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## Community Health Worker Hepatitis B Education for Cambodian American Men and Women

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### Abstract

**Background**—Cambodian Americans have high rates of chronic hepatitis B virus (HBV) infection and liver cancer. There is very limited information about the utility of community health worker (CHW) approaches to cancer education for Asian American men. We have previously reported our positive findings from a trial of CHW education about HBV for Cambodian Americans who had never been tested for HBV. This report describes similarities and differences between the outcomes of our CHW HBV educational intervention among Cambodian American men and women.

**Methods**—The study group for this analysis included 87 individuals (39 men and 48 women) who were randomized to the experimental (HBV education) arm of our trial, participated in the CHW educational intervention, and provided follow-up data six months post-intervention. We examined HBV testing rates at follow-up, changes in HBV-related knowledge between baseline and follow-up, and barriers to HBV testing (that were reported to CHWs) by gender.

**Results**—At follow-up, 15% of men and 31% of women reported they had received a HBV test ( $p=0.09$ ). HBV-related knowledge levels increased significantly among both men and women. With respect to HBV testing barriers, women were more likely than men to cite knowledge deficits, and men were more likely than women to cite logistic issues.

**Discussion**—Our study findings indicate that CHW interventions can positively impact knowledge among Cambodian American men, as well as women. They also suggest CHW interventions may be less effective in promoting the use of preventive procedures by Cambodian American men than women. Future CHW research initiatives should consider contextual factors that may differ by gender and, therefore, potentially influence the relative effectiveness of CHW interventions for men versus women.

### Keywords

Cambodian Americans; Hepatitis B Infection; Liver Cancer; Community Health Workers

## INTRODUCTION

The 2011 American Community Survey counted over 300,000 Cambodian Americans (Hmong Studies Internet Resource Center, 2013). The overwhelming majority of Cambodian adults came to the United States (US) as immigrants or are the children of immigrants (Smith-Hefner, 1999). Many Cambodian Americans are linguistically isolated, economically disadvantaged, and have low levels of health literacy (Grigg-Saitio et al., 2010). Approximately 40% of Cambodian Americans have limited English proficiency and over 75% speak Khmer at home. Additionally, about 30% of Cambodian American men and 40% of Cambodian American women have less than a high school education, and 20% of Cambodian families in the US live below the poverty level (Hmong Studies Internet Resource Center, 2013).

Southeast Asian immigrants to the US are over 20 times more likely to have evidence of chronic hepatitis B virus (HBV) infection than the general population (Chao et al., 2009; Pollack et al., 2011). Individuals with chronic HBV infection are at considerable risk of liver cancer, and Americans of Southeastern Asian origin have higher rates of liver cancer than any other racial/ethnic group (Miller et al., 2006; Parkin, 2006; Wong and Corley, 2008). HBV serologic testing is recommended for all immigrants from endemic areas of the world such as Southeast Asia, as well as their US-born children (Weinbaum et al., 2008). Further, the Institute of Medicine has recently emphasized the importance of educational and research efforts to improve levels of HBV testing and HBV-related knowledge in foreign-born and other high-risk communities (Institute of Medicine, 2010).

We have previously reported outcomes from our randomized controlled trial to evaluate a community health worker (CHW) HBV educational intervention for Cambodian Americans (Taylor et al., 2013). The trial was conducted in the greater Seattle area of Washington State. Experimental group participants received CHW education addressing HBV and control group participants received CHW education addressing physical activity. An intent-to-treat analysis indicated that the HBV education was effective in promoting HBV testing receipt. Additionally, experimental group participants had significantly higher levels of knowledge about HBV than control group participants at follow-up.

Research has shown that CHW interventions can improve adherence to breast and cervical cancer screening guidelines in Asian American, as well as other racial/ethnic minority communities (Hou et al., 2011; Taylor et al., 2008; Viswanathan et al., 2010; Wells et al., 2011). However, there is very limited information about the utility of CHW approaches to cancer education for Asian American or other minority men. Consequently, several recent reviews of CHW interventions have reported a need for studies that include male participants (Rhodes et al., 2007; Viswanathan et al., 2010). This descriptive report addresses similarities and differences between Cambodian American men and women with respect to the outcomes of our HBV CHW educational intervention.

## METHODS

### Trial Overview

The trial design has been reported in detail elsewhere (Taylor et al., 2011; Taylor et al., 2012; Taylor et al., 2013). Trial participants were individuals who participated in a baseline (community-based) survey. Individuals were eligible for participation in this survey if they were of Cambodian descent, aged 20–64 years, and able to speak Khmer or English. Baseline survey respondents provided information about their HBV testing history, knowledge about HBV, and demographic characteristics.

Our baseline survey participants were eligible for the trial if they reported no history of HBV testing. Individuals in the trial were randomized to an experimental or a control group six months after they participated in the baseline survey. Immediately after randomization, individuals assigned to the experimental group were offered a HBV CHW intervention and individuals assigned to the control group were offered a physical activity CHW intervention. Our primary trial outcome was HBV testing completion within six months of intervention receipt. Levels of knowledge about HBV were assessed as secondary trial outcomes. Outcome ascertainment was based on responses to a follow-up survey. A total of 250 individuals (125 men and 125 women) without prior HBV testing were randomized to either experimental or control status. (This manuscript focuses on the experimental group participants.)

All our trial materials were translated into Khmer using standard methods. Project personnel with direct participant contact (survey interviewers and CHWs) were all bicultural, bilingual Cambodian Americans. Male staff members conducted study procedures with men and female staff members conducted study procedures with women. The Fred Hutchinson Cancer Research Center Institutional Review Board approved our study protocols.

### **Hepatitis B Intervention Materials**

We used findings from an earlier qualitative study to develop culturally and linguistically appropriate materials for use in the HBV intervention (Burke et al., 2011). The HBV materials included an educational flipchart (available in Khmer and English) and accompanying pamphlet (with Khmer and English text), as well as a motivational Khmer language DVD (with English subtitles). The flipchart and pamphlet provide basic information about HBV including the prevalence of chronic infection among Cambodians, ways the virus can and cannot be transmitted, importance of serologic testing, and consequences of chronic infection. The HBV DVD used an educational-entertainment format to reinforce information provided in the flipchart and pamphlet.

### **Community Health Workers**

Four CHWs (two men and two women) delivered the HBV intervention. They were all fluently bilingual and bicultural ethnic Cambodians, and none of them were certified health professionals. The CHWs were trained to educate participants about HBV, motivate participants to obtain HBV testing, and address participants' individual barriers to HBV testing.

### **Hepatitis B Intervention**

Our CHWs made up to 11 attempts to complete a home visit with each participant. During home visits, the CHWs systematically asked participants if they could review the HBV flipchart together and provided them with the HBV DVD and pamphlet. They also asked each participant why he/she had not had a HBV test and addressed his/her individual barrier(s) to testing. Finally, the CHWs attempted to complete follow-up telephone calls with participants one month after completed home visits to offer further information and assistance, as necessary.

### **Process Data Collection**

Process data were collected to document implementation of the HBV intervention. Specifically, the CHWs documented the outcome of home visit attempts, use of the educational materials during home visits, participants' self-reported individual barrier(s) to HBV testing, and the outcome of follow-up telephone call attempts. A home visit was

considered complete if the CHW was able to complete a discussion about HBV at a participant's home.

### Follow-up Survey

Bilingual Cambodian interviewers made up to 11 follow-up contact attempts. Follow-up survey interviews were conducted face-to-face in participants' homes. Each follow-up survey respondent was asked whether he/she had ever had a HBV test and, if so, when the test was completed. Other questions assessed levels of HBV knowledge (using the same survey items that were included on the earlier baseline survey) and use of the project's HBV educational and motivational materials.

### Data Analysis

We compared the male and female experimental group participants' demographic characteristics, pre-intervention HBV knowledge, and post-intervention HBV testing levels. Additionally, we examined changes in knowledge between baseline and follow-up among experimental group men and women separately. To assess statistical significance, we used chi-square tests for between-group comparisons (i.e. men versus women at baseline or at follow-up) and McNemar tests for within-group comparisons (i.e. changes from baseline to follow-up within the same gender)

## RESULTS

### Study Group

CHWs were able to contact 116 (56 men and 60 women) of the 125 individuals (63 men and 62 women) randomized to our trial experimental arm. Four individuals were not home at the time of seven home visit attempts, and five individuals had moved since they completed the baseline survey and could not be traced.

Ninety-nine (85%) of the 116 contactable individuals, 46 (82%) of the 56 contactable men, and 53 (88%) of the 60 contactable women agreed to complete educational sessions with CHWs in their homes. There was no difference between the proportions of contactable men and contactable women who agreed to participate ( $p=0.35$ ).

Eighty-seven (39 men and 48 women) of the 99 individuals who completed educational sessions also completed the follow-up survey. The other 12 were either not at home after 11 contact attempts, had moved and could not be traced, or declined to participate in the follow-up survey.

For this report, we focused on the 87 individuals who completed both a HBV home visit and a follow-up survey. The demographic characteristics of our study group are given in Table 1. All but four were foreign-born. Over one-half (56%) had less than 12 years of education and fewer than one-quarter (21%) spoke English fluently or well. Women were significantly more likely to have less than 12 years of education than men ( $p=0.01$ ).

### Barriers to Hepatitis B Testing

When asked why they had not been tested for HBV, 15 (38%) of the 39 men and 21 (44%) of the 48 women gave his/her CHW one or more specific reasons (Table 2). Three men and 15 women cited lack of knowledge about HBV and/or HBV testing. As examples, one woman stated that she "did not know about hepatitis B before this education" and another stated that she "already got the vaccination and did not know people needed to get a test first until today." Seven participants said they did not think HBV testing was personally necessary because they did not have any symptoms of HBV and/or because none of their

family members had HBV. Five men indicated that they had not been tested because they lacked health insurance and eight men indicated they did not have time to get tested.

### Hepatitis B Testing

At follow-up, 21 (24%) of the 87 individuals in our study group reported they had been tested for HBV in the six months following their intervention. Six (15%) of the 39 men reported HBV testing compared to 15 (31%) of the 48 women ( $p=0.09$ ).

### Hepatitis B Knowledge

Prior to receiving their HBV education, men were significantly more likely than women to know HBV cannot be spread by eating food prepared by an infected person ( $p=0.01$ ) and to know HBV cannot be spread by sharing chopsticks ( $p=0.04$ ). There were no other significant pre-intervention differences between men and women with respect to levels of HBV-related knowledge.

Table 3 gives results from our analysis addressing pre-intervention versus post-intervention knowledge about HBV. Men and women had higher post-intervention than pre-intervention knowledge levels for all variables except knowing that HBV can cause liver cancer. Both genders were significantly more likely to know that Cambodians have higher rates of HBV infection than whites, HBV cannot be spread by eating food prepared by an infected person, HBV cannot be spread by sharing chopsticks, and HBV cannot be spread by shaking hands at follow-up than baseline. Men were significantly more likely to know that HBV cannot be spread by coughing and women were significantly more likely to know there is treatment for HBV.

### Process Evaluation

Our CHWs reported that they reviewed the HBV flipchart with all the home visit participants. They also reported that the HBV pamphlet and HBV DVD were provided at the end of all but one of the home visits. Follow-up telephone calls were successfully completed with 91% of the study group. The proportions of men and women who completed follow-up telephone calls were 95% and 89%, respectively ( $p=0.36$ ).

At follow-up, 59 (68%) of the study group reported reading the HBV pamphlet and 43 (49%) reported watching the HBV DVD. The proportions on men and women who read the pamphlet were 74% and 63%, respectively ( $p=0.24$ ); and the proportions of men and women who watched the video were 56% and 44%, respectively ( $p=0.24$ ).

## DISCUSSION

Our study indicates that CHW interventions are acceptable to Cambodian American men, as well as women. Specifically, 85% of contactable individuals agreed to complete a home visit, and there was no meaningful difference in the proportions of men (82%) and women (88%) who agreed to complete a home visit. An earlier study evaluated a CHW intervention for Chinese immigrants to the Pacific Northwest, and found that the proportions of men and women that were prepared to participate in educational sessions about HBV were 74% and 66%, respectively (Taylor et al., 2009).

We previously reported our trial findings from an intent-to-treat analysis that included all randomized individuals (regardless of whether they participated in the HBV or physical activity interventions and/or the follow-up survey); 17% of the experimental group and 2% of the control group were tested for HBV using the intent-to-treat approach (Taylor et al., 2013). The reported analysis includes individuals who were randomized to the experimental

group, completed the HBV CHW intervention, and provided follow-up data. Nearly one-quarter (24%) of these individuals reported a HBV test. However, female participants were almost twice as likely to report testing than were male participants (31% versus 15%). While this difference is not statistically significant ( $p=0.09$ ), our findings suggest CHW interventions may be less effective in promoting the use of preventive procedures by men than by women.

We found gender differences with respect to self-reported HBV testing barriers. Women were more likely than men to cite lack of knowledge about HBV or HBV testing as their reason for not having been tested. Conversely, men were more likely than women to cite logistic barriers to testing such as lack of health insurance or time. These findings suggest that CHW interventions for men might usefully emphasize that preventive testing helps people avoid time-consuming and expensive medical care in the future. They also suggest that the content of CHW interventions may need to be tailored to men and women.

Our earlier experimental trial analyses showed that the HBV CHW intervention was effective in increasing knowledge (Taylor et al, 2013). In multivariable analyses (that adjusted for demographic characteristics and baseline knowledge levels), the experimental group had higher levels of knowledge about HBV than the control group at follow-up. Specifically, experimental group participants were significantly more likely to know that Cambodians have higher rates of HBV infection than whites, HBV cannot be spread by eating food prepared by an infected person, HBV cannot be spread by sharing chopsticks, and HBV cannot be spread by shaking hands. Our current descriptive analysis indicates that the HBV CHW intervention positively impacted knowledge levels among both men and women, and the impact did not differ meaningfully by gender.

Nguyen and colleagues recently reported their findings from a pilot study of a colorectal cancer intervention for Chinese Americans that was delivered by CHWs (Nguyen et al., 2010). This study, which focused on promoting fecal occult blood testing, included 73 participants. Six months after intervention, 56% of the study group self-reported fecal occult blood testing receipt. Additionally, knowledge about colorectal cancer and colorectal cancer screening had increased significantly (compared to baseline). While this study only included 20 male participants, it found minimal gender differences in the effect of the intervention (on knowledge or fecal occult blood testing receipt).

Our study has several limitations that should be recognized. We recruited individuals living in one geographic area of the US, and the results may not be applicable to all Cambodian Americans. Additionally, only individuals who agreed to complete a community-based survey were eligible for participation in the study and survey responders may be more receptive to health education programs than survey non-responders. Finally, our follow-up interval was only six months and some study participants may have received HBV testing after their follow-up survey.

The US Affordable Care Act recognizes CHWs as valuable members of the healthcare workforce, as well as their important role in reducing health disparities (Martinez et al., 2011; Rosenthal et al., 2012). Further, many states and US healthcare systems have initiated or are initiating policies and funding mechanisms to foster increased utilization of CHWs (Brownstein et al., 2011; Goodwin and Tobler, 2008). Therefore, evaluations of the effectiveness and comparative effectiveness of CHW interventions for men (as well as women) are becoming increasingly important. Such evaluations should consider contextual factors and processes that may differ by gender and, therefore, potentially influence the effectiveness of CHW interventions among men versus women (Arvey and Fernandez, 2012; Glenton et al., 2011).

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**Table 1**

## Study Group Characteristics

Demographic Characteristic	Men N=39 n (%)	Women N=48 n (%)	p-value	Total N=87 n (%)
< 45 years old	19 (50)	21 (44)	0.56	40 (47)
< 12 years education	16 (41)	33 (69)	0.01	49 (56)
Currently married	27 (69)	36 (75)	0.55	63 (72)
< 20 years of age at immigration *	17 (45)	15 (31)	0.20	32 (37)
Spoke English fluently or well	11 (28)	7 (15)	0.12	18 (21)
Health insurance coverage	24 (62)	33 (69)	0.48	57 (66)

\* Includes 3 men and 1 woman who were US-born

**Table 2**

## Self-reported Barriers to Hepatitis B Testing\*

Barrier	Men N=15 n	Women N=21 n	Total N=36 n
Did not know about HBV and/or HBV testing	3	15	18
Believed HBV testing is unnecessary	2	5	7
Did not have health insurance	5	2	7
Did not have time for HBV testing	8	0	8
Did not speak English well	1	0	1

\* 1 man reported 3 barriers, 2 men reported 2 barriers, and 1 woman reported 2 barriers

