

DOI:10.58240/1829006X-2025.21.12-215



ORIGINAL RESEARCH

HEALTH COMMUNICATION AND GENERATION Z: A BIBLIOMETRIC MAPPING OF KEY ISSUES AND FUTURE RESEARCH DIRECTIONSIsmubaraqah Jufri^{1*}, Arianto², Alem Febri Sonni³¹Department of Communication Science, Faculty of Social and Political Science, Hasanuddin University, South Sulawesi, Indonesia. ismubaraqahjufri@gmail.com²Department of Communication Science, Faculty of Social and Political Science, Hasanuddin University, South Sulawesi, Indonesia. arianto@unhas.ac.id³Department of Communication Science, Faculty of Social and Political Science, Hasanuddin University, South Sulawesi, Indonesia. afsonni@unhas.ac.id**Corresponding Author:** Ismubaraqah Jufri, Department of Communication Science, Faculty of Social and Political Science, Hasanuddin University, South Sulawesi, Indonesia. ismubaraqahjufri@gmail.com**Received:** Nov 29, 2025; **Accepted:** Dec 27, 2025; **Published:** Jan. 7, 2026**Abstract**

This study investigates the phenomenon of health communication in the context of Generation Z in the digital era, focusing on digital health literacy and the influence of social media on their health behaviour. Generation Z, who grew up with digital technology, more often seek health information through the internet, but their level of health empowerment is relatively lower than previous generations. The purpose of this study is to analyse publication trends, author collaborations, and emerging topics in the literature related to Generation Z health communication using bibliometric analysis methods. The data was analysed by mapping the number of publications, citations, main sources, and comparing global and local trends. The findings of this study show a significant surge in publications in 2020, triggered by the COVID-19 pandemic, with the USA being the largest contributor to publications. However, despite an increase in the number of publications, citations per article tended to decline after peaking in 2019, indicating saturation or a shift in topic focus. In addition, these findings also identified disparities in author collaboration and research influence, with several leading journals such as the International Journal of Environmental Research and Public Health becoming major centres of publication. This study enriches the literature by providing insights into the dynamics of Generation Z's health communication and revealing the need for better digital health literacy education. The practical implication of this study is the importance of digital-based education to improve Generation Z's health empowerment.

Keywords: Health Communication, Bibliometric Review, Generation Z**INTRODUCTION**

Generation Z, comprising individuals born between 1995 and 2010¹⁻³, is the first group to grow up in a highly connected digital era^{4,5}. They have unique habits in accessing and sharing information, particularly in the context of health, which differ significantly from previous generation^{6,7}. Digital technology, especially the internet and social media, has changed the way they search for, understand, and manage health information. This phenomenon presents new challenges in health communication, where information delivery must be adapted to their highly integrated digital habits. Meanwhile, although Generation Z accesses health information more frequently online, research shows that their health empowerment levels are lower than previous generations, despite their high digital health literacy. Furthermore, the importance of research that understands the relationship between digital health literacy and information-seeking behaviour among Generation Z is becoming increasingly urgent. As a

generation that is more dependent on technology, they not only search for health information online, but also interact with various digital platforms that offer various forms of health information. Thus, understanding Generation Z's preferences and habits in searching for health information is key to designing effective and relevant health communication strategies. However, there is a significant gap in research linking digital health literacy theory with real-world practice, as well as a deeper understanding of how Generation Z utilises digital media in managing their health.

Recent research on health communication involving Generation Z indicates a significant gap in digital health literacy and health information search behaviour among this group. Several studies, such as those conducted by^{8,9}, identify that although Generation Z uses the internet more often to search for health information than previous generations, they demonstrate lower levels of health empowerment. This behaviour is influenced by digital health literacy, which in some cases, although

Ismubaraqah Jufri, Arianto, Alem Febri Sonni. HEALTH COMMUNICATION AND GENERATION Z: A BIBLIOMETRIC MAPPING OF KEY ISSUES AND FUTURE RESEARCH DIRECTIONS**Bulletin of Stomatology and Maxillofacial Surgery. 2025;21(12)215-226 doi:10.58240/1829006X-2025.21.12-215**

higher among Generation Z, does not always correlate with their ability to manage their health independently. Additionally, research by^{10,11} indicates that although Generation Z possesses high technological capabilities, they tend to rarely use mobile health applications or wearable devices to monitor their health, influenced by variables such as social interactions and healthy living habits that are already ingrained in their lives.

On the other hand, studies by^{12,13} show how the COVID-19 pandemic has accelerated changes in Generation Z's lifestyle, with an increased interest in health and health management, although there are still challenges in adopting new technologies in health management. The dependent variables in these studies include health empowerment, technology adoption, and the utilisation of digital health resources, with research designs varying from cross-sectoral surveys to qualitative interview-based studies. Overall, this research highlights the importance of a deeper understanding of how Generation Z manages their health in the digital world, with important implications for more effective health communication strategies.

Although many studies related to health communication and Generation Z have been conducted, most studies use qualitative approaches or primary data-based surveys. However, bibliometric analyses that map global and local research trends, as well as inter-topic relationships and major influences in this field, are still very limited. The use of bibliometrics to identify publication patterns, author collaborations, and emerging topic shifts is crucial for comprehensively understanding the dynamics of this research. There is a lack of global and local bibliometric analysis that maps research trends, leading authors, and emerging topics in the field of Generation Z health communication. Based on the identified gaps, there is a significant lack of application of bibliometric methods in analysing health communication for Generation Z. The main gaps include a lack of mapping of global and local trends, analysis of author collaboration, identification of emerging topics, and the use of citations to measure policy impact. In addition, multidisciplinary approaches and long-term analysis are also areas that require more attention in using bibliometric methods to understand research developments in this field.

This study offers a unique contribution by utilising a bibliometric approach to provide a comprehensive overview of research trends, author collaboration, emerging topics, and the impact of policies on health communication for Generation Z. By mapping emerging topics and distinguishing between global and local research trends, this study not only fills a gap in the current literature but also introduces a new methodology that can strengthen future health communication strategies for Generation Z.

This study aims to conduct a bibliometric analysis of research related to Generation Z health communication,

focusing on mapping global and local trends, author collaboration, and the development of relevant topics. The main focus of this study is to identify how these research trends have developed over time and to understand the relationships between emerging topics, particularly those related to digital health literacy and health empowerment. In addition, this study also aims to explore the differences between research conducted at the global and local levels and to examine how this research influences health policy and health communication practices, especially in an increasingly digitalised world. Using a bibliometric approach, this research will provide a clearer picture of publication patterns, key authors, and existing research networks in this field, as well as make an important contribution to the development of more effective health communication strategies for Generation Z.

RESEARCH METHODOLOGY

Research design.

This study applies a quantitative approach through bibliometric analysis using the Scopus databas^{14,15}. Bibliometric analysis was chosen as the optimal technique for mapping the conceptual structure in the domain of health communication and identifying future research directions related to Generation Z. To produce a more comprehensive synthesis, this study integrates bibliometric mapping with content analysis^{16,17} to examine various research trends from 2013 to 2026.

Data were extracted on 23 December 2025 using specific keywords (*Health AND Communication AND Generation Z*). The use of the Scopus database was based on its broader coverage and more comprehensive citation metadata compared to Web of Science (WoS), particularly in social science and communication literature. Unlike previous studies on Generation Z health that tended to focus on the WoS database, this study explored the *Health Communication* niche in Scopus to obtain a more inclusive global perspective. From the search results, 91 documents were obtained and then analysed thoroughly without applying exclusion criteria (document type or language) to ensure complete and in-depth data representation of key issues in Generation Z health communication.

Search strategy, criteria, and data collection

In the data search strategy, this study adapted the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) model, which has been modified for bibliometric studies. Figure 1 presents a detailed flow chart of the PRISMA protocol applied. Data were collected on 23 December 2025 from the Scopus database using a specific search query: ("Health" AND "Communication" AND "Generation Z"). These keywords were selected to capture literature that explicitly discusses the intersection of communication practices and health behaviour in Generation Z.

To ensure the inclusivity of this bibliometric review and content analysis, this study adopted a comprehensive review approach. After conducting an initial screening of relevant literature, we evaluated documents based on eligibility criteria that included subject relevance and citation structure. Unlike most bibliometric studies, which often limit results to English-language journal articles, this study did not apply exclusion criteria based on document type or language. This strategy was adopted to ensure that the entire spectrum of literature—including conference proceedings, book chapters, and reviews in various languages—was fully represented, given that the topic of Gen Z health communication is a rapidly developing field in various geographical regions.

The initial search in the Scopus database yielded 91 documents based on titles, abstracts, and keywords. All of these records (n=91) were deemed eligible and qualified for inclusion in descriptive analysis, bibliometric mapping, and further content analysis. The use of the entire database without reduction allowed researchers to capture the research landscape holistically without losing important information from non-article document types.

Tools and data analysis

This study utilised R-Biblioshiny software, a *web-interface-based* application for bibliometrics operated in

the RStudio environment, as the main tool for data analysis and visualisation. The use of R-Biblioshiny allows researchers to perform integrated data processing, from data *cleaning*, bibliometric metric calculations, to the creation of complex network maps in one robust workflow. Through this platform, we constructed and visualised bibliometric networks to examine keyword correlations, authorship patterns, and cross-country collaboration and publications in the domain of Generation Z health communication.

This comprehensive methodology combines quantitative bibliometric analysis with *network* analysis to uncover in-depth insights from various aspects of the research field. The analysis covers annual publication growth trends, identification of the most contributing journals and institutions, mapping of the most influential authors, and keyword *co-occurrence* analysis to identify major theme clusters. With this approach, this study aims to synthesise current research flows and map *future* research directions that are crucial for the development of health communication studies on Generation Z.

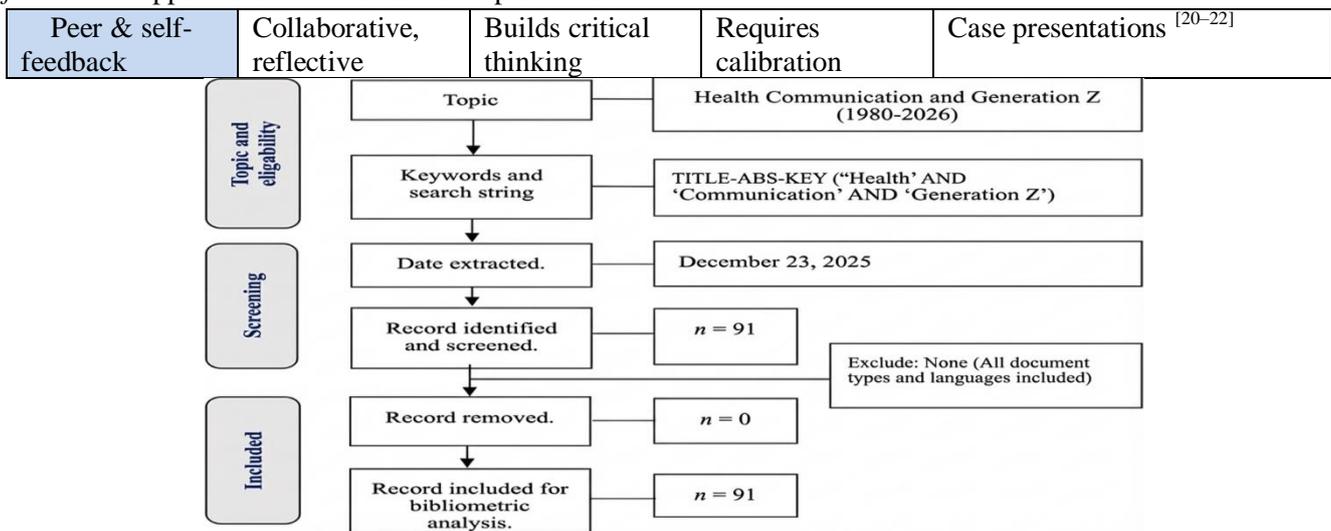


Figure 1. PRISMA Diagram
Source: Researcher's Data Analysis Results, 2025

RESEARCH FINDINGS AND DISCUSSION

Descriptive analysis

Based on the bibliometric data analysis presented, this study covers publications produced between 2013 and 2026, with an annual growth rate of 8.82%, indicating rapid development in this field. During this period, 91 documents were published through 68 different sources, indicating a concentration on several major research platforms. Author collaboration was a dominant factor in this research, with a total of 324 authors, but only 12 authors contributed as sole authors. Most of the research involved team collaboration, with an average of 3.75 co-authors per document. International collaboration was recorded at 17.58%, indicating a global dimension to this research. A total of 386 keywords were used, enabling a more in-depth mapping of topics, while 790 references were used to support the validity of the research. The average age of the

documents was 2.76 years, indicating that most of this research is still highly relevant to current developments. In addition, this research also received significant attention with an average of 10.38 citations per document, indicating that this research has had a considerable impact on the academic community. (Figure 2).



Figure 2. Dataset Overview

Based on the graph in Figure 3, there is a significant fluctuation in the average citations per year in the publications studied. In 2019, there was a large spike in the number of citations, reaching more than 7 citations per document, reflecting a peak of interest or relevance to publications in that year. However, after 2019, citations per year declined sharply and tended to stabilise at around 2 to 3 citations per document in subsequent years. This decline may indicate that although research in 2019 received a high level of attention, interest in the topic has begun to wane in recent years, possibly due to shifts in research focus, the novelty of the topic, or newer publications capturing the attention of the academic community. This graph provides an overview of how citation trends in this literature can be influenced by external or internal factors, including thematic relevance and academic context outside the peak period.

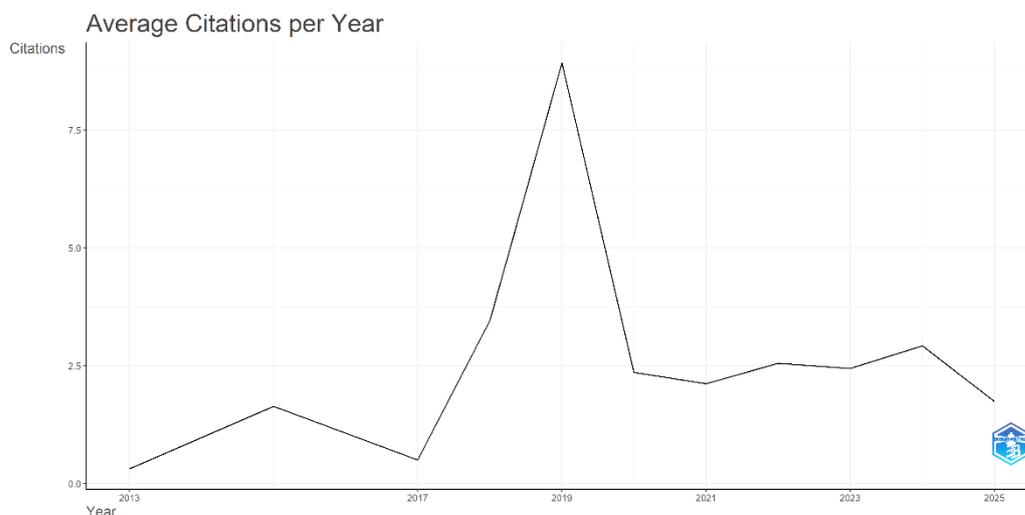


Figure 3. Average Citations Per Year

Research trend analysis

Based on the attached graph, the production of research sources from 2013 to 2026 can be seen, showing the accumulation of sources from various journals or related publications. At the beginning of the period (2013-2017), source production was relatively stagnant, with only a few journals appearing, as indicated by the flat line. However, since 2019, there has been a significant surge in the number of publications, with a sharp increase in the line, reflecting rapid growth in contributions from various research sources.

Certain journals or sources, such as the International Journal of Environmental Research and Public Health (green) and Sustainability (blue), show more consistent and significant growth from 2020 to 2025, indicating that topics related to health and sustainability are gaining greater attention. On the other hand, some sources, such as the European Journal of Business and Economics (purple), show sharper fluctuations with a surge in 2021 before reaching stability. Overall, this graph illustrates a clear trend, where certain topics in the fields of health communication, the environment, and sustainability have been growing since 2020, with the highest peak expected to occur between 2023 and 2025. This reflects a shift or increase in academic interest in these fields, with a strong possibility of a connection to global developments or significant events that influence attention to these topics.

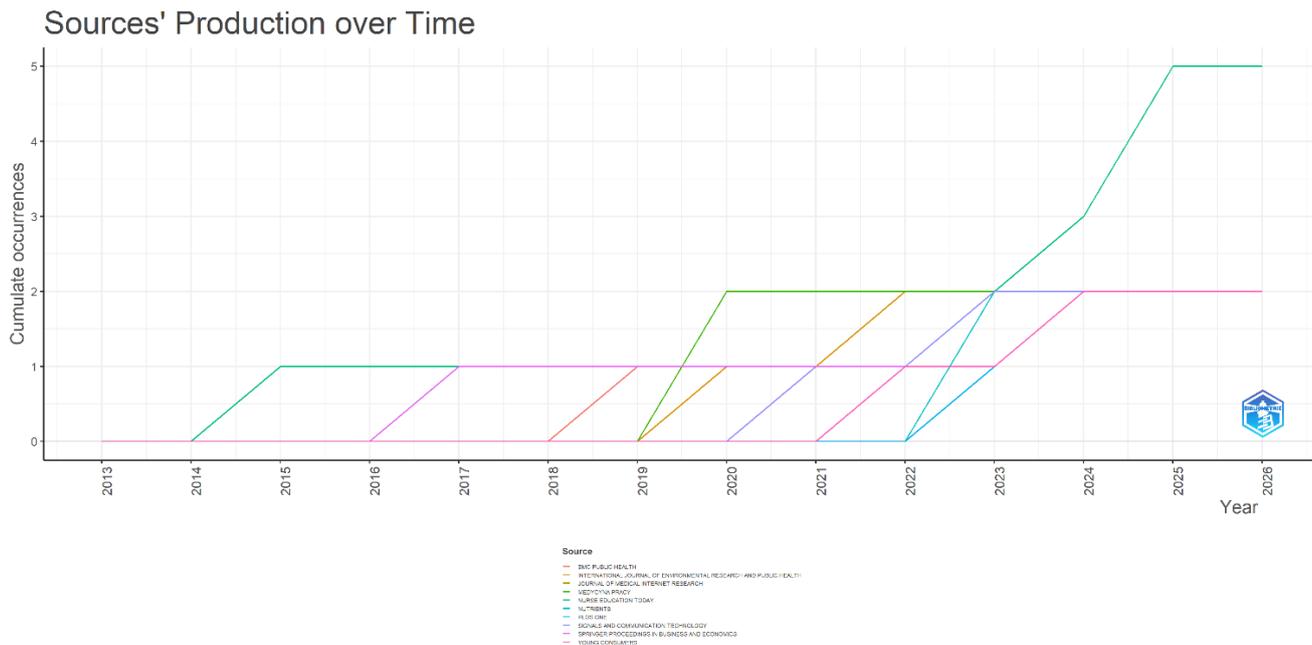


Figure 4. Sources' Production over Time

Most influential countries, affiliates, and productive authors

Based on the table presented in Table 3, it can be seen that the USA dominates in terms of publications related to this topic, with a total of 40 publications. Indonesia is in second place with 28 publications, indicating a significant contribution in this field. This is followed by Poland with 19 publications and Australia with 17 publications. Other countries such as South Korea, Greece, and Portugal have smaller contributions, with 14, 9, and 9 publications respectively. Meanwhile, the UK, China, and India are at the bottom with 7 publications each. These findings indicate that the USA has the greatest influence in research related to health communication and topics related to Generation Z, while other countries outside America and Indonesia have more limited but still significant contributions.

Table 1. Top Countries' Scientific Production

Country	Freq
USA	40
Indonesia	28
Poland	19
Australia	17
South Korea	14
Greece	9
Portugal	9
UK	8
China	7
India	7

Source: Author Data Processing from Scopus Database

Based on Figure 5, there is a list of the most relevant authors in this study based on the number of documents they produced. The most dominant authors, each with three documents, are Kamenidou I, Mamalis S, Mylon I, and Stavriane A. This shows that they have made a significant contribution to the total number of publications on this research topic.

Several other authors, such as Bieńkowski P, Bortkiewicz A, Fahmy HMA, Karpowicz J, Kieliszek J, and Lukman S, have only 1 or 2 documents, indicating that although they are involved in this research, their contributions are relatively smaller than those of the authors mentioned earlier. This graph provides insight into the main authors who have played a role in producing relevant literature on the topic of Generation Z health communication, with some authors showing greater involvement in this research.

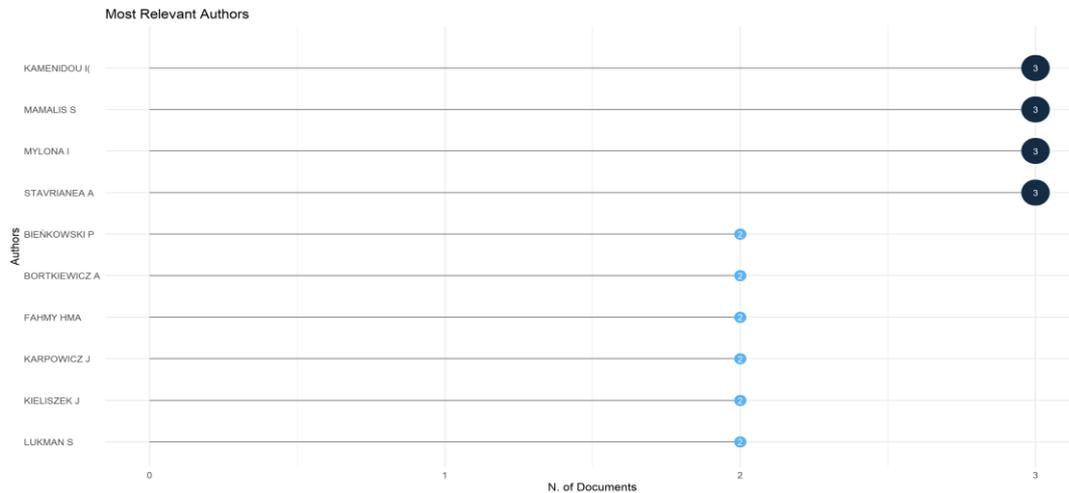


Figure 5. Most Relevant Authors

Based on the graph in Figure 4, the local H-index of several authors involved in this study can be seen. All authors listed, namely Bieńkowski P^{18,19}, Bortkiewicz A^{20,21}, Kamenidou I^{12,22,23}, Karpowicz J^{24,25}, Keiszek J, Lukman S, Mamalis S^{26,27}, Mylon I, Politański P^{28,29}, and Rydzyński K³⁰, have the same H-index, which is 2. This H-index indicates the local impact of these authors based on the number of publications that have been cited, which means that each author has at least two publications that have received two or more citations. This shows that although no author has a higher score, all authors in this graph have made a significant contribution to research, with an equal level of influence in the local context.

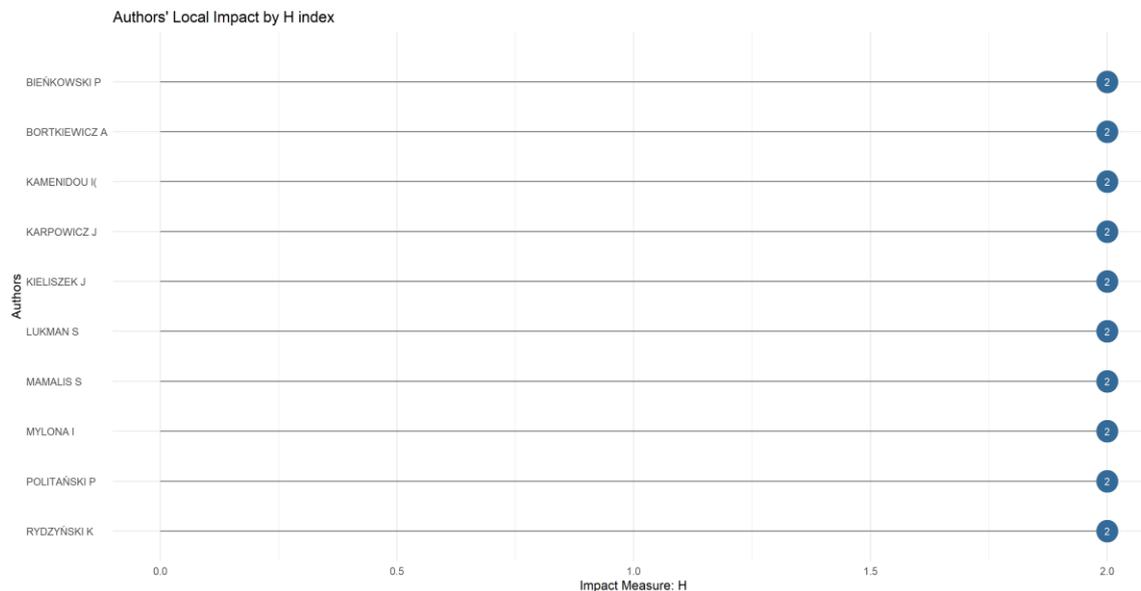


Figure 6. Author Local Impact H-Index

Citation analysis

Based on the graph in Figure 5, there is a significant fluctuation in the average citations per year from the publications studied. In 2019, there was a sharp increase in the number of citations, reaching more than 7 citations per document. This surge indicates a peak of interest or relevance to publications in that year. However, after 2019, citations per year declined dramatically and tended to stabilise at around 2 to 3 citations per document in subsequent years. This decline may indicate that although publications in 2019 received a great deal of attention, interest in the topic began to wane, possibly influenced by a large number of new publications focusing on fresher or more developing topics. This graph provides insight into changes in citation trends that may be related to the relevance or novelty of topics in the academic community.

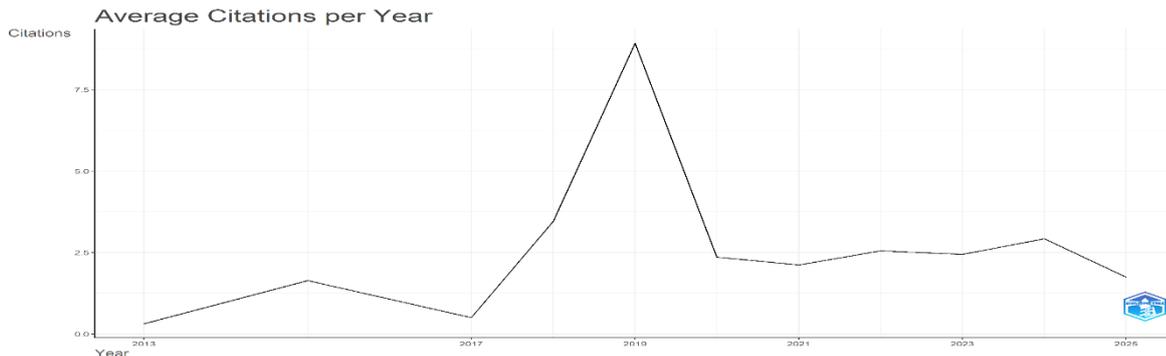


Figure 7. The top ten most cited documents

Based on Table 3, the USA recorded the highest number of TC (Total Citations) at 283, with an average of 23.60 citations per article. This shows that although the number of publications from the USA is higher, the average citation from these publications is relatively lower than that of Germany, which has the highest average citation of 67.30 despite having fewer publications, namely 202 TC. Other countries such as Australia (15.00 average citations), Greece (9.00), and Indonesia (4.20) also have lower average citations, reflecting differences in the impact or acceptance of their research at the international level. Countries with smaller contributions in terms of citation numbers, such as Korea and Pakistan, also show lower average citations (5.30 and 19.00, respectively). These findings show that Germany is the leader in terms of citation impact per article, despite having fewer publications than other countries such as the USA.

Table 2. Top Most Cited Countries

Country	TC	Average Article Citations	Freq
United States	283	23.60	16
Germany	202	67.30	16
Australia	45	15.00	16
Greece	36	9:00	16
Indonesia	34	4.20	16
Malaysia	25	12.50	16
Hungary	23	11.50	16
Pakistan	19	19:00	16
Korea	16	5:30	16

Topic analysis

Table 6 shows how often keywords related to Generation Z health research appear in the Scopus database. "Human" is the most common keyword, appearing in 53.20% of the articles. "Adolescent" comes in second with 45.78%, and "Female" comes in third with 43.90%. "Male" (43.31%), "Article" (42.59%), and "Humans" (37.50%) are some of the other most common keywords. This shows that there is a strong focus on studies centred on humans, especially those dealing with teenagers and health issues related to gender. Mental health is a significant part of this field, with the term "Mental Health" appearing in 31.83% of articles. Additionally, words such as "Psychology" (17.44%), "Depression" (16.28%), and "Youth" (12.21%) indicate growing concern about mental health in young people. The distribution also shows that study designs are a major focus, with terms such as "Major Clinical Study," "Controlled Study," and "Cross-sectional Study" appearing in many articles. This indicates that there is a great deal of research on Generation Z health, with a focus on mental health and the well-being of teenagers and young adults.

Table 3. Topic Trends

Term	Frequency	Year (Q1)	Year (Median)	Year (Q3)
Attitude of Health Personnel	7	2018	2018	2022
Health Personnel Attitude	7	2018	2018	2022
Baby Boomers	6	2020	2020	2022
Public Health	5	2020	2020	2022
Medical Education	6	2020	2020	2024
Education	5	2018	2018	2021
Article	25	2020	2020	2024
Interpersonal Communication	14	2020	2022	2024
Human Experiment	7	2018	2022	2024
Human	41	2020	2023	2024

Source: Author's data processing from the Scopus database

Based on Figure 6, there is a word cloud that illustrates the main keywords that frequently appear in research related to health communication and Generation Z. The words "human" and "humans" appear in very large sizes, indicating that topics related to human studies are the main focus of this research. "Generation Z" also appears as a dominant keyword, emphasising the importance of research focusing on this age group in the context of health communication. In addition, terms related to interpersonal communication, attitude of health personnel, public health, COVID-19, and survey/questionnaire also appear frequently, indicating that this research focuses heavily on individual behaviour, perceptions of medical personnel, and the use of survey methods to collect data. Other topics that emerged included social media, education, procedures, and human experiments, indicating that social media, education, and human experiments are important aspects of this research. Overall, this word cloud provides an overview of the topics that dominate health communication studies focusing on Generation Z, with an emphasis on behavioural, educational, and interpersonal communication aspects in the context of public health.



Figure 8. Word Cloud

Based on Figure 7, it can be seen that the most relevant keywords in this study are "human" and "humans", with 41 and 31 occurrences respectively, indicating that human-related topics are the main focus of this study. Furthermore, the term "article" appears 23 times, indicating that publications or articles related to this topic also receive significant attention. "Generation Z" appears 23 times, indicating that this age group is one of the main focuses in health communication studies. Other words that appear quite significantly are "adult" and "female", each with 23 occurrences, which shows the importance of the role of adult age groups and gender in this study. In addition, words such as "male", "questionnaire", "interpersonal communication," and "communication" were also recorded quite frequently, each with 11 to 18 occurrences. These findings illustrate that the focus of this study is on interpersonal communication, as well as studies of specific human groups, including gender and age groups, in the context of health communication.

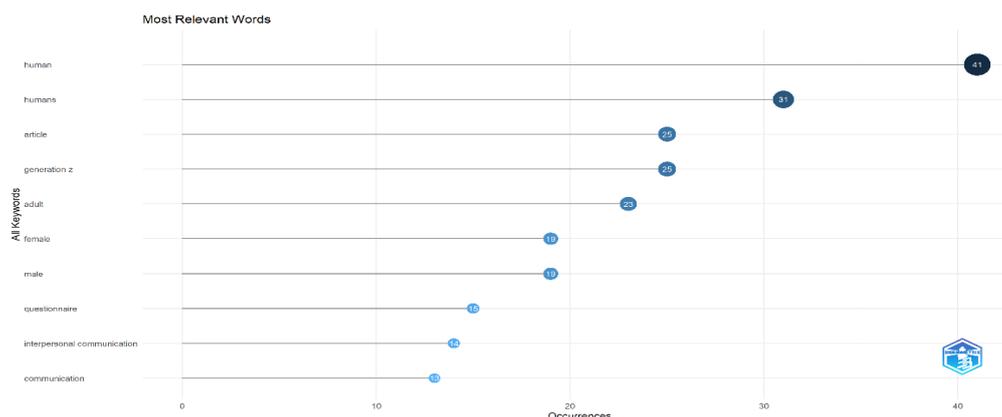


Figure 9. Most Relevant Words

DISCUSSION

This study reveals that health communication for Generation Z has undergone significant transformation in recent years, reflected in the rapid increase in publications and citations since 2020. One of the main patterns that emerged was the dominance of publications from the USA, with 40 publications, indicating this country's dominance in research related to Generation Z and health communication. However, although the USA had the highest number of publications, Germany had a higher average number of citations, indicating the greater quality and impact of its publications. This study also shows that 2020 was a major turning point, with a large number of publications emerging, possibly in response to the urgent need for health communication amid the COVID-19 pandemic. However, despite a surge in 2019, there was a subsequent decline in citations per document. This indicates saturation in certain topics or a shift in research focus towards topics that are more relevant to global changes and faster technological developments. This decline may also reflect a lack of sustainability of previously popular themes or the emergence of new topics that are more attractive to researchers and the academic community.

A more interesting finding is the concentration on several key sources such as the International Journal of Environmental Research and Public Health, which shows that although many publications have been produced, there are several key sources that are the focus of research in Generation Z health communication. This reflects that, although this research is growing rapidly, there is an imbalance in the distribution of publications across various journals or platforms. This opens up opportunities to disseminate more research to more diverse sources in order to reach a wider audience and increase the impact of future research.

search for health information than previous generations. However, our findings also reveal that despite greater access to information, Generation Z's level of health empowerment tends to be lower. This confirms the results of previous studies showing that digital health

literacy and the ability to manage health information independently are determining factors in the successful adoption of health information by Generation Z. These findings add to the insight that even though they are more digitally connected, Generation Z still needs more training in digital health literacy to improve personal health management.

This study also expands on existing findings, such as the research by Kamenidou et al. (2020) which highlights the importance of social media in health communication. Social media is recognised as the main platform for Generation Z to obtain health information, and our research deepens this understanding by identifying how their interaction with health information on digital platforms shapes the way they respond to and manage their health. Overall, this study broadens our understanding of the role of digital media in disseminating health information, as well as the challenges faced by Generation Z in using this information for personal health.

The results of this study support the Digital Health Communication theory, which states that although digital technology provides greater access to health information, this is not always matched by a high level of empowerment. These findings confirm that greater access to health information through digital platforms does not necessarily improve individuals' ability to use that information effectively. Our research adds a new dimension to this theory by showing that although Generation Z is more exposed to technology and digital health information, they tend to lack the ability to assess the quality or relevance of this information, which impacts their health decisions.

Theoretically, these findings also enrich the Technology Adoption Theory in the context of digital health, by showing that although Generation Z has extraordinary technological capabilities, they have not yet fully adopted technology for personal health management. This shows that technology adoption in health communication does not only depend on individuals' ability to access information, but also on the availability of educational

support, the development of digital health literacy skills, and critical understanding of existing health information. This study also challenges the theory by showing that habitual factors and technological limitations can hinder the wider acceptance of health technology among Generation Z.

Practically, these findings have important implications for the development of more effective health communication strategies for Generation Z. To improve health empowerment, communication strategies must emphasise the development of digital health literacy, particularly in relation to the ability to assess and use health information found on digital platforms. Practices in the field should include digital-based education that helps Generation Z identify valid and relevant information, as well as provide them with better tools to manage their personal health. In this context, the results of this study provide a basis for designing digital health education campaigns that are more adaptive and based on the digital habits of Generation Z.

From a theoretical perspective, these findings enrich the health communication literature by providing insights into how existing theories, such as interpersonal communication theory and technology adoption theory, can be expanded and updated. This study shows that although these theories are quite relevant in explaining digital health communication, changes in digital dynamics require theoretical adjustments to better reflect the challenges and opportunities that exist in the use of technology for personal health. Thus, these findings open the door to the development of digital health communication theories that are more integrated with the needs and characteristics of Generation Z.

One limitation of this study is the limited data, which only covers literature indexed in large databases such as Scopus and Web of Science, which may not cover all relevant studies, especially those published in local journals or unindexed platforms. Furthermore, this study is also limited to secondary data and bibliometric analysis, which does not allow for a deeper exploration of social, cultural, or policy factors that may influence digital health communication for Generation Z in various regions. Therefore, further research that includes primary data and more in-depth field studies can provide richer insights into the contextual factors that influence the adoption of health communication among Generation Z.

CONCLUSION

This study examines Generation Z's health communication with a focus on digital health literacy and the use of social media in obtaining health information. The findings show that although the USA dominates in terms of the number of publications, Germany has the greatest influence in terms of citations

per article, indicating the higher quality and impact of their publications. There was also a significant surge in publications in 2020, suggesting that the COVID-19 pandemic influenced academic interest in this topic. However, despite the increase in the number of publications, the average citations per article declined after peaking in 2019, indicating topic saturation or a shift in research interests. This anomaly illustrates that although the topic of Generation Z health communication is highly relevant, a new approach is needed in managing and publishing future research. This study enriches the literature by identifying new trends in author collaboration and research influence, and shows that digital health literacy is essential for improving Generation Z's health empowerment. However, there are several limitations, including a lack of field research and reliance on bibliometric data, which only covers indexed publications. Further research with primary data in various cultural contexts could deepen our understanding of the factors that influence technology adoption in health communication among Generation Z. Recommendations for future research include digital health literacy education and studies that combine social and cultural factors in health technology adoption.

DECLARATION

Conflict of Interest

None to declare.

FUNDING

This research did not receive funding or financial support from any institution, organisation, or funding source.

ACKNOWLEDGEMENTS

We would like to thank all those who have provided valuable support and contributions to this research process. In particular, we would like to thank our colleagues and peers who have provided valuable insights and input. We also appreciate all the authors and publications that have been part of the literature reviewed in this study.

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