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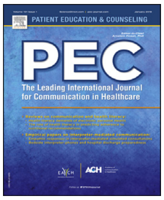
PEC 5870 No. of Pages 8
ARTICLE IN PRESS

Patient Education and Counseling xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou



# Reducing patient and provider knowledge gaps: An evaluation of a community informed hepatitis C online course

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ARTICLE INFO

*Article history:*
Received 5 September 2017
Received in revised form 20 November 2017
Accepted 9 January 2018

*Keywords:*
Education
Patient
Provider
Hepatitis C
E-learning
Health literacy
Online education

ABSTRACT

*Objectives:* Hepatitis C (HCV) knowledge gaps are associated with lower levels of engagement in (HCV) care which contributes to HCV-related morbidity and mortality. Knowledge gaps may be exacerbated by rapid changes in HCV care/treatment. Cost-effective, timely and easy-to-implement education is needed to address knowledge gaps and foster HCV engagement.

*Methods:* We developed a free, one-hour, online course for patients and providers. Online and facilitated course events were evaluated. Outcome measures included: pre/post-scores, perceived knowledge gains and increased capacity to educate/encourage engagement in HCV care.

*Results:* Total pre-post-test gains were significant ($p < .001$) across groups. Over 50% of participants reported: perceived knowledge gains of “A lot” or higher; the course increased their capacity to educate and encourage client engagement in care by “A lot” or higher.

*Conclusions:* The evaluation confirmed ongoing patient and provider HCV knowledge gaps, significantly reduced those gaps, and increased provider’s capacity to educate and encourage client engagement in HCV care.

*Practice implications:* The course is an effective tool to address knowledge gaps that might lower engagement in care. It is available to patients to use in the privacy of their own home or for providers for their personal use, to use with individuals or patient groups.

## 1. Introduction

Hepatitis C virus (HCV) infection is a global health concern, with more than 70 million people living with HCV [1]. In Canada, about 210,000–460,000 people are infected with HCV, with the highest rates among those in the 1945–1965 birth cohort, people who inject drugs, Indigenous populations and immigrants from high HCV prevalence countries [2,3]. Chronic HCV infection increases the risk of progressive liver disease and those affected are increasingly presenting with serious end stage liver diseases including decompensated cirrhosis, hepatocellular carcinoma, and liver failure leading to premature death [4–6]. New direct-acting antivirals (DAAs) with HCV cure rates of more than 95% are expected to greatly reduce progressive liver disease going forward [7,8]. However, low levels of linkage and retention in care, which characterizes the Hepatitis C Illness and Care Journey (HCV-ICJ), will limit the impact of DAAs to reduce HCV-related morbidity and mortality rates [9–14].

In 2011, as many as 44% of people in Canada living with hepatitis C were estimated to be unaware of their hepatitis C status [3], but with increased HCV testing rates, this proportion is likely lower, especially in British Columbia [15]. Unfortunately, even with higher testing rates, many living with hepatitis C are not engaged in HCV care. In British Columbia (BC), among those aware of their infection, only 32% were receiving liver-related monitoring or care and 13% were not engaged in any care in 2011–2012 [10]. Screening and testing is needed for undiagnosed individuals, while those previously diagnosed require linkage with care, treatment and long-term follow-up in cases where liver damage is more severe or there is potential for reinfection.

Low engagement levels across the HCV-ICJ are associated with a complex intersection of personal, provider and system level factors, including patient and provider knowledge gaps and experiences of stigma, that vary across populations affected by the virus [16,17]. With the exception of specialist-based anti-viral therapy, most patients receive their HCV care in primary care and community-based organizations where inadequate provider

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https://doi.org/10.1016/j.pec.2018.01.008
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Please cite this article in press as: T. Buller-Taylor, et al., Reducing patient and provider knowledge gaps: An evaluation of a community informed hepatitis C online course, Patient Educ Couns (2018), https://doi.org/10.1016/j.pec.2018.01.008

knowledge of HCV is well documented [18] and can contribute to low patient uptake of services and engagement in care across the HCV-ICJ [19]. Our and others' studies, including follow-up of HCV cases in a BC regional health authority, found that primary care physicians and other providers had suboptimal knowledge of HCV diagnosis, management and treatment and have requested HCV education [16,17,20–23].

Existing knowledge gaps in HCV and health service access could be further compounded by emerging gaps/barriers from the rapidly changing HCV care and treatment landscape due to new drugs, changing screening guidelines, laboratory testing and increased primary care involvement. For example, blood-test-based fibrosis assessment and a shift from a specialist to a shared-care-model could potentially increase HCV testing and monitoring efficiencies and improve HCV-ICJ engagement, but could also introduce new knowledge and support gaps that deter HCV-ICJ engagement

Furthermore, patient HCV knowledge in Canada is low and patients have expressed the need for HCV education and information [22,24–26], including, a "one-stop shop" with information relevant to the entire hepatitis C care journey. Easy-to-access, relevant and timely education tailored to the needs of priority populations could stem the compounding of factors associated with non-attendance for care, especially for those at risk of HCV and for rural/remote populations and maximize the population-level benefits promised by highly effective antiviral curative therapy [19].

Online or e-learning courses are cost-effective methods of addressing knowledge gaps. The accessible, self-directed and self-paced nature of enrollment and interaction with course-learning supports interest in the material, faster reinforcement of the messaging and builds self-care capacity [27,28]. Online courses also allow for automated and instant tracking and reporting of user activities along with outcome assessments to determine whether learning has occurred, making them easier to evaluate [29].

In addition, ease-of access to online courses (or through USB for regions with limited internet access) enables the learner the opportunity to explore HCV in the privacy of their own home and thereby limit the negative impact of stigma. When used in a group setting, e-courses are an efficient method of supporting group facilitators as they reduce facilitator preparation time and standardize education messages. Finally, the format also allows instructors or developers to evaluate and easily update course content and personalize instruction to meet the changing needs and priorities of users. This is especially critical in the context of HCV given its evolving treatment landscape. In view of the above factors associated with engagement in HCV care, we designed and evaluated an online course for patients and providers to address knowledge gaps and mitigate stigma.

## 2. Materials and methods

### 2.1. Hepatitis C: the basics online course

*Hepatitis C: The Basics* is a self-paced, narrated online course that takes 30–60 minutes to complete, addresses some key HCV knowledge gaps [16,17,19–23] in a non-stigmatizing and easy-to-understand format. Although designed for people affected, front line health care providers (e.g., public health, tertiary care and student nurses; support group leaders) have also taken the course to acquire/update basic HCV knowledge.

#### 2.1.1. Course development

Our original research project found that knowledge deficits across the HCV Illness and Care Journey (ICJ) and experiences of stigma were two of six key perceived contributing factors to low engagement [17]. The online course was designed to address knowledge gaps in a non-stigmatizing format.

The course was developed using a national collaborative research process with people affected by hepatitis C (had lived experience with hepatitis C or were family/friends of people with hepatitis C), community stakeholders working with populations affected by hepatitis C and providers who were experienced serving populations affected by hepatitis C, including a national nurse network involving those working in rural and remote communities, public health, corrections and community clinics. Affected individuals and providers acted as advisory and working group members, study participants, recruitment partners, evaluation event participants and organizers, and disseminators of the resource. This collaborative process was iterative to ensure the various stakeholders were able to guide and/or provide input into resource development from inception to finalization. Benefits of employing of this more time consuming collective process, versus a top-down approach, include: (1) course content and format that is evidenced-based and informed by patients and providers to ensure its timeliness and relevancy to end-users; (2) wording and imagery that is non-stigmatizing and culturally sensitive; and (3) expanded capacity of the project to reach other providers and those affected through network participants.

#### 2.1.2. Contents and versions

Core module sections covered key facts along the HCV-ICJ (see Fig. 1). *Basic facts* covered topics such as prevalence, clearance, curability, and symptoms. *How it's spread* included safe and risk activities. *Testing* included who should and how to get tested, tests used, and the meaning of positive and negative results. *What if I have it* included what HCV can do to the body, liver damage, questions to ask providers, how often to see a provider and who to tell that one has HCV. *Balance* included pointers on staying healthy, alcohol and the liver, supplements and the liver and diet. *Treatment and Life after treatment* included basic facts about treatment, how to get treatment and getting ready for life after treatment.

Two versions of the course were evaluated: English [30] and an adaptation for Indigenous audiences [31]. Stakeholders representing each of these groups were involved in the design and/or adaptation of modules to ensure cultural sensitivity and relevance. This paper reports results from course participants from August 31, 2014 to December 31, 2016.

### 2.2. Course setting and administration

The course was free and available to the public and health and social care providers. It was promoted through our national network of partners, a nurse newsletter, and our website. The course was administered using two methods: *Online* and *Facilitated Event* presentations. For those without access to internet, the course was provided on a USB stick upon request.

**The online course** was hosted on British Columbia's publically accessible Provincial Health Services Authority (PHSA) learning management system, the LearningHub. There were no online forums or instructors; however, an e-mail address was available for content questions or to help with technical difficulties. *Online* participants began with a pre-test and, once completed, the course module was unlocked to allow the registrant to proceed at their own pace. Once the module was complete, the post-course and course evaluation components were unlocked. When all course components were completed, the registrant received a downloadable certificate of completion.

**For facilitated events**, facilitators were provided with a small budget for food and a gift card draw as well as instructions on how to show the course and administer test and evaluation forms. Attendees received pre-and post-course paper forms with ID

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