

Special Article

The Concept of Health Literacy during the COVID -19 Pandemic: A Bibliometric Analysis

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Abstract

Aim: This study aims to conduct a bibliometric analysis of the health literacy studies conducted during the COVID -19 pandemic period.

Methods: The search was based on the use of "Health literacy" AND "COVID*" OR "Coronavirus*" OR "Novel Coronavirus" AND "Nursing" OR "Nurse*" keywords in WoS between the years 2020 and 2022. The search included a total of 27 articles, which were analyzed using the bibliometric method. The publications were analyzed in terms of issues such as the year of publication, journal information, country distributions, number of authors, number of samples, study design, etc. Analyses also included the graphics of the top-used words, interaction of the top-used words, and interaction of the top-cited publications via VoS viewer.

Results: Analysis results showed that in addition to health literacy, the studies were also found to include topics such as digital literacy, fear, and anxiety.

Conclusions: It is evident that the importance of the concept of health literacy, which is an important public health issue worldwide, should be explored through more comprehensive studies.

Key words: Covid, health literacy, bibliometric

Introduction

Health literacy was defined and conceptualized in various ways, but almost all the definitions include similar fundamental components defining personal skills about individuals' accessing, understanding, and using the information to take health-related decisions and actions (Nutbeam et al., 2018).

When the current state of health literacy levels worldwide was analyzed, the results showed that a national study conducted in the United States of America (USA) reported the health literacy levels of adult individuals as basic in 22% of the population, medium in 53% of the population, and inadequate in 36% of the population. A study conducted in eight countries that are members of the European Union reported that health literacy rates ranged between 2% and 27% and indicated

inadequate health literacy levels. A study representing 23 cities in our country reported the general health literacy index as 30.4% (Bakan & Yıldız, 2019). The results of all these studies in the literature indicate very low levels of health literacy (Güven, Bulut & Öztürk, 2018). A low level of health literacy causes chronic diseases and socio-economic loss. It also causes very little use of preventive health services, an increase in the incidence of chronic diseases, and deterioration in basic health indicators.

Health literacy is known to be a very important way of assessing health-related information and preventing both non-contagious and contagious diseases. Health literacy is acknowledged as a very important component of protecting people from diseases in public health strategies. However, health literacy has never been more important than

the time it is during the COVID-19 pandemic (Do et al. 2020).

Pandemics are worldwide epidemics that could cause significant morbidity and mortality rates. The world has faced large-scale epidemics in various periods. In the 21st century, there have been new and also permanent difficulties in terms of determining the dangers of contagious diseases as well as managing them. Some examples of more recent health emergency cases include influenza, Severe Acute Respiratory Syndrome Coronavirus (SARS), Middle East Respiratory Syndrome (MERS), Zika, and Ebola (Ozkan et al. 2020). Today, the COVID-19 pandemic is accepted as the most important global health disaster and the greatest difficulty faced by humanity since World War II (Chakraborty and Maity, 2020).

When a bibliometric analysis is done for the assessment of scientific publications through a statistical method, the assessment includes the pluses and minuses of an individual, topic, or institution in scientific communication (Villatte et al., 2020). The bibliometric analysis enables to make a systematic review, data analysis, in-depth review of the studies about any issue, and evaluation of the literature. Bibliometric analyses through the analysis of the WoS data of many fields and topics have been conducted both in our country and in the world. However, the literature includes no bibliometric analyses on health literacy in the pandemic process. The present study is thus considered to fill this gap in the literature. In this regard, the purpose of this study is to conduct a bibliometric analysis of the health literacy studies conducted during the COVID-19 pandemic period and analyze its effectiveness in the WoS database to demonstrate the general status of the issue.

Method

Research Design: This study is a bibliometric study done using the VoSviewer software. Bibliometric analysis is a multi-disciplinary analysis that enables quantitative analysis of all information using mathematical and statistical methods (Hu et al. 2020). This analysis method has become an important research method to analyze national and international cooperation on prominent topics (Hu et al. 2020). In addition to this analysis method, programs such as

VOSviewer and CiteSpace enable the creation of information maps (Hu et al. 2020). Bibliometric analyses provide a wide range of data related to a topic and allow the researcher to determine general tendencies about the publication of that topic. Therefore, in this study, the analyses were utilized to understand health literacy during the COVID-19 pandemic better.

Information Sources and Search Strategies:

This study, which aimed to conduct a bibliometric analysis of studies on health literacy during the COVID -19 pandemic, was started by reviewing databases. Today, there are many important databases available such as WoS, PubMed, MEDLINE, and Scopus. This study utilized the WoS database because it is commonly used in bibliometric studies; it includes the most effective journals and journals with the highest impact factor in the field of health sciences; and it enhances data collection for analysis. Special attention was paid to fit the keywords with Medical Subject Headings (MeSH). The keywords used for the search included "Health literacy" AND "COVID*" OR "Coronavirus*" OR "Novel Coronavirus" AND "Nursing" OR "Nurse*". The search was done under the "Subject" title in a way to include the title, abstract, author, and keywords.

Inclusion and Exclusion Criteria: The WoS database was searched between the 1st and 10th of April, 2022. Since the search included articles on health literacy during the COVID-19 period, search results included all the articles about the topic within the past three years without any limitations in the years (2020, 2021, and 2022). Research data were composed of 98 articles. The studies that were not early publications and those published and are indexed in Science Citation Index Expanded (SCI-EX) and Social Science Citation Index (SSCI) were filtered, and the number of articles was decreased to 73. As a result of content analysis, further exclusion was performed based on the elimination of the studies that were not conducted in the nursing field, that were not accessed as full texts, that were published in languages other than English, and that were not related to the keywords, which resulted in the exclusion of 46 articles. The analyses included 27 articles.

Various classifications were performed to analyze the information, which included (a) distribution of the publications by years, (b) distribution of the publications by countries, (c) distribution of the publications by the name of journals, (d) methodologic topics (study design, number of authors, number of sample), and (e) frequency of the common words in the keywords.

Data Quality: WoS Core Collection scientific database was preferred because it includes journals with relatively higher impact factors and higher quality in comparison to other databases (Norris and Oppenheim, 2007). As recommended by Stemler (2000), there are some additional steps to be followed for the data quality of bibliometric or content analysis. Initially, researchers should review the material independently and produce a set of features that forms a checklist. Secondly, researchers should compare and reconcile the differences in the original checklists. Thirdly, they should use a standardized guide to implement coding individually. Fourthly, they should test the reliability of coding (95.% coding consensus is recommended). If the degree of reliability is adequate, a large-scale framework should be implemented. Finally, regular quality controls should be performed (Stemler, 2000). In this study, these steps were followed by both authors, and the coding was found to demonstrate a 96% fit, indicating that data quality was achieved.

Data Analysis: The results were analyzed using descriptive bibliometric analyses. Data were retrieved from the WoS database as a text file (*.txt) and a reference citation file (*.ris) and transferred to the VoSviewer software. VoSviewer is a Java-based computer program that forms and visualizes bibliometric maps. As the analyses used in this study show, some examples of the maps formed by the software include publication maps, country maps, journal maps, and keyword maps (Huang et al., 2020). SPSS (Statistical Package for Social Sciences) 23.0 program was utilized for the analyses of the publication year distribution, journal information, country distributions, number of authors, number of samples, and research design of the studies. The related analyses were also visualized.

Results

Table 1 demonstrates the distribution of the studies by years, the journals where they were published, and the countries where they were published based on the search using the “COVID-19” and “health literacy keywords” indexed in WoS. With the outbreak of the COVID-19 pandemic in 2019, the studies on health literacy in this field started to be published in the year 2020. However, the number of these studies was found to increase up to three times (63.0%) in the year 2021. The majority of the studies were found to have been conducted in China (29.6%), and they were published in the International Journal of Environmental Research and Public Health with a proportion of 25.9% (Ayaz Alkaya & Dulger, 2022; Mohammadkhah et al., 2021; Wang et al., 2021; Turhan et al., 2021; Amoah et al., 2021; Jafree et al., 2021; Riiser et al., 2020; Nguyen et al., 2021; Moussa et al., 2021; Wong et al., 2020; Rosário et al., 2020; Patil et al., 2021; Zakar et al., 2021; Rohwer et al., 2021; Vrdelja et al., 2021; Sjostrom et al., 2021; Savcı & Cil Akıncı, 2022; Ho & Smith, 2020; Bray et al., 2021; Xiao et al., 2020; Do et al., 2020; Guo et al., 2021; Dadaczynski et al., 2021; Jia et al., 2021; Dashti et al., 2022; Leung et al., 2022; Sogut et al., 2022).

Table 2 demonstrates the distribution of the studies by the number of authors, topics, study design, and the number of samples. Of all the studies, 44.4% were prepared by a group with 1-5 and 6-10 authors, and 81.5% utilized a cross-sectional design. The sample size of 88.9% was reported between 1 and 5000.

The main topic in the studies searched included the “COVID-19” and “health literacy” topics. Secondary topics accompanied by these topics are demonstrated in Graph 1, which indicates the concept of Digital HLS at a proportion of 40.7% and fear and anxiety topics at a proportion of 18.5%.

When the studies conducted were analyzed via VoSviewer, the top-cited words were healthy literacy and COVID-19 respectively (Fig. 1) Two cluster groups are seen at the center, and they are clustered according to the intensity of interaction.

Each cluster includes topic titles such as e-health literacy, mental health, and the pandemic. Figure 2 demonstrates connections of these with others (Fig. 2).

Three top-cited authors were found Paakkari & Orkan (2020), van der Vaart & Drossaert (2017) and Zarocostas (2020) (Fig. 3)

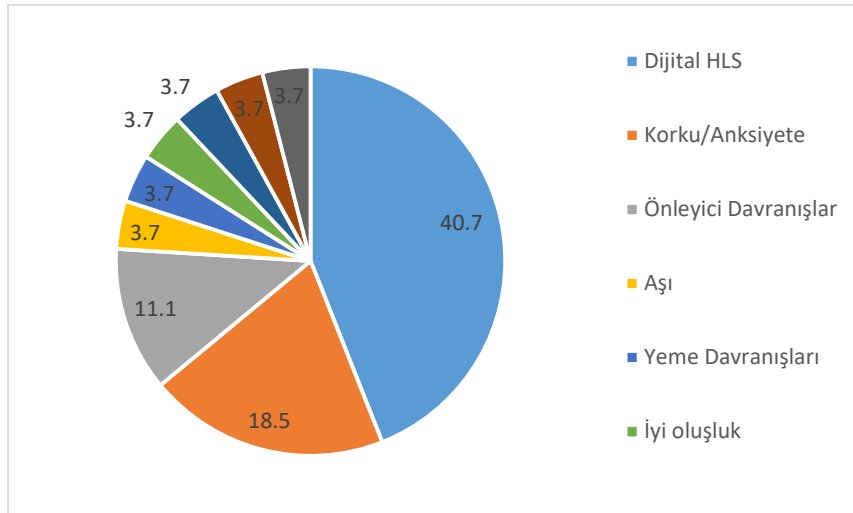
Table 1. Distribution of the studies by publication years, journals, and countries (n)

Publication Year	n	%	Journal*	n	%	Country**	n	%
2020	6	22.2	International Journal of Enviromental Research and Public Health	7	25.9	Republic of China	8	29.6
2021	17	63.0	Journal of Medical İnternet Research	3	11.1	Turkey	4	14.8
2022	4	14.8	Asian Pasific Journal of Public Health	2	7.4	Germany	2	7.4
			Plos One	2	7.4	Iranian	2	7.4
					Pakistan	2	7.4	

*Other journals; *Geriatric Nursing, Heliyon, Current Psychology, BMC Open, Frontiers in Nutrition, Frontiers in Public Health, International Journal of Nursing Practice, Journal of Clinical Nursing, Neuropsychiatric Disease and Treatment, Risk Management and Health Care Policy, BMC Medical Education, Aging Mental Health, Journal of Nursing Research*; ** Other countries; *Norway, Vietnam, Saudi Arabia, Portugal, United States of America, Slovenia, Sweden, United Kingdom, Taiwan*

Table 2. Distribution of the studies by the number of authors, research design, and sample size (n)

Number of authors	n	%	Research design	n	%	Sample size	n	%
1-5	12	44.4	Cross-sectional	22	81.5	1-5000	24	88.9
6-10	12	44.4	Correlational	2	7.4	5001-10000	1	3.7
11-19	1	3.8	Randomized controlled trial	1	3.7	10001 and above	1	3.7
20 and above	2	7.4	Qualitative	1	3.7	None	1	3.7
			Discursive	1	3.7			



Graph 1. The second main topic of the studies*

**It is the second main topic. A bibliographic review defines the second topic reviewed in addition to the main topic of health literacy.*

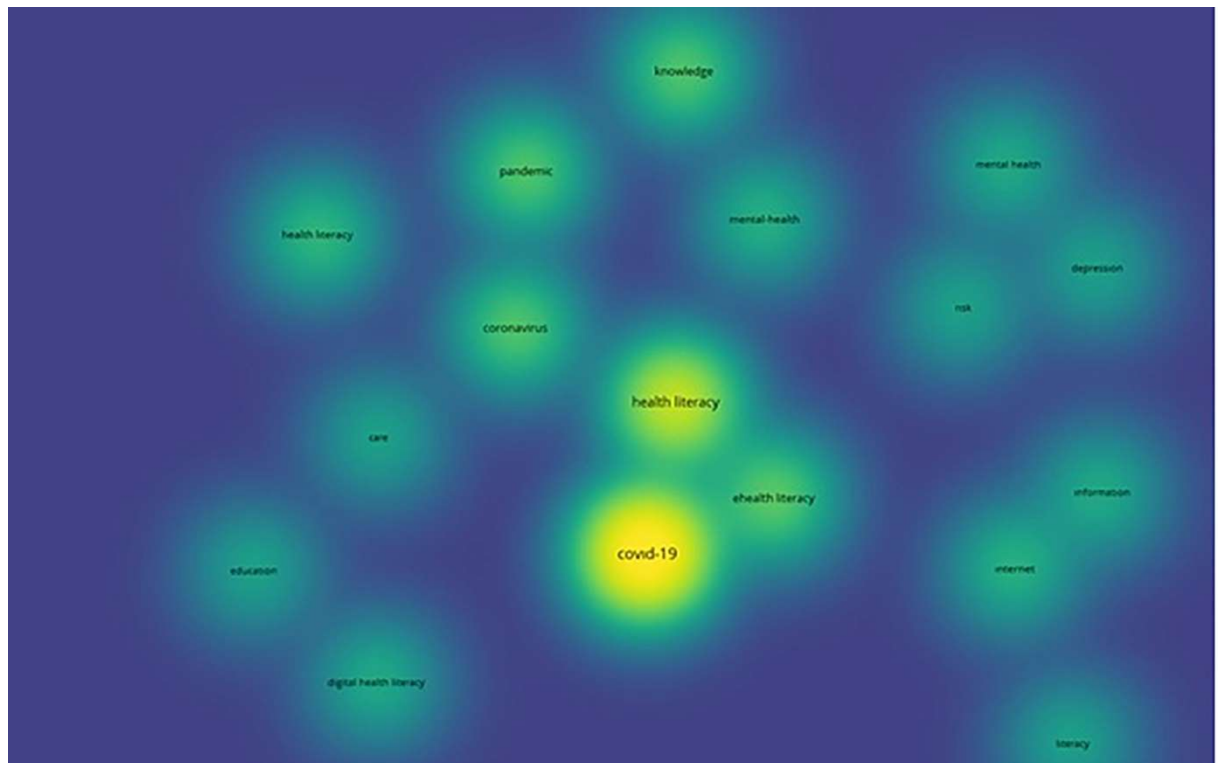


Fig 1. The intensity of the top-used words

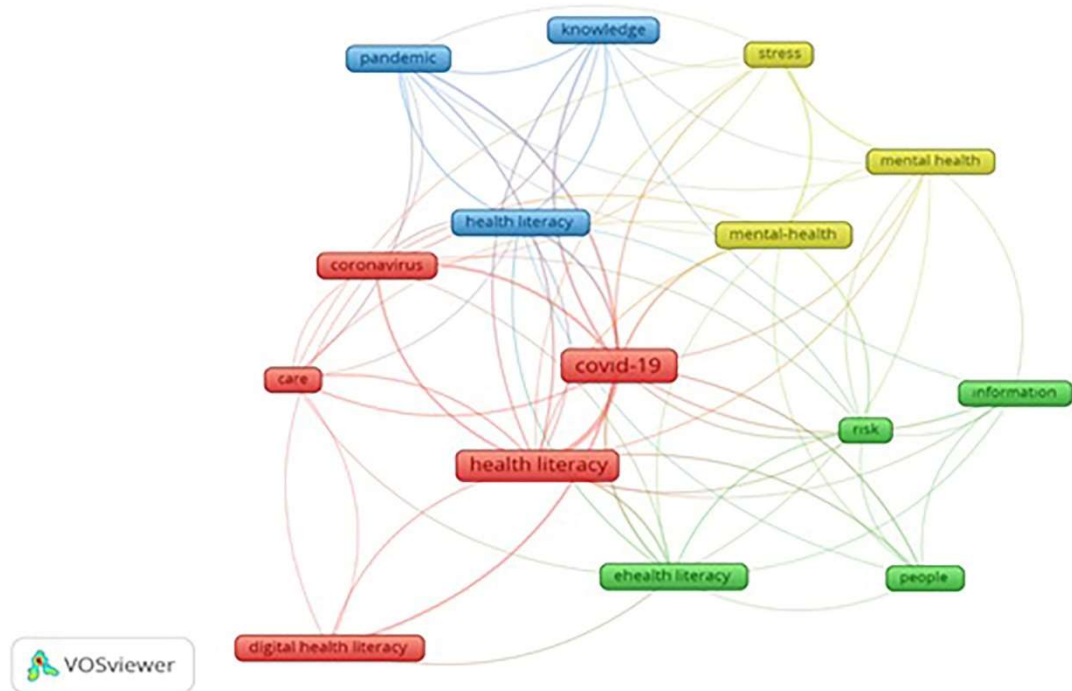


Fig 2. Interaction of the top-used words

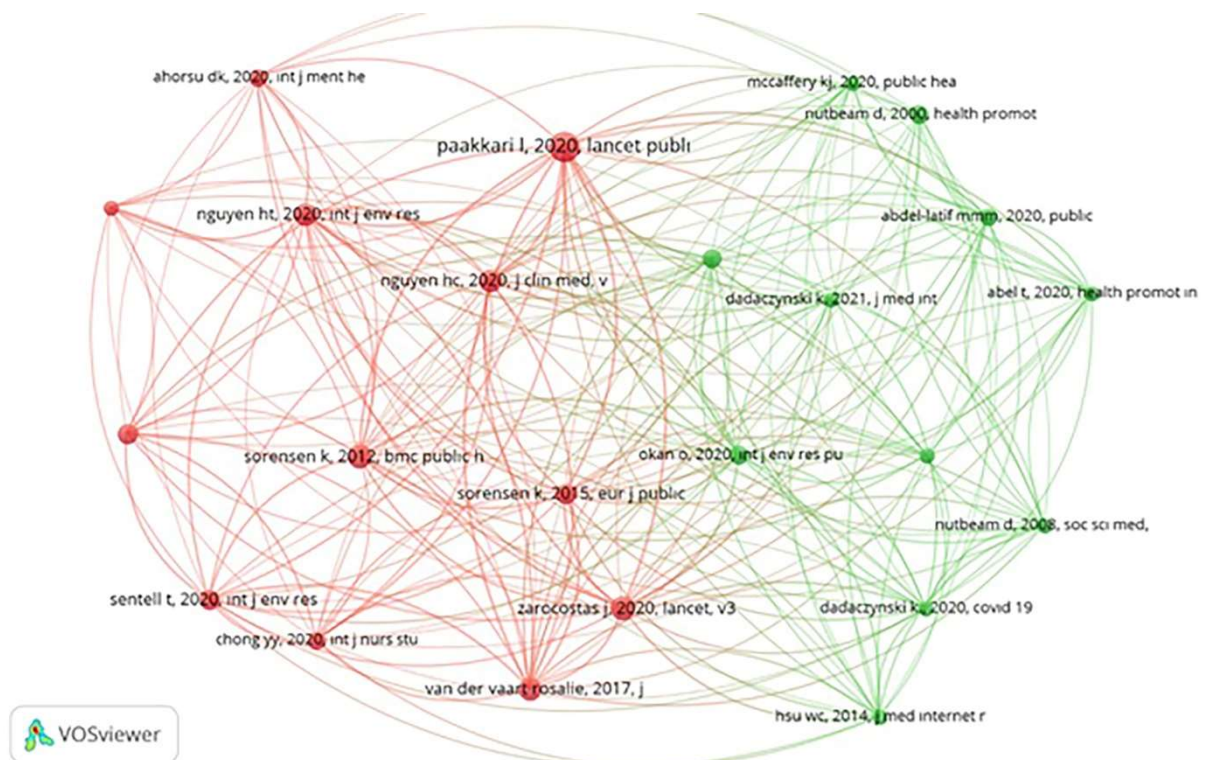


Fig 3. Interaction of the top-cited publications

Discussion

Although the coronavirus pandemic started in 2019, its declaration as a pandemic in many countries of the world was at the beginning of the year 2020. With the declaration of the pandemic, countries have strived to adapt to this new process and control the pandemic within their area of responsibility. Therefore, the number of publications about health literacy was lower in the year 2020 compared to the following year. As for the year 2021, the number of publications was found to be higher because countries began to be more adapted to the process of struggling with the pandemic and started to observe the effect of the pandemic on this issue better. Analyses showed that the majority of the publications were done in China. The people's Republic of China was the first starting point of the coronavirus infection and the country where the first cases were reported. In the process of the emergence of a highly contagious infection with high mortality rates and transmission to other countries, views of society about this infection, adaptation, and many other topics had been investigated in countries where the first transmission was reported. Hence, China had the highest number of publications about health literacy during the COVID-19 pandemic, which is somewhat expected.

Cross-sectional studies are conducted within a certain period and finalized relatively faster. The COVID-19 pandemic is a process that includes rapid changes in health and requires follow-ups in short intervals, so cross-sectional studies are preferred for the investigation of many topics related to COVID-19. Analyses showed that the majority of health literacy studies utilized a cross-sectional design, which supports this view. The use of quantitative approaches in studies is an indicator of the positivist paradigm (Taşkaya and Aksoy, 2020). Despite this, randomized-controlled studies, mixed methods, and experimental studies are utilized less frequently (Brown et al., 2019). Analyses results revealed one randomized-controlled study. Increasing the number of randomized-controlled studies could contribute to the understanding of the cause-and-effect relationship better and help to make results more reliable.

Digital media applications make access to health information easier, and the digital health platforms in the countries worldwide have been used actively to prevent transmission and access to accurate information; they have also become one of the key points in managing the pandemic. Analysis results showed that the majority of the studies investigated the concepts of digital health literacy, mental health, fear, and anxiety. Rapid transmission and high mortality rates of the coronavirus and frequent variances have caused societies to experience anxiety and fear. Digital health platforms and digital support systems are considered to become important in accessing accurate health information and coping with anxiety and fear caused by the pandemic. The COVID-19 pandemic has also become an adaptation process to a new digital world.

The top-cited publication was found to highlight that the COVID-19 pandemic and health literacy are important topics that should not be underestimated. The study emphasized that with the COVID-19 outbreak, health literacy was realized to be important for the prevention of not only noncontagious but also contagious diseases. The second top-cited study developed a Digital Health Literacy tool. The majority of the analytic studies on health literacy during the pandemic period were found to be cited highly because they used this data collection tool (van der Vaart and Drossaert, 2017). The third top-cited publication reported that the COVID-19 pandemic also brought an information epidemic, and this process was also a kind of “infodemic” and emphasized the importance of the use of an accurate source of information (Zarocostas, 2020). In this regard, the top-cited publications were found to highlight the importance of health literacy during the COVID-19 pandemic.

Conclusion and Recommendations: The COVID-19 pandemic has emphasized the vital importance of health literacy. Studies on this issue were found to utilize mainly analytic study designs. An analysis of the current literature about this issue shows that randomized-controlled studies with high evidence levels are still quite limited. Given the potential pandemic scenarios in the future, the results of this study provide information

about health literacy-related topics that should be investigated in a pandemic process. Besides, important outcomes can be obtained about health literacy from this pandemic, and preparations can be made for potential pandemics.

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