



Health Management of Adolescents with HIV: A Bibliometric Analysis of the Current Situation and Perspective

Grhasta Dian Perestroika^{1,2*}, Ika Sumiyarsi Sukamto^{1,2}, Angesti Nugraheni¹, Niken Bayu Argaheni¹, Noviyati Rahardjo Putri¹, Iffah Indri Kusmawati¹, Rizka Ayu Setyani^{2,3}

¹Undergraduate Program and Professional Education of Midwifery, Faculty of Medicine, Universitas Sebelas Maret, Jl. Ir. Sutami 36a 57126 Surakarta Jawa Tengah, Surakarta, Indonesia

²Research Ethics Committee, Universitas Sebelas Maret, Jl. Ir. Sutami 36a 57126 Surakarta Jawa Tengah, Surakarta, Indonesia

³Doctoral Program in Public Health, Faculty of Medicine, Universitas Sebelas Maret, Jl. Ir. Sutami 36a 57126 Surakarta Jawa Tengah, Surakarta, Indonesia

*Corresponding Author's Email: grhastadian@staff.uns.ac.id

Abstract

This bibliometric research aims to analyze and identify the forms of health management services available for adolescents with HIV using a bibliometric approach. The study examines the trends in health management services for adolescents with HIV over a specific period across different countries. The Scopus database was utilized for data collection and analysis. The keywords used for the search included "Management of health services among adolescents with HIV". The selection and data collection process involved English language articles published between 2013 and 2023. The Scopus website and VOS Viewer were used as bibliometric analysis tools to analyze the collected data. This analysis included examining the data distribution from the literature in Scopus and visualizing the semantic network of documents. The results of this study provide insights to obtain relevant information on appropriate healthcare service management for adolescents living with HIV; it is recommended to conduct comprehensive literature reviews or initiate further research. Three main aspects should be considered: 1) The top document-producing countries, namely the United States, South Africa, and the United Kingdom; 2) The Centers for Disease Control and Prevention affiliation, which is a reliable source of information and can serve as a primary reference; and 3) There is still potential for expanding healthcare service management for adolescents living with HIV, particularly in the field of nursing and midwifery.

Keywords: *Adolescents; Bibliometric Analysis; Health Management; HIV*

Introduction

Bibliometric research effectively highlights areas that emerge in that field (Donthu *et al.*, 2021). Regarding adolescent health, HIV has become a worrisome global problem, with infections among adolescents causing significant negative impacts on their well-being (Bhana *et al.*, 2020; Gabbidon *et al.*, 2020; Karim & Baxter, 2019). This situation calls for serious efforts to manage and prevent HIV among adolescents due to its wide-ranging implications for their quality of life and future.

Unfortunately, in Indonesia, HIV stigma remains widespread, negatively impacting prevention and treatment efforts for HIV among adolescents. The associated stigma creates a significant barrier for adolescents to seek care and get tested for HIV, especially when they know their infection status (Fauk *et al.*, 2021; Waluyo *et al.*, 2022). As a result, many adolescents are hesitant to undergo health screenings that could determine whether they have contracted HIV, fearing discrimination and the attached stigma (Irmayati *et al.*, 2019). Consequently, this leads to low rates of healthcare visits and

delays in receiving necessary treatment, hindering effective HIV management and control among adolescents in Indonesia.

The discomfort and fear resulting from HIV-related stigma contribute to low rates of HIV status screenings among adolescents, with significant consequences. Indirectly, this situation increases the risk of uncontrolled HIV transmission among adolescents. The consequences of uncontrolled transmission have serious implications for society, potentially contributing to future increases in HIV cases (Fauk *et al.*, 2021; Irmayati *et al.*, 2019; Waluyo *et al.*, 2022). In this context, the low visitation rates among adolescents for HIV testing worsen the situation, allowing HIV transmission without detecting cases requiring medical attention and appropriate preventive measures.

To address these challenges, various policies and actions focused on managing and providing healthcare services for adolescents living with HIV are necessary. Involving multiple stakeholders, including government institutions, healthcare organizations, educational institutions, and the general public, is crucial in these efforts (Huriati *et al.*, 2021; Manalu & Syakurah, 2022; Ranti *et al.*, 2020). Developing effective policies requires identifying and thoroughly analyzing different models of healthcare service management that already exist for adolescents with HIV.

One scientific method that can be used for this analysis is the bibliometric approach, which involves collecting and analyzing bibliographic data such as scientific publications, articles, and related literature (Donthu *et al.*, 2021). By implementing this approach, we can better understand the latest trends and developments in the management and healthcare services for adolescents with HIV. Bibliometric analysis enables identifying and exploring relevant scientific literature, gathering bibliographic data, and statistically analyzing it to reveal significant research trends and current topics of discussion.

This research aims to analyze and identify various literature on available healthcare service management for adolescents living with HIV using a bibliometric approach. The research will provide new insights and valuable information for the literature search on "Management of health services among adolescents with HIV". Through bibliometric analysis, we understand the latest research trends, credible sources of information, the network of the most productive countries in the research output, and the journal network based on total link strength. The findings of this research serve as a strong foundation for conducting more in-depth literature reviews to obtain information about appropriate healthcare service management for adolescents living with HIV.

Methodology

The initial step involved searching the Scopus database, and the retrieved documents were evaluated through a three-phase process, namely: 1) Phase 1, where search criteria were determined to retrieve records from the Scopus database and refine the selected records (data collection phase); 2) Phase 2, where the documents were imported into VOSviewer software to analyze bibliometric aspects such as publications, countries, journals, and research areas (data visualization phase); and 3) Phase 3, which involved analyzing the data to identify the main topics discussed in research related to Early Adolescent Sexual Intercourse. The three phases are illustrated in Figure 1.

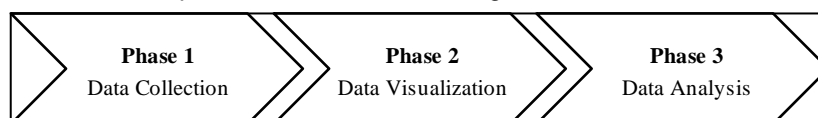


Figure 1: The Methodology Phase and Steps Involved in Conducting Bibliometric Analysis for this Study

The bibliometric analysis method was employed to identify scientific trends, ensure the quality of information, and produce outcomes. In this study, bibliometric analysis was conducted by gathering documents from the Scopus data platform, which is considered an ideal database for bibliometric analysis because it encompasses published information in indexed journals across various fields of knowledge and is widely utilized in bibliometric analysis. The search was conducted on July 14, 2023, using the keyword "Management of health services among adolescents with HIV". The search period spanned from 2013 to 2023 for comprehensive publication analysis. The literature was restricted to research articles and conference papers written in English within the subject areas of medicine, psychology, social sciences, and nursing. Out of a total of 1712 articles, 784 articles that met the criteria above were obtained. The data collection process is illustrated in Figure 2.

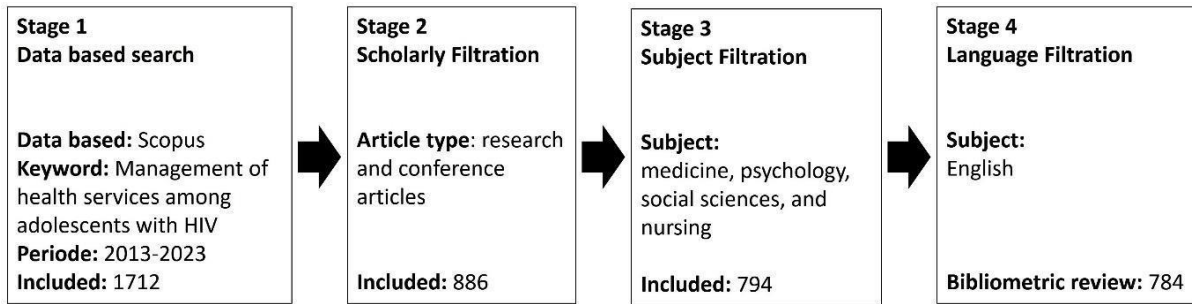


Figure 2: Stages in Collecting Documents on the Scopus Database (Data Collection)

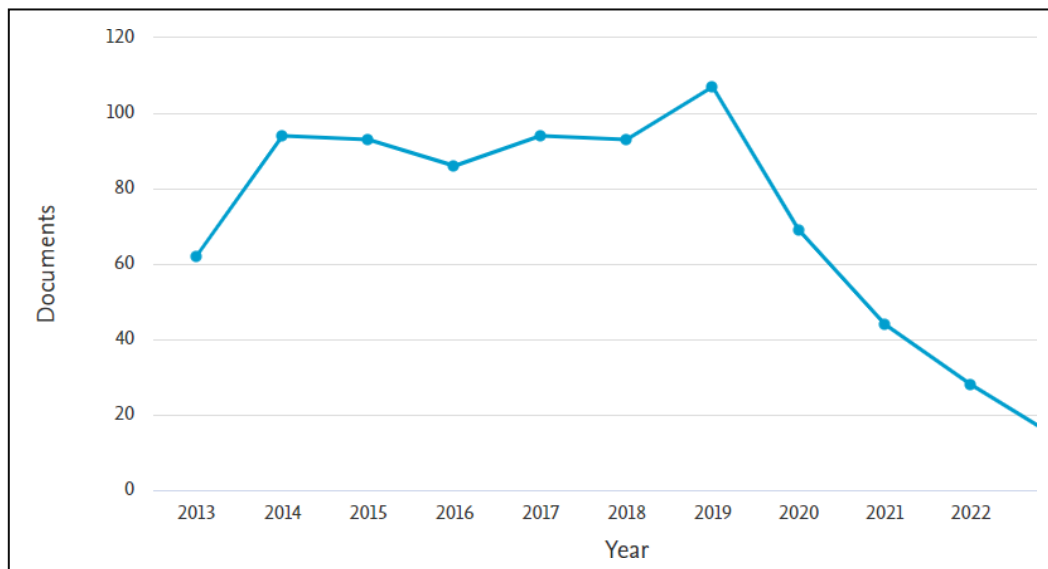
After the data collection process was completed, all gathered data were analyzed descriptively on the +Scopus website page and exported in ".csv" format, which contained complete notes and cited references for use in co-authorship and co-occurrence analysis using VOSviewer software, allowed for the generation of network maps of countries and keywords, and through citation analysis, the network map of scientific journals could be identified.

The descriptive analysis on the Scopus website page included 1) The annual trend in the number of published documents, 2) The annual distribution of documents based on their source, 3) The yearly breakdown of documents based on author affiliation, 4) The categorization of documents based on subject areas and their respective quantities.

VOSviewer software (version 1.6.19, Leiden University, Leiden, Netherlands) was used to construct and visualize bibliometric networks. The results were shown as interconnected circles, making analyzing the relationships between bibliometric data easier. The output showed the network of the most productive countries in the research output and the journal network based on total link strength. Different colours represented different groups of terms, and the size of the circles correlated with the frequency of term occurrences (Fu et al., 2022; McAllister et al., 2022; Shah et al., 2020).

Results

As previously stated, a query in the Scopus database yielded 784 publications on "Management of health services among adolescents with HIV," spanning from 2013 to 2023. Figure 3 illustrates a rising trend in the number of publications, reaching its highest point in 2019. However, there has been a decline in the publication count for this topic from 2019 onward.

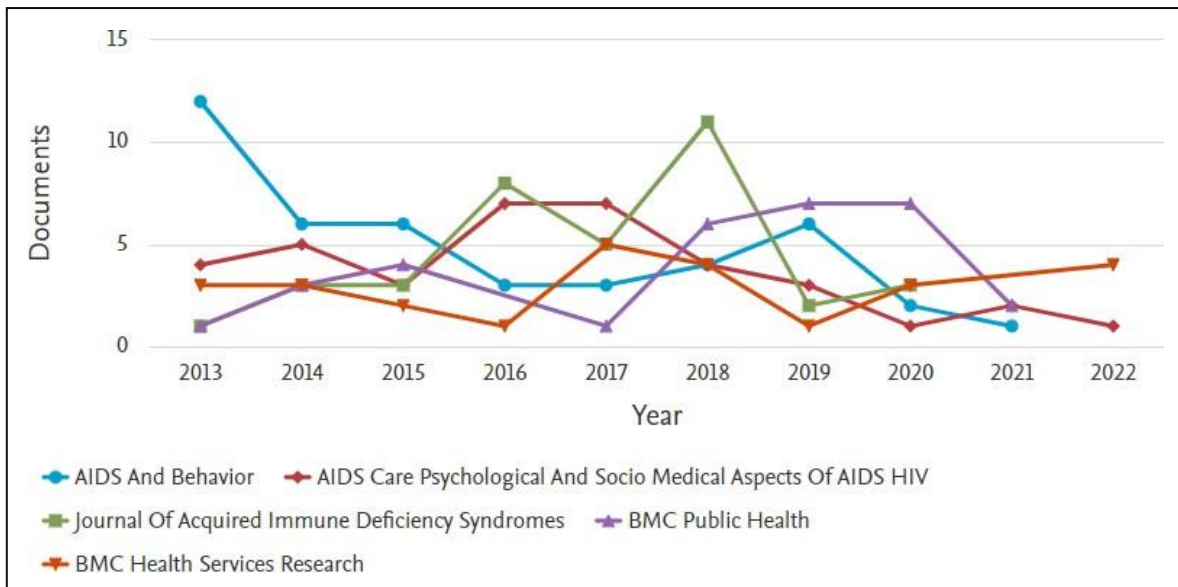


Source: Output of descriptive analysis from the Scopus web page

Figure 3: Documents by Year in the Research Output on Management of Health Services among Adolescents with HIV

The research peak 2019 can be attributed to the growing interest in the field, driven by emerging concerns, healthcare advancements, and recognition of specific needs. Funding and resources dedicated to HIV health services research during that period encouraged researchers to conduct studies and share their findings. The topic gained prominence in policy discussions, attracting attention from researchers and public health organizations. Furthermore, advancements in scientific understanding, treatment options, and best practices contributed to the increased number of publications. However, starting in 2019, there has been a decline in publications, possibly due to research saturation, shifting research priorities, and publication delays for more recent studies (McAllister *et al.*, 2022; Shah *et al.*, 2020).

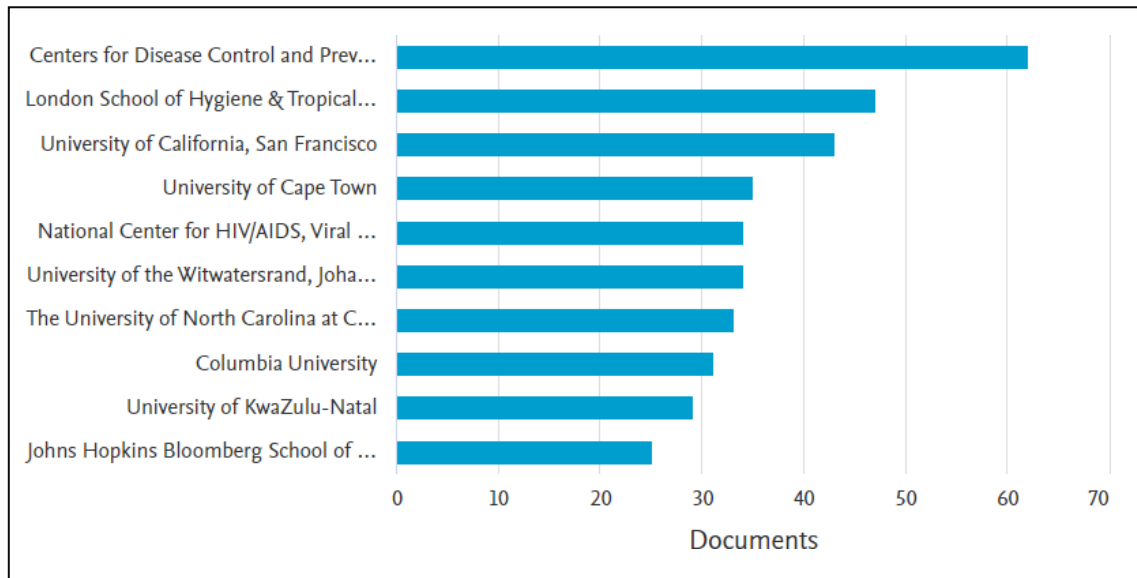
According to Figure 4, out of the 784 published documents on "Management of health services among adolescents with HIV", five journals have been the most productive sources. These journals are AIDS and Behavior, AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV, Journal of Acquired Immune Deficiency Syndromes, BMC Public Health, and BMC Health Services Research. However, at present, only two journals continue to publish on this topic, which is AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV and BMC Health Services Research. The remaining three journals have ceased producing publications on this topic since 2020. The change in the number of journals published on "Management of health services among adolescents with HIV" may be attributed to shifts in research priorities and interests. The cessation of publication by the other three journals could result from changes in research focus or the emergence of new areas of interest within the field.



Source: Output of descriptive analysis from the Scopus web page

Figure 4: Documents per Year by Source in the Research Output on Managing Health Services among Adolescents with HIV

The ranking of the top document suppliers based on their affiliations is presented in Figure 5. The Centers for Disease Control and Prevention hold the first position, followed by the London School of Hygiene and Tropical Medicine in second place, the University of California, San Francisco in third place, the University of Cape Town in fourth place, the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention in fifth place, the University of the Witwatersrand, Johannesburg in sixth place, the University of North Carolina at Chapel Hill in seventh place, Columbia University in eighth place, the University of KwaZulu-Natal in ninth place, and Johns Hopkins Bloomberg School of Public Health in tenth place. The analysis of documents per year by source/affiliation aims to assess the credibility and quality of sources. By examining the number of documents published each year and their respective sources, we can evaluate the reliability and quality of those sources. Consistently high publication output over time may suggest reliability and a strong reputation (McAllister *et al.*, 2022; Shah *et al.*, 2020). In this situation, the Centers for Disease Control and Prevention can be identified as the most reliable source when searching for information on the topic "Management of health services among adolescents with HIV".

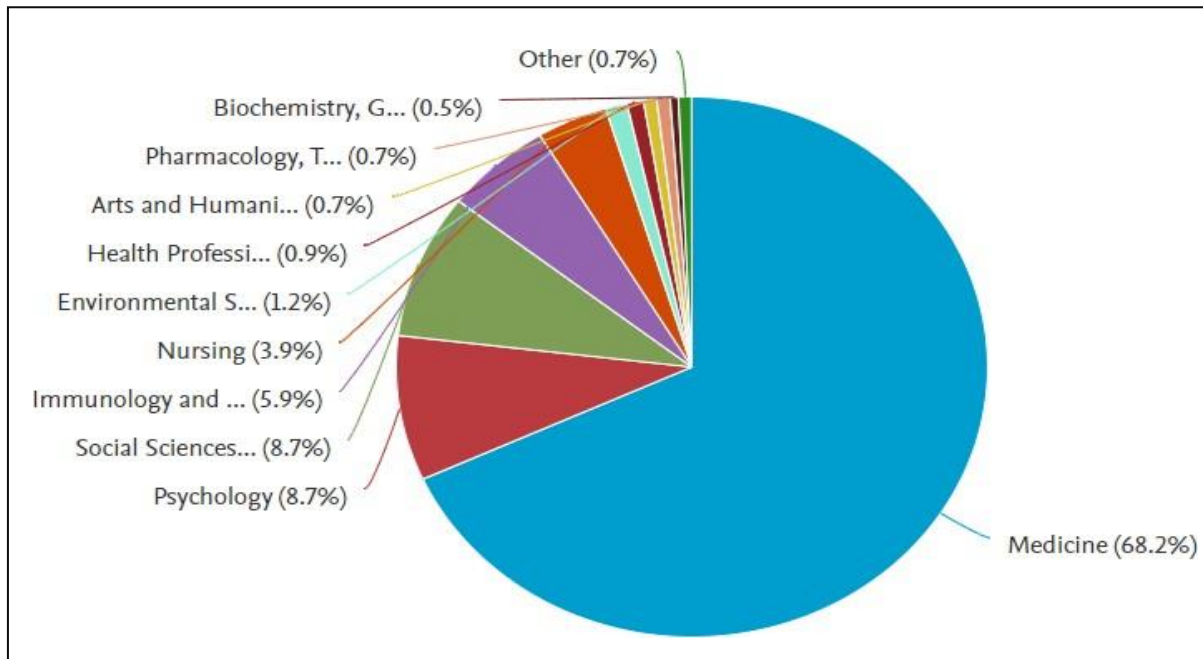


Source: Output of descriptive analysis from the Scopus web page

Figure 5: Documents per Year by Affiliation in the Research Output on Managing Health Services among Adolescents with HIV

Analyzing documents by subject area in the research output on managing health services for adolescents with HIV is crucial for several reasons. Firstly, it helps us identify the main research focus in this field and the most studied subjects or topics. It keeps researchers and practitioners updated on current trends and advancements in managing health services for adolescents with HIV. Secondly, it allows us to assess the coverage of specific aspects such as prevention, treatment, education, and interventions in this field. By understanding the subject distribution, we can identify research gaps and areas that need further attention (McAllister *et al.*, 2022; Shah *et al.*, 2020).

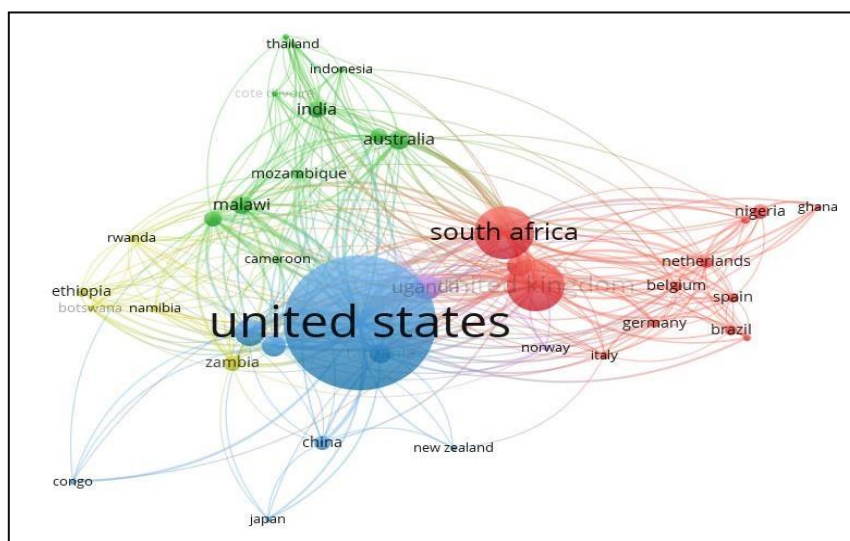
According to Figure 6, the graph displays the distribution of documents by subject area. The majority of research, approximately 70 percent, on the topic "Management of health services among adolescents with HIV" is categorized under the subject area of medicine. In contrast, the nursing subject area represents a small portion, around 4 percent. However, it is crucial to note that nursing significantly shapes policies for HIV management among adolescents. It suggests that there is still ample opportunity for further research on "Management of health services among adolescents with HIV" within the nursing subject area.



Source: Output of descriptive analysis from the Scopus web page.

Figure 6: Documents by Subject Area in the Research Output on Managing Health Services among Adolescents with HIV

Figure 7 illustrates the semantic network of documents published by different countries. It is evident from the distribution that the United States is the country with the highest number of publications on the topic "Management of health services among adolescents with HIV," followed by South Africa and the United Kingdom. Understanding the semantic network of documents published by different countries is important for a few reasons. Firstly, it helps us see which countries produce the most publications on "Management of health services among adolescents with HIV," with the United States, South Africa, and the United Kingdom leading the way. This information gives us insights into the global impact of research in this area. It provides a broader perspective and highlights the contributions from various regions. Hence, researchers seeking relevant literature on this topic are advised to focus their search on the top three countries that contribute the most published documents: the United States, South Africa and the United Kingdom (McAllister *et al.*, 2022; Shah *et al.*, 2020).

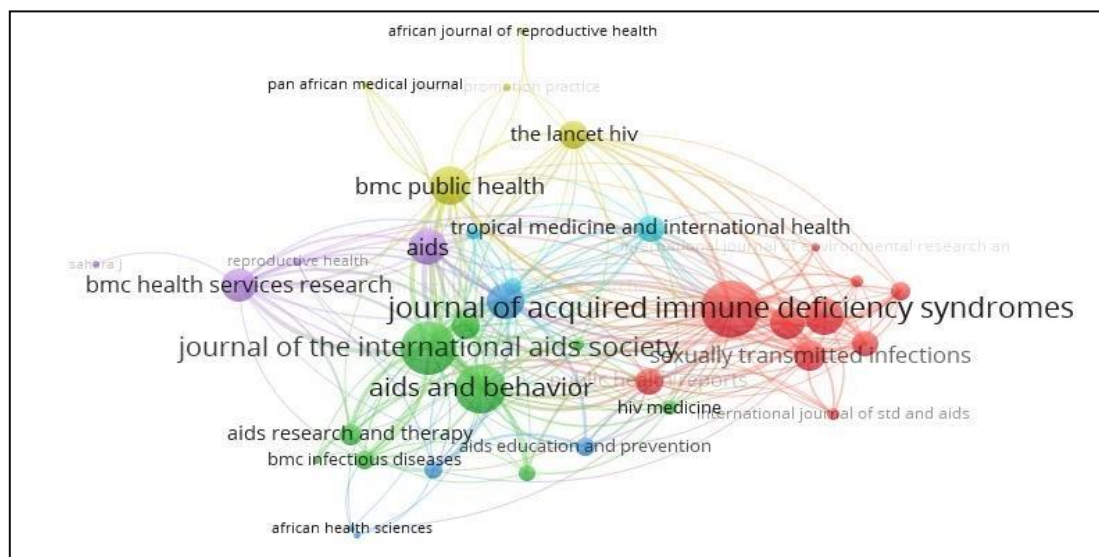


Source: Output of network analysis in VOSviewer software

Figure 7: Visualization of the Network of the Most Productive Countries in the Research Output on Managing Health Services among Adolescents with HIV

Figure 8 shows the journal network based on the strength of connections in the research output on managing health services for adolescents with HIV. By analyzing the total link strength between these journals, we can determine which ones have stronger connections and are often cited together. This valuable information helps us understand research collaboration patterns, the influence and reputation of journals in the field, and the similarity of topics or research focus among the interconnected journals (McAllister *et al.*, 2022; Shah *et al.*, 2020).

In this analysis (Figure 8), the top three journals that have stronger and more frequently cited interactions are the Journal of Acquired Immune Deficiency Syndromes, ranking first, followed by the Journal of the International AIDS Society and AIDS and Behavior in third place., suggests that even though these three journals have stopped publishing articles on this topic since 2020, they still have a significant influence and are widely referenced. In other words, although these journals are not currently publishing new articles on "Management of health services among adolescents with HIV," the information related to this topic was already extensively published until 2020.



Source: Output of network analysis in VOSviewer software

Figure 8: Visualization of the Journal Network Based on Total Link Strength

Discussion

The query results in the Scopus database have provided valuable insights into the research landscape concerning the "Management of health services among adolescents with HIV." A total of 784 publications were identified, spanning 2013 to 2023. This substantial number of publications indicates a significant interest in understanding and addressing the challenges related to health service management for adolescents with HIV over the past decade (Nkala *et al.*, 2015).

Upon analyzing the publication trends depicted in Figure 3, it becomes evident that the research output in this field has experienced distinct phases. The figure portrays a noteworthy upward trajectory in the number of publications over the years, with the pinnacle of this growth occurring in 2019. This surge in publications during 2019 could signify a heightened focus on the topic during that year, possibly due to emerging challenges or advancements in the field (Crowley *et al.*, 2019).

However, what is particularly intriguing is the subsequent decline in the publication count from the year 2019 onwards. This drop in research output raises questions about the factors contributing to this downward trend. Possible explanations for this decline might include the possibility that researchers have shifted their attention to other pressing topics or that the initial wave of interest led to a saturation of the most immediate research questions, causing a temporary dip in publication activity (Irmayati *et al.*, 2019).

It is important to note that the trend illustrated in Figure 3 is an impetus for further investigation. The declining trend from 2019 onwards indicates a temporary lull in research interest or suggests that the field has reached a level of maturity where fewer groundbreaking findings are being made. Additionally, the drop could range from shifts in funding priorities to changes in the prevalence of adolescent HIV cases (Mutumba *et al.*, 2019).

This descriptive analysis underscores the dynamic nature of research trends and the need for ongoing inquiry to comprehend the underlying factors contributing to these fluctuations. The findings from these publications, particularly during the peak year of 2019, might have played a crucial role in shaping policies and interventions to improve the management of health services for adolescents with HIV. However, the subsequent decline suggests that there is still much to learn and explore in this vital area of healthcare, highlighting the potential for renewed research interest and fresh perspectives to advance the field further (Karim & Baxter, 2019; Rodriguez *et al.*, 2019).

The trajectory of research publications related to managing health services among adolescents with HIV, as revealed by the Scopus database query, showcases a pattern of growth followed by a decline. This pattern invites researchers, policymakers, and stakeholders to reflect on the factors driving these trends and to recognize the evolving nature of research priorities. Continued efforts in understanding and addressing the challenges faced by adolescents with HIV are crucial for ensuring comprehensive and effective healthcare services for this vulnerable population (Nguyen *et al.*, 2023).

The insights drawn from Figure 4 of the analysis regarding the "Management of health services among adolescents with HIV" provide a deeper understanding of the dynamics within the academic landscape. The focus shifts from the total number of publications to the specific journals contributing to this field. This analysis unveils the most productive journals and highlights the changing nature of research interest over time.

From the data, it is evident that five journals—AIDS and Behavior, AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV, Journal of Acquired Immune Deficiency Syndromes, BMC Public Health, and BMC Health Services Research—stood out as the major sources of published documents in this area. These journals played a significant role in disseminating research on managing health services among adolescents with HIV. Their substantial contributions underscore the attention and dedication given to this critical field during the years in question (Waluyo *et al.*, 2022).

However, a noteworthy transformation has occurred in recent times. While the analysis spans 2013 to 2023, the present scenario reveals a significant change in the publications landscape. Of the five previously prolific journals, only two—AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV and BMC Health Services Research—have continued to publish on this topic. The other three journals, namely AIDS and Behavior, Journal of Acquired Immune Deficiency Syndromes, and BMC Public Health have ceased producing publications in this area since 2020 (Waluyo *et al.*, 2022).

The shift in the number of journals published on the topic can indicate evolving research priorities and interests within the field. The cessation of publication by the three journals might reflect changes in the overarching research focus or the emergence of new and compelling areas of interest within the broader spectrum of HIV research. This phenomenon could also be linked to shifts in funding, advancements in medical and technological interventions, or changing demographics and prevalence patterns of adolescent HIV cases (Macdonell *et al.*, 2022).

The dynamics observed in Figure 4 remind us that research is a dynamic and evolving process. Once central topics may experience fluctuations in interest as new challenges emerge or as existing challenges are addressed more comprehensively. While the drop in the number of journals publishing on this topic may suggest a change in the immediate emphasis, it is crucial to remember that this change can pave the way for exploring other crucial areas that demand attention.

The transformation of journal publication patterns, as depicted in Figure 4, underlines the fluid nature of academic research. The shift in the number of journals publishing on the "Management of health services among adolescents with HIV" hints at the malleability of research priorities in response to emerging developments. It also underscores the importance of staying attuned to these shifts to adapt and respond effectively to the changing healthcare challenges faced by adolescents with HIV.

The insights provided in Figure 5, which presents the ranking of top document suppliers based on their affiliations, shed light on the institutional players that have significantly contributed to the discourse on "Management of health services among adolescents with HIV." This analysis goes beyond mere publication numbers to highlight the prominent affiliations driving the research landscape. It underscores the importance of assessing the credibility and quality of sources in academic endeavours.

The Centers for Disease Control and Prevention are at the forefront of this ranking, occupying the first position. This position can signify the organization's robust involvement in researching and addressing the management of health services for adolescents with HIV. The London School of Hygiene & Tropical

Medicine follows closely in second place, cementing its role as a notable institution contributing to this critical area of research (Gabbidon *et al.*, 2020).

The University of California, San Francisco, the University of Cape Town, and the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention are the top five, solidifying their significance in generating knowledge and insights on this topic. The subsequent positions are held by equally prestigious institutions, including the University of the Witwatersrand, Johannesburg; The University of North Carolina at Chapel Hill; Columbia University; the University of KwaZulu-Natal; and Johns Hopkins Bloomberg School of Public Health. These affiliations collectively reflect a global engagement in the research on managing health services for adolescents with HIV (Nagenda *et al.*, 2022).

The analysis of documents per year by affiliation serves as a crucial step in assessing the credibility and quality of sources. A steady and consistent publication output over time, as seen with these top affiliations, often indicates reliability and a strong reputation in the field. Institutions that maintain a sustained commitment to producing high-quality research over multiple years will likely be recognized as authoritative sources within the academic community (Crowley *et al.*, 2021).

By closely examining the contributions of these affiliations, researchers and practitioners can stay attuned to the main focus of research in this domain. This analysis also offers insights into the distribution of subject areas within the broader scope of managing health services for adolescents with HIV. Understanding the predominant subjects or topics studied is essential for keeping up with the latest trends, identifying research gaps, and pinpointing areas that require further exploration and intervention (Crowley *et al.*, 2021).

In summary, Figure 5 provides a comprehensive overview of the key players in managing health services for adolescents with HIV. The prominence of certain affiliations highlights their commitment to contributing knowledge and insights that shape the discourse in this critical area of healthcare. As we navigate the complexities of adolescent health, the contributions of these institutions are pivotal in advancing our understanding, improving healthcare delivery, and ultimately enhancing the lives of adolescents living with HIV.

The information presented in Figure 6, which illustrates the distribution of documents by subject area in the research output on "Management of health services among adolescents with HIV," provides valuable insights into the diverse facets of this critical area of study. The analysis of subject areas not only underscores the breadth of interdisciplinary involvement but also prompts us to recognize areas where further research and collaboration are needed.

The graph clearly outlines the distribution of research documents across different subject areas. Notably, the majority of research, accounting for approximately 70 per cent, falls under the subject area of medicine. This emphasis on the medical perspective reflects the clinical and healthcare-oriented aspects of managing health services for adolescents with HIV. The substantial focus on medicine suggests a strong commitment to understanding the medical interventions, treatment protocols, and healthcare delivery mechanisms that can effectively address the unique challenges faced by adolescents with HIV (Mutumba *et al.*, 2019).

However, what emerges as equally significant is the relatively smaller portion of research—around 4 per cent—categorized under the nursing subject area. While the percentage may appear small, the impact of nursing on shaping policies, providing patient care, and driving holistic healthcare approaches is undeniable. Nurses often serve as the frontline caregivers and are pivotal in promoting patient well-being and adherence to treatment regimens (Mutumba *et al.*, 2019).

The fact that nursing, a discipline critical to patient care and policy implementation, represents a smaller proportion of the research output in this area indicates an opportunity for further exploration and collaboration. Nursing research can shed light on patient experiences, psychosocial support, health education, and community-based interventions, all integral aspects of managing health services for adolescents with HIV. This insight highlights the potential for significant contributions from nursing research in shaping comprehensive and patient-centred approaches to HIV management.

In essence, the distribution of research documents across subject areas, as depicted in Figure 6, underscores the interdisciplinary nature of the research landscape related to managing health services for adolescents with HIV. While the medical perspective is crucial, nursing research is vital for providing a well-rounded understanding of this population's challenges and opportunities in healthcare delivery. The visualization also serves as a call to action, urging researchers, practitioners, and institutions to

bridge the gap in nursing research to create a more holistic and comprehensive approach to managing health services for adolescents with HIV.

The distribution of research documents across subject areas reflects the multifaceted nature of the topic "Management of health services among adolescents with HIV." While medicine dominates the landscape, nursing's role is indispensable and holds the potential to contribute significantly to improved patient care, policy formulation, and overall healthcare outcomes for this vulnerable population. Collaborative efforts across disciplines can lead to a more comprehensive and effective approach to addressing the complex needs of adolescents living with HIV (Fauk et al., 2021).

The insight provided by Figure 7, which presents the semantic network of documents published by different countries in the research output on "Management of health services among adolescents with HIV," offers a comprehensive view of the global research landscape in this critical area. This analysis goes beyond individual publication numbers to highlight the collective impact of countries, underscoring the importance of understanding this global distribution.

The visualization shows that the United States occupies a prominent position, emerging as the country with the highest number of publications on this topic. Close are South Africa and the United Kingdom, each making significant contributions to the discourse on managing health services for adolescents with HIV. These three countries stand out as leaders in research output, and their contributions reflect their engagement in addressing the challenges faced by adolescents living with HIV (Chem et al., 2022).

Understanding the semantic network of documents published by different countries carries multifaceted significance. Firstly, it provides a clear picture of countries actively producing research in this field. It allows us to identify key players and global leaders in advancing knowledge on managing health services for adolescents with HIV. The predominance of the United States, South Africa, and the United Kingdom highlights their commitment to research and intervention in this critical area of healthcare (Mutumba et al., 2019).

Secondly, this network analysis unveils the global impact of research in managing health services for adolescents with HIV. By showcasing the contributions of various countries, the visualization underscores the collective effort of researchers and institutions worldwide to improve the lives of adolescents living with HIV. It reinforces that this shared challenge requires collaborative solutions and insights from diverse perspectives (Nagenda et al., 2022).

Researchers seeking relevant literature on this topic can draw valuable guidance from semantic network analysis. The focus on the top three countries—the United States, South Africa, and the United Kingdom—offers a strategic approach to identifying primary sources of information. These countries are hubs of research and innovation, and their publications are likely to contain substantial insights that could shape interventions, policies, and clinical practices for managing health services for adolescents with HIV (MacDonell et al., 2022).

Figure 7 offers a compelling visual representation of the global distribution of research efforts in managing health services for adolescents with HIV. The dominant positions of the United States, South Africa, and the United Kingdom underscore their pivotal roles in advancing knowledge and driving positive change. This visualization emphasizes the collaborative nature of research and provides a roadmap for researchers seeking to navigate the wealth of information available by focusing on these key countries. It is a testament to the collective determination to address the unique healthcare needs of adolescents living with HIV globally.

The insights conveyed by Figure 8, which presents the journal network based on the strength of connections in the research output on "Managing health services for adolescents with HIV," offer a glimpse into the intricate web of academic collaboration and influence within this field. This analysis delves beyond individual journal publications to reveal the collaborative relationships and the collective impact of journals in shaping the discourse on this crucial topic.

Visualizing the journal network based on total link strength serves multiple purposes. Firstly, it allows us to decipher the strength of connections between various journals. Journals with stronger connections and higher link strengths indicate that they are often cited together in research articles. This interconnectedness signifies a collaborative and interdependent relationship between these journals, contributing to the cohesiveness of the research landscape (Adams et al., 2021).

Secondly, this analysis provides insights into the reputation and influence of journals within the field. Journals with substantial link strengths are significant in shaping the academic discourse and

influencing researchers' perspectives. These journals are more likely to be authoritative sources as references for researchers seeking to contribute to the field.

In Figure 8, the visualization highlights the top three journals that exhibit strong and frequently cited interactions within the research output on managing health services for adolescents with HIV. The Journal of Acquired Immune Deficiency Syndromes takes the lead regarding link strength, followed by the Journal of the International AIDS Society and AIDS and Behavior in second and third places, respectively. These findings reveal that even though these journals have ceased publishing articles on this topic since 2020, their influence continues to be significant.

Despite the cessation of new publications, the continued influence of these journals underscores the lasting impact of their contributions. The fact that they remain frequently cited indicates that the knowledge and insights they provided until 2020 continue to be relevant and valuable to researchers and practitioners. This observation further highlights the enduring nature of well-established research and its ability to shape ongoing discussions and advancements (Fauk *et al.*, 2021).

Figure 8 provides a dynamic visual representation of the collaborative and influential landscape within the research output on managing health services for adolescents with HIV. The interconnectedness of journals and the enduring influence of those who have ceased publishing articles serve as a testament to academic contributions' resilience and lasting value. The visualization captures the intricate interplay between journals, revealing a tapestry of collective knowledge that guides current and future endeavours in enhancing healthcare services for adolescents with HIV.

Conclusion

Based on the findings of this study, we can conclude that the number of published documents on the topic of "Management of health services among adolescents with HIV" has decreased since 2019. Only two journals, AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV and BMC Health Services Research, continue to publish articles on this topic. The Centers for Disease Control and Prevention are considered the most reliable information source, as they contribute the highest number of documents annually. Although there has been a decline in publications, there is still great potential for further research in the nursing field, as most publications focus on the medical subject area. The United States, South Africa, and the United Kingdom are the top three countries contributing the most to published documents. The Journal of Acquired Immune Deficiency Syndromes, Journal of the International AIDS Society, and AIDS and Behavior are highly influential journals in this field, as they have strong and frequently cited interactions.

The findings of this study have important implications. Firstly, the decrease in published documents on "Management of health services among adolescents with HIV" since 2019 suggests a change in research focus. Researchers should be aware of this and explore new areas for study. Secondly, only two journals continue to publish on this topic, so staying updated with their publications is crucial. Efforts should be made to encourage more journals to cover this topic.

Additionally, the Centers for Disease Control and Prevention are a reliable source of information. Researchers and practitioners should prioritize accessing information from reputable sources. Moreover, there is an opportunity for more research in the nursing field, as most publications are in the medical subject area. Lastly, collaboration among researchers from the United States, South Africa, and the United Kingdom can enhance understanding and improve interventions. Overall, these findings provide insights for future research, the importance of reliable sources, the need for interdisciplinary collaboration, and the role of nursing in managing health services for adolescents with HIV.

This study has a few limitations. Firstly, the data used in this bibliometric study is restricted to the Scopus database, meaning it may only encompass some relevant publications. Secondly, the quality of the data relies on the available metadata and does not include non-indexed publications. Furthermore, the analysis solely focuses on quantitative aspects and does not assess the quality or methodology of the publications.

We recommended conducting comprehensive literature reviews or initiating further research. Three main aspects should be considered: 1) The top document-producing countries, namely the United States, South Africa, and the United Kingdom; 2) The Centers for Disease Control and Prevention affiliation, which is a reliable source of information and can serve as a primary reference; and 3) There is still potential for expanding healthcare service management for adolescents living with HIV, particularly in the field of nursing.

Conflict of Interest

The authors declare that they have no competing interests.

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