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Reducing Liver Cancer Risk in African-Born Immigrants Through Culturally Targeted Hepatitis B Group Education Programs

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Abstract Of 900 West African-born immigrants living in New York City who were tested for hepatitis B virus (HBV), over 9% were found to have the infection (Shankar H et al. Clin Infectious Dis 62(S4):S289–s297, 2016). Community targeted group education programs (EP) have been shown to improve immigrant population's health (Bailey E et al. J Natl Med Assoc 92(3):136–42, 2000). Our aim is to enhance HBV screening in at-risk West African immigrants through the development of a group EP as a first critical step to reducing liver cancer risk. The framework for an HBV group EP was created based on our prior work to identify barriers and facilitators for HBV screening in this community (Sriphanlop, P et al. Am J Health Behav 5(10):745–754, 2014). The framework was then refined with input from community "gatekeepers" or leaders (n = 57) through four focus groups. After refining the group EP, we then pilot tested the EP with 154 participants from eight different West African communities with a pre-/post-test HBV knowledge survey assessment to determine the impact of the group EP. Results from the pre-/post-test survey assessment demonstrated a significant increase in HBV knowledge after the EP (70% pre-test vs. 88% post-test, p value <.01). Through a community-based participatory approach, a group EP could be effective in increasing knowledge about HBV infection and HBV screening as a first step to reducing liver cancer risk.

Keywords Hepatitis B · Liver cancer · Group education · West African-born immigrants · Cancer screening

Introduction

Screening and vaccination for hepatitis B virus (HBV) are critical first steps in reducing the risk of serious health issues related to chronic HBV infection including liver cirrhosis, liver cancer and death. HBV screening is the best approach to support early detection and treatment of HBV.

In the United States (US), there are between 700,000 and 2.2 million people living with the HBV infection [1]. Globally, there are over 240 million people living with chronic HBV [2]. In West Africa, the prevalence of HBV is viewed to be among the highest in the world, reaching up to 12% [3]. The number of African immigrants in the US has increased by over 750% since 1980 [4]. West African-born immigrants carry a significant portion of the global burden of the disease with about 11% of chronic HBV cases worldwide [2].

Effective evidence-based strategies to increase knowledge about HBV to at-risk populations such as West African-born immigrants have not been developed or evaluated within this group. However, culturally targeted group education programs (EPs) have been found to be effective in increasing knowledge and cancer screening rates for other cancers in various cultural groups. For example, in African American women, group EPs have been effective in increasing breast and cervical cancer screening rates [5–7]. Studies have, also,

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shown that community outreach EPs have been effective in reducing liver cancer disparities in Asian communities with a higher prevalence of HBV infection [8–10].

Culturally appropriate group HBV EPs targeting West African-born immigrants in New York City have yet to be developed or assessed. HBV infection disproportionately affects West African-born immigrants in New York City. Shankar et al., tested over 900 West African-born immigrants living in New York City for HBV and found that over 9% had evidence of HBV infection compared to less than 2% in the general US population [11]. West African-born immigrants are more likely to be recent arrivals to the US, live below the poverty line and have a greater dependence on emergency room for primary care needs [12, 13]. Therefore, screening for HBV in West African-born immigrants living in New York City is an important first step in reducing liver cancer risk. Our aim was to develop and assess a culturally targeted group EP to increase knowledge of HBV and liver cancer in West African-born immigrants living in the US using a community-based participatory approach.

Methods

Program Development

A framework for a culturally targeted HBV group EP was developed using previously identified barriers to and facilitators for screening in West African-born immigrant communities residing in New York City, including both those who were and were not screened for HBV through qualitative studies [14]. Factors identified included privacy issues and fear of disclosure [14]. Content for the group EP included general information about the liver and its function, facts about HBV infection including routes of transmission, prevention, screening and treatment options, and myths and attitudes towards HBV infection. After developing a framework for the group HBV EP, it was formatted onto PowerPoint for further modification through feedback received during focus groups with West African "gatekeepers" or community leaders. Changes suggested by the gatekeepers include a new title and logo as well as the inclusion of more imagery and facts about the increased prevalence of HBV in Africa. We then pilot tested the group EP using qualitative methods in West African-born immigrants.

Refinement of the Education Program

Four focus groups (n = 57) were first conducted using the group HBV EP in English. Participants who attended the focus groups were West African-born immigrant community "gatekeepers" that included community organizers, religious leaders and media personalities. The focus group participants were recruited through a well-known Senegalese patient navigator with ties to many different African communities around New York City. All participants provided IRB-approved informed consent and then viewed the EP, which lasted approximately 30–45 min. Detailed feedback was elicited slide-by-slide during the program. Participants also completed six demographic questions using an automatic response system (ARS) prior to the presentation. At the end of the presentation, participants were encouraged to provide feedback on the content and length of the presentation and group EP locations. Saturation was achieved after four focus groups with respect to new feedback. This qualitative feedback from gatekeepers was used to refine the EP. Participants received a $30 gift card as compensation for their participation.

Community-Based Pilot Test of the Program

After refining the group HBV EP, through a community-based participatory approach, it was pilot tested in eight different West African-born immigrant communities (n = 154) in New York City. The group EP was administered as a PowerPoint slide presentation that lasted approximately 45 min. All participants provided IRB-approved informed consent. A demographic questionnaire was completed along with a brief six-question pre-/post-test survey which was administered via ARS to measure change in knowledge. The pre-/post-test survey questions were developed based on gatekeeper feedback and coordinated with the educational content of the program. All individuals who participated in the pilot testing were West African-born immigrants residing in Harlem or Bronx, New York, many recruited with the assistance of the patient navigator. Participants in the pilot test received gift cards ($15) as compensation for their involvement.

Results

Refinement of the EP with Gatekeepers

A total of 57 participants attended the four focus groups with gatekeepers (see Table 1). Gatekeepers represented the following countries: Burkina Faso, Mali, Niger, Nigeria, Senegal and Sierra Leone. Of the 57 participants, 23 (40.4%) completed a demographic questionnaire during the focus groups. Some of the participants were reluctant to complete the demographic questions. As we were working on establishing new relationships and wanted to ensure the trust of the participants, we did not get demographic data from all participants. The majority of gatekeepers were male (65.2%) and 82.6% were above the age of 50 years old. Nearly half (47.8%) of the participants attended some college or more and 52.2% of the participants preferred French as the primary language but all were fluent in

Table 1 Demographic information for participants from four focus groups with gatekeepers, *n* = 23

Age in years	
≤50	82.6%
>50	17.3%
Gender	
Male	65.2%
Female	26.1%
Missing	8.7%
Highest education	
≤High school graduate/GED	34.7%
>Some college or more	47.8%
Missing	17.4%
Preferred language	
English	34.8%
French	52.2%
Other	8.7%
Missing	4.3%
Regular doctor	
Yes	34.8%
No	39.1%
Missing	26.1%
Insurance status	
Employer-provided insurance	17.4%
Medicaid/medicare	26.1%
None	21.7%
Other	13.0%
Missing	21.7%

Information was not collected at the first focus group

GED general education development

English. Over a third of the participants (39.1%) did not have a regular primary care doctor, 26.1% of the participants had Medicaid or Medicare as a form of health insurance while 21.7% were uninsured.

Qualitative Findings of the Focus Groups with Gatekeepers

The overarching themes that emerged from the four focus groups as barriers to HBV screening in this community included fear of disclosure, stigma within the community and lack of knowledge (see Supplementary Table 1). Many gatekeepers relayed community fear of disclosing HBV status to other community members and to places of employment. Some gatekeepers expressed concern about how other community members would stigmatize positive persons.

> I worry that if I show that I'm sick, some people will say aren't you contagious? How is it that you've contracted HBV? What type of things were you doing that caused you to get HBV?

Gatekeepers expressed that educating West Africans about HBV and how it is transmitted can decrease the stigma associated with it. Lack of knowledge about HBV was the prominent theme from all four of the focus groups. Gatekeepers did not understand the prevalence of HBV in their home countries. Many were surprised to learn about the silent nature of HBV infection, and that HBV is more infectious than HIV.

> So you mean to tell me that HBV is 100 times more infectious that HIV? This is unbelievable and something we have never learned before! We always hear about Africa and HIV but we never hear about HBV, which is more deadly than HIV.

Most gatekeepers expressed strong appreciation and positive feedback for the program while expressing significant gaps in HBV knowledge among the West African-born immigrants. One gatekeeper noted:

> The information we've received today is great. This is information that I can share with people who are close to me, especially because we have never received information like this before.

Gatekeepers felt comfortable and relaxed in the focus group session as the open dialogue created a suitable atmosphere to discuss the transmission of HBV with other African groups.

> Bringing together different African groups, like this, helps to open the discussion about the spreading of HBV.

The themes that emerged from the focus group were used to develop the pre-/post-test survey that assessed HBV knowledge during the group EP (see Supplemental Table 2). Feedback received from the gatekeepers during the focus groups was used to further refine the EP that was pilot tested in eight different West African-born immigrant communities.

Community-Based Pilot Test of the Program

After refinement of the group HBV EP, it was then pilot tested with 154 participants from eight different groups in West African-born immigrant communities. Participants represented the following countries: Cameroon, Ivory Coast, Mali, Niger, Nigeria and Senegal. The majority of the participants were male (42.5%) and 43.2% were above the age of 50 years old. Most of the participants attended high school or beyond (58.9%) and 47.9% spoke English. Of participants who submitted demographic information (*n* = 146), 59.6% had a regular doctor while 33.5% had Medicaid or Medicare and 12.3% reported no insurance (see Table 2).

Table 2 Demographic information for participants in pilot test of group HBV education program, *n* = 146

Age in years	
<50	35.6%
≥50	43.2%
Missing	21.1%
Gender	
Male	42.5%
Female	37.0%
Missing	20.5%
Highest education	
≤High school graduate/GED	20.5%
>Completed high school/GED	58.9%
Missing	20.5%
Language spoken	
English	47.9%
French	21.9%
Other	5.5%
Missing	24.7%
Regular doctor	
Yes	59.6%
No	19.9%
Missing	20.5%
Insurance status	
Employer-provided insurance	21.9%
Medicaid/medicare	33.5%
None	12.3%
Other	11.7%
Missing	20.5%

Demographic information was not collected from all participants

GED general education development

Detailed results from the pre-/post-test survey administered during the pilot test of the EP are demonstrated in Table 3. The most notable finding was an overall increase in knowledge from pre- to post-test (70% pre-test vs 88% post-test, *p* value <.01). On the pre-test survey, African participants displayed moderate baseline knowledge of HBV with an average correct score of 70% prior to the EP. Across all six questions, knowledge improved after the EP. For survey question, “How many African-born people are infected with Hepatitis B?” while there was improvement in the response, it was incorrectly answered by more than half of the participants on the post-test survey (17.4% pre-test vs 46.9% post-test).

Table 3 Change in knowledge based on HBV knowledge pre-/post-test survey in pilot testing

	% Correct—pre[a]	% Correct—post[a]
Q1	17.4%	46.9%
Q2	72.4%	85.6%
Q3	54.0%	85.9%
Q4	91.2%	92.2%
Q5	90.7%	96.2%
Q6	90.3%	93.1%

An overall increase in knowledge from pre-test 70% to post-test 88% (*P* value <.01). Pre-/post-test surveys were not completed by all participants (*n* = 84)

[a] Missing values have been excluded

Discussion

The findings in this study demonstrated that through a community-based participatory approach, a culturally targeted group HBV EP, refined with feedback from gatekeepers and then pilot tested in West African-born immigrants is effective in increasing knowledge about HBV. This represents an important development in improving HBV screening in the West African community which is a critical first step in reducing liver cancer risk in this community.

At baseline, prior to the group HBV EP, African participants demonstrated a moderate knowledge of HBV infection. Development and refinement of the EP through a community-based participatory approach which was then pilot tested in West Africans, resulted in improved HBV knowledge. Feedback during focus groups with gatekeepers was positive and community leaders were eager to promote a group EP to improve HBV knowledge within their communities. Since this study, requests for community-based HBV screenings to our group have increased and we have conducted three screening events (33 people screened). We are currently exploring avenues to offer the EP immediately followed by HBV screening on the same day.

Salient feedback from this study that will impact future work includes consideration to test this group EP in African languages. While all participants were fluent in English, many indicated that French was their primary language. Therefore, impact of this group program may be enhanced through translation of the program and testing in French and other African languages. Use of language of origin in recruiting individuals for HBV screening events has been suggested as an additional successful method in HBV education to foreign born individuals [13]. Additionally, assessing the impact of delivery of the program by West African community peers may be helpful in enhancing knowledge throughout the community and reducing barriers to HBV screening. Mukhtar et al. found that providers who spoke an Asian language had an increased chance of performing HBV screening to Asian participants [15]. While it may be helpful to present group EPs in language of origin, it should be noted that some forms of West Africans languages do not have a written version of the language and therefore additional ways to educate some communities may be needed.

This study also highlights the strength of engaging a culturally targeted patient navigator for improving health knowledge. The successful recruitment of participants for this study was enhanced through the engagement of a culturally targeted patient navigator. The engagement of a culturally targeted patient navigator has also been effective in promoting the efforts of Mount Sinai's Hepatitis Outreach Network (HONE) which has screened over 1600 foreign born individuals for HBV and linked over 85% of those who tested positive to follow up care [16].

One limitation of this study was the recruitment of participants. Without the engagement of the patient navigator, many participants did not attend the focus groups and education programs. A number of scheduled focus groups and education programs were cancelled due to low participant turn-out. In addition, many participants were reluctant to complete the demographic survey, although they did complete the anonymous ARS questions. This seemed to be related to a lack of trust of the health care system as well as research itself. In the future, we plan to use resources within the West African communities such as, radio, local newspapers and local television stations, in addition to a culturally targeted patient navigator, to help promote HBV EPs and to continue building trust between the medical staff and participants from this at-risk community.

HBV screening remains an unmet medical need in at-risk West African-born immigrant communities. Through this study, we have successfully created, refined and tested an effective HBV group EP targeting West African-born immigrants. This group EP represents an important first step in efforts to reduce liver cancer in West Africans.

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Compliance with Ethical Standards All participants provided IRB-approved informed consent.

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