Khizanah al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, & Kearsipan
p-ISSN: 2354-9629
e-ISSN: 2549-1334
Volume 12 Issue 1, June, 2024

Health Education during the COVID-19 Pandemic: A Bibliometric Analysis

Yunindyawati[1]

[1]Universitas Sriwijaya, Indonesia
Correspondence email: yunindyawati@fisip.unsri.ac.id

Information

Submitted: 08-05-2023
Revised: 22-01-2024
Accepted: 07-03-2024

How to cite: Yunindyawati. (2024). Health Education during the COVID-19 Pandemic: A Bibliometric Analysis. Khizanah Al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, Dan Kearsipan, 12(1). https://doi.org/10.24252/kah.v12i1a11

DOI: 10.24252/kah.v12i1a11

ABSTRACT

The COVID-19 pandemic has drastically increased global mortality, underscoring the urgent need for effective health education. This study examines health education literature during the pandemic, focusing on articles published from 2018 to 2022, sourced from the Dimensions Database. Using bibliometrics and VOSviewer for visualization, 2,500 articles were analyzed based on publication trends, contributions by countries, institutions, and authors, journal distribution, highly cited articles, and bibliographic coupling. The findings reveal that the United States, the United Kingdom, China, Canada, and Australia are the primary contributors to health education publications. Notably, the University of Michigan-Ann Arbor, the University of California, Los Angeles, and Johns Hopkins University emerged as leading institutions regarding document count and citations. The most cited article, "Consumer Attitudes Towards Environmental Concerns of Meat Consumption: A Systematic Review" by Sanchez-Sabate & Sabaté, published in the International Journal of Environmental Research and Public Health, reached 148 citations. This analysis highlights the significant global contributions to health education research during the pandemic, identifying key institutions and influential works. These insights are vital for researchers and policymakers aiming to enhance health education strategies in response to global health crises.

Keywords: Bibliometric; research trend; health education literature

1. INTRODUCTION

Health education is a pedagogical endeavor that involves disseminating health information to modify individuals' behaviors, foster comprehension of healthy practices, and promote awareness of illness-related behaviors. Healthy behavior refers to the deliberate actions undertaken to avert the onset of diseases, whereas sick behavior encompasses the modifications made to one's endeavors to facilitate the process of recovery (Yunindyawati, 2023). Health education is a matter of global significance as nations strive to enhance their populations' overall health and well-being.

This study aims to examine the discourse around health education as presented in articles published in a range of international journals. This will be achieved through the classification of publications according to 1) Trends in scholarly publications and 2) The Role of Countries, Institutions, and Authors in Contributing. The two topics that will be discussed in this paper are the distribution of journals and highly cited articles and the analysis of bibliographic clutch.

Many scientists have carried out research with the theme of "Health Education" worldwide. Studies of this kind have been carried out, for example, "mental health education (Zhao, 2021), oral health education (Lee et al., 2022), interventions for cervical cancer, and health education (Makadzange et al., 2022), health education on pain and anxiety, and the effect of multimedia (Kuo et al., 2021), Health education on second-hand smoke knowledge and exposure (Abu-Baker, et al., 2022), The education on health and health behaviors effect (Fu, Ge, Huang, and Shi, 2022), intervention in suicide prevention, and mental health education (Milbourn et al., 2022). No research has mapped "Health Education" in general using bibliometric analysis. This study is based on database dimensions from 2018 to 2022.

Bibliometric analysis is usually used to break the evolution of knowledge from scientific reference publications in qualified publication sources (Kessler, 1963). Bibliometrics changed from a simple statistical bibliographic study to a separate and unique field of study after the 90s, according to the Institute for Scientific Information (ISI), Science Citation Index (SCI) (Karanatsiou, Misirlis, and Vlachopoulou, 2017). Quotations, also known as citations, are the most important aspect of bibliometrics (Kolahi & Khazaei, 2016). The citation of research results in the form of scientific publications can be measured through a bibliometric approach.

The history of health education is long and diverse and goes back hundreds of years. A combination of learning experiences designed to facilitate voluntary actions conducive to health is Health Education (Smelser & Baltes, 2001). The community is significantly conditioned by inter-subject variability behavior, which can be shaped by the impact of education, which is the main assumption that underlies the essence of health education (Przybylska, et al., 2014). The noble task of modern health education is to increase the competence of groups and individuals so that they can become independent for health in various social life organizations (Przybylska et al., 2014).

The problem at discussion is the heightened significance and necessity of discussing health education in light of the COVID-19 epidemic, which has resulted in a substantial global mortality rate. Consequently, his endeavors to address this issue via health education presented a theoretical argument favoring health education. In his work, he describes health education as a transformative process that facilitates the connection between health information and health behavior. This process aims to motivate individuals to acquire knowledge and develop skills in order to preserve their well-being by abstaining from detrimental behaviors and adopting beneficial ones (Yunindyawati, 2023).

This research aims to analyze the bibliographic pattern and content of articles (Putera, et al., 2020) of authors in various countries who conduct research regarding health education, observing the existence of papers appearing from 2018 to 2022.

2. METHODS

Bibliometric analysis is used to measure texts and information in many science subject matters, for example, social, policy, and research management in recent decades. Citation analysis is increasingly being relied upon to decide on promotions, tenure, and financing (Weingart, 2005). This study focuses on a paper published in the international journal Health Education throughout 2018-2022, coinciding with the ongoing COVID-19 pandemic spanning from 2019 to 2022. The data for this study was taken from articles from the Dimension database gathered in December 2022. The open-access database dimension found 8,810,428 articles on

health education topics. Then, eliminate grouped by Year of Publication (2018-2022), Type of Publication: Articles, and Open Access: Gold. Based on these categories, 837,839 articles were obtained. After that, 2,500 articles were obtained for analysis with bibliometric mapping. The data is then analyzed using the VOS Viewer software. The data types analyzed are 1) Publication Trends, 2) Contributions of States/Institutions and Authors, 3) Journals distributions and Highly Citation Articles, and 4) Analysis of Bibliographic Coupling.

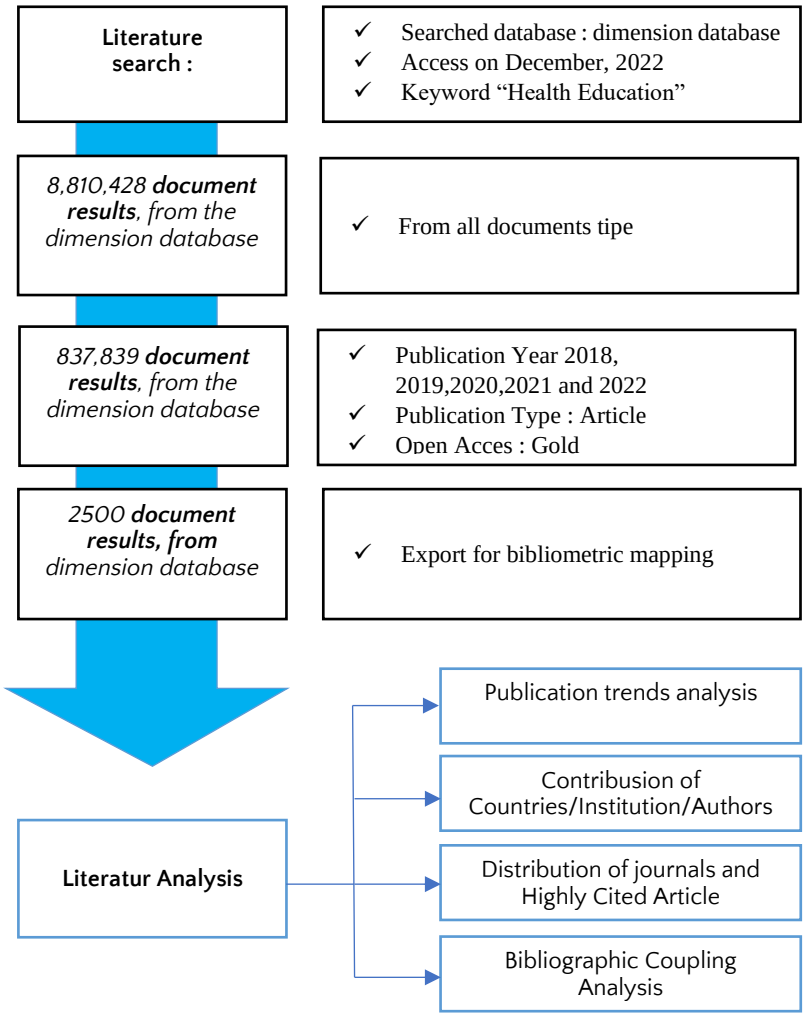


Figure 1. The data collection process

3. RESULTS AND DISCUSSION

Results

Trend Publication by Year and Influential Countries of Publications

The trend of articles on health education from 2018 to 2022 increased during the COVID-19 pandemic (from the end of 2019 to 2021). Then it decreased in 2022 when the Covid 19 pandemic began to be resolved by administering vaccines. During the pandemic, the number of articles about health education that appeared the most was in 2021. Namely 1041 articles, and the least occurred in 2019 with 191 articles. A more detailed picture can be seen in Figure 2. Below.

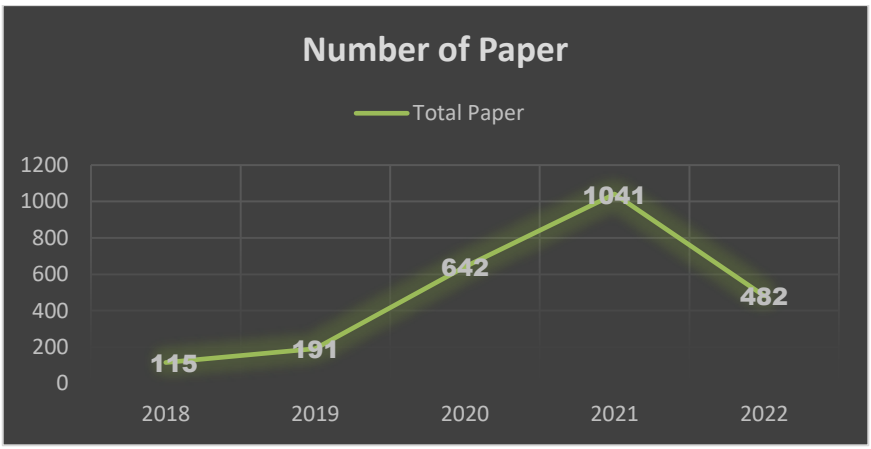
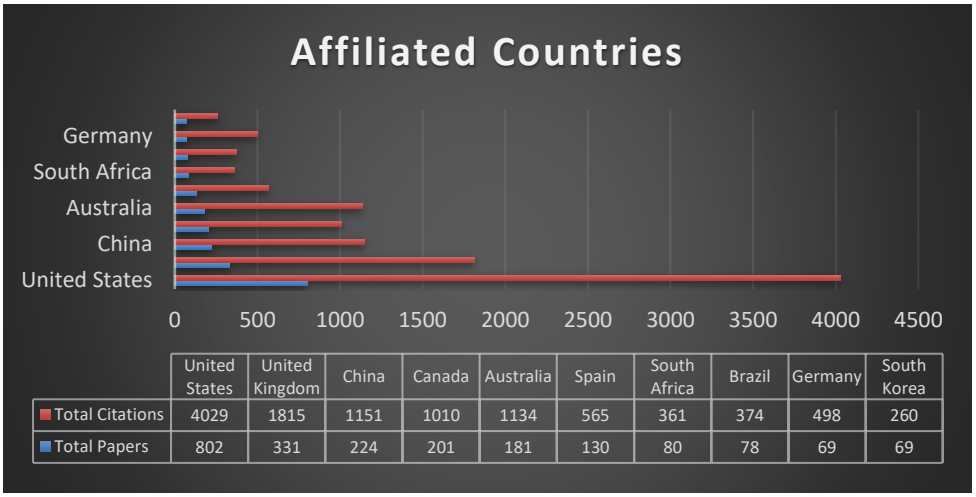


Figure 2. Health Education publication trends

Based on the Dimensions, articles on health education were written by authors from 126 countries. There are ten top countries with the most authors, as illustrated in Figure 3. The data shows that most authors on health education come from the United States, with 802 articles (32.08%) and 4029 citations. The United Kingdom ranked second with 331 articles (13.24%) with 1815 citations. The third rank for the highest number of articles was China, with 224 (8.96%) and 1151 citations. China is related to the fact that COVID-19 originated in China. Further details can be seen in Figure 3.



	United States	United Kingdom	China	Canada	Australia	Spain	South Africa	Brazil	Germany	South Korea
Total Citations	4029	1815	1151	1010	1134	565	361	374	498	260
Total Papers	802	331	224	201	181	130	80	78	69	69

Figure 3. Top 10 most affiliated countries publishing research on health education

Furthermore, Canada had 201 articles (8.04%) and 1010 citations, followed by Australia with 181 articles (7.24%) and 1134 citations. Spain contributed 130 articles (5.2%) and 565 citations. Many articles on health education were also written by South Africans, with 80 articles (3.2%) and 361 citations, followed by Brazil, which had 78 articles (3.12%) and 374 citations. Sixty-nine articles (2.76%) and 498 citations were recorded from Germany. South Korea ranks tenth with 69 articles (2.76%) and 260 citations. Meanwhile, other countries also wrote about health education with 335 articles (31.4%).

Authors Network Cluster Based on State Affiliation

The results of the bibliometric analysis, figure 4, indicate that there are four clusters formed based on the state affiliation, namely Cluster red (1), Cluster green (2), Cluster blue (3),

and Cluster yellow (4). Each Cluster consists of several authors from various countries connected.

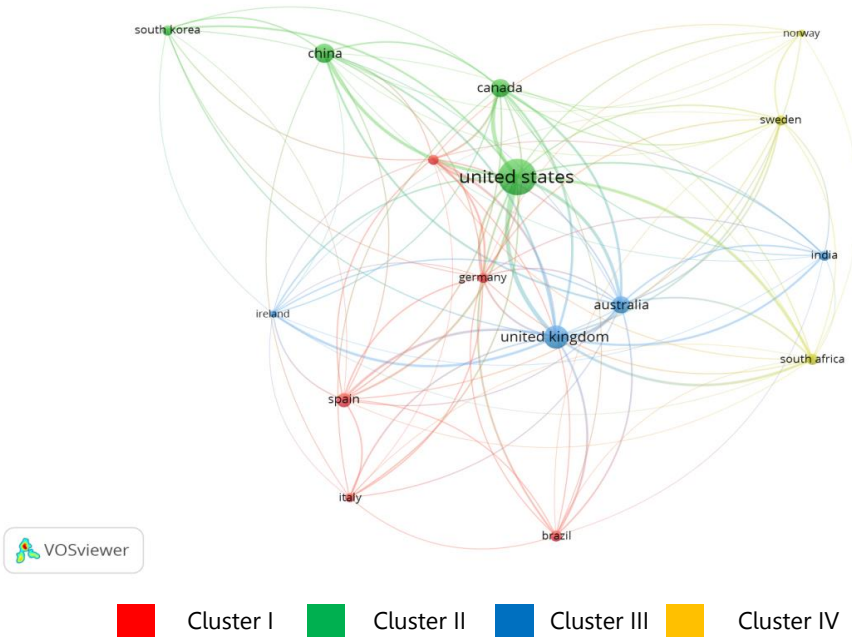


Figure 4. Authors network cluster based on state affiliation

The results of the bibliometric analysis show that Cluster 1 (red) is a network of authors from the following countries: Brazil, Germany, Italy, the Netherlands, and Spain. Cluster 2 (green) consists of authors from 4 countries: Canada, China, South Korea, and the United Kingdom. Cluster 3 (blue) shows a network of authors from 4 countries: Australia, India, Ireland, and the United Kingdom.

Cluster 4 (yellow) shows a network of authors from 3 countries: Norway, South Africa, and Sweden. The four clusters (figure 4) are connected to the authors of articles about health education from the United States. It proves that all authors are connected to the authors of articles on Health Education published in the United States.

The Top 10 Author Affiliation Institutions Researching Health Education Topic and Based on Citation Number

The database records 2,295 institutions from which the authors have the theme "health education" from 2018 to 2022. However, there are ten institutions from which the authors have published the most articles with the theme "Health Education" based on the minimum number of documents of an organization, namely 25, and the minimum number of citations of an organization is 0 (see table 1). The University of Michigan-Ann Arbor is an organization that has articles and gets the most citations, namely 52 documents (TP) and 603 citations (TC). Meanwhile, when viewed from the quality of the articles, the University of California, Los Angeles is the institution with the highest quality of articles, namely 12.22 (TC/TP).

Table 1. Top 10 author affiliation institutions

Rank	Institution	TP	TC	TC/TP
1	University of Michigan-Ann Arbor	52	603	11,59
2	University of California, Los Angeles	44	538	12,22
3	John Hopkins University	44	406	9,22
4	London School of Hygiene & Tropical Medicine	43	246	5,72
5	University of Melbourne	26	246	5,72

6	University of British Columbia	26	225	8,65
7	Harvard University	30	197	6,56
8	University of Oxford	31	192	6,19
9	University College London	41	155	3,78
10	University of Toronto	46	137	2,97

Based on the data, 11,067 authors collaborated to write "Health Education" articles from 2018 to 2022. Fourteen top authors dominate based on the minimum number of documents of an author, namely 5, and the minimum number of citations of an author, namely 0 (see Table 2). The author whose writings are most cited by the number of articles that have been made is Shervin Assari (Associate Professor of Family Medicine at Charles R. Drew University of Medicine and Science), with a total of 477 citations. Then, there were 13 other authors, each with a different number of articles ranging from 5 to 13 but with fewer citations than the author in the first position. So Shervin Assari is one of the authors with the best quality articles because of the many citations from the articles he has made 17.66 (quality of paper). For more details, the number of articles (number of papers) and the number of citations (number of citations) of each author can be seen in Table 2.

Table 2. Top 14 authors based on the number of citations

Rank	Author Name	Institutions	Number of Paper	Number of Citations	Quality of Paper
1	Shervin Assari	Associate Professor of Family Medicine at Charles R. Drew University of Medicine and Science	27	477	17,66
2	Mohsen Bazargan	Uppsala University, UU · Department of Earth Sciences Doctor of Philosophy	13	181	13,92
3	Cleopatra H. Caldwell	School of Public Health University of Michigan	7	102	14,57
4	Fran Baum	The University of Adelaide, Australia	6	92	15,33
5	Shanika Boyce	College of Medicine at Charles R. Drew University of Medicine and Science (CDU)	7	56	8
6	Lauren A. Manggio	Uniformed Services University of the Health Sciences, Bethesda, MD	5	56	11,2
7	Nan lu	Traditional Chinese Medicine World Foundation	5	51	10,2
8	Ryuichi Ohta	Unnan City Hospital, Community Care MD MHPE MPH PhD	6	45	7,5
9	Chiaki Sano	Shimane University, Faculty of Medicine Department of Community Medicine Management	6	45	7,5
10	Lillian Mwanri	Torrens University Australia	7	39	5,57
11	Rachel Jewkes	South African Medical Research Council	5	35	7
12	Rapeepong Suphanchaimat	Thailand Ministry of Public Health and head of the Non-Thai Population Research	6	11	1,83
13	Jorge Rojo Ramos	Universidad de Extremadura, UNEX, Department of Didactics	5	9	1,8

		of Music, Plastic and Body Expression			
14	Manka Nkimbeng	Division of Health Policy and Management, University of Minnesota	5	0	0

Distribution of Journals and Highly Cited Articles

Based on data dimensions, from 2018 to 2022, there were 327 publication sources publishing articles with the theme "Health Education." After the bibliometric analysis, ten publication sources in the form of scientific journals published the most articles on "Health Education" (see Table 3). Scopus still indexes all these journals so that CiteScore, SJR, and SNIP can access them.

Table 3. Top 10 sources based on the number of citations

Rank	Sources	CiteScore (2021)	SJR (2021)	SNIP (2021)	Number of Papers	Number of Citations
1	International journal of environmental research and public health	4,5	1,44	1,44	686	3241
2	Plos One	5,6	0,852	1,368	310	2337
3	International Journal for Equity in Health	5,4	1,369	1,911	120	876
4	BMJ Global Health	7,2	2,263	2,456	26	236
5	Children	2,0	0.645	1.159	23	190
6	Frontiers in Sociology	1,7	0,56	1,142	64	150
7	Heliyon	4,0	0,55	1,27	33	76
8	Healthcare	2,5	0.533	0.893	36	76
9	Journal of Clinical and Translational Science	0,2	0,13	N/A	31	31
10	Innovation in Aging	5,4	0,817	1,646	235	22

Table 3. indicates the sources that published the most articles with the theme "Health Education" and at the same time received the most citations from published articles was the International Journal of Environmental Research and Public Health, with 686 articles (Number of Papers) and 3241 citations (number of citations).

Meanwhile, if analyzed based on the categories of article titles that are often cited, there are the top 10 article titles. First, the International Journal of Environmental Research and Public Health published an article entitled "Consumer Attitudes Towards Environmental Concerns of Meat Consumption: A Systematic Review" by Sanchez-Sabate & Sabate 2019 (Sanchez-Sabate & Sabaté, 2019). This article was cited 148 times, averaging 49.33 citations per year. Next in second place is an article entitled "Psychological distress, anxiety, family violence, suicidality, and wellbeing in New Zealand during the COVID-19 lockdown: A cross-sectional study" by Every-Palmer et al. in 2020 (Every-Palmer et al., 2020) published by PLOS ONE with 140 citations with an average of 70 citations per year. The third-ranked article written by Latkin et al. (Latkin et al., 2021) entitled "Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US" published by PLOS ONE with 105 citations with an average of 105 citations per year.

The second and third-ranked highly cited articles referred to the COVID-19 Pandemic. This implies that the global scientific community regards the COVID-19 pandemic as a significant matter of concern. Then, the individuals proceeded to present their thoughts in the form of scholarly publications, which were then submitted for publication in international journals. The objective is to effectively and expeditiously address the COVID-19 pandemic by means of high-quality and appropriate healthcare measures.

In the tenth (last) position is an article entitled "Are Differences in Physical Activity across Socioeconomic Groups Associated with Choice of Physical Activity Variables to Report?" by Stalsberg & Pedersen in 2018 (Stalsberg & Pedersen, 2018) published by the International Journal of Environmental Research and Public Health has 77 citations with an average citation of 19.25 per year. For more details, the ten most cited articles can be seen in Table 4.

Table 4. Top 10 articles with the most citations

Rank	Title	Year	Source Title	Document Type	Total Citations	TC/Y
1	Consumer Attitudes Towards Environmental Concerns of Meat Consumption: A Systematic Review (Sanchez-Sabate & Sabaté, 2019)	2019	International Journal of Environmental Research and Public Health	Article	148	49,33
2	Psychological distress, anxiety, family violence, suicidality, and wellbeing in New Zealand during the COVID-19 lockdown: A cross-sectional study (Every-Palmer et al., 2020)	2020	PLOS ONE	Article	140	70
3	Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US (Latkin, Dayton, Yi, Colon, & Kong, 2021)	2021	PLOS ONE	Article	105	105
4	County-Level COVID-19 Vaccination Coverage and Social Vulnerability — United States, December 14, 2020–March 1, 2021 (Hughes et al., 2021)	2021	MMWR Morbidity and Mortality Weekly Report	Article	105	105
5	The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff (Zalat, Hamed, & Bolbol, 2021)	2021	PLOS ONE	Article	83	83
6	Policymaking in a low-trust state: legitimacy, state capacity, and responses to COVID-19 in Hong Kong (Hartley & Jarvis, 2020)	2020	Policy and Society	Article	83	41,5
7	Coronavirus questions that will not go away: interrogating urban and socio-spatial implications of COVID-19 measures (Salama, 2020)	2020	Emerald Open Research	Article	81	40,5
8	The importance of urban natural areas and urban ecosystem services during the COVID-19 pandemic (Grima et al., 2020)	2020	PLOS ONE	Article	80	40
9	The Impact of COVID-19 Crisis upon the Consumer Buying Behavior of Fresh Vegetables Directly from Local Producers. Case Study: The Quarantined Area of Suceava County, Romania (Butu et al., 2020)	2020	International Journal of Environmental Research and Public Health	Article	79	39,5
10	Are Differences in Physical Activity across Socioeconomic Groups Associated with Choice of Physical Activity Variables to Report? (Stalsberg & Pedersen, 2018)	2018	International Journal of Environmental Research and Public Health	Article	77	19,25

Bibliographic Coupling Analysis

Bibliographic Coupling Analysis is a document type referenced together by two documents published later (Kessler, 1963). In this Bibliographic Coupling Analysis, three units of analysis are discussed, namely based on Documents, Journal Sources, and Author Organization. In this study, Bibliographic Coupling Analysis is limited by criteria; authors with five documents get a minimum of 15 citations per document.

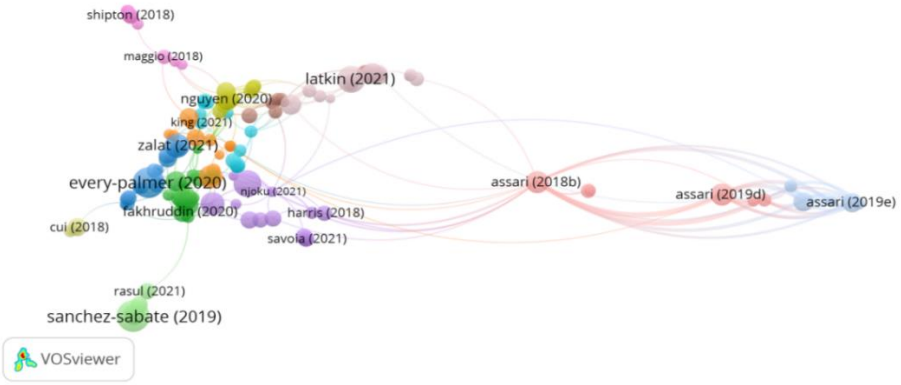


Figure 5. Bibliographic coupling analysis based on documents

Figure 5 shows the results of the coupling bibliographic analysis on Health Education based on documents, forming 13 clusters. Four clusters have the most significant nodes, namely cluster 1 (light pink), cluster 3 (blue), cluster 5 (purple), and cluster 11 (light green).

In cluster 11, the most cited article, namely the article entitled "Consumer Attitudes Towards Environmental Concern of Meat Consumption: A Systematic Review" from Sanchez-Sabate, R., & Sabate, J. (2019), was cited as many as 148 citations. Cluster 3's most cited article was "Psychological distress, anxiety, family violence, suicidality, and welfare in New Zealand during the COVID-19 lockdown: A cross-sectional study" from Every-Palmer, Susanna, et al. (2020) cited 140 citations. In Cluster 5, the article "County-Level COVID-19 Vaccination Coverage and Social Vulnerability-United States, December 14, 2020–March 1, 2021" by Hughes, Michelle M., et al. (2021) is one of the most frequently published articles and cited as many as 105 citations. Furthermore, the last one is in Cluster 1, the article "Mask Use, Social Distancing, Race Relations, and Gender of Intention of COVID-19 Vaccine Among Adults in the US" from Latkin, Carl A., et al. (2021) is one of the articles the most quoted, namely as many as 105 citations.

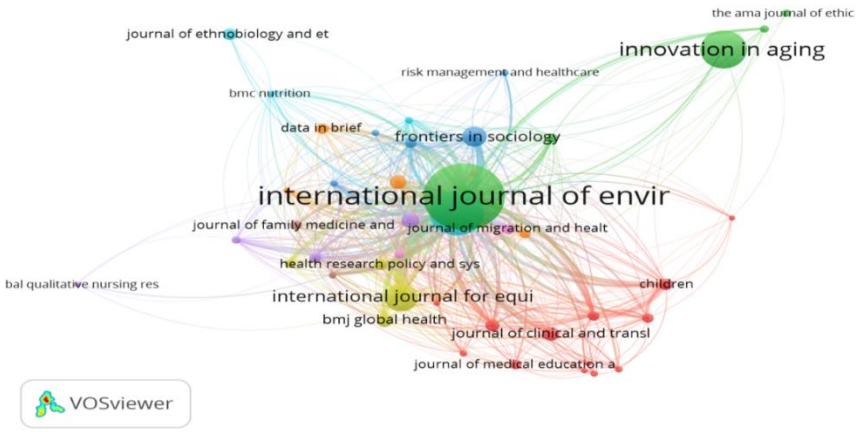


Figure 6. Bibliographic coupling analysis based on sources

The bibliographic analysis of the coupling in the Health Education network based on sources (Figure 6) shows that ten network clusters from 44 journal sources publish articles on health education. The dominant journal based on the number of documents and citations is cluster 1 (red). The data shows that the journal "International journal of environmental research and public health" is the journal with the most documents (686) and the most citations (3241).

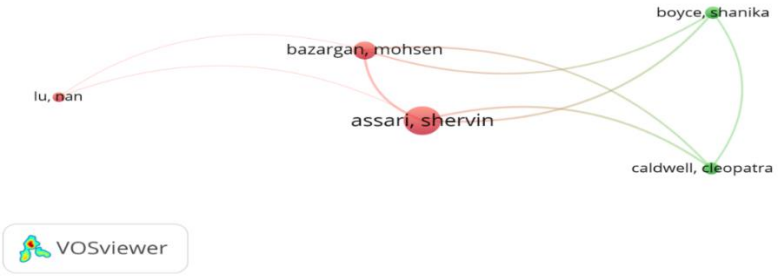


Figure 7. Bibliographic coupling analysis based on authors

Bibliographic coupling analysis based on the authors' network (Figure 7) shows 2 clusters of the author's networks with the theme of Health Education. In cluster 1 (in red), there are three authors: Shervin Assari, Mohsen Bazargan, and Nan Lu. In cluster 2 (green), two authors are Shanika Boyce and Cleopatra H Caldwell. The author who has published the most articles on the theme of Health Education is Shervin Assari, with 27 documents cited 477 times.

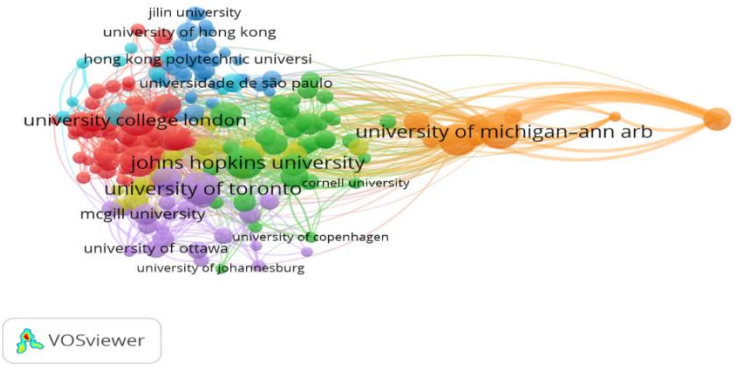


Figure 8. Bibliographic coupling analysis based on organizations

Coupling bibliographic analysis in Health Education based on the author's organizational network (Figure 8) shows that there are 7 clusters. The dominant author organization network is cluster 1 (red), containing 61 author organizational affiliations. In addition, the data shows the five most dominant organizations based on the number of documents, namely first, the University of Michigan–Ann Arbor with 52 documents and 603 citations in cluster 7. Second, the University of Toronto, with 46 documents and 137 citations, is in cluster 5. Third, the University of California, Los Angeles, has 44 documents and 538 citations in cluster 7.

Fourth, Johns Hopkins University, with 44 documents and 406 citations, is in cluster 2. Fifth, the London School of Hygiene & Tropical Medicine, with 43 documents and 246 citations, is in cluster 1.

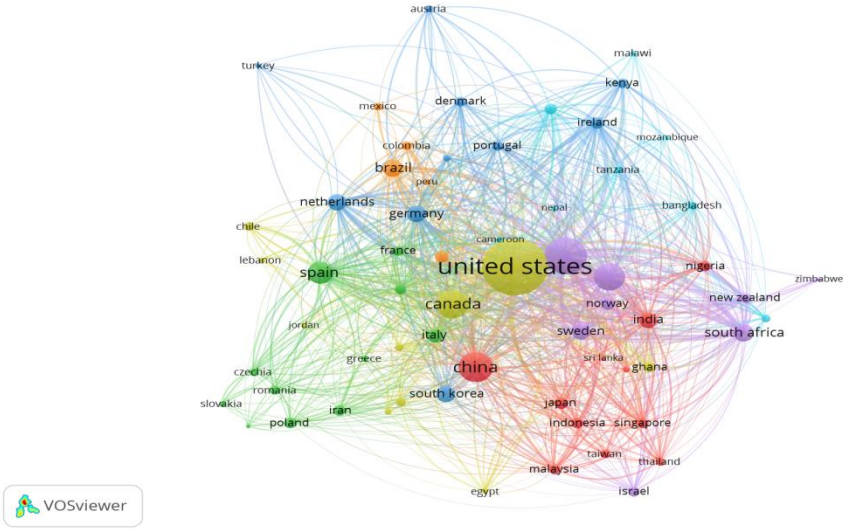


Figure 9. Bibliographic coupling analysis based on countries

Bibliographic coupling analysis based on the country network (Figure 9) shows that there are 7 clusters. In cluster 1 (red), there are 11 networks based on countries: China, India, Indonesia, Japan, Malaysia, Nigeria, Singapore, Sri Lanka, Taiwan, and Vietnam. In cluster 2 (colored green), there are 11 country networks: Belgium, Czechia, France, Greece, Iran, Italy, Lithuania, Poland, Romania, Slovakia, and Spain.

In cluster 3 (dark blue), there are ten country networks: Austria, Denmark, Finland, Germany, Ireland, Kenya, Netherlands, Portugal, South Korea, and Turkey. In cluster 4 (yellow), there are ten country networks: Canada, Chile, Egypt, Ghana, Jordan, Lebanon, Pakistan, Saudi Arabia, the United Arab Emirates, and the United States. In cluster 5 (purple), there are eight country networks: Australia, Israel, New Zealand, Norway, South Africa, Sweden, the United Kingdom, and Zimbabwe. In cluster 6 (light blue), there are eight country networks: Bangladesh, Cameroon, Malawi, Mozambique, Nepal, Switzerland, Tanzania, and Uganda. In cluster 7 (orange-colored), there are five country networks: Brazil, Colombia, Ethiopia, Mexico, and Peru.

The five countries with the most published articles and the most cited authors are the first, the United States, with 802 documents and 4029 citations. Both United Kingdom has as many as 331 documents and 1815 citations. Third, China with 224 documents and 1151 citations. Fourth, Canada with 201 documents and 1010 citations. Fifth, Australia with 181 documents and 1134 citations.

Based on the data, it appears obvious that the five countries demonstrated a significant emphasis on health education during the COVID-19 epidemic. The inference can be drawn that these five nations continue to prioritize health education within their respective jurisdictions despite being classified as advanced countries. The implications of this analysis suggest that there is a need for ongoing efforts in developing countries worldwide to enhance health education among their populations, akin to the practices observed in affluent nations. This is crucial in order to sustain the upward trajectory of public health levels in the developing world.

4. CONCLUSION

During the COVID-19 pandemic, health education emerged as a topic of significant interest, as evidenced by its ranking as the second and third most widely read articles on the subject. The five countries with the most published articles and the most cited authors are the

United States, the United Kingdom, China, and Australia. It seems clear that during the COVID-19 outbreak, the five countries put a lot of effort into health education. It appears likely that these five countries, even though they are considered to be advanced, continue to give high priority to health education in their own countries. Based on the results of this study, it seems that poor countries around the world need to keep working to improve health education for their people, just like rich countries do. It is very important to do this so that the improving health of people in the poor world can continue.

REFERENCES

Abu-Baker, N. N., Al Diabat, L. A., & Alnuaimi, K. (2022). The effect of health education on second-hand smoke knowledge and exposure among pregnant women in Jordan: A quasi-experimental study. *Heliyon*, *8*(9), e10647. https://doi.org/https://doi.org/10.1016/j.heliyon.2022.e10647

Butu, A., Brumă, I. S., Tanasă, L., Rodino, S., Dinu Vasiliu, C., Doboș, S., & Butu, M. (2020). The impact of COVID-19 crisis upon the consumer buying behavior of fresh vegetables directly from local producers. Case study: The quarantined area of Suceava County, Romania. *International Journal of Environmental Research and Public Health*, *17*(15), 5485.

Every-Palmer, S., Jenkins, M., Gendall, P., Hoek, J., Beaglehole, B., Bell, C., … Stanley, J. (2020). Psychological distress, anxiety, family violence, suicidality, and wellbeing in New Zealand during the COVID-19 lockdown: A cross-sectional study. *PLoS One*, *15*(11), e0241658.

Fu, H., Ge, R., Huang, J., & Shi, X. (2022). The effect of education on health and health behaviors: Evidence from the college enrollment expansion in China. *China Economic Review*, *72*, 101768. https://doi.org/https://doi.org/10.1016/j.chieco.2022.101768

Grima, N., Corcoran, W., Hill-James, C., Langton, B., Sommer, H., & Fisher, B. (2020). The importance of urban natural areas and urban ecosystem services during the COVID-19 pandemic. *Plos One*, *15*(12), e0243344.

Hartley, K., & Jarvis, D. S. L. (2020). Policymaking in a low-trust state: legitimacy, state capacity, and responses to COVID-19 in Hong Kong. *Policy and Society*, *39*(3), 403–423.

Hughes, M. M., Wang, A., Grossman, M. K., Pun, E., Whiteman, A., Deng, L., … Stokley, S. (2021). County-level COVID-19 vaccination coverage and social vulnerability—United States, December 14, 2020–March 1, 2021. *Morbidity and Mortality Weekly Report*, *70*(12), 431.

Karanatsiou, D., Misirlis, N., & Vlachopoulou, M. (2017). Bibliometrics and altmetrics literature review. *Performance Measurement and Metrics*, *18*(1), 16–27. https://doi.org/10.1108/PMM-08-2016-0036

Kessler, M. M. (1963). Bibliographic coupling between scientific papers. *American Documentation*, *14*(1), 10–25.

Kolahi, J., & Khazaei, S. (2016). Altmetric: Top 50 dental articles in 2014. *British Dental Journal*, *220*(11), 569–574. https://doi.org/10.1038/sj.bdj.2016.411

Kuo, C.-P., Li, P.-C., Chuang, H.-L., Lee, S.-H., Liao, W.-C., & Lee, M.-S. (2021). The effect of multimedia health education on pain and anxiety in women undergoing mammography in Taiwan. *Taiwanese Journal of Obstetrics and Gynecology*, *60*(6), 1084–1089. https://doi.org/https://doi.org/10.1016/j.tjog.2021.09.021

Latkin, C. A., Dayton, L., Yi, G., Colon, B., & Kong, X. (2021). Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US. *PloS One*, *16*(2), e0246970.

Lee, M.-C., Wang, L.-H., Lin, T.-C., Chang, Y.-T., Cheng, F.-C., & Chiang, C.-P. (2022). The impact of integrating oral health education into a human physiology curriculum for students of early childhood education. *Journal of Dental Sciences*, *17*(3), 1329–1334.

https://doi.org/https://doi.org/10.1016/j.jds.2022.04.012

Makadzange, E. E., Peeters, A., Joore, M. A., & Kimman, M. L. (2022). The effectiveness of health education interventions on cervical cancer prevention in Africa: A systematic review. *Preventive Medicine*, *164*, 107219. https://doi.org/https://doi.org/10.1016/j.ypmed.2022.107219

Milbourn, B., Black, M. H., Afsharnejad, B., Snyman, Z., Baker-Young, E., Thompson, C., … Girdler, S. (2022). The "Talk-to-Me" MOOC intervention for suicide prevention and mental health education among tertiary students: Protocol of a multi-site cross-over randomised controlled trial. *Contemporary Clinical Trials*, *112*, 106645. https://doi.org/https://doi.org/10.1016/j.cct.2021.106645

Przybylska, D., Borzęcki, A., Drop, B., Przybylski, P., & Drop, K. (2014). Health Education as an Important Tool in the Healthcare System. *Polish Journal of Public Health*, *124*(3), 145–147. https://doi.org/doi:10.2478/pjph-2014-0032

Putera, P. B., Suryanto, S., Ningrum, S., & Widianingsih, I. (2020). A bibliometric analysis of articles on innovation systems in Scopus journals written by authors from Indonesia, Singapore, and Malaysia. *Science Editing*, *7*(2), 177–183.

Salama, A. M. (2020). Coronavirus questions that will not go away: interrogating urban and socio-spatial implications of COVID-19 measures. *Emerald Open Research*, *2*.

Sanchez-Sabate, R., & Sabaté, J. (2019). Consumer attitudes towards environmental concerns of meat consumption: A systematic review. *International Journal of Environmental Research and Public Health*, *16*(7), 1220.

Smelser, N. J., & Baltes, P. B. (2001). *International encyclopedia of the social & behavioral sciences* (Vol. 11). Elsevier Amsterdam.

Stalsberg, R., & Pedersen, A. V. (2018). Are differences in physical activity across socioeconomic groups associated with choice of physical activity variables to report? *International Journal of Environmental Research and Public Health*, *15*(5), 922.

Weingart, P. (2005). Impact of bibliometrics upon the science system: Inadvertent consequences? *Scientometrics*, *62*(1), 117–131.

Yunindyawati. (2023). *Modul Sosiologi Kesehatan*. *Unsri Press*.

Zalat, M. M., Hamed, M. S., & Bolbol, S. A. (2021). The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. *PloS One*, *16*(3), e0248758.

Zhao, X. (2021). Analysis on the integrated mode of mental health education for employees in electric power enterprises under the background of mass education. *Energy Reports*, *7*, 218–229. https://doi.org/https://doi.org/10.1016/j.egyr.2021.10.036