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SCIENTIFIC MAPPING ANALYSIS ON HEALTH EDUCATION RESEARCH IN EDUCATION

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Abstract

It is known that almost every field of science is related to the subject of health nowadays. This can be considered as evidence of both the importance given to the subject by the scientific community and the seriousness with which it is approached from a human perspective. In health studies, which are addressed by almost every field of science, education is the main actor. This is because achieving an individual and societal understanding of health and raising awareness about being healthy seems to be possible only through systematic education. Therefore, the issue of health education has special importance in achieving the objectives of all studies undertaken by these scientific disciplines. In line with this importance, the rapid increase in health education studies in recent years has drawn the attention of researchers from many different disciplines, especially social sciences. So, what kind of publications are made in the field of health education in the social sciences? To answer this question, the study aims to analyze the bibliometric aspects of journal publications related to health education in social sciences research. The dataset collected from the Scopus database was examined for the specified analysis. Accordingly, although there have been some small fluctuations in the number of publications related to health education over the years, there seems to be a general trend of increase. The United States is among the most productive countries in the field of health education worldwide. On the other hand, it is observed that the Journal of School Health is the most productive and influential in the field of health education in social sciences; and Qazvin University of Medical Sciences is prominent among the most cited institutions. It is hoped that the results obtained from this research will provide a general overview to researchers working on health education.

Keywords: Social sciences; health education; Scopus; map analysis

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1. Introduction

According to the current understanding of health, the most important responsibility for an individual to maintain or improve their health lies with the individual. This undoubtedly requires the individual to have sufficient knowledge, skills, thoughts, and values. However, many people do not take their health seriously until their health is compromised due to a lack of sufficient knowledge and skills, or due to attitudes and behaviors such as carelessness, indifference, and laziness, even if they possess the necessary knowledge and skills. This situation makes it necessary to develop positive attitudes, values, and beliefs towards the subject, and to transform knowledge and skills into behavior. However, this transformation is not an easy process that occurs automatically. Especially, the conditions or situations that individuals are exposed to from childhood often cannot help people to learn, adapt, and apply knowledge, skills, values, and attitudes about the subject correctly, and may even lead to negative knowledge, attitudes, and values development. In this context, it becomes an indispensable concept for both individual and social future to provide correct and systematic health education to children from an early age, particularly in the family, environment, and education institutions. Therefore, providing planned and systematic health education to children from an early age is important for adopting, internalizing, and transforming correct and effective health understanding into behavior. The explanations for health education obtained from the literature review in the following process support this view.

1.1. Literature Review

According to recent statements, the widely accepted view for promoting and developing good health is that individuals are primarily responsible for their own health status. However, in order to take on this responsibility, individuals need to be educated about the nature and causes of health/illness, their lifestyle-related behaviors, and their personal risk levels. In this context, any practice that aims to increase individuals' knowledge levels on health/illness-related topics and directly influence their skills, value, belief, and attitude systems for behavior change is called health education (Whitehead, 2004). This is because individuals need to develop healthy living skills and behaviors to increase their control over their lives. The development of these skills primarily involves adopting and adhering to the principles of healthy living behaviors. It is well known that health education plays a crucial role in acquiring and maintaining these healthy living behaviors (Özenoğlu, Yalnız, & Uzdil, 2018). Therefore, providing planned and systematic health education to individuals from an early age is crucial for adopting and internalizing a correct and effective understanding of health and transforming it into behavior.

Health education, in its most general sense, according to the World Health Organization (WHO) committee, “aims to convince individuals to adopt and apply measures to maintain a healthy lifestyle; to familiarize them with how to use health services correctly; and to encourage individuals to make decisions collectively or individually to improve their health status and environment” (Gözüm and Bağ, 1998, p.33; Ulusoy Gökkoca, 2001, p.371). In other words, the goal of health education is to identify behaviors that affect people's health and to provide them

with knowledge, skills, values, attitudes, and responsibilities to address those behaviors (Gözüm and Bağ, 1998).

On the other hand, the World Health Organization defines health not only as the absence of physical illness but as a "state of complete physical, mental, and social well-being." In order to create and maintain this state of well-being, individuals must be systematically educated and trained from birth based on the conditions they are in. However, this situation should not be limited to childhood years. On the contrary, it should cover a lifelong process. Therefore, individuals need to acquire the necessary knowledge, skills, values, and attitudes to maintain and improve health throughout their entire lives, from infancy to old age. In addition, maintaining health and well-being is not limited to individuals alone. Because not only individuals but also their families and entire communities may be affected by its deterioration. Therefore, to build a healthy community, individuals must first be raised to exhibit behaviors that meet their health-related needs (Özenoğlu, Yalnız, and Uzdil, 2018). The main purpose of health education defined by the World Health Organization is to "enable individuals and communities to acquire desired behaviors that will meet their health needs" (Çoban and Özcebe, 2018, p.344).

In the literature, the functions of health education are generally described as: a) providing gains that affect health-related values, beliefs, attitudes, and motivation; b) realizing learning about health or diseases through gaining, digesting, and spreading knowledge; c) leading the way for behavioral changes aimed at developing skills and lifestyles related to being healthy... In this context, the precursors of health education activities include individuals' ability to interpret and understand their actions and behaviors and to act according to any resulting tension, to give priority to their health, to act based on the desire to avoid or reduce any negative health condition, and so on. For these activities to be effective, they need to be targeted at the individual level and designed to influence attitudes, values, and belief systems, in addition to providing information (Whitehead, 2004, p.313-314).

As seen, the foundation of health education is often defined as achieving behavior change for the development of a good understanding of health. In this context, the characteristics of health education can be summarized as follows: 1) Helping individuals change their health lifestyles positively to promote and develop health, 2) Assisting individuals in shaping their personal decisions and other lifestyle behaviors, and 3) based on the assumption that the outcomes will significantly improve healthy behaviors (Minkler, 1989). Based on this assumption, it is evident that health education is an important mechanism to improve individuals' health and well-being because it primarily reduces the need for health services, associated costs, and the suffering of individuals. It also helps promote and sustain healthy lifestyles and positive choices, nourishing physical and mental well-being by supporting human development, relationships, and personal, family, and community welfare (Feinstein et al., 2006).

In their research using health data from European countries, Brunello, Fort, Schneeweis, and Winter-Ebmer (2016) found that education has a significant protective effect on the health of European men and women over 50 years old (approximately one-fourth in the short term and approximately one-third in the long term). Feinstein, Sabates, Anderson, Sorhaindo, and Hammond (2006) also found significant international evidence of the strong association

between education and health determinants such as health behaviors, risky contexts, and preventive service utilization. For example, Lleras-Muney (2005) found that an additional year of education reduced the likelihood of dying by 3.6% for individuals born in the United States between 1914 and 1939; Spasojevic (2003) found that an additional school year reduced the risk of poor health by 18.5% for Swedish male groups born between 1945 and 1955; and Breierova and Duflo (2004) found that an increase in average years of education in Indonesia reduced child mortality from an average of 22.5% to approximately 10% (cited in Feinstein et al., 2006). Many studies, such as these, indicate that individuals who receive health education for longer periods tend to have better health and healthier behaviors. Although many factors impact health, research consistently highlights education as one of the most significant factors influencing health.

Given these statements and research findings, it is crucial to raise awareness and develop attitudes and behaviors towards gaining accurate information, skills, attitudes, and behaviors for young people from an early age to improve health. To achieve this, it is necessary to prepare and implement educational activities systematically, tailored to age and level. Systematic education, of course, begins in educational institutions. Therefore, starting from preschool education, educational curricula should be prepared in a way that contributes to students' acquisition of knowledge, skills, attitudes, and values necessary for improving their health and preventing diseases. Childhood is "the period when basic health behaviors are shaped and health protection programs are most effective" (Sönmez et al., 2001, p.33). Therefore, health education given to children in schools systematically is of great importance for a healthy future (Taşpınar, 2011). In this context, elementary school years, in particular, are "the period when a child can be directed towards positive behaviors and influenced the most by external information" (Mercin, 2005, p.76). If children are expected to take more responsibility for protecting and improving their health, it is essential to provide them with basic knowledge, skills, attitudes, and values necessary for their lives, such as healthy eating, hygiene, and prevention of infectious diseases, especially in elementary school years (Sönmez et al., 2001). Accordingly, it is aimed to provide children with the basic knowledge, skills, attitudes, and values necessary for their lives through life knowledge and social studies courses, starting from the first years of primary school [Ministry of National Education (MEB), 2018a; 2018b]. When the curricula of these courses are examined, it is seen that these gains are mainly focused on healthy eating, personal care, hygiene, and cleanliness, which are the basics for improving students' health and preventing diseases.

Looking at the studies conducted on the subject, there appears to be a strong and consistent connection between nutrition, personal care, hygiene, and cleanliness in maintaining health. It is also noted that many infectious diseases and other epidemic diseases spread rapidly in unclean, unhygienic environments and unhealthy nutrition conditions. Therefore, individuals need to have sufficient knowledge and skills regarding basic personal hygiene and cleanliness to protect their health (Oyibo, 2012). However, this alone is not sufficient, as according to behavior theory, knowing something is not enough for it to be converted into behavior. The individual's behavior must also have the intention to implement it. Therefore, what is known must also be supported effectively (belief, value, attitude, motivation, etc.) for the behavior to occur, and willingness or obligation must also be present (Tahiroğlu and Esener, 2022, p.1380).

In this context, the World Health Organization recommends that “health and education authorities, teachers, students, parents, and community leaders work together to make schools healthier. This will help students develop positive health-related knowledge, attitudes, and behaviors such as protecting their own and others' health, making appropriate decisions regarding their health, and controlling their living conditions”. In this regard, a health literacy and education approach should be adopted, especially in health education processes in schools (Çoban and Özcebe, 2018, p.333-344).

Health literacy is a relatively new concept in promoting and improving health. It is a compound term used to describe a range of outcomes related to health education and communication activities. From this perspective, health education can be seen as an activity aimed at developing health literacy (Nutbeam, 2000, p. 259). This is because health literacy is "the cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health" (Dost and Üner, 2020, p. 475). Health literacy, defined by the World Health Organization as "the degree to which individuals can obtain, process and understand basic health information and services needed to make appropriate health decisions" (Aslantekin and Yumrutaş, 2014, p.328), “covers many important issues necessary for positive health outcomes, such as evaluating acquired knowledge, implementing treatments, and understanding the healthcare system” (Sezgin, 2014, p. 73). Therefore, it is seen as an important requirement for the successful implementation of health education, especially in the development of health literacy. This is because children may not understand many complex health information and skills through the educational materials presented to them (Çoban & Özcebe, 2018).

In this context, health education contributes to improving the quality of life by addressing basic health problems, preventing diseases, protecting and improving health consciousness, and providing conscious knowledge, skills, and behaviors to be implemented during examination and treatment processes (Özsarı, 2013; Gürel and Akçil Ok, 2021). However, it is also known that there are many problems in imparting this knowledge and skills and creating behavior change (Yurdakul and Ardıç Çobaner, 2015). In order to overcome these problems, it is crucial to plan and organize health education well, taking into account the country's trained human resources in this field (Özgül, 2018). In this process, “it is important to provide training to teachers, who are the main protagonists in the education sector accompanying the health sector, to increase their health literacy levels, which is vital for both themselves and society”. This is because teachers play a key role in the health education process at school. Therefore, the health literacy and health competence of teachers play a vital role in the effective implementation of health education in schools (Dost and Üner, 2020, p. 475-477).

When reviewing the relevant literature on the subject, it is seen that many different studies have been conducted on health education (Arslan and Filiz, 2020; Demir and Gözüm, 2011; Göktalay, Cengiz Özyurt, Şakar Coşkun, Çelik, 2011; Golden & Earp, 2012; Hoffmann & Worrall, 2004; Kann, Telljohann, and Wooley, 2007; Özgül, 2018; Lawrance & McLeroy, 1986; Jensen, 1997; Sloane & Zimmer, 1993; Simonds, 1974; Yiğitbaş, Deveci, Açık, Ozan, Oğuzöncül, 2013; Yücesan and Ayaz Alkaya, 2018; Whitehead, 2004; Zeren and Gürsoy, 2018).

In this context, for example, Siyez, Öztürk, Esen & Kağnıcı (2018) systematically examined sexual health education programs for university students.

On the other hand, Selva-Pareja, Ramos-Pla, Mercadé-Melé, and Espart (2022) analyzed the number of publications, citations, authors, collaborative works, keyword trends, keyword developments, and related term clusters of publications on health education and health literacy published between 2000 and 2021 in Web of Science to provide an analysis. According to the study, the publications on the subject increased unevenly until 2020 and decreased significantly in 2021. In a study in which Kondilis, Kiriaze, Athanasoulia, and Falagas (2008) conducted a bibliometric analysis of studies conducted in the field of health literacy between 1991 and 2005, it was found that European countries produced 1/3 fewer studies than the USA. In addition, the study stated that the countries that produced the most publications on the subject in order from Europe were the Netherlands, Sweden, Germany, Italy, and France, and therefore, European countries do not have similar standards in terms of health literacy. Akyüz (2021) also presented the scientific map of the health literacy field strategically and thematically. The study mentioned that there has been an increase in research on health literacy since 2004 and that the USA has conducted the most studies among all countries from 1975 to 2019. Bankson (2009) examined studies published between 1997 and 2007 in databases such as CINAHL, HealthSource: Nursing/Academic Version, PubMed, SOCIndex, PsycINFO, Academic Search Premiere, Education Full-Text, ERIC, and LISTA. Accordingly, it was determined that studies showed an increasing trend from 2003 to 2007. However, it is seen that not all databases (especially in the field of social sciences) related to the subject were scanned in these studies.

In this study, a bibliometric analysis was conducted on studies related to health education in the social sciences field, which are available in the Scopus database, unlike the previous studies mentioned above. In this context, the focus was on the studies scanned in the social sciences field in the Scopus database, with the author keywords "health education," and the aim was to reveal the state of the social science research dimension of health education literature. In other words, the current study aims to provide a different perspective from previous studies by accessing studies published in the Scopus database that are solely focused on health education and have not been previously examined and to comprehensively examine the relevant subject area. Therefore, a bibliometric analysis of studies related to health education was conducted to examine the subject area holistically. The study aims to answer the following research questions:

1. How is the distribution of articles published on health education in the social sciences field by year?
2. What are the most cited articles related to health education in the social sciences field?
3. Who are the most prolific authors, journals, institutions, and countries in publishing and citing articles related to health education in the social sciences field?
4. What are the most commonly used keywords in articles published on health education in the social sciences field?
5. Which institutions and authors stand out in inter-institutional and inter-author collaboration (co-citation network) related to health education in the social sciences field?

2. Method

2.1. Research Pattern

In this study, the studies conducted on health education in the field of social sciences in the Scopus database were analyzed using the bibliometric analysis method. When the literature of the field is examined, bibliometric analysis is seen to aim to reveal the characteristics of studies that have been carried out in a certain field (such as subject area, scientific discipline, or a specific journal) by adhering to statistical and mathematical methods (Pritchard, 1969) or to examine studies and findings holistically that have been developed specifically for a certain area (Zupic & Čater, 2015). In this context, in the current study, a holistic perspective was created by conducting a bibliometric analysis based on studies related to this topic using the keyword "health education," and this information was presented visually using modern bibliometric techniques.

2.2. Data Set of the Research

The screening criteria for the study were determined before the dataset was created to ensure the replicability of the research, highlight the uniqueness of the study compared to other studies, and fill the gaps in previous research by identifying the gaps. The first criterion was to identify the main keywords to be screened. As a result of the relevant literature review, it was decided that the keywords "health education" along with different search terms such as "primary school," "elementary school," "secondary school," and "middle school" (e.g., "health education," "primary school") would be sufficient for the purpose of the research. The second criterion was created by deciding on which screening area of the Scopus database the identified keywords would be searched. When the relevant literature was examined, it was observed that the "topic" (article title, abstract, keywords) area was selected for screening in bibliometric studies conducted on research in the Scopus database. This sometimes resulted in the inclusion of many irrelevant studies in the analysis. Therefore, to focus on relevant primary studies, the second criterion was to conduct the screening in the "keywords" search area. As a result of this decision, 1411 studies were obtained. The third criterion in the current study was to select the studies in the social sciences research category of the Scopus database. The purpose of selecting this category was because the researchers' educational research is listed under the social sciences category. After the screening was conducted based on this criterion, a total of 205 studies were included in the research. Another criterion was to determine the publication type, and after the type of publication was determined to be an article, a total of 189 articles were obtained. Finally, the publication year range was determined as a criterion for the study. No restriction was imposed of the starting year of the publication in the study, but studies conducted in 2023 were excluded since the year has not ended. Furthermore, there was no restriction on the language and type of publication in the screened studies, and thus, the final dataset consisted of 184 studies.

2.3. Analysis of Research Data

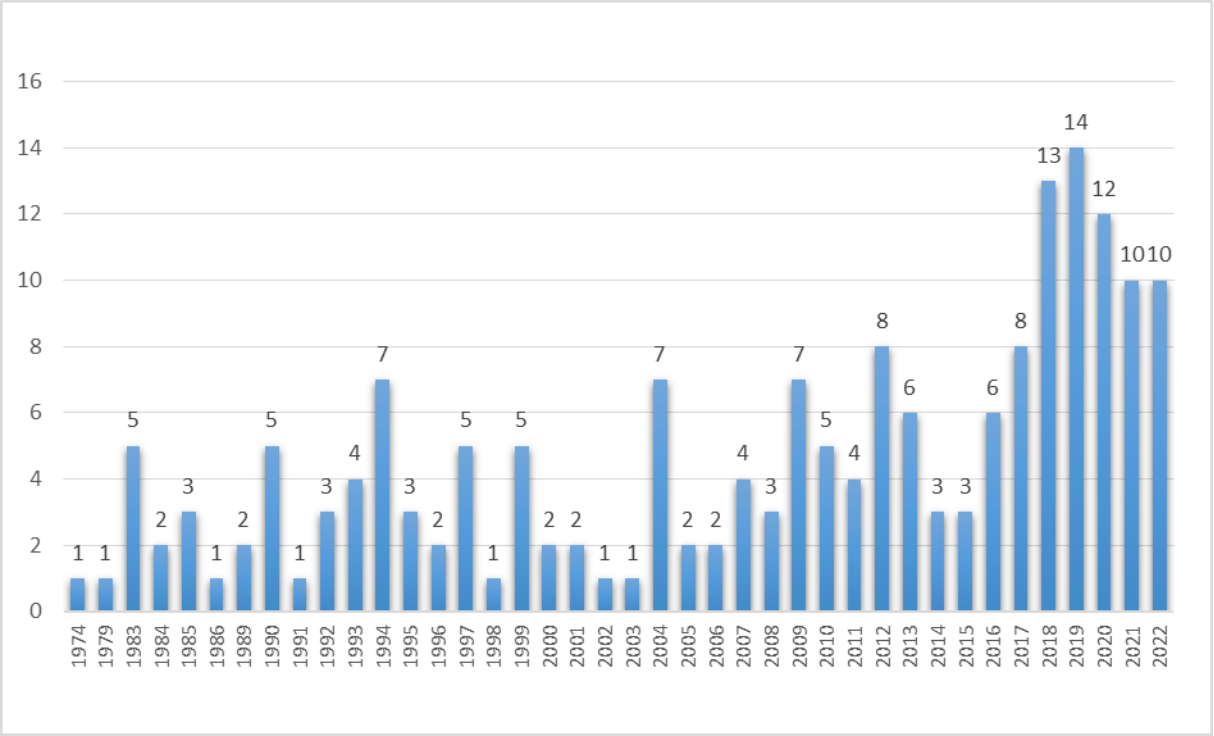
The distribution of studies conducted on health education over the years was first examined in the study. Following this examination, a bibliometric analysis of the research was conducted. In this context, citation analysis was first performed. With citation analysis, the most cited articles, authors, journals, institutions, and countries on health education were identified. After this determination, the authors, journals, institutions, and countries that conducted the most research on health education were discussed with continued citation analysis. Then, through co-author analysis, the institutions that collaborated the most on health education were identified. Afterward, co-citation analysis was conducted to determine the authors who were most frequently cited together on health education. Finally, co-word analysis was used to reveal the most frequently used author keywords in studies related to health education. After these determinations and identifications, bibliometric data obtained for 184 studies were analyzed using the VOSviewer software. In the literature of the field, it is known that the VOSviewer software can create networks and maps based on bibliometric data and visualize them. It is known that these visualizations enable a more detailed and comprehensive analysis of bibliometric data (van Eck & Waltman, 2019).

3. Results

This study presents a bibliometric analysis of the research conducted on health education in the social sciences category indexed in the Scopus database. The findings of the research are presented below.

3.1. Distribution of studies by year

According to the information obtained from the Scopus database, the distribution of studies on health education in the social sciences category by year is presented in Graph 1.



Graph 1. Distribution of studies by year.

According to Graph 1, it can be seen that the first publication related to health education in the indexes and categories was published in 1974, and there has been a significant increase in the number of publications as of 2018. Although there have been occasional minor fluctuations or stagnations in the number of publications, it was determined that a certain level of publications was produced after 2018, and there was a decrease in the number of research after 2019.

3.2. Most cited studies on health education

According to the information obtained from the Scopus database, Table 1 presents the top 10 most cited studies related to health education in the social sciences category.

Table 1. Most cited studies.

	Article	Author	Year	Journal Name	Citation
1	"Schools as social complex adaptive systems: A new way to understand the challenges of introducing the health promoting schools concept"	"Keshavarz Mohammadi, N., Nutbeam, D., Rowling, L., Khavarpour, F."	2010	Social Science and Medicine	178

2	"Short-term impact of safer choices: A multicomponent, school-based HIV, other STD, and pregnancy prevention program"	"Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Harrist, R., Baumler, E., Weil, M."	1999	Journal of School Health	117
3	"A pilot study to examine the effects of a nutrition intervention on nutrition knowledge, behaviors, and efficacy expectations in middle school children: Research article"	"Fahlman, M.M., Dake, J.A., McCaughtry, N., Martin, J."	2008	Journal of School Health	87
4	"Correlates of Condom Use and Number of Sexual Partners Among High School Adolescents"	"Richter, D.L., Valois, R.F., McKeown, R.E., Vincent, M.L."	1993	Journal of School Health	76
5	"Knowledge, risk perception of AIDS and reported sexual behaviour among students in secondary schools and colleges in Tanzania"	"Maswanya, E.S., Moji, K., Horiguchi, I., Nagata, K., Aoyagi, K., Honda, S., Takemoto, T."	1999	Health Education Research	70
6	"Participation of the school community in AIDS education: An evaluation of a high school programme in South Africa"	"Kuhn, L., Steintberg, M., Mathews, C."	1994	AIDS Care	58
7	"Primary schoolchildrens' perceptions of smoking: Implications for health education"	"Porcellato, L., Dugdill, L., Springett, J., Sanderson, F.H."	1999	Health Education Research	54
8	"Increased sexual abstinence among in-school adolescents as a result of school health education in Soroti district, Uganda"	"Shuey, D.A., Babishangire, B.B., Omiat, S., Bagarukayo, H."	1999	Health Education Research	53
9	"Increasing fruit and vegetable intake among children: Comparing	"Reinaerts, E., Crutzen, R., Candel, M., De Vries, N.K., De Nooijer, J."	2008	Health Education Research	52

	long-term effects of a free distribution and a multicomponent program"				
10	"Sexuality Education: A More Realistic View of its Effects"	"Kirby, D."	1985	Journal of School Health	51

Upon analysis of Table 1, it can be seen that the most cited study is "Schools as social complex adaptive systems: A new way to understand the challenges of introducing the health promoting schools concept" conducted by Keshavarz Mohammadi, N., Nutbeam, D., Rowling, L., Khavarpour, F. (2010), with 178 citations. This study is a qualitative research examining the implementation of health promoting school programs in primary schools in Sydney, Australia.

3.3. Most prolific and highly cited authors on health education

According to the information obtained from the Scopus database, a density map of the 39 Top-publishing researchers in health education in the social sciences category is presented in Figure 1.

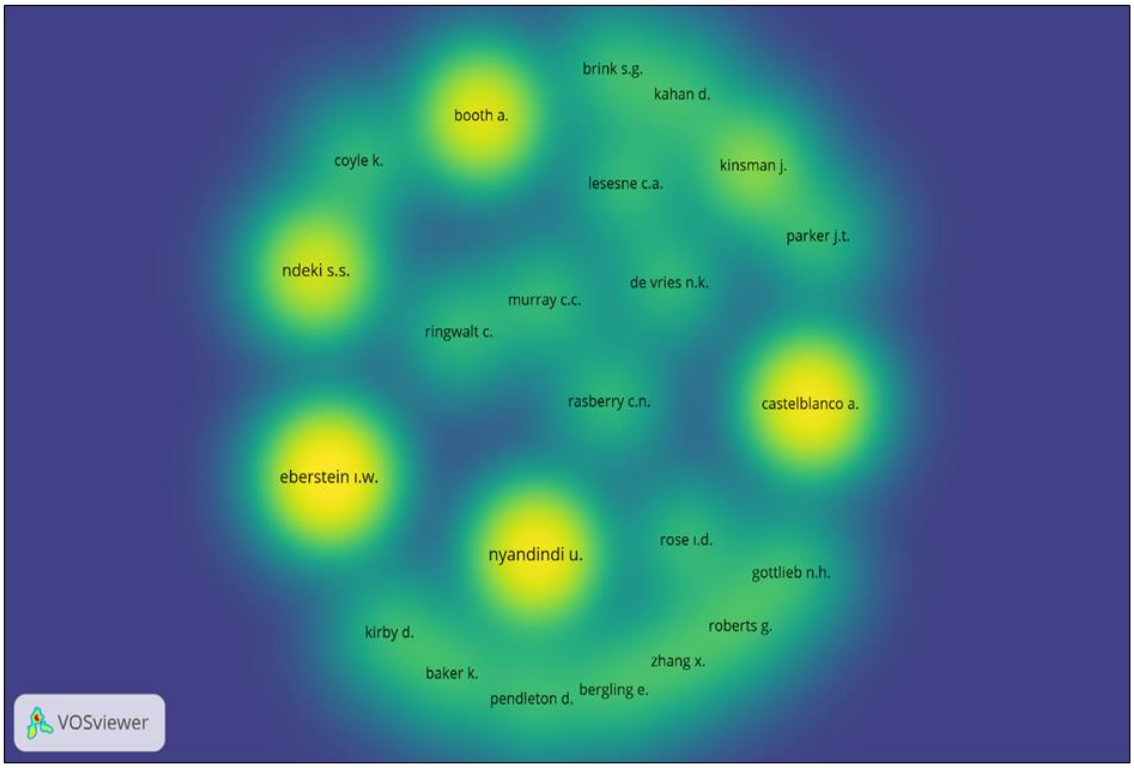


Figure 1. Top-publishing researchers in the field of health education according to the Scopus database

Upon examining Figure 1, the most productive researchers in the field of health education in the social sciences category are highlighted as follows due to their having the most research on the topic; "Nyandindi, Ursuline, S." (n:4), "Ndeki, Sidney, S." (n:3), and "Eberstein, Isaac W." (n:3), "Castelblanco, Andrea" (n:2), "Booth, Alison Olivia" (n:2). Other researchers in the figure have two research articles each.

According to the information obtained from the Scopus database, data on the top 10 most cited researchers in the field of health education in the social sciences category are presented in Table 2.

Table 2. Most cited researchers

	Author name	Number of citations	Number of Publications	Citation Average
1	Keshavarz-Mohammadi, Nastaran	202	2	101
2	Nutbeam, Don	202	2	101
3	Khavarpour, Freidoon A.	178	1	178
4	Rowling, Louise	178	1	178
5	Kirby, Douglas B.	168	2	84
6	Coyle, Karin K.	118	2	59
7	Banspach, Stephen	117	1	117
8	Basen-Engquist, Karen	117	1	117
9	Baumler, Elizabeth R.	117	1	117
10	Harrist, Ronald	117	1	117

According to Table 2, "Keshavarz-Mohammadi, Nastaran" and "Nutbeam, Don" stand out as the two most cited researchers in the field of health education, with 202 citations each. Additionally, "Keshavarz-Mohammadi, Nastaran" is also among the most prolific researchers in terms of publication output (Figure 1). On the other hand, "Khavarpour, Freidoon A." and "Rowling, Louise" are among the most cited researchers besides them, with 178 citations each. Therefore, it can be said that the information in Table 2 is consistent with the information presented in Table 1.

3.3. Most cited journals related to health education

According to the information obtained from the Scopus database, 66 journals related to health education in the social sciences category were identified. The density map for these journals is presented in Figure 2.

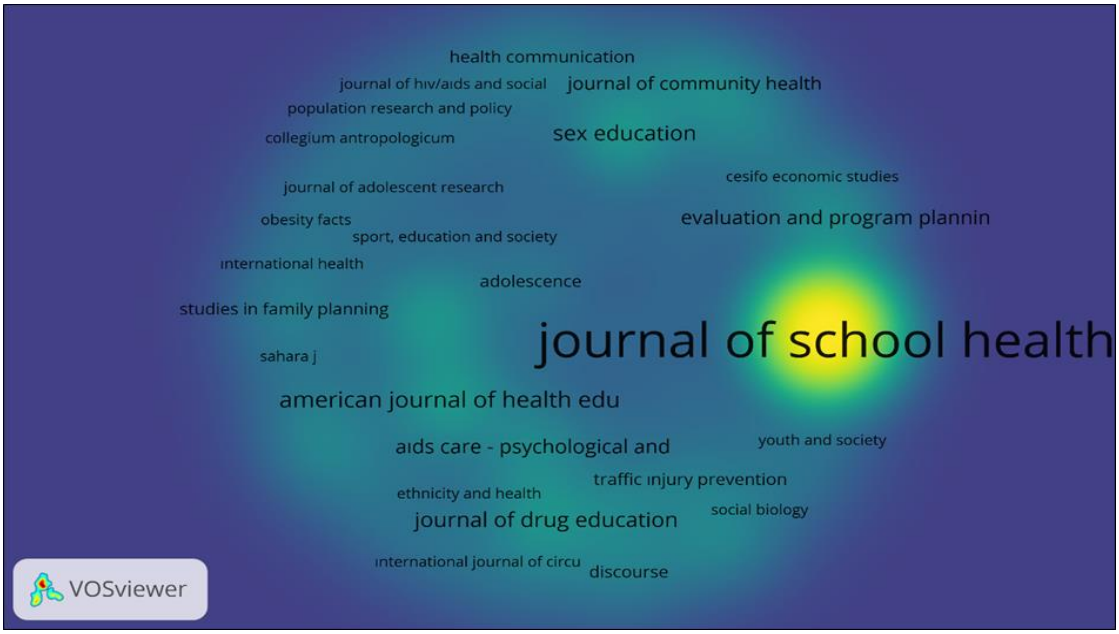


Figure 2. Top publishing journals

According to Figure 2, "The Journal of School Health" stands out as the most prolific journal with 36 publications in the field of health education. Other highly productive journals in this field include "Health Education Research" (n:16), "Health Promotion International" (n:11), and "Health Education" (n:11).

Information on the top 10 most cited journals in the field of health education, based on data obtained from the Scopus database in the social sciences category, is presented in Table 3.

Table 3. Most cited journals

	Journal Name	Number of Citation	Number of Publication	Average of Citations
1	Journal of School Health	644	36	17,88
2	Health Education Research	460	16	28,75
3	Social Science and Medicine	269	6	44,83
4	Health Promotion International	183	11	16,63
5	AIDS Education and Prevention	131	8	16,38
6	AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV	89	4	22,25
7	AIDS Care	87	3	29
8	Health Education	68	11	6,18
9	Journal of Drug Education	68	5	13,6
10	Traffic Injury Prevention	53	2	26,5

Upon reviewing Table 3, it is evident that the "Journal of School Health" is the most cited journal in the field of health education. In addition, other journals that have received over 150 citations include "Health Education Research," "Social Science and Medicine," and "Health Promotion International," which are the most influential journals in terms of citations. Among these journals, "Social Science and Medicine" has the highest average citation rate.

3.4. The institutions that publish the most and receive the most citations related to health education

The Scopus database provided information on 405 institutions and organizations in the social sciences category. The density map of these institutions is presented in Figure 3.

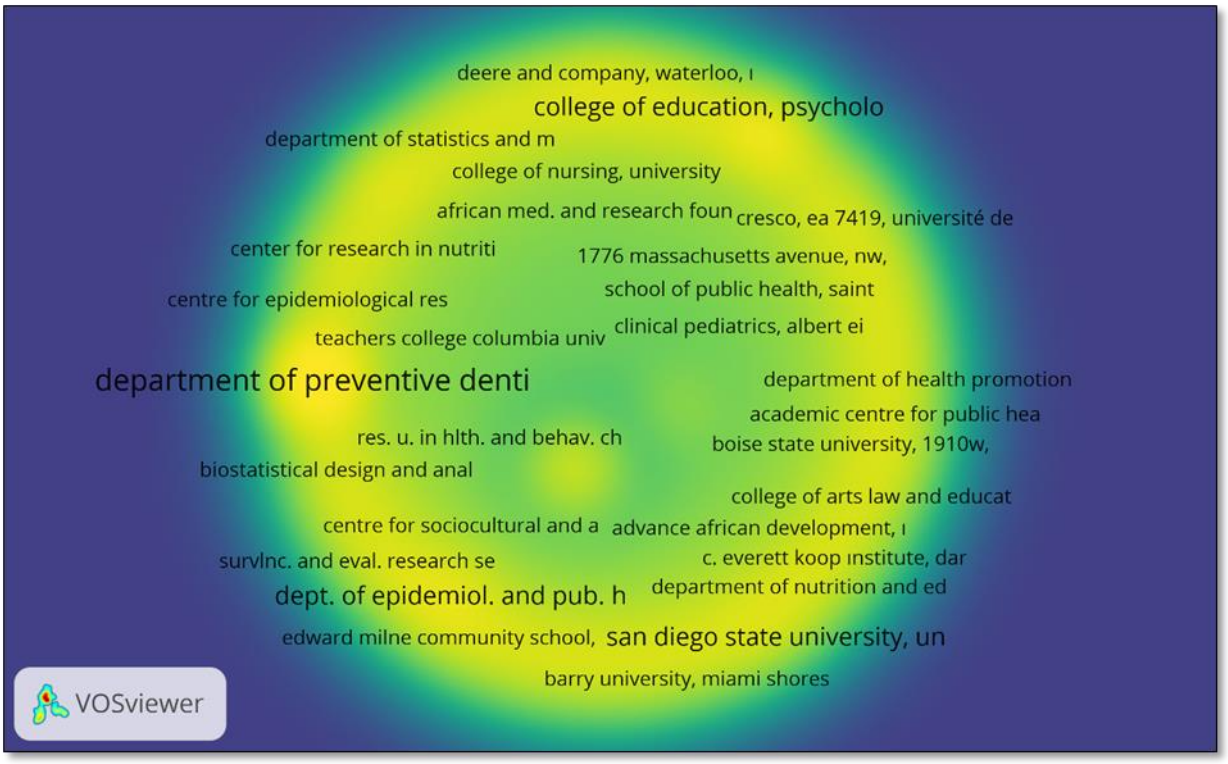


Figure 3. Institutions and organizations that publish the most

Upon reviewing Figure 3, the "Department of Preventive Dentistry and Cariology, University of Kuopio, Finland" is the most productive institution with 3 publications. Other institutions with 2 publications include "San Diego State University, United States," "Centre For International Mobility, Ministry of Education and Culture, Helsinki, Finland," "Department of Preventive and Community Dentistry, University of Dar Es Salaam, Tanzania," "Dept. of Epidemiol. and Pub. Health, Univ. of Miami School of Medicine, Miami, United States," "Ryder Trauma Center, Miami, United States," "Pacific Institute for Research and Evaluation, United

States," and "College of Education, Psychology and Social Work, Flinders University, Adelaide, Australia," while other institutions have 1 publication each.

The Scopus database provided information on the top 10 institutions in the social sciences category that have received the most citations related to health education, and this information is presented in Table 4.

Table 4. Most cited institutions

Rank	Instituon name	Number of citations	Number of articles
1	"Health Promotion Unit, School of Public Health, Qazvin University of Medical Sciences, Iran"	178	1
2	"Office of Vice-Chancellor, University of Southampton, United Kingdom"	178	1
3	"University of Sydney, Australia"	178	1
4	"Ctr. for Hlth. Prom. R. and D., Univ., United States"	117	1
5	"Department of Biometry, Univ. Texas-Houston Hlth. Sci. Ctr., United States"	117	1
6	"Etr Associates, United States"	117	1
7	"Survlnc. and Eval. Research Section, Div. of Adolescent and School health, Centers for Dis. Contr. and Prev., United States"	117	1
8	"Univ. Texas-Houston Hlth. Sci. Ctr., United States"	117	1
9	"University of Texas, M.D. Anderson Cancer Center, United States"	117	1
10	"College of Health Science and Human Service, University of Toledo, United States"	87	1

According to Table 4, the most effective institutions in terms of citation numbers include "Qazvin University of Medical Sciences," "The University of Southampton," and "The University of Sydney," with 178 citations each. The difference in citation numbers between these institutions and the others is significant. In other words, the citation numbers of the other institutions in the table are very close to each other. It is noteworthy that although the "Department of Preventive Dentistry and Cariology, University of Kuopio, Finland" and "San Diego State University, United States" are among the most prolific institutions (Figure 3), they cannot be found among the most cited institutions, which can be considered one of the remarkable findings of the study.

3.5. Institutional Co-authorship Analysis

There are 405 institutions in the social sciences category in the Scopus database that have published studies related to health education. Based on the criterion of having at least 2 publications, 8 collaborating institutions were identified, but they do not have any collaboration among themselves. Therefore, the three collaborating institutions are presented in Figure 4.

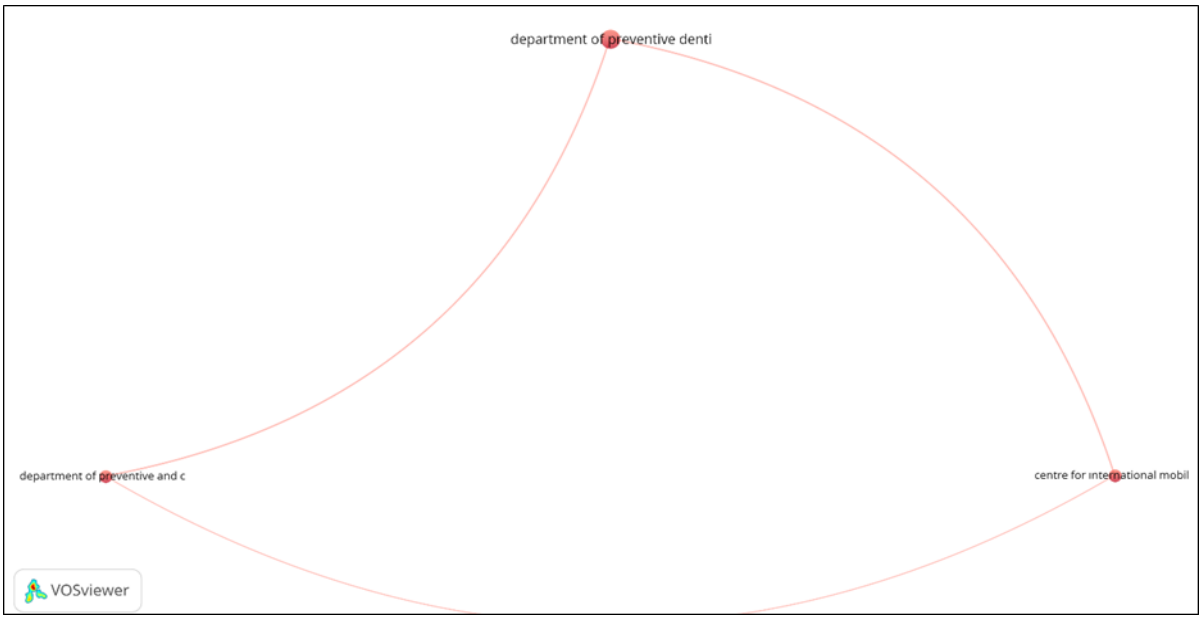


Figure 4. Inter-institutional cooperation network

According to Figure 4, there is a collaboration between the "Department of Preventive Dentistry and Cariology, University of Kuopio, Finland", "The Centre For International Mobility, The Ministry of Education and Culture, Helsinki, Finland", and "The Department of Preventive and Community Dentistry, University of Dar Es Salaam, Tanzania".

3.6. The countries with the highest publications and citations related to health education

Based on information obtained from the Scopus database, a total of 42 countries were identified that have published articles related to the research topic in the social sciences category, and the density map of these countries is presented in Figure 5.

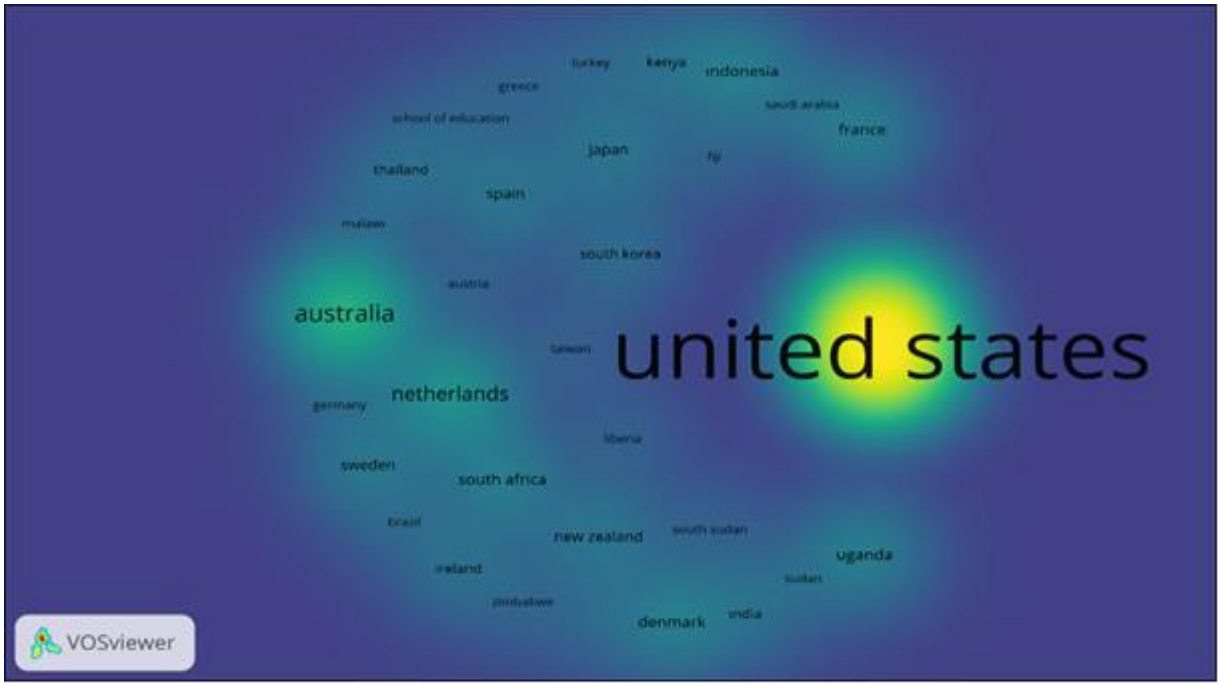


Figure 5. Top publishing countries

According to Figure 5, the USA stands out as the country with the highest number of publications (n:76). Other countries with the highest number of publications include The United Kingdom (n:14) and Australia (n:12).

Information on the top 10 countries that received the most citations in the field of health education in the social sciences category, based on data obtained from Scopus, is presented in Table 5.

Table 5. Most cited countriesarticle.

Rank	**Countries**	**Number of citations**	**Number of Publications**	**Citation average**	**Rank**	**Countries**	**Number of citations**	**Number of Publications**	**Citation average**
1	USA	1111	76	14,62	6	Netherlands	130	8	16,25
2	U. K	431	14	30,78	7	Uganda	123	4	30,75
3	Australia	285	12	23,75	8	China	118	5	23,6
4	Iran	203	4	50,75	9	South Africa	111	4	27,75
5	Tanzania	157	8	19,63	10	Japan	85	3	28,33

According to Table 5, the USA stands out as the country with the highest citation count, with 1111 citations. This country is remarkable for its productivity and impact in terms of both publications and citations. There is a dramatic difference between this country and other countries in terms of citation performance. Other countries with high citation counts include the United Kingdom (n:431), Australia (n:285), Iran (n:203), and Tanzania (n:157). In addition, Iran stands out as the country with the highest citation average performance of 50.75 with 4 publications and 203 citations.

3.7. Author keyword analysis on health education

According to Scopus data, a total of 399 different keywords were used in the included publications. The criterion for inclusion in the analysis was the use of each keyword at least three times. As a result of this process, 25 different keywords emerged. The keyword network for the joint analysis of keywords related to health education is presented in Figure 6.

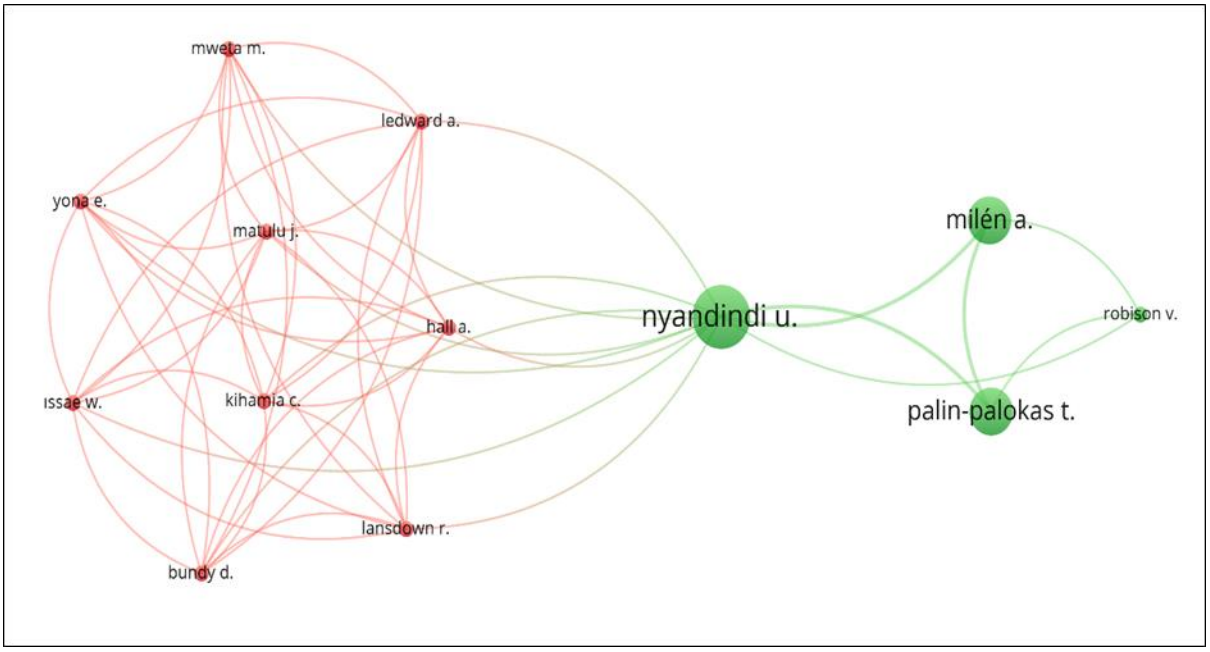


Figure 6. Common keyword network

According to Figure 6, which presents a word network for the most commonly used keywords by authors related to health education, five different clusters have emerged. The most frequently used keywords are located in the same cluster and positioned closer to each other on the network map. There are eight keywords in the red cluster, seven in the green cluster, four each in the blue and yellow clusters, and two in the purple cluster. The most commonly used author-shared keywords are "health education," "children," "nutrition," "primary schools," "physical activity," and "elementary school."

3.8. Analysis of common author references,

Information obtained from the Scopus database indicates that 656 authors or sources (articles belonging to official institutions or NGOs) were cited together in publications related to health education in the social sciences category. Then, by selecting sources that received more than 20 citations as a citation criterion, 192 authors were reached. As it was observed that there was no collaboration among the 192 authors, a common author reference network was determined by including 13 authors who collaborated. Figure 7 below presents a visual of the common author reference network.

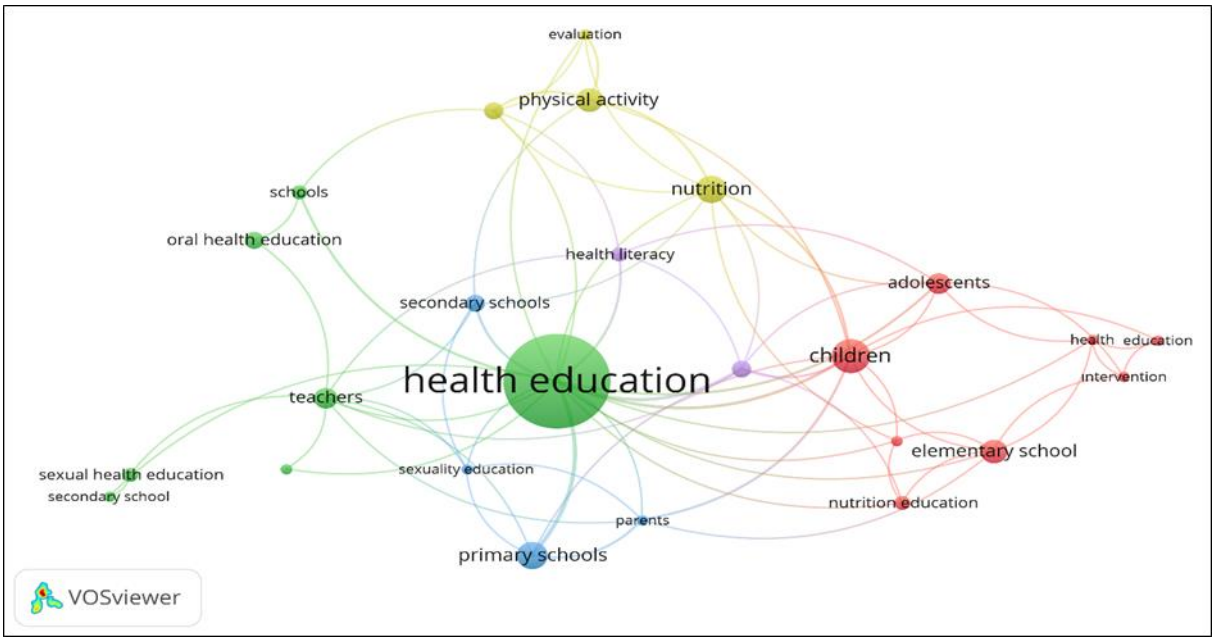


Figure 7. Joint citation network of authors

As seen in Figure 7, there are two different color clusters of authors who are jointly cited. The authors or sources that are most commonly cited together take on the same color in the network map and are positioned close to each other. Accordingly, it has been determined that the red cluster consists of 9 researchers and the green cluster consists of 4 researchers..

4. Conclusion And Discussion

This study performs a bibliometric analysis of articles related to health education in the Scopus database. The first result presented pertains to the trend of publications related to the topic over the years. According to the data obtained from Scopus, the first study related to health education in the social sciences category was published in 1974. Although there was no significant increase in the number of publications in the following years, the number of publications increased or decreased in certain years. However, since 2018, the number of studies in this field has reached double-digit figures. Although there have been some fluctuations in the number of publications during certain periods, overall, an increasing trend can be observed from the past to the present. Selva-Pareja, Ramos-Pla, Mercadé-Melé, and Espart (2022) state in their

study on health education that the highest number of studies related to the topic were published in 2020, and that studies based on health education and health literacy have increased in the last decade, indicating an increase in interest. Health education and health literacy concepts are related to many other concepts in the field of health, and after the Covid-19 pandemic, most research in this field has been conducted in the area of mental health literacy. For instance, it has been emphasized that topics such as how to behave towards sensitive populations like adolescents and how to increase knowledge on mental health management will become increasingly important. Although an increase in the number of publications has been observed since 2000, it has been pointed out that this increase has been irregular. However, from 2016 to 2020, there was a gradual and continuous increase in the number of publications, which decreased again in 2021. The graph illustrating the distribution of health education studies over the years (Graph 1) supports the situation described in the literature. Therefore, it can be inferred that topics related to health education have attracted the attention of researchers in certain periods.

According to the results of the study on the most productive countries in health education, the USA is the most productive country in this field. The other countries with the highest number of publications are UK and Australia. The first bibliometric study conducted in the field of health education, by Kondilis, Kiriaze, Athanasoulia, and Falagas (2008), focused mostly on the concept of health literacy. The results presented by the authors also placed the USA at the top of the list of the most productive countries in health education (in terms of GDP), a position that has remained unchanged since 2008 (Selva-Pareja, Ramos-Pla, Mercadé-Melé, and Espart, 2022). Despite having a less developed research tradition, Iran ranks fourth in terms of productivity, alongside countries with high citation rates such as UK, Australia, and Tanzania. Despite having only four publications, Iran has the highest citation average performance among the countries analyzed.

A study conducted by Akyüz (2021) covering the period between 1975 and 2019 also shows an increase in research activity in health education since 2004, with the USA being the most productive country in this field, as well as in health literacy. Moreover, when examining the articles published in the field of health literacy, the study highlights the significant superiority of developed countries, especially the USA, Australia, Canada, Germany, and the UK, over other countries. Akyüz (2021) used keywords such as “healthcare management”, “health care management”, “healthcare”, “health care”, “health services”, “healthcare services”, “hospital”, “clinics”, “pharmacy”, “primary care”, and “health literacy” to scan articles, including those covering primary and secondary education. Despite the inclusion of these additional keywords in the search, the study conducted by Akyüz (2021) and the results of the present study show significant similarities and overlap. Additionally, Bankson's (2009) study focuses on analyzing research conducted on health literacy between 1997 and 2007. The study reports that in 1997, there were 19 studies on health literacy, and by 2007, this number had increased almost tenfold. The author attributes this increase to the growing importance of health literacy across multiple disciplines, which is also consistent with the results of the present study.

According to the results of the research, which obtained information from the Scopus database, the study titled "Schools as social complex adaptive systems: A new way to understand the challenges of introducing the health promoting schools concept" by Keshavarz Mohammadi,

Nutbeam, Rowling, and Khavarpour (2010) is the most cited study in the field of health education. The results also show that Nastaran Keshavarz-Mohammadi and Don Nutbeam are the two most cited researchers in the field of health education, and they are also among the most productive scholars in terms of publications. Other highly cited researchers in the field of health education include Freidoon A. Khavarpour, Louise Rowling, and Douglas B. Kirby. The findings of the present study are consistent with Selva-Pareja, Ramos-Pla, Mercadé-Melé, and Espart's (2022) conclusion that Don Nutbeam is the most published and cited researcher in the field of health education.

Another research result focuses on the journal with the most publications in the field of health education. In this context, the Journal of School Health stands out as the most productive journal on the research topic. Bankson's (2009) study also showed that the Journal of School Health is one of the most published journals, which is consistent with the results of the current study. The study found that Health Education Research, Health Promotion International, and Health Education are the other most published journals on the topic. Moreover, the Journal of School Health is the most cited journal in the field of health education, which is consistent with the most published journal result mentioned above. According to the findings from the Scopus database, the Journal of School Health is the most productive and effective journal in the field of health education in the social sciences. Other effective journals in the field of health education include Health Education Research, Social Science and Medicine, and Health Promotion International. Additionally, Social Science and Medicine are shown to have the highest citation rate on average.

Another result of the research pertains to the institutions that publish the most on health education. In this context, it was observed that the identified institutions have published one article each on the subject. According to the results obtained from the Scopus database, the institutions that receive the most citations are the Qazvin University of Medical Sciences, the University of Southampton, and the University of Sydney. Regarding the results of inter-institutional cooperation in the research, it is observed that there is collaboration in health education among the "Department of Preventive Dentistry and Cariology, University of Kuopio, Finland", "Centre for International Mobility, Ministry of Education and Culture, Helsinki, Finland", and "Department of Preventive and Community Dentistry and University of Dar Es Salaam, Tanzania".

Looking at the common keywords used by researchers, "health education," "children," "nutrition," "primary schools," "physical activity," and "elementary school" are seen to be prominent. In the study conducted by Selva-Pareja, Ramos-Pla, Mercadé-Melé, and Espart (2022), it is noted that "care," "knowledge," "education," and "health literacy" are among the most commonly used keywords, and that the word "health education" was among the frequently used keywords in 2017. This is evidence of the parallelism between the results of this study and the results of keyword analysis conducted in other studies.

In light of this information, it can be said that the current research results provide a general framework for health education in primary and secondary schools. In this context, it is believed

that the study will contribute to future research on health education, such as its development in educational institutions.

Recommendations:

- The dataset used in this study is limited to Scopus. Similar studies can be conducted by comparing research results obtained from different databases such as VOSviewer and Dimensions.
- Following updates in developing countries' education policies focused on health education can be proposed to open the way for innovative initiatives.
- In this study, journal articles were examined as the publication type. In the future, studies can be conducted on different publication types such as conference papers and books.
- The dataset obtained under author keywords was examined in this study. In the future, different studies based on the research topic and title can be designed.
- Scientific research is influenced by the time period it is conducted in. In this study, research conducted until the end of 2022 was examined. Research can be conducted for the period after this year (2022) to reveal current trends.

Declaration of Conflicting Interests and Ethics

"The authors declare no conflict of interest."

References

Akyüz S. (2021). Sağlık okuryazarlığı araştırmalarının bibliyometrik analizi. Genel Tıp Dergisi, 31(4): 402-416.

Arslan, R. ve Filiz, M. (2020). Sağlık eğitimi alan öğrencilerin Covid-19 salgınına yönelik algılarının değerlendirilmesi, Cumhuriyet Üniversitesi İktisadi ve İdari Bilimler Dergisi, 21(2), 1-18. doi: 10.37880/cumuiibf.745861

Aslantekin, F. ve Yumrutaş, M. (2014). Sağlık okuryazarlığı ve ölçümü. TAF Preventive Medicine Bulletin, 13 (4), 327-334. https://doi.org/10.5455/pmb1-1364566995

Bankson, H., L. (2009). Health literacy: An exploratory bibliometric analysis, 1997–2007. Journal of the Medical Library Association: JMLA, 97(2):148.

Brunello, G., Fort, M., Schneeweis, N. ve Winter-Ebmer, R. (2016). The causal effect of education on health: What is the role of health behaviors?. Health Economics, 25(3), 314-336. https://doi.org/10.1002/hec.3141

Çoban, T. ve Özcebe, H. (2018). Çocuklarda sağlığın geliştirilmesinde sağlık okuryazarlığının rolü. Turkish Journal of Public Health, 17(3), 337-349. https://doi.org/10.20518/tjph.464542

Demir, Y. ve Gözüm, S. (2011). Sağlık eğitiminde yeni yönelimler; web destekli sağlık eğitimi. DEUHYO ED., 4(4), 196-203.

Dost, A. ve Üner, E. (2020). Öğretmenlerin Sağlık okuryazarlığı düzeylerinin yükseltilmesi neden önemlidir? İstanbul Gelişim Üniversitesi Sağlık Bilimleri Dergisi, (12), 475-483. https://doi.org/10.38079/igusabder.766017

Feinstein, L., Sabates, R., Anderson, T. M., Sorhaindo, A. ve Hammond, C. (2006). What are the effects of education on health. In Measuring the effects of education on health and civic engagement: Proceedings of the Copenhagen symposium (s.171-354) içinde. Paris, France: Organisation for Economic Co-operation and Development. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=32e9079959269c5af50f7ad11a74712968cb01cb

Golden S. D. ve Earp J.A. (2012). Social ecological approaches to individuals and their contexts: twenty years of health education & behavior health promotion interventions. Health Educ Behav. 39(3), 364-72. doi: 10.1177/1090198111418634.

Göktalay, T., Cengiz Özyurt, B., Şakar Coşkun, A. ve Çelik, P. (2011). Sağlık eğitimi alan 3 ve 4. sınıf öğrencilerinde sigara kullanımı ve etkileyen faktörler: İzlem araştırması. Tüberküloz ve Toraks, 59(4), 355-361.

Gözüm, S. ve Bağ, B. (1998). Etkin sağlık eğitiminde sosyal bilişsel öğrenme kuramının kullanımı. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, l(2), 32-43.

Gürel, S., ve Akçil Ok, M. (2021). COVID-19 salgın sürecinin, sağlık eğitimi alan öğrencilerin beslenme alışkanlıkları, fiziksel aktivite ve vücut ağırlıkları üzerine etkisinin saptanması. Başkent Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 6(Özel sayı), 1-15.

Hoffmann, T., ve Worrall, L. (2004). Designing effective written health education materials: Considerations for health professionals. Disability and Rehabilitation, 26(19), 1166–1173. doi:10.1080/09638280410001724816

Jensen, B. B. (1997). A case of two paradigms within health education, Health Education Research, 12(4), 419–428. doi: 10.1093/her/12.4.419

Kann, L., Telljohann, S.K. & Wooley, S.F. (2007). Health education: results from the school health policies and programs study 2006. Journal of School Health, 77, 408-434. https://doi.org/10.1111/j.1746-1561.2007.00228.x

Keshavarz, N., Nutbeam, D., Rowling, L., & Khavarpour, F. (2010). Schools as social complex adaptive systems: A new way to understand the challenges of introducing the health promoting schools concept. Social science & medicine (1982), 70(10), 1467–1474.

Kondilis B.K, Kiriaze IJ, Athanasoulia A. P, Falagas, M.E. (2008) Mapping health literacy research in the european union: A bibliometric analysis. PLoS ONE 3(6): 1-6. https://doi.org/10.1371/journal.pone.0002519.

Lawrance, L., & McLeroy, K. R. (1986). Self-efficacy and health education. Journal of School Health, 56(8), 317–321. doi:10.1111/j.1746-1561.1986.tb05761.x

Mercin, L. (2005). Piaget ve Kohlberg'in ahlak (moral) gelişim kuramlarının özellikleri ve karşılaştırılması. Sosyal Bilimler Araştırma Dergisi (SBArD), 5, 73-86.

Millî Eğitim Bakanlığı [MEB], (2018). Hayat bilgisi dersi öğretim programı (İlkokul 1,2 ve 3.sınıflar). Ankara: MEB Yayınları.

Millî Eğitim Bakanlığı, [MEB), (2018). Sosyal bilgiler dersi öğretim programı (İlkokul ve Ortaokul 4, 5, 6 ve 7. Sınıflar). Ankara: MEB Yayınları.

Minkler, M. (1989). Health education, health promotion and the open society: An historical perspective. Health Education Quarterly, 16(1), 17-30. https://www.jstor.org/stable/45049840

Nutbeam, D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. Health promotion international, 15(3), 259-267. https://doi.org/10.1093/heapro/15.3.259

Oyibo, P. G. (2012). Basic personal hygiene: Knowledge and practices among school children aged 6-14 years in Abraka, Delta State, Nigeria. Continental Journal of Tropical Medicine, 6(1), 5-11. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.364.4287&rep=rep1&type=pdf

Özenoğlu, A., Yalnız, T. ve Uzdil, Z. (2018). Sağlık eğitiminin beslenme alışkanlıkları ve sağlıklı yaşam biçimi davranışları üzerine etkisi. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, (3), 234-242. https://doi.org/10.31067/0.2018.20

Özgül, B. (2018). Türkiye'de önlisans düzeyinde sağlık eğitimi ve geleceği. Süleyman Demirel Üniversitesi Vizyoner Dergisi, 9(21), ss. 129-144. doi: 10.21076/vizyoner.422729

Özsarı, S. H. (2013). Sağlık yönetimi ve sağlık eğitimi ilişkisi. Yükseköğretim Dergisi, 3(1), 9-11. Retrieved from https://dergipark.org.tr/tr/pub/yuksekogretim/issue/41246/498205

Pritchard, A. (1969). Statistical bibliography or bibliometrics. Journal of Documentation, 25(4), 348–349.

Selva-Pareja, L., Ramos-Pla, A., Mercadé-Melé, P., & Espart, A. (2022). Evolution of scientific production on health literacy and health education—A bibliometric analysis. International Journal of Environmental Research and Public Health. 19(7):4356, 1-20. https://doi.org/10.3390/ijerph19074356

Sezgin, D. (2014). Sağlık okuryazarlığını anlamak. Galatasaray Üniversitesi İletişim Dergisi, 3 (Özel sayı), 73-92. Retrieved from http://iletisimdergisi.gsu.edu.tr/tr/pub/issue/7383/96659

Simonds, S.K. (1974). Health education as social policy. Health Education Monographs. 2(1), 1-10. doi:10.1177/10901981740020S102

Siyez, D., Öztürk, B., Esen, E. & Kağnıcı, Y. (2018). Üniversite öğrencilerine yönelik cinsel sağlık eğitimi programları: sistematik gözden geçirme. Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 46, 344-362. doi: 10.21764/maeuefd.358377

Sloane, B. C., ve Zimmer, C. G. (1993). The power of peer health education. Journal of American College Health, 41(6), 241–245. doi:10.1080/07448481.1993.9936334

Sönmez, S., Şen, N., Bolışık, B. ve Akyürek, H.B. (2001).7-12 yaş grubu çocuklarda sağlığı koruma ve kazalardan korunma davranışlarının belirlenmesi. Ege Üniversitesi Hemşirelik Fakültesi Dergisi, 17(3), 33-42.

Tahiroğlu, M. ve Esener, P. (2022). An application for gaining the habit of cleaning as a value in primary pchool ptudents: Clean child - dirty child. International Online Journal of Education and Teaching (IOJET), 9(3), 1377-1397.

Taşpınar, P. (2011). Sosyobilimsel tartışma destekli sağlık eğitimi etkinliklerinin ilköğretim 5. sınıf öğrencilerinde sağlık bilincinin ve içerik bilgisinin gelişimine etkisi. (Yayımlanmamış doktora tezi) Marmara Üniversitesi.

Ulusoy Gökkoca, F. Z. (2001). Sağlık eğitimi açısından temel ilkeler. Sürekli Tıp Eğitimi Dergisi, 10(10), 371-374.

Van Eck, N. J. ve Waltman, L. (2019). Manual for VOSviewer version 1.6.13. VOSviewer Manual.

Whitehead, D. (2004). Health promotion and health education: Advancing the concepts. Journal of Advanced Nursing, 47(3), 311–320. doi:10.1111/j.1365-2648.2004.03095.x

Yiğitbaş, Ç., Deveci, S. E., Açık, Y., Ozan, A.T. ve Oğuzöncül, A. F. (2013). Sağlık eğitimi alan bir grup öğrencinin empatik eğilim ve becerisi. S.D.Ü Sağlık Bilimleri Dergisi, 4(1), 7-13.

Yurdakul, M. ve Ardıç Çobaner, A. (2015). Üreme sağlığı ve aile planlaması hizmetlerinde sağlık eğitimi, iletişim ve danışmanlık. Türkiye Klinikleri, 1(2), 28-34.

Yücesan A. ve Ayaz Alkaya, S. (2018). Okullarda göz ardı edilen bir konu: Cinsel sağlık eğitimi. SDÜ Tıp Fakültesi Dergisi, 25(2), 200-209.

Zeren, F. & Gürsoy, E. (2018). Neden cinsel sağlık eğitimi?, Düzce Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, 8(1), 29-33.

Zupic, I. & Čater, T. (2015). Bibliometric methods in management and organization. Organizational Research Methods, 18(3), 429–472.