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Review Article

Educational technologies for people living with hepatitis B: integrative review

Tecnologias educativas voltadas para pessoas que vivem com hepatite B: revisão integrativa

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Objective: to identify the educational technologies used and/or validated for people living with hepatitis B. **Methods:** integrative literature review conducted in the databases: Latin American and Caribbean Literature, *Base de Dados de Enfermagem*, Medical Literature Analysis and Retrieval System on-line, PubMed, Cochrane Library, and Scopus. **Results:** the final sample consisted of five articles. Most studies chose as educational technology the mobile apps/websites. Three studies were developed with this feature. One of them used a scale and the other, a comprehensive intervention, with actions, such as technical guidelines, standardized medical care and community involvement. **Conclusion:** the five studies found that the use of educational technologies was useful for patients with chronic hepatitis B, since issues such as knowledge of the disease, self-efficacy and self-care performance showed significant improvements.
Descriptors: Hepatitis B; Educational Technology; Health Education.

Objetivo: identificar as tecnologias educativas construídas e/ou validadas para pessoas que vivem com hepatite B. **Métodos:** revisão integrativa da literatura, realizada nas bases de dados: Literatura Latino-Americana e do Caribe, Base de Dados de Enfermagem, *Medical Literature Analysis and Retrieval System on-line*, *PubMed*, *Cochrane Library* e *Scopus*. **Resultados:** amostra final para análise constitui-se por cinco artigos. Em maioria, os estudos escolheram como tecnologia educativa os aplicativos/*website*, sendo três estudos desenvolvidos com esse recurso. Um deles utilizou escala e outro, intervenção abrangente, com a junção de ações, como orientações técnicas, atendimento médico padronizado e envolvimento da comunidade. **Conclusão:** os cinco estudos encontrados evidenciaram que a utilização de tecnologias educativas foi útil para os portadores de hepatite B crônica, de modo que quesitos, como conhecimento da doença, autoeficácia e desempenho no autocuidado apresentaram melhoras significativas.
Descritores: Hepatite B; Tecnologia Educacional; Educação em Saúde.

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Introduction

Hepatitis B is a severe infectious disease, found worldwide, with significant morbidity and mortality rates, and is considered a neglected tropical disease, since most cases of morbidity and mortality cases from the hepatitis B virus (HBV) take place in tropical and subtropical countries. The African and western Pacific regions have the highest reported prevalence of HBV[1].

The World Health Organization estimates that there are 325 million people with HBV worldwide, two million of them in Brazil, which is among the countries with the highest rates of infection[2]. The problem concerning this disease is the number of individuals affected and the complications resulting from the acute and chronic forms of the infection.

In 2015, hepatitis B was responsible for about 887,000 deaths, mainly from cirrhosis and hepatocellular carcinoma. From 2016, 27 million people (10.5% of all people estimated living with hepatitis B) were aware of the infection, while only 4.5 million (16.7%) were on treatment[3]. Since it is a silent disease, hepatitis B causes problems associated with morbidity and mortality that require a very specific form of management by health professionals, especially those who work in direct care with this public.

Nursing, widely known as the caring profession, must always use technologies and resources in order to continuously increase the quality of the care provided. Health Technology, defined as a set of actions that aim to enrich treatment and care through health practice, is relevant in this context. In health, these technologies are classified as: light, based on the behavioral sciences; light-hard: based on knowledge; and hard: which, in essence, refers to mostly physical/material technologies. These three types of technology are interconnected, being integral parts of the practice of care, and as such must often be considered to fully meet the needs of individuals[4].

In this context, nursing becomes one of the professions that has the possibility to develop and use technologies in daily routine, so that it positively impacts the profession's own growth, as well as the relationship between the professional and the client[5]. Given the complexity that permeates the process of nursing care, it is extremely important for these professionals to use the appropriate technologies.

Given the complexity that permeates chronic pathologies, such as hepatitis B, the nurse must use strategies to provide better coping mechanisms for patients and their families, a process in which educational technologies are strong allies[6]. The use of technology in care favors the work of nurses by improving precision and speed in actions, providing more time for nurses to provide care, enabling greater interaction with the person living with hepatitis B, directly impacting the quality of care.

Therefore, the use of educational technologies in care offers subsidies for nurses to dedicate themselves to the expressive aspects of care, building effective interactions with the individual[7]. The knowledge of such technologies for people with hepatitis B may enable professionals involved in the disease process of these individuals to be able to implement them or develop new technologies based on local needs.

Thus, the objective of this study was to identify the educational technologies used and/or validated for people living with hepatitis B.

Methods

This is an integrative literature review, which consists of a broad analysis of published studies that enable discussions on research methods and results[8]. For this study, six steps were followed: definition of the guiding question; search for studies in literature; data collection; evaluation of the content selected; discussion; and publication of results[9].

To better formulate the research question, the PICO strategy was used (Patient; Intervention; Comparison; Outcome)[10]. In this study, P meant: Patients with hepatitis B; I: educational technologies; C: No other educational technology, with a different educa-

tional technology or with traditional explanations; O: Effect of the use of educational technologies to promote the health of patients with hepatitis B. This raised the following research question: What educational technologies are used and/or validated for people living with hepatitis B?

Two reviewers independently and simultaneously searched for articles in the database Latin American and Caribbean Center on Health Sciences (LILACS), *Banco de Dados de Enfermagem* (BDENF - Nursing Database), Online Medical Literature Analysis and Retrieval System (MEDLINE), National Institutes of Health (PUBMED), Cochrane Library and SCOPUS, using the search strategy descriptors (tw: (hepatitis B)) AND (tw: (educational technology)) OR (tw: (health education)) , according to the terminology of the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH), in June 2019.

The inclusion criteria for this integrative review were: articles discussing the use, construction and/or validation of educational technologies aimed at people living with hepatitis B; published in national or international journals in the last ten years (2009-2019), so that the number of studies was as large as possible; available in their entirety free of charge and in English, Portuguese, and Spanish. Book chapters, editorials, theses, letters to the editor and reflection, revision and update articles were excluded.

Initially, the selection of studies occurred by reading the titles and abstracts of the studies. Those that met inclusion criteria were included in the review. This process was performed by two reviewers and only when there was disagreement as to the selection between them, a third reviewer was consulted.

19,755 articles were identified in the databases. From the search of the descriptors in the title or summary of the total found, 16 articles were identified. From these, an article was excluded because it was in German; and eight articles, because they were not available for consultation. Seven articles were selected to be read in their entirety, and two articles were excluded for not answering the research question, totaling a final sample of five articles. Figure 1 presents the selection flowchart of these studies.

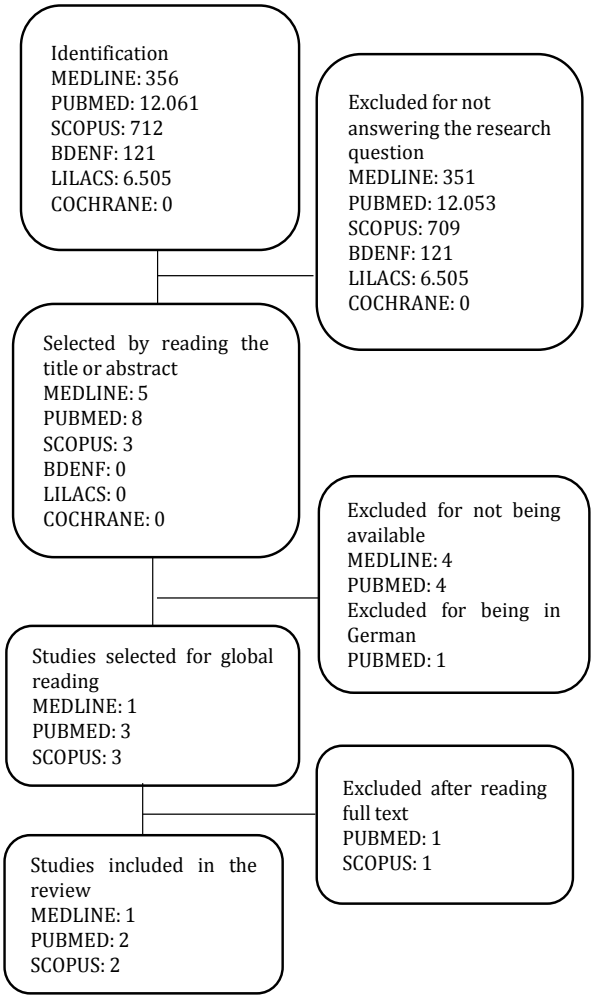

Figure 1 – Flowchart of article selection

From the studies selected for the final sample, a form previously prepared by the authors was used to collect the following data: authors, year and country of publication, study objective, methodological design, level of evidence and type of technology employed in the study. After collection, data were input into the Microsoft Excel® 2010 software, where a descriptive analysis of the content found was performed, whose results were synthesized and presented in Figure 2.

Results

Five articles were included, and an analysis matrix was elaborated, with information of interest to the research related to these productions. Figure 2 shows the characterization of the articles that used educational technologies for people living with hepatitis B.

Studies	Authors/ year	Country	Objectives	Methodological designs/ Levels of evidence	Technologies
E1[11]	Yang, 2012	Korea	Develop an online program for patients with chronic hepatitis B to improve their disease self-management capabilities and to evaluate its application.	Methodological study of technology construction and validation/Level 6	Website
E2[12]	Chao *et al.*, 2013	China	To evaluate the effects of comprehensive intervention by comparing changes in patients with chronic hepatitis B before intervention and one year after it.	Randomized controlled trial/Level 2	Multiple actions
E3[13]	Davies *et al.*, 2015	Australia	To describe the development process and report the results of the initial culturally bilingual app for hepatitis B as part of the Action Research project.	Methodological Study of Technology Development/ Level 6	App
E4[14]	Jeon, 2016	Korea	To analyze the performance of use of an app in patients with chronic hepatitis B.	Randomized controlled trial/Level 2	App
E5[15]	Kong *et al.*, 2018	China	To develop a self-report measurement of self-management behaviors for patients with chronic hepatitis B.	Methodological study of scale construction and validation/Level 6	Scale

Figure 2 – Characterization of articles that used educational technologies for people living with hepatitis B

Among the studies included, two were produced in Korea[11,14], two in China[12,15] and one in Australia[13]. As for the year of publication, one was published in 2012[11], one in 2013[12], one in 2015[13], one in 2016[14], and one in 2018[15].

The studies were classified according to the level of scientific evidence, considering seven levels. Level 1: systematic review or meta-analysis from randomized controlled trials or clinical guidelines; level 2: well-designed randomized controlled trials; level 3: well-designed clinical trials without randomization; level 4: well-designed cohort and case-control studies; level 5: systematic review of descriptive and qualitative studies; level 6: case report; level 7: opinion of authorities or in vitro research[8].

Most studies chose as educational technology the apps/websites, three of them having developed these features[11,13-14]. One of them used a scale[15] and the other a comprehensive intervention, with the combination of actions, such as technical guidelines, standardized medical care and community involvement[12].

From the selected articles, three were published in nursing journals[11,14-15] and two in journals in other health areas[12-13]. Two were written only by nurses[11,14] and one by nurses in partnership with doctors[15]. In two of the studies, it was not possible to define to which professional category the authors belonged[12-13].

Concerning the methodological design, two articles were classified as randomized controlled trials[12,14] and three as methodological studies[11,13,15]. Concerning the level of evidence, two studies were level 2[12,14] and three were level 6[11,12-13,15].

Discussion

The present study had as limitation the small number of publications concerning the subject discussed, which represents a gap in the knowledge produ-

ced in Brazil. Although the epidemiological profile of hepatitis B still shows alarming numbers worldwide, little has been found in the literature, through the results presented, about educational technologies focused primarily on people living with HBV, something that would bring benefits, such as better adherence. Consequently, a reduction in transmissibility rates, which would have a direct impact on the number of people still affected by this disease.

This study contributes to guide the necessary transformations in this setting, precisely because of the number of studies identified in the literature, as it encourages researchers to publish more studies on how the use of educational technologies favors a positive outcome concerning the quality of life of people living with HBV.

Given the complexity that permeates this process, nurses who provide care to patients with hepatitis B are constantly challenged to design and use educational technologies to facilitate the health education process of patients and their families, as this is a field capable of contributing to a new vision of the health--disease-care process, since they aim to promote and develop knowledge, with the purpose of contributing to the health of people involved in this process[16].

A research in the sample was focused on the association between using an online program and how it would be beneficial for patients with chronic hepatitis B. A similar study was conducted in the United States with immigrant Cambodians, through educational intervention that used audiovisual technology with lay educators, showing an increase in knowledge levels by 22.0% after using the tool[17].

Other similar studies are common on other infectious diseases of similar hepatitis B chronicity, such as studies on adherence and Human Immunodeficiency Virus. A researcher used telephone messages as a care tool for people living with HIV/Acquired Immunodeficiency Syndrome, based on the analysis of interactions between nurses and patients. Satisfaction with the follow-up of 90.5% was observed and there was an increase in the quality of treatment adherence[18].

In this context, chronic disease management is known to be effective using self-management promotion software that considers multidimensional factors of the health-disease process. The ability for self-management has helped patients, generating maintenance and health promotion results from the point of view of prevention of serious complications and helping health management[19].

In the context of chronic hepatitis B, continuous monitoring of the disease, adherence to treatment and proper health behavior are essential. The discovery of the diagnosis of hepatitis B brings, over time, changes in the lifestyle of these subjects. The individual with this diagnosis should be seen as a whole, considering the biopsychosocial aspects that make up this subject[20]. A study showed that the level of health behavior related to hepatitis B was significantly higher in individuals with a high level of knowledge about the disease[11].

In this sense, adherence to other infectious diseases of global impact, such as tuberculosis is also being studied. Other researchers have developed smartphone-based technology to facilitate remotely observed therapy through video streaming rather than personal observation. The participants' estimated that the median of adherence was 90.0% and the pill count 93.8%[21].

Similar to the study cited, the applications built on two researches included in the sample had similar theoretical foundations, in which both developed technologies focused on the conceptual model of self--regulation for chronic disease control. This model considers as a method what individuals use to control their own disease[11,14].

Stands out that the chronic disease implies disruption in the individual's way of life, and can cause changes in the physical, mental and behavioral aspects, so that patients need to change their lifestyle habits to be able to face the challenges that arise during this process[22].

In an investigation that focused on the issue of self-management of patients with chronic hepatitis B,

a positive association was found between self-management and better health outcomes, and there were no scales dedicated to assessing self-management behaviors of patients with chronic hepatitis B[15]. However, in another research, it was observed that an instrument had already been developed to assess the self-management capacity of research participants[23].

Corroborating the effective association indicated above, it is stated that people living with chronic diseases, such as hepatitis B, are confronted daily with decision-making about self-management of the disease, which requires educational actions[24].

It was possible to observe the concern to adapt the contents so that users could have the correct understanding of what they intended to explain. For example, the term silent disease, commonly used by health professionals, meant for this specific population that hepatitis B was related to witchcraft[15].

Thus, it is of utmost importance that there is the appropriate cultural adequacy for the development of any type of technology that has as premise the provision of information about a certain disease. A study shows that people respond positively to information in their own language[15]. That is, one must pay attention to the necessary details so that the message being conveyed is linguistically and contextually correct so that it will be received in the expected manner.

Finally, it can be inferred that studies have shown statistically significant improvements in knowledge related to hepatitis B, with p=0.010, self-efficacy and self-care also significantly increased, p=0.006 and 0.001, respectively. Other significant improvements can be cited as body pain, vitality, social and mental functioning, as well as in the physical and mental component score (p<0.050).

Conclusion

The five studies found that the use of educational technologies was useful for patients with chronic hepatitis B, so that issues such as knowledge of the disease, self-efficacy and self-care performance showed significant improvements.

Collaborations

Lopes NL contributed to the conception, analysis and interpretation of data and writing of the article. Souza NPG, Brito GCB and Pereira MLD collaborated with data analysis, relevant critical review of intellectual content and approval of the final version to be published.

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