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REVIEW

Research Trends on Primary Healthcare Integration: A Bibliometric Analysis

Tendencias de investigación sobre la integración de la atención primaria de salud: un análisis bibliométrico

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ABSTRACT

Introduction: integrating primary health care services is a key focus in strengthening global health systems, particularly achieving universal health coverage (UHC). This study aims to analyze trends in scientific publications related to integrating primary healthcare services using bibliometric analysis.
Method: articles were searched using the Scopus database. Mendeley and OpenRefine software were used to clean and cluster keywords. Data analysis was conducted using VOSviewer and Biblioshiny software to identify publication trends, citation trends, keyword analysis, authors, inter-researcher collaboration, and affiliations. The database search yielded 130 articles from 1994 to April 2025.
Results: a significant increase in the number of publications began in 2014, peaking in 2024. The average number of citations was approximately 13,81 citations per document. Co-occurrence network analysis identified three keyword clusters: the red cluster focused on operational aspects and service challenges, the blue cluster focused on organizational capacity and support systems, and the green cluster focused on collaborative strategies and holistic approaches. “Primary healthcare integration” is the central topic connected to various keywords in the three clusters. The total number of authors is 676, with an average of 5–6 authors per article. Affiliations and publication sources are predominantly from the United States. International collaboration continues to grow, but there remains a gap in research contributions from developing countries, particularly in Africa and Asia
Conclusions: this study highlights the importance of global collaboration and research capacity development in countries that are developing primary healthcare systems.

Keywords: Healthcare Integration; Primary Healthcare; Bibliometric Analysis.

RESUMEN

Introducción: la integración de los servicios de atención primaria de salud es un enfoque clave para fortalecer los sistemas de salud a nivel mundial, especialmente para lograr la cobertura sanitaria universal (CSU). Este estudio tiene como objetivo analizar las tendencias en las publicaciones científicas relacionadas con la integración de los servicios de atención primaria mediante un análisis bibliométrico.
Método: se realizó una búsqueda de artículos en la base de datos Scopus. Se utilizaron los programas Mendeley y OpenRefine para limpiar y agrupar las palabras clave. El análisis de los datos se llevó a cabo con los programas VOSviewer y Biblioshiny para identificar las tendencias de publicación, tendencias de citación, análisis de palabras clave, autores, colaboración entre investigadores y afiliaciones. La búsqueda en la base

de datos arrojó 130 artículos desde 1994 hasta abril de 2025.
Resultados: se observó un aumento significativo en el número de publicaciones a partir de 2014, con un pico en 2024. El número promedio de citas fue de aproximadamente 13.81 citas por documento. El análisis de redes de co-ocurrencia identificó tres grupos de palabras clave: el grupo rojo se centró en aspectos operativos y desafíos del servicio; el grupo azul en la capacidad organizativa y sistemas de apoyo; y el grupo verde en estrategias colaborativas y enfoques holísticos. La "integración de la atención primaria de salud" es el tema central conectado a diversas palabras clave en los tres grupos. El número total de autores fue de 676, con un promedio de 5 a 6 autores por artículo. Las afiliaciones y fuentes de publicación provienen predominantemente de Estados Unidos. La colaboración internacional sigue creciendo, pero persiste una brecha en las contribuciones investigativas de países en desarrollo, especialmente en África y Asia.
Conclusiones: este estudio resalta la importancia de la colaboración global y el desarrollo de capacidades de investigación en países que están desarrollando sus sistemas de atención primaria de salud.

Palabras clave: Integración de la Atención Sanitaria; Atención Primaria de Salud; Análisis Bibliométrico.

INTRODUCTION

Primary health care (PHC) is the foundation of the health system and the first point of contact between the community and health services. Its purpose is to provide comprehensive, integrated, and sustainable services.[1,2] However, in practice, the integration of primary healthcare services still faces various challenges, such as program fragmentation, weak cross-sectoral coordination, and disparities in access and quality of services, particularly in remote areas.[3]

In many countries, primary health care services often operate in a sectoral manner with separate programs, leading to duplication of services, waste of resources, and reduced effectiveness and efficiency of the health system.[4,5] Additionally, inequitable access to primary health care services, especially in remote and marginalized areas, further widens health disparities.[6]

Various countries have implemented integrative approaches with mixed results. In Thailand, the Universal Coverage Scheme (UCS) policy successfully integrated primary care with a structured referral system supported by adequate funding.[7] In the United Kingdom, the Integrated Care Systems (ICS) within the National Health Service (NHS) facilitate collaboration between general practitioners, hospitals, and social services.[8] Brazil, through the Estratégia Saúde da Família (ESF) program, has strengthened the role of family health teams, although disparities between urban and rural areas persist.[9] India has developed Health and Wellness Centers (HWCs) under the Ayushman Bharat scheme, but limited trained personnel and infrastructure pose challenges.[10] South Africa, with its National Health Insurance (NHI), faces obstacles due to resource disparities between the public and private sectors.[11] Meanwhile, in Indonesia, community health center (Puskesmas) have been at the forefront of primary health care since the 1970s. However, there are still obstacles to the integration of vertical programs of the Ministry of Health, overlapping services, and limited resources.[12] Experiences in various countries show that an integrated approach requires adaptive, context-based, and collaborative strategies across sectors.[3]

Based on the experiences of various countries, the integration of primary health care requires an adaptive approach that takes into account the local context and involves multisectoral collaboration.[13] The results of this study are expected to provide a strong empirical foundation for the formulation of more effective health policies, particularly in efforts to strengthen the integration of primary healthcare services to support the achievement of Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs).[14,15]

Accordingly, this study aims to systematically map the global research landscape on primary health care integration using bibliometric analysis. The specific objectives are to (1) identify publication trends, influential countries, institutions, and authors; (2) analyze patterns of research collaboration across regions; and (3) highlight key themes and emerging areas of focus in the literature. By achieving these objectives, the study seeks to provide a clearer understanding of how knowledge on PHC integration has evolved and where research gaps remain, thereby guiding future studies and policymaking.

Through a bibliometric analysis approach, this study traces the direction and trends of research in primary health care integration.[16] The findings not only provide practical recommendations but also expand theoretical understanding and present new perspectives that can support the formulation of primary healthcare integration policies in the future.

METHOD

This study uses a bibliometric approach with data taken from the Scopus database. The keywords used in the search are "integrated primary healthcare," "primary care integration," "integrated primary care services,"

"health system integration primary care," OR "multidisciplinary care primary healthcare." There is no time limit for the search. Data management includes metadata cleaning, keyword clustering, and data analysis. Data obtained from the Scopus database was extracted in RIS format for metadata cleaning in Mendeley and CSV format for keyword clustering in OpenRefine. The metadata cleaning process in Mendeley includes article duplication, keyword correction, and other metadata improvements. After the data is cleaned, keyword clustering is performed in OpenRefine.[17] Data analysis was visualized using VOSviewer and Biblioshiny software includes the number of publications per year, authors' countries of origin, affiliated institutions, frequently occurring keywords, collaboration between authors and countries, and several other findings.[18,19]

Inclusion and exclusion criteria

The inclusion criteria for this study were scientific articles indexed in Scopus, written in English, and open access. Meanwhile, the exclusion criteria were non-scientific articles (reviews, conference papers, editorials, letters to the editor, short communications, and others), articles not written in English, and articles irrelevant to the research topic.

RESULTS

Figure 1. Summary of main information

The bibliometric analysis results include four pieces of information, namely publication trends, citation trends, keyword analysis and author trends, a collaboration between researchers, and affiliations, which can be reported as follows:

Publication Trend

Figure 1 shows the results of a Scopus database search based on keywords. It reveals that, the publications on the topic of "primary healthcare integration" began in 1994 and continued through April 2025, with 130 articles from 93 sources. The average annual growth rate of published documents is 3,61 %, which indicates a relatively stable upward trend during the period from 1994 to April 2025.[19]

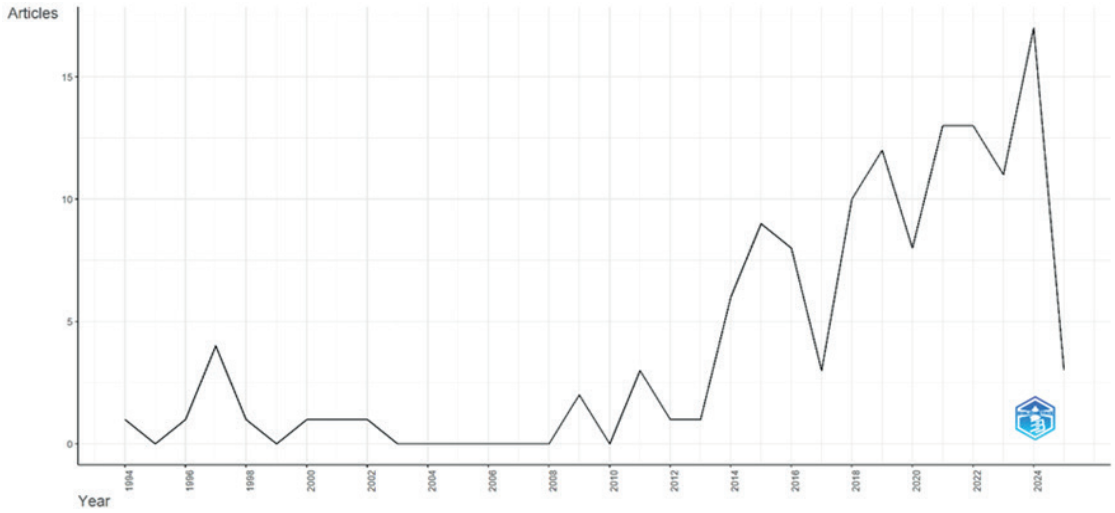

Figure 2. Publication trend from 1994 to April 2025

Figure 2 shows the trend of publication growth from 1994 to 2013, indicating that article production was still very low and fluctuating, with even some years without any publications. Since 2014, there has been a significant increase in the number of publications until 2015, indicating a growing interest in the topic of "primary healthcare integration." However, there was a temporary decline in 2016–2017, but the trend resumed a fairly stable increase from 2018 to 2023. The highest peak occurred in 2024, with the number of publications reaching 17 articles. Although there was a sharp decline in 2025, this was due to the data for this year not being final, as the data collection was conducted at the beginning of the year. Based on this trend, the topic of "primary healthcare integration" is becoming increasingly relevant for further study, especially in the past 5–10 years, as it began to receive significant attention in 2014.

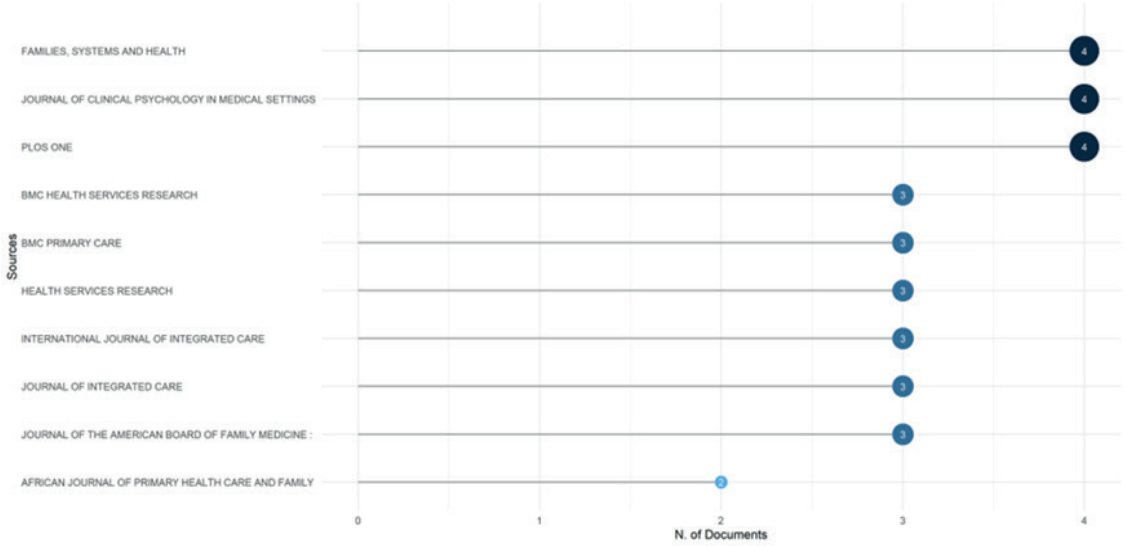

Figure 3. Top 10 journals publishing articles related to the research topic

Figure 3 shows 10 of the 93 journals that published articles related to the research topic. These 10 journals are the most productive and relevant sources actively publishing research on integration, organizational capacity, and barriers in primary health care, making them primary references for writing articles or potential target journals for publication.

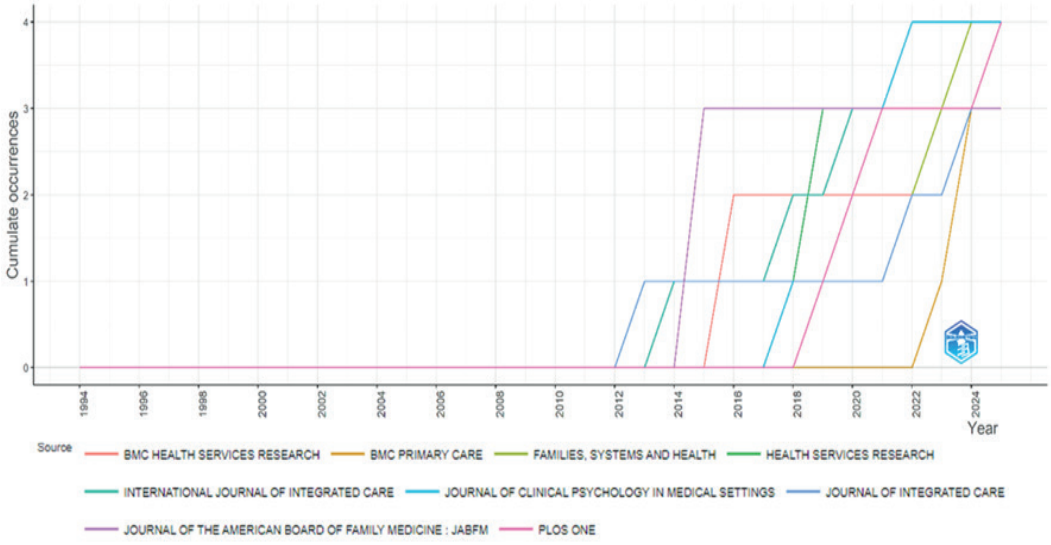

Figure 4. Trend in productivity of top 10 journals publishing articles related to research topics each year

Based on figure 4, it is reported that these 10 journals have experienced consistent publication growth over the period 2013–2024. The existence of specific journals such as BMC Primary Care, Health Services Research, BMC Health Services Research, International Journal of Integrated Care, Journal of Integrated Care, Journal of the American Board of Family Medicine, African Journal of Primary Health Care and Family Medicine, and multidisciplinary journals such as PLOS ONE, Journal of Clinical Psychology in Medical Settings, and Families, Systems and Health indicates that the issue of primary health care integration is not only a concern in the fields

of public health and health policy, but also attract attention from various fields, such as medical psychology, management, service systems, and primary care in general. These findings suggest that studies on 'primary healthcare integration' are spread across multiple journals, with a wide spectrum of topics, from clinical practice and policy analysis to healthcare management.[20,21]

Citation Trend

Table 1 shows that the average age of documents in the Scopus database is approximately 7,18 years, indicating that many articles are relatively new. Of the 130 documents, each article received an average of approximately 13,81 citations, indicating that this literature is frequently referenced. The total number of references cited in all documents analyzed was 4.359 references.[19]

Table 1. Top 10 journals with the highest number of citations, analyzed using

Journal	Documents	Citation
JAMA - Journal of the American Medical Association	1	274
Journal of the American Board of Family Medicine: JABFM	3	121
BMC Family Practice	2	114
Medical Journal of Australia	1	110
BMC Health Services Research	3	70
Reproductive Health	2	63
Harm Reduction Journal	1	61
Frontiers in Psychiatry	2	54
Pharmacy Practice	1	47
Journal of General Internal Medicine	2	46

Keyword analysis

Figure 5 shows the top 10 most frequently appearing "Keyword Plus" in reference titles. Keyword Plus is an additional keyword automatically generated by the Scopus algorithm based on the titles of cited references (not author keywords). Analysis of "Keyword Plus" shows that the keywords "primary health care" appear most frequently (140 times), confirming that the main focus of publications in this field is on primary health care services. Additionally, the keywords "human" (107) and "humans" (90) indicate that most research is focused on human populations rather than pre-clinical experiments or animals. Gender aspects are prominent through the appearance of the keyword "female" (82) and "male" (72), suggesting that research on the integration of primary health care often considers gender differences.

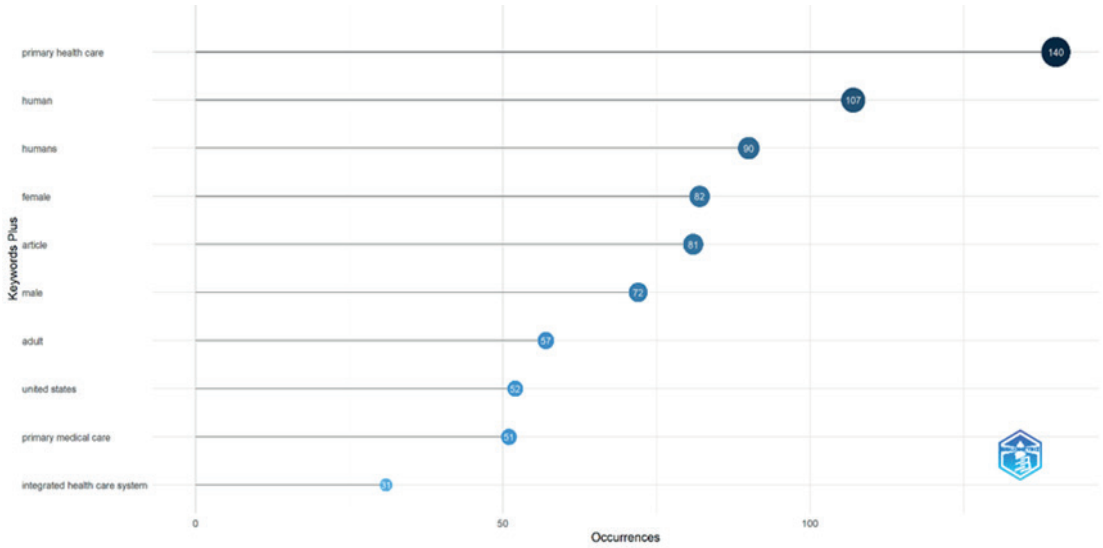

Figure 5. Top 10 "keywords plus" with the highest number of citations

Meanwhile, the keyword "adult" (57) shows that the adult population is the most studied group in these studies. The appearance of the keyword "United States" (52) indicates that many studies in this domain originate from or are conducted in the United States, reflecting the dominance of literature from developed countries and indicating a potential research gap in developing countries. The keywords "primary medical care" (51) and

"integrated health care system" (31) reinforce the finding that integration in health care systems is a central issue.[24] Collectively, these discoveries help scholars in multiple ways - from shaping their research questions and spotting knowledge gaps to creating theoretical structures that better fit their specific study contexts.[16,22]

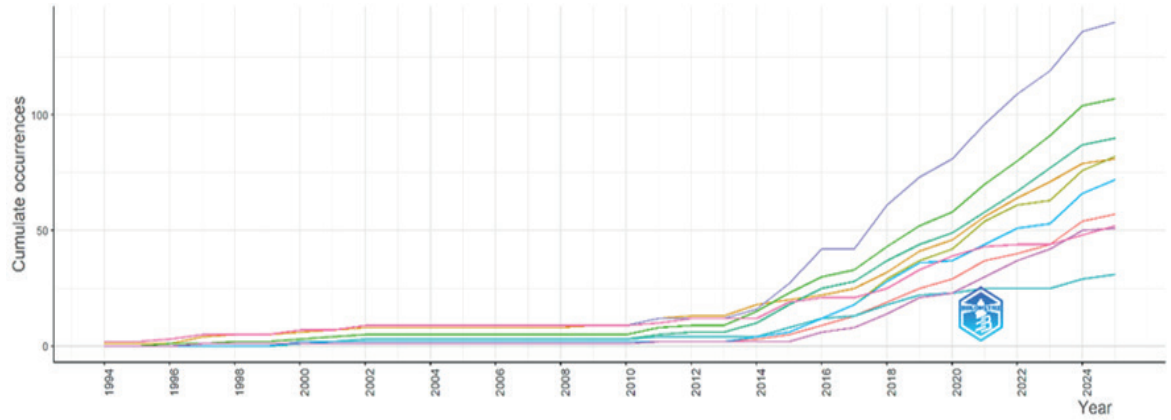

Figure 6. Trend of the top 10 "keyword plus" appearances by year

Figure 6 shows a significant increase in "keyword plus" related to "primary health care" since 2010, indicating a primary research focus on primary health care services. Terms such as "human," "female," "male," and "integrated health care system" have also grown, reflecting increased attention to population, gender, and health care system integration. This trend indicates that issues of integration and demographic dimensions have become key concerns in primary healthcare literature over the past decade.[19]

Table 2. Top 10 "author keywords" with the highest number of citations

Keyword	Occurrences	Total link strength
primary healthcare integration	114	360
mental health & psychotherapy	47	165
vulnerable populations	39	183
methodology & research design	36	150
chronic disease & comorbidities	28	113
health services research	27	128
organization & management capacity	27	121
prevention & promotion	18	90
health worker competency	17	87
pharmaceutical & drug treatment	17	79

Table 2 presents the top 10 of 31 most frequently used "author's keywords," consisting of "primary healthcare integration" (114 times), which is the main focus of the study, indicating a high level of attention to how primary healthcare services can be effectively integrated. The keywords "mental health & psychotherapy" (47), "vulnerable populations" (39), and "chronic disease & comorbidities" (28) illustrate the attention to vulnerable groups and mental health conditions as part of the challenges of service integration. The keywords "health services research" (27) and "methodology & research design" (36) indicate in-depth methodological exploration to understand and evaluate primary service integration. Phrases like 'organizational and management capacity' (27) and 'health worker competency' (17) show how crucial institutional strength and health workforce abilities are for integrated service provision. Meanwhile, 'prevention and health promotion' (18) and 'pharmaceutical and drug treatment' (17) stand out as important components, indicating an all-encompassing view of healthcare services."

The keyword co-occurrence network results in figure 7 shows 31 keywords grouped into 3 clusters: the red cluster (healthcare workers, medical assessment, healthcare worker competencies, health insurance, vulnerable populations, patient care continuity, pharmaceutical care & medications, infectious diseases & pandemics, healthcare service research, digital health, rural health, emergency care, ambulances & support services), blue cluster (organization & management capacity, health access, health financing, research methodology & design, chronic diseases & morbidity, geriatric care, quality healthcare), and green cluster (primary healthcare integration, interprofessional collaboration, mental health & psychotherapy, stakeholder participation, health

policy, LMIC & global health, oral health, maternal & child health, urban health, community support services, prevention & promotion). The network visualization shows that the topic "primary health care integration" is at the center of the network, indicating the main focus of the research, as indicated by the largest node size. The topic "primary health care integration" has close relationships with various other keywords divided into three main clusters.[16,22]

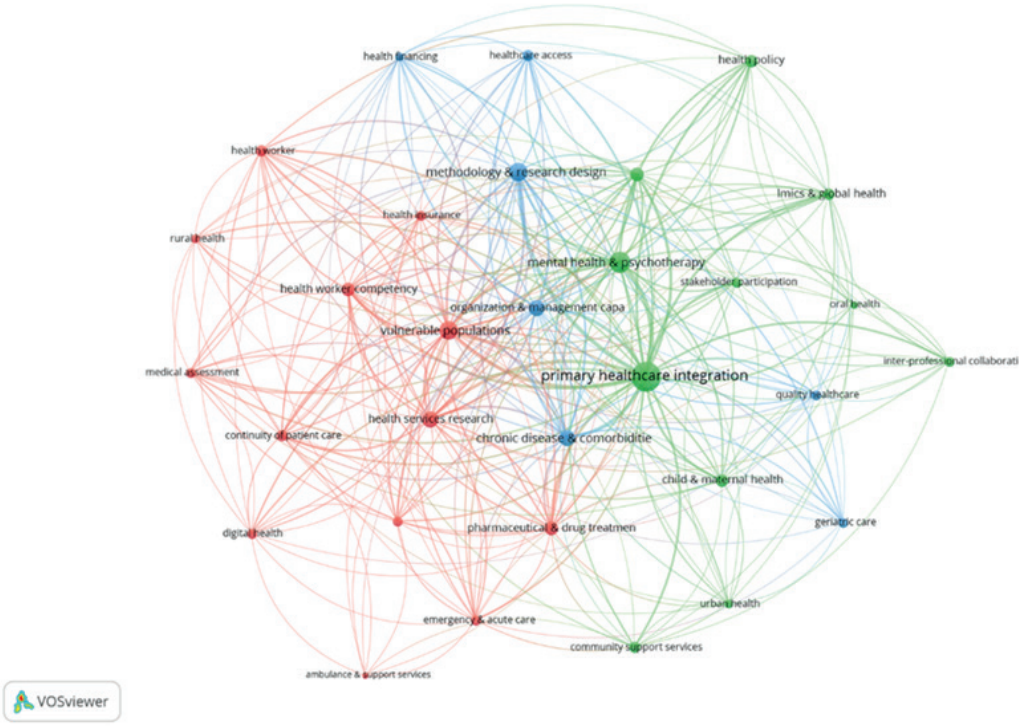

Figure 7. Keyword Co-occurrence Network, analyzed using VOSviewer

The red cluster focuses on operational aspects and service challenges, grouping themes that focus on service delivery in the field, including issues related to health workers (health worker competency), medical assessment, and geographical and population challenges (rural health, vulnerable populations). It also includes issues related to infectious disease and pandemic management, as well as the application of digital technology in healthcare (digital health). This cluster reflects the practical challenges in ensuring the continuity and effectiveness of primary healthcare services, particularly in diverse geographical and social contexts.[27]

The blue cluster, which focuses on organizational capacity and support systems, consists of concepts related to systemic and institutional structures, such as "organization and management capacity, health financing, and health access". Topics such as "quality healthcare" and "methodology and research design" indicate the importance of evidence-based approaches in service planning. Enhanced attention to "chronic diseases and comorbidities" and "geriatric care" highlights the urgency of integrating services to address the growing burden of chronic diseases. This cluster underlines that service unification requires both technical capability and a well-established, sustainable support system.[25]

Concurrently, the green cluster concentrates on partnership models and integrated solutions. This cluster functions as a conceptual nexus highlighting guiding tenets for primary care service integration. Key terms such as "primary healthcare integration, inter-professional collaboration", and "stakeholder participation" underscore the importance of cross-sectoral and interprofessional collaboration. Additionally, the focus on global issues (LMICs and global health), community health (urban health, community support services), and mental health and family aspects (mental health and psychotherapy, child and maternal health) demonstrates a holistic orientation that is not only curative but also promotive and preventive. These findings indicate a new paradigm in the health system that prioritizes collaboration, community empowerment, and responsiveness to population needs.[28]

These three clusters indicate that the integration of primary health care is a multidimensional issue that encompasses operational, systemic, and strategic aspects. An integrated approach requires harmonization between organizational capacity, operational readiness at the service level, and intersectoral collaboration to address the complexity of public health needs sustainably.[24] These findings provide a strong conceptual foundation for the development of policies and further research within the context of a health system that is responsive, inclusive, and adaptive to both local and global dynamics.[26]

Authors, co-authorship networks, and institutional affiliations

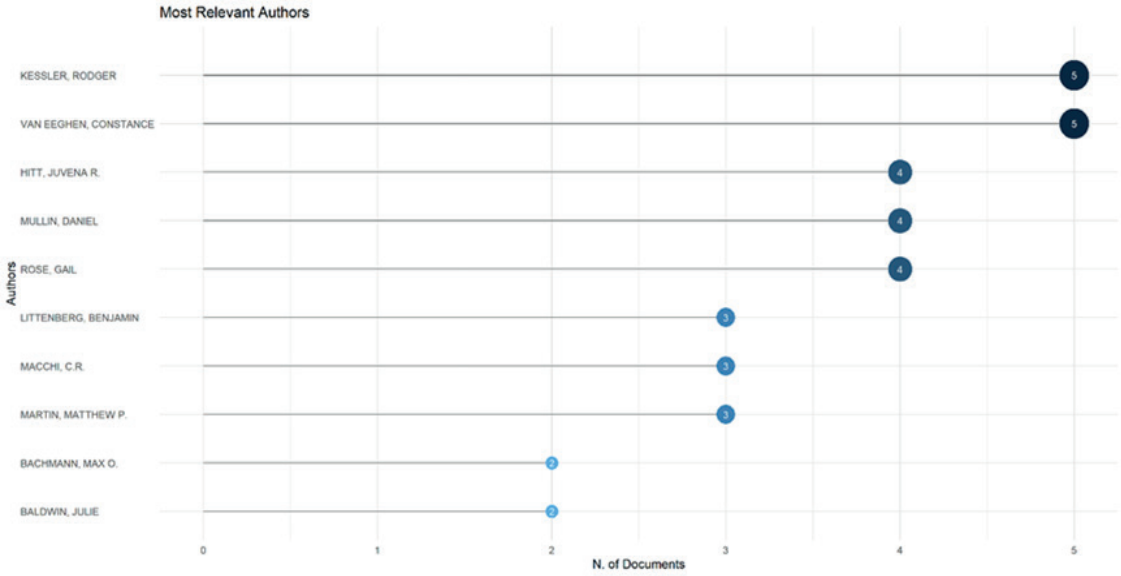

Figure 8. Top 10 authors with the highest number of articles, analyzed using OpenRefine

Figure 8 shows that the most productive authors producing publications on primary health care integration are Rodger Kessler and Constance Van Eeghen, each with five publications. They are followed by Juvena R. Hitt, Daniel Mullin, and Gail Rose, each contributing four publications, and authors such as Benjamin Littenberg, C.R. Macchi, and Matthew P. Martin with three publications. These findings indicate a significant collaborative and sustained contribution to the development of this topic.[19]

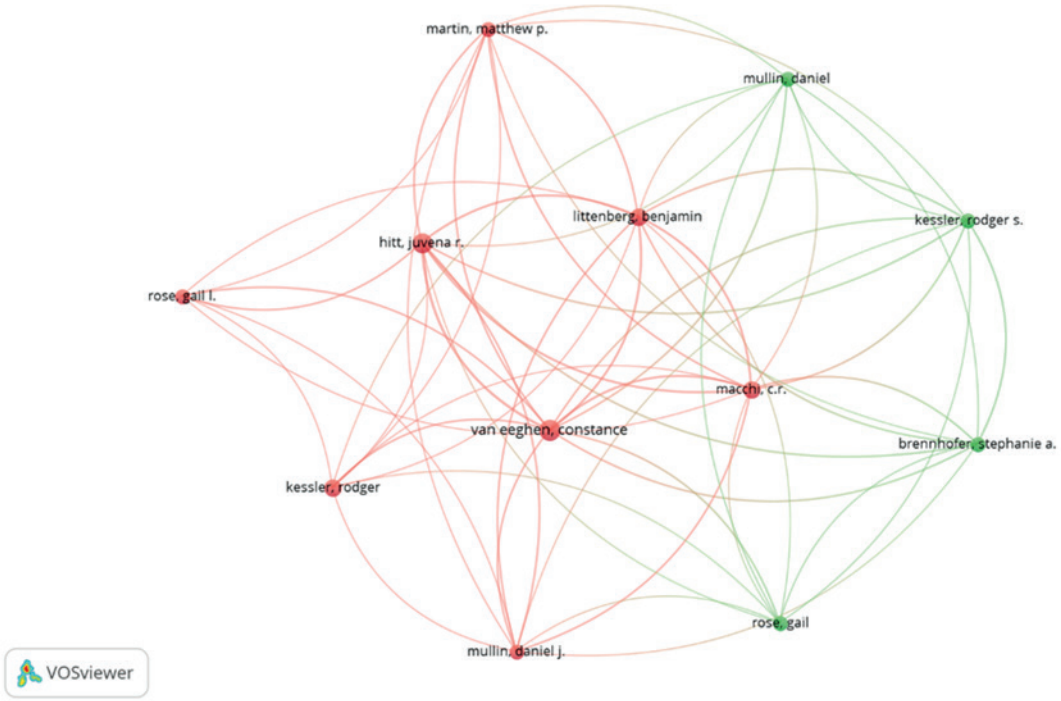

Figure 9. Co-authorship Network, processed using VOSviewer

Network analysis in figure 9 shows that there are 12 interconnected authors with a minimum of 2 publications. The red cluster consisting of Gail Rose, Martin, Matthew P., van Eeghen, Constance, Macchi, C.R., and Littenberg, Benjamin is a group of authors who tend to collaborate. In contrast, the green cluster includes Kessler, Rodger S., Brenhofer, Stephanie A., and Mullin, Daniel, a group with strong internal connections. In this collaboration network, Van Eeghen, Constance, and Macchi, C.R. serve as network hubs connecting authors within the red and green clusters.[18] The network illustrates intense collaboration within small groups but remains limited

globally, opening opportunities for cross-national and cross-institutional collaboration expansion. Authors such as Van Eeghen and Macchi could be crucial in expanding scientific collaboration and fostering knowledge integration.[16,22]

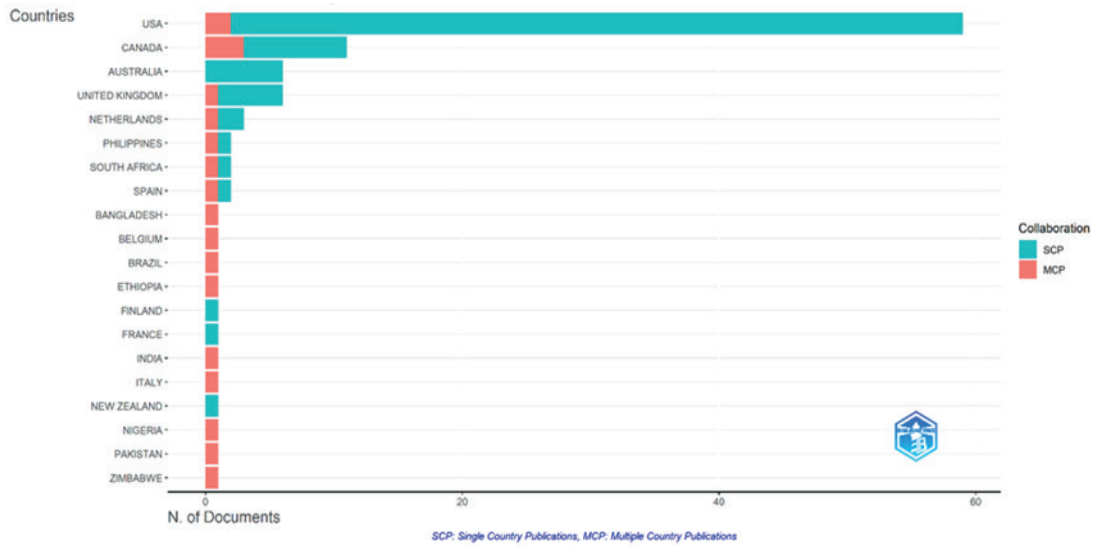

Figure 10. Distribution of countries of correspondence authors

Figure 10 shows that the United States has the most significant contribution to publications, dominated by single-country publications (SCP), reflecting strong national research capacity. The USA is also quite strong in cross-country collaboration (MCP). Canada also occupies an important position, showing a higher proportion of multi-country publications (MCP), indicating active involvement in international collaboration related to primary healthcare integration. Other countries such as the United Kingdom, the Netherlands, South Africa, Spain, and the Philippines also contribute through SCP and MCP. Meanwhile, developing countries such as India, Bangladesh, Nigeria, Pakistan, Ethiopia, and Zimbabwe are only involved in MCP, indicating their role as global research collaboration partners. Countries with a dominance of SCP tend to have well-established local research capacity, while a dominance of MCP indicates a reliance on international partnerships in knowledge production.

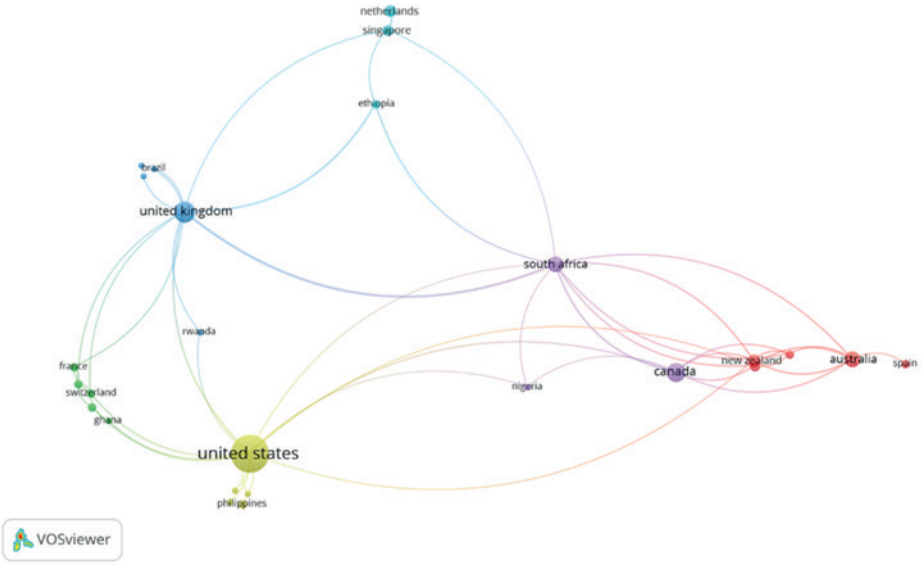

Figure 11. Country Co-Writing Network, analyzed using VOSviewer

An analysis of collaboration networks between countries with at least one published article in figure 11 shows that there are six collaboration clusters consisting of the yellow cluster (USA, Bangladesh, Philippines), the red cluster (Australia, Argentina, New Zealand, India, Spain), the light blue cluster (United Kingdom, Brazil, Zimbabwe, Rwanda), the dark blue cluster (Netherlands, Ethiopia, Singapore), the purple cluster (Nigeria, South Africa, Canada) and green cluster (France, Thailand, Switzerland, Vietnam, Ghana).[18] The United States

(USA) has a central influence in the network, as seen from the large node size, which indicates dominance in the number of documents and high total link strength, which indicates numerous connections with other countries. The United Kingdom, Canada, and South Africa also play important roles as connectors with many countries from various clusters. Countries such as the United States (USA), the United Kingdom, Canada, and South Africa are important connectors in global collaboration related to the publication of primary healthcare integration. Network analysis indicates that single-country publications (SCP) and inter-country collaborations (MCP) tend to remain centralized in developed countries such as Canada and the USA, compared to other countries, particularly developing nations in regions like Africa and Asia, as shown in figure.[15,16,22]

DISCUSSION

The results of the bibliometric analysis reveal that the United States (USA) is the dominant country in scientific publications related to primary health care integration, as reflected in the number of articles and the high citation rates, which indicate strong academic strength and significant research capacity in developing and disseminating integration approaches.[30,31,32] This dominance may be attributed to several factors, including substantial research funding from federal agencies such as the National Institutes of Health (NIH), longstanding policy priorities emphasizing health system reform, and the historical development of managed care models that encouraged early experimentation with integration. In addition, the U.S. has strong academic infrastructure and global research networks that facilitate knowledge production and dissemination. Canada, Australia, and the United Kingdom also contributed significantly to publications, albeit on a more limited scale.[29] The results of the collaboration network analysis found a gap in the involvement of developing countries in primary healthcare integration research. Countries in Asia and Africa tend to be more involved in multi-country publications (MCP), indicating their role as collaborative partners rather than knowledge development centers. This highlights the importance of strengthening local capacity so that developing countries are not merely knowledge users but also key producers in the primary healthcare integration agenda.[33]

Research Gaps

This study reveals several critical gaps in existing research. Some important findings include: (1) limited field studies examining the effectiveness of primary health care integration in developing countries, especially in Asia and Africa.[34] (2) Limited policy analysis directly links organizational capacity to integration program outcomes, making developing guidelines relevant to local conditions difficult.[15] (3) There is an absence of comprehensive discussions on critical elements such as sustainable financing mechanisms and health workforce capacity development, despite these aspects being key to successful implementation at the community level.[15]

Policy Implications

These findings have important implications for policymakers to integrate primary health care services. Therefore, strategies are needed to improve the capacity of health organizations at the local and national levels through managerial training, infrastructure strengthening, health information system reform, and promoting cross-sector collaboration.[15,26,35,36] The role of health digitalization, such as electronic health record systems (EHRs) and telehealth platforms, is also increasingly crucial in integrating services and improving integrated primary healthcare.[37] Additionally, contributions from the academic sector through research collaborations, particularly between developed and developing countries, can support adopting best practices.[38]

Future Research Directions

Future research should focus on developing evidence-based policies to strengthen the integration of primary care services. Adaptive and contextual organizational capacity models must be developed to address challenges at the local level, such as limited budget, health worker shortages, and geographical disparities.[15,26,38] In addition, digital transformation in the health system must be further explored to understand its impact on service effectiveness and health organization efficiency, particularly in countries with limited infrastructure.[39] Stakeholder engagement also plays a crucial role in achieving primary healthcare integration implementation, especially at the local and national levels.[35]

Study Limitation

This study relied solely on the Scopus database and included only English-language publications, which may have excluded relevant research. In addition, the focus on citation counts emphasizes quantity over qualitative impact, and the analysis does not directly evaluate the effectiveness of integration models in practice.

CONCLUSIONS

Bibliometric analysis of publications on primary health care integration shows that the literature is still dominated by developed countries, particularly the United States, in terms of both the number of publications

and citation rates, with limited global collaboration. Although there is a trend toward increased contributions from other countries, there are still gaps in scientific production and leadership, particularly from developing countries. Key research gaps include a lack of empirical studies evaluating the effectiveness of integration strategies, limited policy-based research linking organizational capacity to integration success, and minimal studies on financing models and human resources. These findings emphasize the need for policy reforms to strengthen health organizational capacity, cross-sector collaboration, and leveraging digital technology to support service integration. Future research should focus on developing adaptive health organizational capacity models and strengthening the role of digital health transformation and cross-sectoral engagement in improving the efficiency and effectiveness of primary health service integration. With a multidisciplinary and evidence-based approach, strengthening primary healthcare integration in various country contexts will become more targeted and sustainable, particularly in developing countries.

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