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Hepatitis B and Liver Cancer Among Three Asian American Sub-Groups: A Focus Group Inquiry

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Abstract

Prevalence of hepatitis B among Asian Americans is higher than for any other ethnic group in the United States. Since more than 50% of liver cancer is hepatitis B related, the burden of morbidity and mortality is extremely high among Asian Americans, highlighting the need for culturally appropriate interventions. We conducted focus groups ($n = 8$) with a total of 58 Korean, Vietnamese, and Chinese immigrants in Maryland to explore knowledge, awareness and perceived barriers toward hepatitis B screening and vaccinations. Thematic analysis uncovered generally low levels of knowledge and awareness of hepatitis B risks, screening, and vaccination; inter-generational differences; and barriers to prevention. Some differences arose across ethnic groups, particularly toward perceived orientation to preventive activities and the role of religious groups. High rates of hepatitis B infection among Asian Americans highlight the need for tailored interventions. These findings may assist policy strategists in implementing interventions that will facilitate the integration and scale-up of hepatitis B education, screening, and vaccination campaigns.

Keywords

Hepatitis B risk; HBV screening and vaccinations; Asian Americans; Qualitative; Immigrant health

Introduction

Asian Americans are the fastest growing minority group in the United States. In 2008, Asian Americans numbered approximately 13.5 million (almost twice that of the 6.9 million from

1990), and accounted for 4.2% of the US population [1]. By 2050, the Census Bureau predicts that the population will reach 41 million, or approximately 11% of the US population, highlighting the importance of addressing health issues specific to this group. Though the Office of Management and Budget (OMB) includes many ethnicities within the overarching category of 'Asian American,' Asian Americans are a heterogeneous group with respect to their cultural beliefs, socioeconomic backgrounds, normative perceptions, and cancer incidence rates [2]. For instance, while Asian Americans are more likely to have a college education than other members of the US population, on average, Asian Americans also have a higher poverty rate than the national average [3], placing some groups at risk for having limited access to healthcare and health information.

The current paper focuses on three of these specific ethnic groups: Chinese Americans, Korean Americans, and Vietnamese Americans. These three ethnicities constitute three of the five most populous Asian American sub-groups per the 2010 US Census, and combined account for nearly 2% of the United States population and for 43% of the Asian population in the United States [4]. In 2009, 5.2% of Maryland's population was Asian American, 47% of which were Chinese, Korean, or Vietnamese American [5, 6]. Though all Asian Americans share some common health risks, such as a risk for liver cancer, it is important to focus on their specific ethnic differences and not simply Asian Americans as a homogenous unit.

There are 1.3 million chronic hepatitis B cases in the United States, half of which are among Asian Americans and Pacific Islanders (AAPIs) [7]. While hepatitis B virus (HBV) is rare among white non-Hispanics in the United States (1.0%), as many as 1 in 10 Asian Americans carries the virus [7]. A recent study in New York City found that 14.8% of Asian Americans were chronically infected with HBV [8]. Worldwide, more than 50% of liver cancer is directly attributable to the hepatitis B virus, and a quarter of HBV patients will eventually die of liver cancer or liver failure [9, 10]. Rates of HBV and liver cancer vary across different Asian American sub-populations. Vietnamese men have the highest incidence of liver cancer of all ethnic groups (41.9/100,000) and, while lower, incidence rates among Korean males (24.8) and Chinese males (20.9) are still well above those of white males (3.7) [11].

Chronic hepatitis B and liver cancer caused by hepatitis B in Asian Americans and Pacific Islanders comprise one of the most serious—but frequently neglected—racial and ethnic disparities in the US [12]. Reducing the burden of HBV infection is one of the priorities of US public health authorities [13]. More specifically, Healthy People 2010 has a goal of reducing the incidence of HBV infection, especially among ethnic minority groups [13]. Recently, the Institute of Medicine (IOM) reported a need to support more viral hepatitis services for at-risk populations such as foreign-born populations [14]. In May 2011, the Department of Health and Human Services (HHS) released an action plan addressing the IOM's concerns, with a focus on developing programs to eliminate the HBV health disparity [15].

The differences in liver cancer prevalence between Asian Americans and white non-Hispanics can be attributed to hepatitis B infection, resulting from a combination of low levels of hepatitis B vaccination coverage due to cultural, linguistic, or financial barriers, and high rates of mother to child transmission [7]. Although HBV screening and subsequent vaccination can prevent infection, rates of preventive behavior have been demonstrated to be sub-optimal. For example, of those screened in the aforementioned New York study, 56.6% reported not having been screened previously for HBV. This lack of screening may be related to low HBV knowledge and a lack of direct screening recommendations from healthcare providers. One of the few published studies highlighted low rates of knowledge

and screening in Asian American communities and called for additional research [16]. Seventy-one percent of participants in the New York study reported that being tested for HBV had not been previously recommended, even though 89% had regular family physicians [8]. As a result of these low HBV knowledge and screening rates, Asian Americans are often first diagnosed during late stage cancer, resulting in high mortality rates [17]. Though the National Task Force on Hepatitis B started vaccination education programs in 1997 focusing on Asian Americans who were in high school or early college [18], these programs did not address those already exposed or chronically infected.

Given the high rates of hepatitis B and liver cancer, Asian Americans are a minority group for whom valid, reliable, and accessible health information is sorely needed. Although interventions have been conducted to raise hepatitis B awareness among Asian Americans, little research exploring this community's understanding of the virus and prevention efforts has been conducted in Maryland. This lack of published studies highlights the need to further explore how this disease is understood and conceptualized within the local Asian American population, choices surrounding the uptake of screening and vaccination, and structural factors that might influence these choices. This study attempts to fill that gap by conducting focus groups with three Asian American communities strongly affected by HBV and liver cancer: Chinese, Korean, and Vietnamese Americans. Findings of this study will inform the development of educational materials to increase understanding of hepatitis B among the Asian American community in Maryland.

Methods

Between February and April, 2009, trained interviewers recruited 58 individuals from various Asian American communities, Chinese, Vietnamese, and Korean (CVK) for eight focus groups intended to identify perceptions, understanding, and barriers among CVK's with regard to hepatitis B screening and liver cancer prevention. These ethnic classifications were generated by the participants themselves, and based on self-identification, birthplace, and language spoken at home.

Focus group participants were recruited through the following methods: (1) Flyers posted at college campuses, Asian supermarkets, restaurants, and Community Based Organizations (CBOs); (2) recruitment tables at community events; (3) local ethnic newspapers; (4) mass e-mails sent to the Asian student associations at Johns Hopkins University and the University of Maryland; (5) staff members' personal networks; and (6) referrals from CBOs. Individuals were eligible if they were 18 years of age or older and Maryland residents; a total of 115 people were contacted and screened. There were three main factors that guided the sampling: self-identified ethnicity (Korean, Chinese, Vietnamese), age (older or younger than 25), and history of HBV screening. Two focus groups included those <25 years, contained a mix of ethnicities, were conducted in English, and mainly targeted 1.5 and 2nd generation youth. The other six focus groups contained people ≥ 25 years, with two groups from each ethnicity, and were conducted by bilingual moderators using ethnic specific languages. This sample was structured by age for two reasons; (1) we were interested in potential differences in hepatitis B knowledge and understanding between generations and (2) many of the youth felt more comfortable expressing themselves in English resulting in a mixed-ethnicity focus group. The purpose of the mixed ethnicity groups was to obtain opinions from more acculturated members of the populations who presumably had more experiences with the US educational and healthcare systems. Though the focus group moderators differed as result of the necessity that they speak Vietnamese, Korean, or Chinese, they were all simultaneously trained by the second author, observed the English-language focus groups, and conducted mock focus groups in front of faculty. Mock focus groups allowed the moderators to practice facilitation, receive feedback and demonstrate

competency. The focus groups for individuals >25 were divided by ethnicity so that they could be conducted in the participants' language of choice. This allowed participants to more readily express themselves, make them feel comfortable, and to allow for the understanding of specific group norms. Each focus group included, on average, seven individuals. Participants were reimbursed \$20 for their participation.

After being recruited for the study and providing informed consent, each participant was asked to complete a brief survey to collect socio-demographic information. The focus groups were semi-structured and provided opportunities for the moderators to probe further into topics about which the members had particular expertise or opinions. The focus group guide allowed flexibility to address specific issues such as liver cancer and HBV knowledge and experiences, social-cultural barriers and facilitators of screening and vaccinations, and understanding of illness across communities. This guide was informed by previous single ethnicity studies of hepatitis B knowledge and attitudes and through discussions with experts on our project team (see Table 1 for a summary of the content). Focus groups were conducted on the campuses of the Johns Hopkins Bloomberg School of Public Health, the University of Maryland School of Public Health, and at offices of local CBOs. The Institutional Review Board at the Johns Hopkins Bloomberg School of Public Health approved this study.

Focus groups were 90–120 min long (average 100 min) and digitally recorded. The audio files of the interviews and transcripts were identified only by code numbers and participants were instructed to use only first names or pseudonyms during the taping. Audio files were destroyed after transcription and translation. Native speakers conducted verbatim transcription and translation of the in-depth interviews. Each of these translations was validated by another bilingual individual by comparing them against the original transcription and digital file. For words that did not translate directly, such as jargon and slang, a “do not translate” list was created, along with a corresponding glossary, in order to preserve the connotations and meaning of the original-language version.

Analysis

Thematic analyses focused on exploring common themes such as the understanding of HBV and liver cancer risk, Asian Americans' experiences with cancer, and cultural and logistical barriers to screening. This analysis was carried out with the assistance of the qualitative data analysis software, ATLAS.ti [19]. A preliminary codebook was created based on topics in the focus group guide. Transcripts were initially reviewed by two investigators (MP and LE) to further refine the codebook. The investigators then independently applied these refined codes to half of the focus group transcripts in order to modify and create additional codes and sub-codes. Any discrepancies between coders were discussed among the investigators and resolved prior to coding the remaining transcripts.

Results

Study Participants

We conducted eight focus groups with a total of 58 participants in Maryland. Ethnicity was equally represented across the focus groups; the mean age of individuals was 35.8 (range 18–70), and 53% were female (see Table 2).

Participants in each of the focus groups shared thoughts around the following topic areas: awareness and knowledge of HBV and liver cancer, liver cancer risk perception, and barriers and facilitators of screening and vaccination.

Awareness, Knowledge, and Risk Perception for HBV and Liver Cancer

Limited Knowledge About Liver Cancer—Though all groups described cancer as a significant health problem in their communities, about half of the focus groups specifically mentioned liver cancer as an important health issue.

Even among the focus groups that spontaneously mentioned liver cancer, however, overall awareness of the disease, risk factors, and prevention was generally limited.

[CHINESE Group 2]: Liver diseases [are a problem]. We still don't know what to do with liver diseases. We only know the very minimum since we don't have any medical background. We don't really know how to prevent them or how to go for check ups or tests.

While varying perceptions of the reason for the phenomenon were mentioned across groups, one common belief expressed in all groups regarding the phenomenon of hepatitis B transmission was that the virus could be relatively easily spread from person to person.

For instance, one person in the second Vietnamese group discussed the role of a lack of cleanliness in promoting high transmission:

[VIETNAMESE Group 2]: When you asked why Asian people or Vietnamese people have a high prevalence for liver disease, I think it is due to person-to-person transmission. Because they do not keep themselves clean, therefore, person-to-person transmission is very common.

On the other hand, a member of the second mixed ethnicity young group talked about a perception that high transmission is the result of multiple transmission routes:

[MIXED Group 2]: You can get it from kissing, you know, or sharing food or people think for the most stupid things; oh, I can get this by so and so, one simple thing, like touching you, or something like that.

Perceptions of Low Community Awareness Even in Groups with Higher Participant Awareness—There were differences across participants in some groups in terms of the sophistication of information discussed. Members of the Vietnamese and Korean groups tended to discuss the transmission and the causes of hepatitis B in general terms.

[VIETNAMESE Group 1]: I have some thoughts about liver cancer. I think smoking and drinking lead to cancer.

In contrast, some participants in the younger mixed groups and the Chinese groups placed greater emphasis on the biomedical understandings of causes. In spite of a generally higher level of knowledge about health, these group members discussed the discrepancy between their community's understanding of hepatitis B transmission and the state of scientific knowledge.

[CHINESE Group 2]: In the United States, there are more cases of alcoholic hepatitis. There are two types of Hep B, one is alcoholic and the other is viral. It's transmitted only via blood and sexual intercourse. It basically won't be transmitted via touching, or via food-intake [as others in the group suggested]. From a professional point of view, some Hep B cases have family history, but the majority does not have family history...

[MIXED GROUP 2]: I feel that there is so little knowledge out there about how you get something and there's so many myths...that in general, everything is considered to be infectious and bad.

Although individual participants in these groups generally expressed that they believed themselves to be more knowledgeable than most community members, not all participants felt that they had adequate personal knowledge about liver cancer prevention.

[MIXED Group 2]: Yeah, I know embarrassingly little about it as well; I did learn that it's like it's a major cause of death, you know, in Asian countries, in Asian Americans, I think it has something to do with ...something to do with people... heavy drinkers are higher risk.

Awareness may Differ by Generation—In addition to differences in awareness between some participants and what they felt community members would understand, members of the Vietnamese focus groups and the members of the younger mixed ethnicity groups also discussed a divide between the awareness of members of older and younger generations. This difference was framed in terms of technology and information access; youth were sometimes seen as having increased access to medicine, information, and knowledge.

[VIETNAMESE Group 1] ...but actually there are people, for example my mother, if I tell her about hepatitis B virus, she'll ask what a virus is. People can't imagine what a virus is and they only understand that you go for a checkup on this issue.

[MIXED Group 1]: Well, I personally know that it's easily prevented; but I mean, my parents, they don't know anything.

Even among those younger individuals who reported understanding the fundamentals of the relationship between hepatitis B and liver cancer, there was often an expressed lack of understanding of what steps one might take to prevent hepatitis B. As one participant explained:

[MIXED Group 1]: I think in general, they know about cancer, they know it's something bad, they know it's something they don't want; but there is this disconnect between the disease and the behaviors that can actually lower your risk of getting the disease, and you know, just general awareness of actions you can take, to be, you know, to protect yourself, to take care of your health, how do you be proactive about, you know, reducing your risk for cancer. I think there's not much knowledge about that in the general community.

Perceived Lack of Susceptibility to Hepatitis B and Liver Cancer—Focus group discussion also coalesced around perceived risk for hepatitis B and liver cancer, with some, but not all individuals recognizing the increased risk for liver cancer among those with Asian American ethnicity. There was a feeling in some of the Chinese, Korean, and younger groups that lack of awareness in the community and a lower perceived susceptibility might be linked to a perception of lower prevalence of hepatitis B in the United States compared to the prevalence in Asian countries.

[KOREAN Group 1]: In Korea, we are kind of forced to get shots although we don't think it is important. This makes people at least think about it. Also the Hep B prevalence rate is about 10% in Korea, so the general public knows about the hepatitis B. But here in the United States, some Korean Americans have no chance like that.

In addition, younger participants described liver cancer as a relatively distal entity that could not affect them personally.

[MIXED Group 2]: I think because it's something that usually happens at older age, or really, it's just something that happens sort of chronically over time. It's so far removed...that their sense of risk is not enough to get them screened.

The Role of Fate in Developing Hepatitis B and Liver Cancer—In contrast to the medicalized notion of risk presented by some participants, some Korean and Vietnamese focus group participants also discussed the role of fate or God's will in the risk for liver cancer development.

[KOREAN Group 1]: It's their fate...there are those who can't avoid cancer. I might be born with such genes.

Stress as a Risk Factor for Developing Hepatitis B and Liver Cancer—Members of some of the Chinese, Korean, and younger mixed groups also endorsed the idea that stress or lack of rest can contribute to the development of liver cancer.

[KOREAN Group 2]: If people have stress, they become weak and probably get a cancer. Genes, stress, and a weak body can develop a cancer. We should be careful. Anyway, cancer is a question mark.

[KOREAN Group 1]: It is up to the person. We can do more exercise and think of everything positively. But if we can try to live without stress, any disease can be preventable...Maybe we can do certain things, but it is all about the percentage (if the rate is extremely rare or reasonable).

Factors Affecting Screening and Vaccination

When asked to describe potential barriers to screening and vaccination, participants raised a number of factors including perceptions toward prevention, lack of insurance, and stigma from the community.

Cultural Barriers to Prevention—A perceived need to prevent health problems like liver cancer was commonly woven through some individuals' discussions.

[MIXED Group 2]: It's like a cultural thing, almost like, it's in Asians, to keep it to yourself, you know, if you deal with a problem, with any problem, you deal with yourself independently.

However, decreased utilization of preventive medicine and a lack of integration of prevention into the Asian American culture were more often discussed as barriers to seeking screening and vaccination.

[VIETNAMESE Group 1]: There is information but Vietnamese people have their own traditional lifestyle; they don't care about their health as much; it's their culture, what is it called? ... It's not a closed-door lifestyle, but it's more like 'okay, living today is for today' they don't think about the future....yeah, they're very loose and don't care much.

Although this barrier was almost universally mentioned across groups, the nature of the discussion varied a bit across groups. A challenge raised in relation to accessing hepatitis B screening was that people are not accustomed to the notion of preventive care, and only access the medical system when they are sick.

[VIETNAMESE Group 2]: and I think people don't have the time because they have to work. There are many other people who don't have insurance; therefore, they cannot afford to go. Also, for the Vietnamese people, if you don't go see a doctor, then you're well; if you go to a doctor, then you'll be sick.

In the Chinese and Vietnamese groups, the lack of preventive care-seeking was at times discussed as a cultural laziness:

[VIETNAMESE Group 2]:we may be sick but, just as everyone here has mentioned, do not care about diseases. The first is that we do not know about diseases, and the second is that we are lazy to go get checked.

In the Korean and younger mixed groups, however, this was more often framed in terms of an orientation toward success and the need to work hard which left little time for prevention:

[MIXED Group 1]: I think a lot of it has to do with the immigrant aspect, so like, Asians have very immigrant-based communities. So then when you come here young people are generally healthy, they are working hard to survive, to pay the rent, and then you take your health for granted, and then you know when you do have time, and you are raising children, it often gets pushed aside, until you become my parents' ages, and your friends start getting cancers. [KOREAN Group 2]: Koreans are trying to do things as fast as they can. It is the problem that Koreans are obsessed with success.

Finally, members of the Korean and Chinese groups attributed at least some of this cultural difference in prevention orientation to differences in the culture of the health systems in Asia as compared to the United States:

[KOREAN Group 1]: We had a good national insurance system in Korea. The government also saves costs if they can protect the citizens from liver disease, so they push people to get tested and vaccination. I think it is the system difference that the United States government doesn't seem to push their people.

Healthcare Systems Barriers—Though nearly all groups mentioned knowing about screening tests, participants were often unsure how to access them, the logistics involved in prevention activities or whether others in their community were aware of them. This lack of awareness was often perceived as further limiting community members' motivation to seek preventive action.

[KOREAN Group 2]: ...here, in the U.S., the health system is complex. In Korea, if we are sick we can go to a clinic without delay. However, in the U.S., even if we made an appointment with doctors we should wait for one or two weeks, which discourages us go to a hospital. Also, it is very expensive to go to the emergency room. Anyway, the problem is complicated health system in the U.S.

[Korean Group 1]: I was negative and was recommended to get the shots. But they didn't follow up that part. Of course it was very cheap (to get a shot) in a local public health center, but I used to forget to get the second or third shot. I revisited the center the next year, and then I had to start getting three shots again. It was disturbing and hard. I don't think many people will be that motivated to get the vaccination.

The problem of insurance was mentioned as a barrier to liver cancer prevention across many groups, with individuals describing difficulties in accessing and enrolling in insurance and, in particular, problems with the expense of enrollment.

[MIXED Group 2]: It's like in America, mostly employer based, so like, with Asians, I know if the Vietnamese community, most of the jobs you get are nail technicians, and those are really small businesses, and employers can't afford health insurance for their employees, so it's like, you know, like the employees, like nail technicians, like my mom, she doesn't get health insurance.

A commonality across all focus groups was the difficulty in obtaining insurance. Newly arrived immigrants were described as often working in settings that couldn't provide them with full insurance coverage. As one individual explained:

[KOREAN Group 2]: From my experiences, immigrants from Korea have difficulty in getting a job regardless their educational backgrounds. It is mainly due to language barrier. Among Korean immigrants, many people are self-employed and can't afford to pay an insurance fee, so they can't get a regular health checkup while working in a stressful environment. I guess a disease might develop from these things. In case of cancer, we can't find it until the final stage.

An additional difference that arose in the focus group discussions was the use of alternative medicine stressed by the Korean groups. Though they stressed the importance of awareness and knowledge of cancer, they noted that it is not always addressed through a Western framework, even by those with health insurance.

[KOREAN Group 2]: Awareness is important. Koreans want to do something, which has direct impact on their health. The difference of awareness makes one group [Americans] go to the doctor's office while it makes another group to buy expensive health supplements. Koreans seem to think that buying insurance is just waste of money. If we have health insurance, we can go to a hospital once a year. Even people who are insured do not regularly go to the doctor's office.

Stigma—A theme that was repeatedly raised across groups as a barrier to liver cancer prevention was that of stigma. Moreover, accessing care was discussed as potentially problematic from the perspective of stigma since it can make it more difficult to keep one's condition secret.

[VIETNAMESE Group 2]: There are many people who are sick [with hepatitis B] but most of them hide it; they do not want to reveal their illness because they fear that other people will stay away from them. But I would like people who have the disease to let others know, so if others know of good medications, they can introduce these medications to help sick people get well.

[CHINESE Group 2]: But he doesn't want other people to know about the fact that he is a ... (hepatitis B carrier) When he was taking the Hep. B medicine, if people asked him, he would just say those are supplements.

Participants in the Vietnamese focus groups were the only participants to mention not only potential stigma toward infected individuals, but also fears of friends or family thinking people who test negative might actually be infected. For example, they mentioned being afraid that having a pamphlet in their car would make others think they were hepatitis B carriers and noted that there were relatively high levels of discrimination from the community.

Religious Groups and Community Functions as Facilitators of Screening—In contrast to the discussion of screening and prevention through the formal healthcare system, participants in Korean and Vietnamese focus groups also described the role of community groups, especially religious institutions, in providing preventive services; something they sometimes called “church insurance.” Members of the younger mixed groups also noted that older members of their families relied on this.

[KOREAN Group 1]: They donate money to their church and pray if some bad things happen to them. They are very dependent on the church...they make a decision based on what they know and believe and they think God will take care of everything.

[VIETNAMESE Group 2]: Last year in July, Vietnamese association also organized at the Vietnamese church of Mary and I went to get vaccinated.

Focus group participants also suggested other community-based methods of accessing preventive measures. An individual in the Vietnamese focus group suggested obtaining information on screening from a cultural festival:

[VIETNAMESE Group 2]: Fortunately, the Vietnamese community always has Tet (New Year) festival, and the health organization gives physical examination and vaccination for free, so I go every Tet. I have been tested for liver, as well as cholesterol level, lipid, and blood sugar level. The results have been very good.

Discussion

This qualitative study examined the perceptions toward, and levels of awareness of, hepatitis B and liver cancer among Asian Americans in Maryland. Although the methods used were not designed for assessing frequencies of opinions or their distribution in the community at large, certain themes were repeatedly mentioned, suggesting their salience. Despite previous hepatitis B interventions and media campaigns focused on screening and vaccination, levels of reported awareness, knowledge, and screening-uptake within the community were consistently low. Numerous barriers were mentioned to accessing hepatitis B screening or the vaccine.

Results of prior studies focusing on the relationship between individual factors and HBV preventive behaviors have varied, at times indicating that Asian Americans who are younger, have lower education and acculturation, and who have lower access to medical care are at higher risk for never having been screened for HBV or for not having received the vaccination [20–22]. Taylor et al. [23] found that knowledge of HBV transmission routes and being told by doctors, friends and family members to get tested were significant predictors of testing [23]. A study of Korean immigrants also found reported barriers to screening and vaccination including lack of insurance, time, lack of culturally competent providers, and a cultural specific notion of when one needs to access care [24]. Findings from these previous studies align with our current findings, though certain themes in our study appeared to be raised more frequently in some Asian American subgroups than in others. Though many of these prior studies focus on the Asian American population as a whole, our current research shows the importance of focusing on specific ethnicities to better understand sub-group differences. In addition, our findings also indicate a perceived acceptance of poor health among some community members and demonstrate a lack of urgency in visiting a doctor. The explanation, suggested by focus group members, that this lack of care-seeking might be specifically associated with the immigrant experience, is something that should be explored in future studies.

Our findings in the current study are novel in that they describe both the commonalities and the variation in how barriers manifested themselves across Chinese, Vietnamese and Korean focus groups. Similar to Thompson's study that showed that only 46% of Chinese and 86% of Vietnamese women knew that HBV causes liver cancer, our findings from the Vietnamese, Korean, and Chinese focus groups also suggested low levels of awareness in Asian American communities [22]. These low levels of awareness within communities were repeatedly mentioned across groups, even by participants whose personal knowledge was relatively high. Moreover, participants continually stressed the importance of improving knowledge about this disease in their communities. Although the younger mixed ethnicity groups were constitutionally different from the other six groups, they noted many of the same themes, particularly when discussing their perceptions of their parents' generation. That the current study uncovered low levels of awareness is important as previous studies

have shown a link between levels of testing and knowledge of HBV transmission routes [23]. Previous studies within the Asian American community have reported low levels of liver cancer knowledge [20, 22–26], as well as a disconnect between having heard of hepatitis B or liver cancer and understanding the health implications of these diseases. Hwang et al. [27] found that when college students were asked if hepatitis B can be transmitted through contaminated food, sharing a toothbrush or razor with an infected person, unprotected sexual activity, or contaminated blood, only 39.8, 45, 66.1, and 65.3% of students, respectively, provided the correct answer [27]. Levels of knowledge about prevention methods were also low [21]. In addition to the ubiquitous theme of limited HBV and liver cancer awareness, all groups discussed cultural barriers to engaging in preventive behaviors and a fear of HBV and liver cancer-related stigma.

Although there were many common themes across the groups, there were some intra-group differences in certain aspects of discussions of hepatitis B and liver cancer. Levels of awareness seemed to be higher among the younger, mixed ethnicity groups as compared to the other focus groups, which could be a result of fewer language barriers, higher education, or more frequent engagements with the medical system. In fact, levels of general medical knowledge appeared to be higher among younger individuals and among participants in the Chinese focus groups, likely resulting from those groups' higher concentration of participants with college educations. There were also some differences in the ways in which facilitators and barriers to prevention were discussed between groups of different ethnicities. For instance, Korean and Vietnamese focus group members but not Chinese focus group members discussed the role of church and community groups in liver cancer prevention, perhaps highlighting a particular avenue for further prevention in those communities. Other studies have incorporated this high level of religiosity reported among Koreans into their interventions, focusing on the church as a location for education and screening programs [2]. Members of the Korean and Vietnamese groups also similarly discussed a perception of the role of fate in determining cancer risk that was absent from the Chinese focus groups. Members of Korean groups also noted a reliance on alternative medicine that was not discussed by others. The subtle differences between groups in the framing of the perceived causes of the cultural non-prevention orientation as related to laziness (in the Chinese and Vietnamese groups) versus an intense focus on work (in the Korean groups) may also be important to note in the development of future prevention messages. It should also be noted that the Korean and Chinese groups focused more on the contrasts between Asian and US healthcare systems, highlighting the need to consider a particular group's prior experiences with healthcare when developing ways to enhance prevention in the United States. Finally, although stigma toward those with hepatitis B and liver cancer was universally raised, the perception of stigma toward those who undergo testing regardless of status seemed to be a particular concern for members of the Vietnamese community. By having used the same set of questions across different ethnicities, these findings highlight potential ways that future hepatitis B interventions can be directly tailored to the needs of specific Asian American sub-groups. While our study was not designed to test hypotheses about group differences, these variations in themes between sub-groups suggest areas for future research.

The goal of this qualitative research was to identify a broad range of information about the conceptualization of HBV and liver cancer risks and prevention within the Chinese, Vietnamese, and Korean community. A limitation of this research is that there were not sufficient resources to conduct additional focus groups to allow for a more comprehensive comparison between groups, or to separate additionally based on age, gender, education, or length of stay in the United States. However, particular themes were repeated and therefore can be seen as valid and important which provides confidence that our results have uncovered many of the critical issues. The between group differences that were noted in themes discussed by focus groups participants are somewhat preliminary but offer avenues

for further study. Another limitation is that the participants in this study were highly educated, and a number of them are Asians who are temporarily living in America (for example as graduate students in a health field) as opposed to Asian Americans who have been here for an extended period of time and who plan to continue living here. This could have resulted in the observed varying levels of health knowledge. More specifically, the Chinese focus group participants had a higher percentage of educated students than the other groups.

Our findings in the current study suggest that while interventions and prevention of HBV and liver cancer are sorely needed among Asian Americans in general, target populations may have varying levels of understanding of liver cancer and specific barriers that must be addressed. Specifically, levels of medical understanding, potential for stigma, and the role of religion varied across subgroups and should be integrated into future interventions accordingly. Our study participants expressed a belief that it is critical to create a larger base of awareness within the community in order to facilitate this uptake of screening or vaccination. Facilitating a dialogue with policy makers, physicians, community organizations, and key stakeholders may move critical interventions forward. These data have informed the development of culturally specific photo novels tailored to the Korean, Vietnamese, and Chinese populations in Baltimore. Each of these use unique photos, dialogue, and story lines to increase the uptake of the corresponding prevention message. As these are being distributed at health fairs and physicians offices, this current project will continue exploring culturally relevant prevention materials to help address the high rates of HBV, and thus liver cancer, among Chinese, Vietnamese, and Korean Americans.

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Table 1
Content of focus group guide

Question content
What do you consider to be a serious illness or health problem in the Asian community?
What health needs concern you as an Asian living in the US? Do you think there would be a difference in these needs if you were living in your homeland?
How concerned are people in your community/in your family about cancer specifically?
What is liver cancer to you (What kind of a disease is liver cancer?) (What experiences have you had with people who have had liver cancer??)
What are some of the early signs of liver cancer?
What do you, or people around you, think causes liver cancer?
Who is more likely to get liver cancer?
Do you think liver cancer can be prevented?
What do people in your community/family do to help prevent liver cancer?
What prevents you from doing the things that you just said were really important for preventing cancer? What keeps people in your community/family from doing the things that prevent cancer?
How many of you know someone in your community who has had an HBV screening test? How many of you have had an HBV screening test yourself?
Tell me about your own experiences with the screening test.
What are reasons to have the screening test?
Why do you think people don't go for the test?
What have you heard a doctor might recommend for someone who has a positive test? For someone who has a negative test?
What have you heard about doctors offering vaccinations based on your tests results?
Where do you learn about HBV screening or about liver cancer?
Have you ever read a brochure about the importance of HBV infection in the Asian American community?
What kinds of suggestions do you have for health professionals (with regard to liver cancer care or HBV screening or just generally??)

Table 2
Characteristics of focus group participants (n = 58)

	Number	%
Language used in the focus group		
English	16	28
Chinese	14	24
Korean	14	24
Vietnamese	14	24
Ethnic origins		
Chinese	20	34
Korean	19	33
Vietnamese	19	33
Age: mean $\pm$ SD, range	35.77 $\pm$ 14.38, 18–70	
Gender		
Male	27	47
Female	31	53
Length of stay in US		
Born in US	9	15
More than 10 years	22	38
6–10 years	5	9
1–5 years	11	19
Less than 1 year	11	19
Annual family income		
Less than 20,000	21	36
20,000–49,999	17	29
More than 50,000	17	29
Missing	3	5
Level of education		
Less than high school	2	3
High school graduate	7	12
College or more	49	85
Employment		
Employed	29	50
Unemployed	4	7
Student	21	36
Retired	4	7
Health insurance		
Yes	49	85
No	9	15