Education Provides Significant Benefits to Patients With Hepatitis B Virus or Hepatitis C Virus Infection: A Systematic Review

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BACKGROUND & AIMS: **Education of individuals who are at risk for, or have been diagnosed with, chronic hepatitis B virus (HBV) or hepatitis C virus (HCV) infections can improve their participation in disease management. We performed a systematic review to evaluate the effects of educational interventions for patients with HBV or HCV infections.**

METHODS: **We searched multiple databases for peer-reviewed studies of individuals with HBV or HCV infection, or those at risk for infection. Our final analysis included 14 studies that evaluated any educational intervention and reported the effectiveness or patient outcomes relevant to the intervention (7 patients with HCV infection, 4 patients with HBV infection, and 3 patients with either). Data extracted from studies included details on educational interventions, patient populations, comparison groups, and outcome measures. The quality of each study was appraised.**

RESULTS: **Types of educational interventions assessed ranged from information websites and nurse-led sessions to community-wide and institutional programs. The educational interventions showed significant ($P < .05$) improvements to patients' knowledge about their disease, behaviors (including testing and uptake of vaccination), willingness to commence and adhere to treatment, and other outcomes such as self-efficacy and vitality or energy scores. These significant benefits were shown in 5 of 7 studies of HBV infection and 8 of 10 studies of HCV infection. On a 20-point quality scale, study scores ranged from 6 to 19.**

CONCLUSIONS: **Simple educational interventions for patients with HBV or HCV infection significantly increase patients' knowledge about their disease. More complex, multimodal educational interventions seem to cause behavioral changes that increase rates of testing, vaccination (for HBV), and treatment.**

Keywords: Liver Disease; Viral Infections; Educational Tools; Evaluation.

Viral hepatitis is a major public health problem. More than 350 million people worldwide are infected chronically with hepatitis B virus (HBV), and 130 million people are infected chronically with hepatitis C virus (HCV).[1] Both HBV and HCV are strongly associated with the development of cirrhosis and hepatocellular carcinoma.[2] HBV accounts for 600,000 to 1,200,000 deaths annually and HCV accounts for 300,000 to 500,000 deaths annually.[3,4] Because viral hepatitis is a chronic silent disease, morbidity and mortality are likely underestimated.[5]

Effective detection and treatment of HBV and HCV can have a significant impact on disease outcomes.[6,7] Close monitoring for complications and sustained suppression of HBV replication spontaneously or with antiviral therapy decreases the risk of progressive liver disease and hepatocellular carcinoma.[8,9] Similarly, successful treatment of HCV, even in patients with advanced disease, prevents liver decompensation and death.[10] Thus, disease detection and ongoing follow-up evaluation are critical to the health outcomes of patients with HBV and HCV. Disease detection requires an awareness of the condition and risk factors, while ongoing follow-up adherence is improved by some knowledge about the natural history of HBV and HCV.

Many people with chronic hepatitis are unaware of their disease status until they develop symptoms of advanced liver disease.[11] Delays in identifying disease status can result in increased likelihood of virus transmission to others, limited treatment options, and worsened patient outcomes.[12] Despite the increasing public awareness of viral hepatitis in the past 2 decades, significant knowledge gaps remain even in the highest-risk populations. A study of injection drug users in New York found that only 37% of those surveyed knew that hepatitis C treatment exists.[13] Knowledge about transmission and natural history of disease also is limited.[14] There is a clear need for improvement in the knowledge base of at-risk groups as well as in those previously diagnosed with viral hepatitis.

Patient education has been defined as a set of planned activities that can be used to influence behavioral changes in

Abbreviations used in this paper: HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus.

1542-3565/$36.00

http://dx.doi.org/10.1016/j.cgh.2013.04.024

patients, resulting in changes in knowledge, skills, and attitudes needed to maintain and improve health.[15] In HBV and HCV, patient education programs can be critical in helping patients understand their condition, cope with their disease, and efficaciously participate in management. Patient education also can be implemented in high-risk populations such as intravenous drug users, prison inmates, and individuals born in countries with high disease prevalence to promote HBV vaccination. As a strategy, patient education has the potential to complement proven antiviral therapies to improve disease-related morbidity and mortality.

To date, it is still not clear what strategies for patient education are most effective in either those at risk of viral hepatitis or those already infected by HBV and HCV. This article systematically reviews the effectiveness of patient education interventions in HBV and HCV.

Materials and Methods

Data Sources

This review was based on searches of the following databases: Medline (1950 to August 2012), CINAHL (1981 to August 2012), Science Citation Index at the Web of Science (1900 to August 2012), ERIC (1966 to August 2012), EMBASE (1980 to August 2012), Cochrane Database of Systematic Reviews (2000 to August 2012), and PsycINFO (1967 to August 2012).

The search strategy was limited globally to articles in peer-reviewed journals. The search strategy included the following terms: (1) Medline search: subject heading terms used were "patient education," and "hepatitis or hepatitis B or hepatitis C." For the keywords search, terms used included "patient education," "hepatitis," "hepatitis B," "hepatitis C," "effectiveness," "evaluation," "program evaluation."

In addition, manual searches of reference sections of retrieved articles were conducted to identify additional published work.

Selection Criteria

Studies were considered suitable for inclusion if they met the following criteria.

First, studies had to include targeted individuals at risk of or patients with a diagnosis of HBV or HCV infection. Second, an education intervention was defined as any attempt to inform individuals at risk of or patients with a diagnosis of HBV or HCV infection about their condition to modify knowledge, attitudes, or skills. Strategies that were purely administrative, such as notification of a test result via letter, were excluded. An article was included if it described a patient education intervention in sufficient detail that it could be replicated. Third, studies had to report some qualitative or quantitative evaluation of program effectiveness or patient outcomes relevant to the intervention. Fourth, experimental and quasi-experimental study designs were included.

The initial search identified 117 publications. After initial abstract and title review, 84 articles were excluded. Thirty-three full-text articles were retrieved. After full-text article review, a further 19 articles were excluded because they did not describe a patient education intervention or did not report an evaluation of the patient education intervention. Fourteen articles were included in this systematic review.

Data Extraction

The following categories of data were extracted. First, the methodology of the study. Second, the type of education intervention and its characteristics, including the lead provider. One-time informational sessions were classified as simple educational interventions, educational interventions that were provided over 2 or more sessions or educational interventions that involved more than a single mode of delivery were classified as multimodal educational interventions.

Third, if applicable, the selection criteria for patient recruitment and allocation to different groups. Fourth, the results of qualitative and quantitative analysis of program effectiveness. Outcomes were analyzed within the framework of the Kirkpatrick model.[16] Positive-effect studies were those in which there was a significant change in at least one major outcome; negative-effect studies showed no important change in any major outcome; and inconclusive-effect studies failed to show a change but also lacked the statistical power to do so.

Quality Assessment

Studies were assigned a quality score based on methodology, intervention, results, data analysis, and discussion. Table 1 shows the complete scoring system used, which was derived by modifications of the methodologies and scales previously described in the literature.[17–19] The highest possible score was 20 and the lowest possible score was 1. A higher score indicated better quality.

Reporting Outcomes

Outcome measures were reported as statistically significant if the P value was less than .05.

Table 1. Scoring Sheet Used to Assess Study Quality

Characteristic	Maximum score (total = 20)
Methodology	
Design (RCT, 3; comparison group, 2; no comparison group, 0)	3
Study sample (well described, 2; good sample, not well described, 1; poor sample, 0)	2
Educational intervention	
Type of program (well described, 2; poorly described, 1; no description, 0)	2
Follow-up evaluation after program (>3 mo, 3; 1–3 mo, 2; 0–1 mo, 1)	3
Analysis	
Statistical analysis (tests of significance used, 1; absent, 0)	1
Results	
Baseline characteristics or measurements (measured, 1; not measured, 0)	1
Satisfaction (measured, 1; not measured, 0)	1
Patient knowledge (objective, 2; subjective, 1; not measured, 0)	2
Patient behaviors (objective, 2; subjective, 1; not measured, 0)	2
Patient outcomes (objective, 2; subjective, 1; not measured, 0)	2
Discussion	
Discussed confounding factors (yes, 1; no, 0)	1

RCT, randomized controlled trial.