlée et al., 2020). Engaging and managing diverse stakeholder needs, addressing data governance and financial challenges are especially critical in assessment and recommendation to unlock the benefits of value co-creation in healthcare for all the stakeholders (Benfeldt et al., 2020).

The analysis of citation patterns reveals a significant evolution in the research landscape of value co-creation since its conceptualisation. Initially, during the period from 2004 to 2009, the field witnessed minimal scholarly output, indicative of its nascent stage. However, a notable transition occurred post-2010, marking the onset of a new phase characterised by a consistent and substantial increase in the number of publications annually. This shift reflects a growing interest and recognition of the importance of value co-creation in healthcare (VCCH) within academic circles. This trend has been previously described in previous literature (Amorim & Ventura, 2023).

One notable finding of this analysis is the identification of the top active countries contributing to research on value co-creation in healthcare. The United States emerges as the leading contributor, both in terms of the number of documents produced and the citation impact of its research output. This reflects the significant investment and interest in understanding the role of value co-creation in improving healthcare delivery and patient outcomes within the US academic and research community. The United Kingdom, Canada, and Australia also demonstrate strong research presence, indicating a global commitment to advancing knowledge in this field. These countries not only produce a substantial volume of

research but also exhibit high citation counts, suggesting the influence and impact of their contributions on the global discourse surrounding value co-creation in healthcare.

Furthermore, the analysis of institutions reveals the leading role played by universities in driving research on value co-creation. Institutions such as the University of Toronto, University of Melbourne, and University College London emerge as key contributors, with a significant number of publications and citations. These universities demonstrate interdisciplinary collaboration and knowledge exchange, engaging in research partnerships across various sectors to address complex healthcare challenges and drive innovation in patient-centred care. The presence of these institutions at the forefront of research underscores the importance of academic leadership and expertise in shaping the direction of scholarly inquiry and driving progress in the field of value co-creation in healthcare.

By analysing current journals, it helps to understand how the results are shared and the platforms that shape the academic discourse on value co-creation. Some of the well-known international journals are Public Management Review, Journal of Service Research and Journal of Medical Internet Research among others that publish important research that enhances practice and knowledge in this area. Apart from serving as knowledge databases these publications are crucial for facilitating discussions, controversies, and collaborations between scholars, practitioners, and policymakers. This enhances the progress and development of the management and delivery of health care.

Some of examples include, Partnership HealthCenter, Portland and Vermont Blueprint for Health. The Partnership HealthCenter in Portland, Maine engaged patients, physicians, and other staff to reassess the manner in which care was delivered and enhance the experience for patients with chronic diseases (Bates et al., 2020). There was improved timely access to providers, improvement in the utilisation of preventive services, and decrease in emergent care and hospitalisation (Lan et al., 2022). The Vermont Blueprint for Health the strategic plan encouraged multi-stakeholder engagement such as patients, purchasers, clinicians and policy makers. This resulted in the formation of community health teams, adoption of wellness and care coordination, and $29 million in cost savings over 5 years by reduction of hospital and ER utilisation (Loganathan & Bijelic, 2023).

Furthermore, analysing co-authorship and bibliographic coupling networks provides a more profound comprehension of research community collaboration practices and knowledge dissemination. Some of the central nodes in these networks are University of Toronto, University of Melbourne, University College London, which suggest that these institutions are the centre of interdisciplinary interaction and knowledge transfer between academic disciplines and practical fields. Given the demanding nature of healthcare problems and the need to progress the value co-creation strategy, this paradigm focuses on the importance of working together.

Conclusion

In conclusion, the bibliometric analysis made on the value co-creation in healthcare field offers insights into the research field and findings. The study affirms that there has been a surge in the research on value co-creation in healthcare since the year 2010, which tends to suggest that there is growing concern in this area and an understanding of the role that it

plays in enhancing delivery of healthcare as well as the quality of health outcomes of patients. Overall, this bibliometric analysis offers a comprehensive overview of the current state of research on value co-creation in healthcare. It identifies research trends, leading contributors, influential journals, and collaborative networks, providing a foundation for shaping future research agendas, policy decisions, and practical initiatives aimed at advancing patient-centred care and improving healthcare outcomes. Every author who contributed to the analysis verified that the included studies' titles and abstracts included pertinent articles. Due to this, our study has produced a considerable reduction in the amount of false positives. By including publications up till 2024 in our evaluation, we were able to gain a better understanding of the research being conducted throughout the current years. The retrieved articles had no language restrictions, in contrast to the prior bibliometric analysis, giving a more complete picture of the existing literature.

Our study also has some limitations. First, without using filters based on article titles or abstract screening, VOSviewer's cluster maps may have produced some inaccurate results. Like in other bibliometric research, there is a chance of a time-length bias that might hurt the citation counts of more recent books. Furthermore, misclassification may arise from the removal of publications written in languages other than English due to linguistic constraints. Furthermore, the papers were sourced only from Dimensions and PubMed, the world's biggest medical archive that exclusively houses biomedical literature. On the other hand, duplicate studies may arise from the counting of some articles more than once while gathering research from several databases.

Another limitation of the study is the reliance on bibliometric data alone, which may not capture the full scope of research on value co-creation in healthcare. The bibliometric analysis primarily focuses on published articles and their citation patterns, potentially overlooking unpublished research, conference proceedings, and grey literature that could provide additional insights into the topic. This limitation may result in an incomplete representation of the research landscape and potentially exclude valuable contributions from non-traditional sources.

Furthermore, the study's inclusion criteria may introduce some bias. While efforts were made to include a wide range of publications by not imposing language restrictions, the reliance on specific databases like Dimensions and PubMed may still result in the exclusion of relevant studies published in other databases or platforms. This could limit the comprehensiveness of the analysis and potentially overlook important research conducted in niche or specialised areas not well-covered by the selected databases. Additionally, the study's focus on value co-creation in healthcare may limit the generalisability of the findings to other domains or industries. While healthcare is a critical area for value co-creation research, there may be valuable insights and developments in other fields that are not captured in this analysis.

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