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The Role of Sociocultural Factors in Hepatitis B Screening Among Asian Americans

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Keywords

Hepatitis B (HBV) screening; Asian Americans; sociocultural factors

INTRODUCTION

Hepatitis B is significantly associated with liver cancer, the fourth most common cause of cancer death among Asian Americans.[1] Patients who become infected with HBV earlier in life are at a higher risk of becoming a chronic carrier. [2–4] HBV infection among Asian Americans is estimated to be about 10% and it varies in incidence and prevalence among Asian American subgroups.[5] The infection typically occurs through mother-to-child transmission at birth. Babies and young children are more likely to develop chronic infections, which explains, in part, the high number of Asian Americans who are chronic HBV carriers.[6]

Chinese American males are six times more likely to report HBV-related liver cancer than Caucasians.[7, 8] Among Chinese Americans, 46% knew that HBV could cause liver cancer, but only 35% reported that they had been tested for it.[9] Forty-eight percent of Chinese immigrants in the United States reported that they had received the HBV blood test.[10, 11] Southeast Asians have higher liver cancer rates than any other racial/ethnic group in the U.S. Yet, a survey of Cambodian immigrant women conducted in Seattle, Washington, indicated that only 38% had been serologically tested for HBV.[12] Chronic infection rates of HBV among Vietnamese-American adults are between 7% and 14%.[13] Our previous study of Vietnamese immigrant adults in Pennsylvania and New Jersey indicated that only 8.8% were screened for HBV.[14]

Educational level, gender, English fluency, and household income were associated with increased HBV knowledge and previous HBV testing among Asian Americans.[15, 16] Study results have indicated that HBV screening may be influenced by Asian cultural factors, such as respect for authority and elders, karma, males as decision makers, saving face, Yin/Yang, and chi.[17–21] Family members may not inform each other to protect their members and may believe that talking about illness (karma) manifests it. Male figures, such as a husband or

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eldest son, often determine decisions about HBV screening and vaccination for the family. Asian Americans may also not want to disagree with a physician; but they may simply not come back to the physician or take their medication as prescribed. The concepts of Yin/Yang may also be important because health entails being in balance; ill health can be restored by bringing back harmony through acupuncture or diet. Asian Americans are likely to use traditional Chinese medicine, Western medicine, or both.[22, 23] These concepts have influenced many Asian American subgroups.[24–27] These demographic and cultural factors may influence HBV screening rates.

Conceptual Model

Ma[28] developed a Sociocultural Health Behavior Model by incorporating the major constructs of the Health Belief Model,[29] Social Cognitive Theory,[30,31] the Behavioral Model and access to medical care,[32] The Sociocultural Health Behavior Model acknowledges that the complexity and interaction of multiple factors play a major role in many patient's health-seeking behaviors. It explains health-seeking behavior by describing the relationships among individual, interpersonal, and environmental factors. This model describes relationships between individual health behavior and interaction with the environment. The interactions and multiple levels of influence of individual, interpersonal, and environmental factors underlying the health behavior are emphasized.

Since screening behavior is influenced by multiple factors, there is a need to identify the associations among these factors. The role of cultural factors is seldom included in a health behavior analysis. In addition to common theoretical components, this model includes cultural factors as a primary component. The model incorporates the interdependence of predisposing, enabling, need, family/social support, environmental health system, and cultural factors, all of which contribute to a particular health behavior or outcome. A number of variables can be included under cultural factors; these include notions of fatalism, birth in the U.S., years lived in the U.S., English fluency, use of native language at home, native food dietary habits, use of media sources in the native language, and attendance of native-themed social events.

The purpose of this community-based study was to apply the proposed Sociocultural Health Behavior Model to determine the relationship of factors proposed in the model to health behaviors related to HBV screening among Asian American adults.

METHODS

Sample

The current study was a part of larger screening study of Chinese, Korean, Vietnamese, and Cambodian Asian Americans. To obtain a representative sample, a current listing of 111 Asian American community organizations in the greater Philadelphia area, New Jersey, and New York City was identified by the Asian Community Health Coalition and Center for Asian Health, Temple University. The 111 community organizations were located in geographic areas which maximized the coverage of Asian Americans across ethnic groups, age, and socioeconomic status. Asian community organizations (N=52) were randomly selected as clusters from the list of 111 organizations. A proportional sampling procedure was adopted based on the size of the four ethnic groups with the size of Chinese twice Korean and Vietnamese.[33] The 2,098 participants were recruited from the 52 Asian community organizations. Among the recruited, 2,011 participants completed the survey (a response rate of 95.9%).

For the purpose of this paper, only adult Asian Americans (Chinese, Korean, and Vietnamese), 18 years of age or older were retained for the analysis; the final sample

comprised 1,312 participants (male=588, female=724). Of these, 718 (54.7%) were Chinese, 289 (22.0%) were Koreans, and 305 (23.2%) were Vietnamese. The sample size was calculated by using GPOWER.[34] By convention, a power of 0.85 was chosen which resulted in a minimum sample size of 160 per ethnic group for statistical tests. The above ethnic group breakdown showed that each ethnic group met this criterion, thus achieving a minimum power of 85%.

Design and Data Collection Procedures

A cross-sectional research design was used in the study because of the common advantages provided by this method, such as collecting information from numerous, diversified participants in a short time. Data collection and administration trainings were provided to all study administrators as well as to on-site bilingual translators. The research team at the Center for Asian Health, Temple University, in conjunction with organization leaders, administered the study to Asian American participants on site in the community organizations' facilities. The study was administered by using face-to-face instruction methods. Participants had the choice of responding to the questions in English or in their native language (Chinese, Korean, or Vietnamese).

Measures

A multi-lingual 95-item questionnaire was developed, back-translated, and pilot-tested for reliability, validity, and cultural appropriateness. It was composed of six sections: (1) demographics (age, gender, foreign born, ethnicity, marital status, education level, employment status, income, and health insurance) and acculturation (English language competency and native foods); (2) screening behavior for HBV; (3) perceived barriers; (4) health perceptions based on the health belief model (susceptibility, severity, benefits, barriers, cues to action, and self-efficacy); (5) access to healthcare (physician visits and language-concordant physician); and (6) satisfaction with access to health care. The detailed information about the data collection and measures were described elsewhere.[35]

The original study questionnaire items were examined and selected for this study through initial screening by applying the frequency distribution analysis and chi square analysis. The selection criteria was based on the reasonable distribution of the independent variables that met the psychometric requirements. After the preliminary screening and analysis, the following variables were retained in the analysis.

The Cultural factor: years lived in the U.S., English fluency, belief that cancer is curable, self-efficacy to prevent getting cancer, fear of getting a bad test result, embarrassment/ shame of being diagnosed with Hepatitis B, use of Internet for information (see Table 2).

The Enabling factor: has a regular physician to visit, importance to get screened for cancers, insurance covers HBV screenings, communication problem, transportation to the facility, lack of knowledge, and knows where to get services (see Table 3).

The Environmental factor: arrangements for making appointments for medical care, length of time waiting to see doctor at the office, length of time waited between making an appointment for care and the day of visit, and rating of care of medical group (see Table 4).

The Family and Social Support factor: discussion of cancer with significant other or family members, family/friend had the disease (see Table 5).

Data Analysis

Statistical analyses included descriptive statistics (frequencies, percentages, and chi square statistic), and logistic regression. The logistic regression was used to model the log odds of the outcome variable: never-screened versus screened. Each domain (i.e., Cultural Factors, Enabling Factor, Environmental Factor, and Family/Social Support Factor) was analyzed separately. The analysis was first conducted with each independent variable univariately; Then the significant variables ($p<.05$) from the univariate model were analyzed with a multivariate model. All statistical analyses were conducted using Statistical Analysis (SAS version 9.1.3).

RESULTS

Of the final sample of 1,312 Asian Americans, 67.5% (n=885) reported never screened for HBV. Table 1 presents the percentages and chi square results for selected demographic factors and screening status. Of all demographic variables, employment and income were not significantly related to screening status, $P>.05$. As a result, the following logistic regression analyses adjusted for age, marital status, education, and ethnicity.

Cultural Factors

Of seven cultural variables analyzed individually in relation to HBV screening status and adjusting for demographics variables, six variables significantly differentiated between never screened and screened. Participants who did not speak English at all were more likely to be never screened than those who spoke English fluently (OR=1.59, 95% CI = 1.06, 2.39). Additionally, those who disagreed with “cancer is curable” (OR=1.67, 95% CI = 1.25, 2.22); those who disagreed with “there is something I can do to prevent getting cancer” (OR=1.83, 95% CI = 1.30, 2.59); those who feared of getting a bad test result (OR=1.75, 95% CI = 1.05, 2.92); those who felt embarrassed or ashamed of being diagnosed with HBV (OR=2.24, 95%CI = 1.02, 4.93); and those who reported not using the Internet often (OR=1.72, 95% CI = 1.28, 2.31) were more likely to be never screened (Table 2).

When including the above six significant variables from the univariate analysis into the multivariate logistic model, only two variables (“there is something I can do to prevent getting cancer” and “Internet use”) remained significant in differentiating between never screened and screened.

Enabling factor

Of seven enabling variables analyzed individually in relation to screening status and adjusting for demographics variables, six significantly differentiated between never screened and screened. Those without a regular physician were more likely to be never screened than those with a regular physician (OR=2.53, 95% CI = 1.88, 3.41). Those who believed it is “not important” (OR=1.74, 95% CI = 1.12, 2.69) or “important” (OR=1.73, 95% CI = 1.29, 2.31) to get screened for cancer were more likely to be never screened than those who believed it is “very important.” Those whose insurance does not cover HBV screening cost were more likely to be never screened (OR=3.59, 95% CI = 2.48, 5.20). Additionally, those who indicated having communication problems (OR=1.42, 95% CI = 1.06, 1.89), those who lacked of knowledge (OR=1.84, 95% CI = 1.38, 2.45), and those who did not know where to get services (OR=1.78, 95% CI = 1.26, 2.52) were more likely to be never screened (See Table 3).

When including the above six significant variables from the univariate analysis into the multivariate logistic model, three variables remained significant. Those without a regular physician to visit, those who considered getting screening for cancer less important, and

those whose insurance does not cover HBV screening cost were more likely to be never screened.

Environmental factor

Of four environmental variables analyzed individually in relation to screening status and adjusting for the ethnicity variable, three variables significantly differentiated between never screened and screened. Participants who reported that "arrangements for making appointments for medical care" was poor or fair were more likely to be never screened, (OR=1.38, 95% CI = 1.06, 1.81). Those who reported that "length of time waiting between making an appointment for care and the day of visit" was poor or fair were more likely to be never screened, (OR=1.50, 95% CI = 1.13, 1.99). And those who rated "overall, how would you rate care at your medical group" as poor or fair were more likely to be never screened, (OR=1.33, 95% CI = 1.01, 1.75) (Table 4).

After including the above three significant variables from the univariate analysis into the multivariate logistic model, none of them were significant.

Family/Social Support Factor

Of two independent variables under the family and social support domain, one was significant. Those who did not discuss HBV with their significant other or family were more likely to be never screened than screened (OR=3.57, 95% CI = 2.35, 5.40). Since there was only one significant variable from the univariate analysis, the multivariate logistic model would have the same results as the univariate model (See Table 5)

DISCUSSION

This study examined multiple levels of influence of predisposing, enabling, cultural, environmental health system, and family/social support factors underlying Hepatitis B screening among Asian Americans using the Sociocultural Health Behavior Model. The study found some significant associations of the proposed model.

Correlates of Screening Behavior

Of the demographic variables, age, marital status, and ethnic subgroup were significantly related to screening status. Asian Americans who were older, married, more educated, and who were of Chinese descent were more likely to be screened and to be compliant with current recommendations than those who were not. Chinese Americans were more likely to be screened, followed by Korean Americans and Vietnamese Americans. Income was not a predictor of HBV screening and this observation is supported in a previous study of Vietnamese Americans.[36] These data may indicate that, relative to the whole sample, few went for screening; of those who did and were retirees, their current decreased income was not relevant to their screening behavior, since the screening could be performed before their retirement. The positive association between age and HBV screening may partially explain this observation. Furthermore, little variation of income among the Asian American population may also mitigate its impact on HBV screening. Consistent with previous studies, older adults or participants who were married were more likely to be screened for HBV.[15, 16, 37].

Previous studies have suggested that English fluency plays an important role in screening.[11] This was supported in our study. Of the cultural factors, the univariate analysis showed that Asian Americans were more likely to be never screened if they did not speak English fluently, feared getting a bad test result, did not think cancer was curable, did not think they could prevent cancer, felt embarrassed or ashamed of getting a test, or did not use the

Internet. The multivariate analysis showed that only internet use and thinking that cancer was preventable led to getting screened.

Of the enabling factors, Asian Americans were more likely to be never screened if they had no regular physician, did not think screening was important, had insurance that did not cover the cost of screening, had communication problem, lacked knowledge about HBV, or did not know where to get the services. Lack of medical insurance coverage correlating with not being screened is consistent with other cancer screening studies showing the association between a lack of health care access and low HBV screening rates.[38] The role of the physician in treating Asian Americans is important. Studies have shown that Asian Americans are more likely to get tested if their physician recommends it and if they do not need an interpreter to understand the physician. [11] Multivariate analysis showed that having a regular healthcare provider, whose insurance covered the cost of HBV screening, were more likely to be screened than those who did not have these resources. Not having a regular physician made it less likely that a person will be given a recommendation to get screened. A physician recommendation has been found to be the most significant correlate for other cancer screening procedures, such as mammograms,[39] and is a significant correlate for Pap testing.[40]

Of the environmental factors, those who were more likely to be never screened reported that arrangements of appointments were poor, there was a long wait between setting an appointment and having it, and rated the care of the medical group as poor than those who did not in univariate analysis. Of the family/social factors, those who did not discuss HBV with their significant others or family members and who did not have a primary care provider were less likely to get screened in univariate analysis. The results from the multivariate analysis indicated that Asian Americans who do not discuss HBV with family members and friends were less likely to get screened. Studies consistently show that family members'/friends' recommendation for testing is significantly correlated with higher screening rates. For example, while few Vietnamese American men received a recommendation from a family member (20%) or a friend (12%), among those who did, 75% were screened.[36] We found that there is a gap between a proportion of "knowing someone close with HBV" and a proportion of "discussing HBV with significant others or family members." In some Asian cultures (especially in Chinese culture), there is a stigma attached to HBV infection.[41, 42] Therefore, although HBV is prevalent in Asian populations, people rarely talk about it with others (even with significant others or family members) because they do not want others to know about their HBV status.

There were several limitations to the study. First, since the sample was drawn from Asian Americans who are members in community organizations, the findings may not be generalizable to all Asian Americans, especially those who do not join community-based organizations. It is possible that Asian Americans who join community organizations may demand more culturally-appropriate information and resources, thus leading to different perceptions of cultural and environmental barriers compared to those who do not join such organizations. Second, these findings are based on self-report study and, as a result, may include participant response bias and measurement error; some studies have found that the prevalence of cancer screening tests are often overestimated.[43] Third, the relatively small cell size and the missing values prevented us from conducting a) a separate analysis on each Asian subgroup, and b) the analysis controlling for all demographic variables. Fourth, we did not ask the type of insurance that the participants had. Older people may have been more likely to have coverage through Medicare or other public insurance, which could explain why older people were more likely to get screened. In addition, it may be worthy for future studies to ask more information about participants' medical history, since having been diagnosed with a chronic disease may increase the likelihood of seeing a primary care

physician and, accordingly, increase the chance of being recommended for screening tests by physicians.

The strengths of the study included: the community-based sampling method, the study was administered by native language speakers in-person, and the application of the Sociocultural Health Behavior Model, which highlights culture as a factor that influences the screening behaviors.

CONCLUSION

The results of this study suggest that HBV screening intervention programs could be more effective if they include the cultural, predisposing, enabling, access/satisfaction with health care factors associated with HBV screening. Sensitivity to ethnic and cultural factors, especially with regard to language concordance and community contexts and dynamics, should be present throughout all secondary prevention activities, especially with education materials and personal contact to enhance interventions which target the improved liver screening rates among Asian Americans. In addition, the partnership with community organizations can play a role in assisting Asian Americans in identifying, planning and adopting effective evidence-based screening programs. Physician recommendations for HBV screening and having health insurance to cover the cost are also important factors to determine Asian Americans' screening behaviors. This result indicates the implications for reaching out and partnering with culturally-competent health care providers who can play a key role in promoting the prevention and intervention of HBV. Future studies should explore the effects of intervention programs that incorporate these significant factors.

Brief Description

Hepatitis B (HBV) is significantly associated with liver cancer, the third most common cause of cancer death among Asian Americans. The purpose of this community-based study was to apply the proposed Sociocultural Health Behavior Model to determine the relationship of factors proposed in the model to health behaviors related to HBV screening among Asian American adults.

Key Points

1. Sensitivity to ethnic and cultural factors, especially with regard to language concordance and community contexts and dynamics, should be present throughout all secondary prevention activities, especially with education materials and personal contact to enhance interventions which target the improved liver screening rates among Asian Americans.
2. The partnership with community organizations can play an important role in assisting Asian Americans in identifying, planning and adopting effective evidence-based screening programs.
3. Physician's recommendation for HBV test and having health insurance to cover the cost are important factors to determine the screening behaviors.
4. The results of this study suggest that HBV screening intervention programs could be more effective if they include the cultural, predisposing, enabling, access/satisfaction with health care factors associated with HBV screening. Future studies should explore the effects of intervention programs that incorporate these significant factors.

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The data collection protocol was approved by the Temple University Institutional Review Board.

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Table 1

Percentages and significance tests of demographic factors in relation to screening status

Demographic Information	N	Never-screened (n=885)	Screened (n=427)	Significance Test
Age category				$\chi 2=11.31$, P<.01
18 – 39	346	75.00	25.00	
40 – 64	788	65.24	34.76	
65+	178	65.19	34.81	
Marital Status				$\chi 2=7.82$, P<.001
Not married	337	73.84	26.16	
Married	965	65.64	34.36	
Highest grade completed				$\chi 2=19.93$, P =.001
Below high school	275	79.21	20.79	
High school +	990	65.13	34.87	
Employment status				$\chi 2=0.14$, P>.05
Employed	860	67.85	32.15	
Unemployed	428	66.82	33.18	
Annual household income				$\chi 2=1.61$, P>.05
<= $10,000	279	67.02	32.98	
$10,000- 30,000	553	68.94	31.06	
> $30,000	278	64.77	35.23	
Ethnicity				$\chi 2=30.07$, P <.0001
Vietnamese	305	79.67	20.33	
Korean	289	67.82	32.18	
Chinese	718	62.12	37.88	

The demographics may not always add up to the total sample size due to the missing values.

Table 2

Logistic regression analysis of cultural factors in relation to HBV screening status

Independent variables	N	Univariate analysis	Multivariate analysis
		Never Screened vs. Screened	Never Screened vs. Screened
Years lived in the U.S.			
<15 yrs	776	1.11(0.86 – 1.44)	
>15 yrs	535	referent	
How well speak English			
Not at all	324	1.59(1.06 – 2.39)*	1.52(0.91 – 2.55)
Not well	620	1.03(0.76 – 1.37)	0.91(0.63 – 1.3)
Well/Very well	366	referent	referent
Cancer is curable.			
Disagree	422	1.67(1.25 – 2.22)**	1.33(0.93 – 1.9)
Agree	781	referent	referent
Self-efficacy to prevent getting cancer			
Disagree	464	1.83(1.3 – 2.59)**	1.75(1.12 – 2.74)*
Agree	741	referent	referent
Fear of getting a bad test result			
Yes	1135	1.75(1.05 – 2.92)*	1.43(0.77 – 2.67)
No	107	referent	referent
Embarrassment/Shame of being diagnosed with HBV			
Yes	1190	2.24(1.02 – 4.93)*	1.97(0.77 – 5.03)
No	52	referent	referent
Use the Internet for sources of information			
No	651	1.72(1.28 – 2.31)**	1.62(1.14 – 2.31)*
Yes	583	referent	referent

*P<.05,

**P<.01

Note: Odds ratio & 95% confidence intervals

The cell size might not always add up to the total sample size due to the missing values.

Table 3

Logistic regression analysis of enabling factors in relation to HBV screening status

Independent variables	N	Univariate analysis	Multivariate analysis
		Never Screened vs. Screened	Never Screened vs. Screened
Have a regular physician			
No	445	2.53(1.88 – 3.41)**	1.60(1.03–2.49)*
Yes	849	referent	referent
Importance of getting screened for cancers			
Not important	146	1.74(1.12 – 2.69)*	1.71(0.90 – 3.24)
Important	411	1.73(1.29 – 2.31)**	1.47(1.02 – 2.12)*
Very important	706	referent	referent
Insurance covers HBV screenings			
No	1036	3.59(2.48 – 5.2)**	3.34(2.23 – 4.99)*
Yes	275	referent	Referent
Communication problem			
Yes	392	1.42(1.06 – 1.89)*	1.04(0.69 – 1.57)
No	849	referent	Referent
Transportation to the facility			
No	107	1.19(0.74 – 1.93)	
Yes	1133	referent	
Lack of knowledge			
No	400	1.84(1.38 – 2.45)**	1.43(0.96 – 2.13)
Yes	844	referent	Referent
Know where to get services			
No	283	1.78(1.26 – 2.52)**	1.43(0.90 – 2.27)
Yes	959	referent	referent

*P<.05,

**P<.01

Note: Odds ratio & 95% confidence intervals

The cell size might not always add up to the total sample size due to the missing values.

Table 4

Logistic regression analysis of environmental factor in relation to HBV screening status

Independent Variables	N	Univariate analysis	Multivariate analysis
		Never Screened Vs. Screened	Never Screened Vs. Screened
Arrangements of appointments			
Poor/Fair	575	1.38(1.06 – 1.81)*	1.16(0.75 – 1.8)
Good/Excellent	570	referent	referent
Time waiting to see physician			
Poor/Fair	668	1.29(0.98 – 1.7)	
Good/Excellent	447	referent	
Time waiting between appointment for care and the day of your visit			
Poor/Fair	661	1.5(1.13 – 1.99)**	1.46(0.98 – 2.2)
Good/Excellent	471	referent	referent
Rating of care of medical group			
Poor/Fair	490	1.33(1.01 – 1.75)*	1.05(0.75,1.46)
Good/Excellent	609	referent	referent

* P<.05,

** P<.01

Note: Odds ratio & 95% confidence intervals

The cell size might not always add up to the total sample size due to the missing values.

Table 5

Logistic regression analysis of family and social support factors in relation to HBV screening status

		Univariate analysis	Multivariate analysis
Independent Variables	**N**	**Never Screened Vs. Screened**	**Never Screened Vs. Screened**
Discussed HBV with significant other or family			
No	1155	3.57(2.35 – 5.4)**	3.57(2.35 – 5.4)**
Yes	155	referent	referent
Family/ friend had HBV			
Yes	1228	0.74(0.37 – 1.46)	
No	80	referent	

*P<.05,

**P<.01

Note: Odds Ratio & 95% confidence intervals

The cell size might not always add up to the total sample size due to the missing values.