CREATING AND TESTING AN EFFECTIVE HEALTH PROMOTION / DISEASE PREVENTION INTERVENTION APPROACH FOR AT-RISK VIETNAMESE AMERICANS FOR LIVER CANCER

By

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Abstract

This thesis consists of a scoping literature review, followed by a project proposal, regarding the topic of liver cancer prevention behavior in the Vietnamese American (VA) population. Despite past interventions, the VA population continues to experience health disparities in liver cancer such that their incidence and mortality rates are significantly greater than those found in non-Hispanic Whites, as well as any other Asian ethnicities. A contribution of this paper is to aid in the disaggregation of Asian American health data, since within the past few decades, there has been a constant underrepresentation of certain ethnic groups. This research recognizes the heterogeneity of the Asian American population and hopes to reduce the health disparities faced by the local VA community. The literature review was chosen to identify and organize data trends related to hepatitis screening/vaccination, address areas needing further research, and inform the project proposal for a community- and clinic-based program to improve screening rates in VA. Methods of this review consisted of utilizing various online databases, and using a systematic approach in article selection. It is important to note that the following project proposal is entirely hypothetical in its details of research methodology and community partner collaboration, but nonetheless contains information to inform future development of VA cancer screening interventions.
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Introduction

This paper is a scoping review of current literature regarding the topic of liver cancer prevention behavior (screening/vaccination) within Vietnamese Americans (VA), followed by an argumentative thesis on how an intervention can be made that is more effective than those implemented previously in improving this behavior. The aim of this review is to address existing gaps and the lack of diversity in the theoretical framework as well as identify areas of research that should be further explored. Studies that aggregate the Asian ethnicities together will not be included so as to acknowledge the significant heterogeneity and health disparities found within each subgroup. Articles chosen for review will cover either factors associated with screening and/or vaccination or analyses of already implemented interventions. The educational background of the authors was found to be fairly uniform, since nearly all were affiliated with the public health field. Prominent models/theories/frameworks utilized in the literature are the Health Belief Model (HBM) and Social Cognitive Theory (SCT). As such, many analyzed factors are psychosocial, including those mentioned by the HBM (i.e. perceived benefits and self-efficacy). Other notable factors are socio-ecological, particularly those regarding physician and/or community influence. Majority of past interventions relied on community-based organizations (CBOs) as a means to reach out to this population and involved some form of hepatitis educational program. Whether there was any success and/or long-term impact in increasing liver cancer prevention behavior varied throughout each type of intervention, with those that involved the community showing more positive results. In the interests of health promotion and disease prevention within minority populations—Vietnamese Americans in this case—it is imperative that there be interventions focused on increasing these screening and/or vaccination rates. That is why my current research question is as follows, “How can we create an intervention for Vietnamese-Americans at risk for liver cancer using an effective health promotion/disease prevention approach?”

Key Terms Defined

Vietnamese-Americans will be defined as individuals who identify as having Vietnamese descent and reside in the United States, regardless of nativity status. Being at-risk, in this case, is to be associated with having risk factors, which the World Health Organization (WHO) defines as having any attributes or exposure that increases the chances of developing a disease or injury [1]. As stated by the Mayo Clinic, the most common type of liver cancer is hepatocellular carcinoma (HCC). Risk factors that can lead to HCC include chronic infection with viral hepatitis B or hepatitis C, cirrhosis, and excessive alcohol consumption [2]. Cirrhosis, scarring of liver tissue, can be caused by chronic alcohol abuse and chronic viral infection with any type of hepatitis [3]. Hepatitis B can be transmitted via exposure to infectious blood, semen, and other bodily fluids (i.e. sexual contact and sharing contaminated needles). Hepatitis C has similar
transmission routes, but is spread primarily through sharing contaminated needles [4]. Health promotion serves to influence behavior such that individuals express increased control over their health outcomes, whereas disease prevention focuses on the avoidance of disease manifestation through preventative measures (i.e. vaccination, screening, and health risk education) [5]. Due to limited literature, the preventative measures that will be focused on in this paper are hepatitis B screening and vaccination.

**Background / Significance**

Asian Americans are the fastest-growing racial/ethnic group in the United States and are projected to become the largest immigrant group, surpassing Hispanics, by 2055 [6]. Though Asian Americans show the lowest overall incidence and mortality rates in comparison to other races, cancer remains as their leading cause of death. As of 2016, despite a gradual decline over the past decade, Asian Americans/Pacific Islanders show greater rates of liver cancer than those of White and Black racial status, and similar rates to those of Hispanics [7]. When compared to non-Hispanic Whites, as well as within Asian ethnicities, Vietnamese Americans have the highest incidence and mortality rates of liver cancer [8, 9]. Because they show relatively low occurrence of binge and/or episodic drinking [10-12], it is unlikely that alcohol abuse is a contributing factor to their liver cancer development. However, several studies have shown that this population is disproportionately burdened by high hepatitis B/C (HBV/HCV) infection rates [13-17], which suggests a positive correlation between the two. One study in particular conducted a series of hepatitis B screenings among Vietnamese Americans (n=2508) from 2011 to 2017, and found that 9.0% were infected with hepatitis B [13]. The percentage found from that study alone is significantly higher than the national prevalence rate of 0.3% found within the general U.S. population [18], further highlighting a health disparity experienced by Vietnamese Americans. Therefore, the risk factor of interest in this paper will be chronic infection with hepatitis B and/or C, with an emphasis on hepatitis B due to limited availability of literature.

Currently, the U.S. Preventive Services Task Force and CDC recommend HBV screening in those born in regions with ≥ 2% prevalence of chronic hepatitis B as well as children of those born in regions with ≥ 8% chronic hepatitis B [19]. Based on this criteria, Vietnamese Americans are eligible to be screened since depending on the region, the prevalence of hepatitis B in Vietnam was found to be as high as 8% and over [20-22]. In regards to vaccination, the Advisory Committee on Immunization Practices (ACIP) and the CDC recommend universal hepatitis B vaccination for medically stable infants within 24 hours of birth and persons with chronic liver disease (including those infected with hepatitis C) [23]. Despite their eligibility and high HBV/HCV infection rates, Vietnamese Americans display low engagement with liver cancer prevention behavior [24-28], which is a potential problem. Therefore, the intended outcome for this paper will be to create an intervention that integrates the two goals of health promotion and
disease prevention such that there will be an increase in liver cancer prevention behavior in Vietnamese Americans. Though the intervention is completely hypothetical, it is intended that those who have an interest in this health disparity, particularly those in the academic field of public health, will find the provided information meaningful and take further action to elicit the desired outcome.

**Literature Review Methodology**

Within the process of developing a proposed intervention was a scoping review of existing literature that either analyzed the factors associated with screening/vaccination behavior within Vietnamese Americans or past interventions that have attempted to increase such behavior. The research articles that were selected for analysis were published within the last ten years (2009-2019), since a majority of relevant literature was published in or referenced to articles from the early 2010s. A preliminary search of literature was performed in NCBI/PubMed in order to identify areas of further research. As a criteria for determining selected articles, I chose to exclude those that were based upon aggregate data or made generalizations about the Asian American population as a whole, since those fail to recognize the heterogeneity of the subgroups. Other excluded articles were those that presented information regarding Vietnamese American’s levels of knowledge regarding liver cancer, but failed to provide correlation to a behavioral change. With this criterion in mind, a total of 32 articles have been selected for review and were organized based upon discussion of either associated factors to liver prevention behavior or past implementations, with the former being separated by type and the latter being separated by method of delivery.

**Consort Diagram:**

- Assess all existing literature within 10 years for eligibility
- Preliminary Search of Literature in NCBI / Pubmed
- Identify Areas for Further Research

**Elimination Process:**
- Articles not specific to Vietnamese Americans (i.e aggregate data)
- Article focuses on treatments/therapies to liver cancer
- No focus on intervention or screening/vaccination-associated factors
Develop specific search based on key terms: [(“liver cancer” OR “hepatitis”) AND (“Vietnamese American”) AND ((“vaccine” OR “screening”) OR “intervention”)]

↓

Search literature in 5 databases: NCBI/ Pubmed, Scopus, CINAHL, Embase, Web of Science

Exclusion Criteria:
- Data regarding disease prevalence, management, knowledge, and risk factors
- Cancers not related to the liver (i.e. colorectal, breast)
- Studies based upon aggregate data (i.e. did not include data specific to Vietnamese Americans)
- Domain other than screening- or vaccination-associated factors and interventions
- Lack of full text availability

<table>
<thead>
<tr>
<th>Database</th>
<th>Search Yield (n=):</th>
<th>Included Articles (n=):</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCBI/ Pubmed</td>
<td>202</td>
<td>30</td>
</tr>
<tr>
<td>Scopus</td>
<td>28</td>
<td>0*</td>
</tr>
<tr>
<td>CINAHL</td>
<td>20</td>
<td>1*</td>
</tr>
<tr>
<td>Embase</td>
<td>71</td>
<td>0*</td>
</tr>
<tr>
<td>Web of Science</td>
<td>56</td>
<td>1*</td>
</tr>
</tbody>
</table>

Total Articles Included: 32

*Number takes into account repeating results and is representative of unique articles found in relation to those from NCBI/ Pubmed

Factors Associated with Liver Cancer Screening and/or Vaccination

There were a total of 24 articles, three containing repeating data, that mentioned associated variables to hepatitis screening and five to hepatitis B vaccination. Analyzed factors from these selected articles were organized into five categories: sociodemographic, behavioral, psychosocial, socioecological, and enabling. As shown in Table 1, more than half of the articles mentioned factors related to psychosocial, socioecological, and enabling. Only one, Toleran et al., included a behavioral factor, which was specifically sexual health history. The focus was on
Vietnamese males who had sex with other males (MSM), and their number of sexual partners. The article found that the higher the number of sexual partners, the more likely the patient was to screen for hepatitis C. Considering that both types of hepatitis can be sexually transmitted, it is interesting that there has not been more research done about risky sexual behavior within Vietnamese Americans. A possible explanation for why this is could be stigma surrounding the topic. In a qualitative study where ten health care providers (HCP) were interviewed [49], it was stated that Vietnamese American women (VAW) were hesitant in revealing their sexual history due to a fear of judgement from the HCP and community. Another study that interviewed VAW [50] indicated family silence as being a barrier to human papillomavirus vaccination due to a fear of judgement as well, but from family members. In both studies, the idea of a sex stigma has been labeled as a cultural barrier, though there is limited research to support and/or discuss that notion in further detail. Among the articles included in the literature review, only a couple (n=2) mentioned perceived stigma as a barrier to HBV screening [42, 48].

Unlike with hepatitis B-related stigma, a prominent factor found to be negatively associated with screening behavior was length of U.S. residency (n=6), suggesting that more recent Vietnamese immigrants are more likely to screen for hepatitis. This pattern is contrasted with findings from other studies that suggest the longer the length of U.S. residency, the more likely immigrants are to undergo cancer screening [51, 52]. Factors that had a positive association were educational status, perceived benefits, disease knowledge, physician recommendation, peer/community influence, and insurance coverage. Other ones of notable mention were those related to access to care (excluding insurance) such as availability of funds/time, age, having a regular place of care, and patient navigation. Articles that analyzed vaccination behavior in Vietnamese Americans seldom were without analysis of screening behavior. Similar to those of screening, factors positively associated with hepatitis B vaccination were disease knowledge and peer/community influence. Those with negative correlations were also length of U.S. residency and age—though age was more often mentioned. Theoretical frameworks utilized include the Health Belief Model (HBM), Social Cognitive Theory (SCT), Theory of Normative Social Behavior (TNSB), Sociocultural Health Behavior Model, and the Health Behavior Framework (HBF).

**Table 1. Articles analyzed and their mentioned factor categories, n=24**

<table>
<thead>
<tr>
<th>Article</th>
<th>Sociodemographic</th>
<th>Behavioral</th>
<th>Psychosocial</th>
<th>Socioecological</th>
<th>Enabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chu, et al. [29]</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Frew, et al. [26]</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Grytdal, et al. [28]</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsu, et al. [30]</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Hwang, et al. [31]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Juon, et al. [32]</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Past Interventions Aimed at Increasing Liver Cancer Prevention Behavior

There were a total of 13 articles chosen and selected for analysis in regards to interventions implemented in the past. Majority of interventions involved the cooperation of community-based organizations in order to aid in the recruitment of participants as well as the facilitation of the programs. Goals of the program included increasing hepatitis screening/vaccination rates and/or disease knowledge within Vietnamese Americans. In order to achieve those goals, interventions would take one or two of the following approaches: education-based, community-based, media-based, and electronic health record (EHR)-based. Two of the four education-based interventions analyzed either knowledge increases [54] or screening intent [56]. The remaining two had a focus on increasing HBV screening. All four interventions showed relative success in achieving their aim. Programs that relied on media marketing/advertising showed unsuccessful
results or short-term results. There was a greater focus on hepatitis B and screening than on hepatitis C and vaccination. Theoretical frameworks utilized include the Health Belief Model (HBM), Social Cognitive Theory (SCT), Health Behavior Framework (HBF), Chronic Care Model, Theory of Planned Behavior, and the PRECEDE-PROCEED model.

Table 2. Articles organized by intervention type, n=12

<table>
<thead>
<tr>
<th>Intervention Type</th>
<th>Article</th>
<th>Year Published</th>
<th>Theoretical Framework</th>
<th>Aim of Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Juon, et al. [54]</td>
<td>2013</td>
<td>PRECEDE-PROCEED</td>
<td>To increase HBV knowledge</td>
</tr>
<tr>
<td></td>
<td>Juon, et al. [55]</td>
<td>2014</td>
<td>PRECEDE-PROCEED</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td></td>
<td>Lee, et al. [56]</td>
<td>2013</td>
<td>HBM, Theory of Planned Behavior</td>
<td>To assess photonovel effectiveness in increasing self-efficacy and intent to undergo HBV screening</td>
</tr>
<tr>
<td></td>
<td>Zacharias, et al.</td>
<td>2015</td>
<td>N/A</td>
<td>To increase HBV knowledge, screening, and vaccination</td>
</tr>
<tr>
<td>Education /</td>
<td>Juon, et al. [32]</td>
<td>2016</td>
<td>N/A</td>
<td>To increase HBV vaccination</td>
</tr>
<tr>
<td>Community</td>
<td>Ma, et al. [35]</td>
<td>2017</td>
<td>HBM, SCT</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td></td>
<td>Lee, et al. [57]</td>
<td>2015</td>
<td>N/A</td>
<td>To increase HCV knowledge</td>
</tr>
<tr>
<td>Media</td>
<td>Chu, et al. [29]</td>
<td>2019</td>
<td>HBF</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td></td>
<td>Maxwell, et al. [39]</td>
<td>2014</td>
<td>HBF</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td>EHR</td>
<td>Hsu, et al. [30]</td>
<td>2013</td>
<td>N/A</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td></td>
<td>Toyoji, et al.</td>
<td>2018</td>
<td>Chronic Care Model</td>
<td>To increase HBV screening</td>
</tr>
<tr>
<td>Community</td>
<td>Dang, et al. [53]</td>
<td>2016</td>
<td>N/A</td>
<td>To increase HBV screening</td>
</tr>
</tbody>
</table>
Literature Review Conclusion

Much of the literature has been based upon the HBM and HBF, with the latter being a synthesis of the HBM with other major theoretical frameworks such as the SCT and Theory of Planned Behavior. As a result, many studies correlated the following factors to increased screening behavior: perceived benefits, perceived barriers, and knowledge of the disease. The HBF considers socio-ecological contexts such that the desired health behavior may be influenced by variables at the level of the individual, in addition to that of the provider/healthcare system and societal [59]. My research will focus on these factors, but with a different framework in mind (i.e. socioecological) and there will be a proposed intervention based on such. An interesting finding was that despite the large impact physician influence had on patient screening and vaccination behavior, there were few interventions that integrated that factor in. In addition to having a different framework, I will also be focusing on designing the intervention in a way that involves both the physician and the patient. The desired outcome is to design a theoretical program that integrates past and potentially successful components of interventions analyzed in the literature review, as well as address factors with greater scope for change.
References Cited


Title: Creating and Testing an Effective Health Promotion / Disease Prevention Intervention Approach for At-Risk Vietnamese Americans for Liver Cancer

Study Team:
Victoria Huynh, University of Arizona
Julie Armin, PhD, University of Arizona

Project Summary/Abstract:
The proposed intervention will address the health disparities surrounding liver cancer currently faced by Vietnamese Americans (VA). This project aligns with Hepatitis B/C screening recommendations made by the U.S. Preventive Services Task Force and CDC. We will be taking a community-based participatory research approach in a collaboration with Asian Pacific Community Organization (APCO) and the Vietnamese Organization (VO). This intervention aligns with the APCO and VO’s efforts to end Hepatitis B. The long-term goal is to decrease liver cancer disparities among Vietnamese Americans (particularly the older generation) through a culturally appropriate, community- and clinic-based intervention. We hypothesize that an intervention of this type can lead to an improvement in self-efficacy, cancer screening knowledge, and self-reported screening in VA families. Vietnamese culture is highly family- and/or group-oriented, and so it is important to cater to these values when developing an intervention. The specific aims and research methods are as follows:

Aim 1: Perform formative work with VA families and family physicians in relation to liver cancer prevention. Focus groups with VA families (N=24), and community health workers (CHW) (N=12) will be conducted to inform development of the intervention. Surveys will be given to local family physicians (N=100) to assess liver cancer screening knowledge and necessity of a clinic-based intervention.

Aim 2: Develop a multi-level community- and clinic-based liver cancer screening intervention program. CHWs will be trained to conduct an educational program, with components and strategies taken from previous interventions. Physicians and other relevant clinical workers will be trained to interpret and communicate an EHR-based prompt, and refer patients to the CHW-led intervention.

Aim 3: Assess increases in knowledge and satisfaction outcomes among VA and providers as well as increases in self-reported screening and self-efficacy in VA patients. Patient participants (N=50) will complete a baseline and post-survey to assess knowledge, self-reported screening, self-efficacy, and satisfaction with the intervention. Key informant interviews (N=12) with persons working closely with the EHR will be conducted to examine feasibility and acceptability of prompts.
A. SPECIFIC AIMS

Vietnamese Americans, when compared to non-Hispanic Whites and other Asian ethnicities, show the highest incidence and mortality rates for liver cancer [2,3]. This disparity is said to be in part due to the hepatitis B/C (HBV/HCV) infection rates that disproportionately affect this ethnic group [4-8]. Furthermore, despite being classified as an at-risk population, VA show low engagement with liver cancer prevention behavior (i.e. HBV/HCV screening) [9-13]. Therefore, the long-term goal is to decrease liver cancer disparities among VA families through a culturally appropriate, community- and clinic-based intervention. Components from past, successful interventions will be integrated in addition to the consideration of VA familial values. We hypothesize that a family-centered intervention that involves the community and clinicians can lead to increases in cancer screening knowledge, self-efficacy, and self-reported screening in VA. Previous interventions had limited focus on VA families and little to no involvement of their primary care providers.

The rationale for this study is that Vietnamese Americans continue to be negatively affected by disproportionate rates of liver cancer incidence and mortality, and there needs to be more research on how to improve screening. In a hypothetical collaboration with APCO and VO in Pima County, we will utilize formative data to develop a culturally appropriate intervention for at-risk VA families. The research aims include:

Aim 1: Perform formative work with VA families and family physicians in relation to liver cancer prevention. Formative data will be collected via focus groups with VA families, separated by generations (adolescent, adult, elder), which will assess healthcare concerns, family dynamics, and expectations for caregiving. Focus groups with CHWs (n=12) and VAs (n=24) will help inform the development of the intervention, using a socioecological model. Physicians (N=100) will provide structured input via surveys in regards to their knowledge of liver cancer preventative care and cultural awareness of VA.

Aim 2: Develop a multi-level community- and clinic-based liver cancer screening intervention program. Data collected from the focus groups and surveys will be assessed and used to inform components of the intervention. Development will also be informed by past studies and integrate factors that contributed to their successes. CHWs will be trained to conduct the educational program. EHR prompts will be created for use in the Tucson Alvernon family clinic, providing information about Hepatitis B screening and VA patients as an at-risk population. Physicians and relevant clinical workers will be trained to interpret the prompt and send referrals to the CHWs as necessary.

Aim 3: Assess increases in knowledge and satisfaction outcomes among VA and providers as well as increases in self-reported screening and self-efficacy in VA patients. From the CHW-led intervention, data outcomes to be collected and analyzed are VA patient self-reported screening, liver cancer knowledge, and self-efficacy. Self-reported screening will be compared to the EHR for validation. Key informant interviews with clinical staff (N=12) will be conducted to assess changes in knowledge. Data from the EHR will describe how often providers responded to
the prompt, how many referrals were made, and how many VA patients were seen during the study period.

The proposed project addresses the cancer objectives outlined in the Healthy People 2020, specifically the C-1 and C-12 objective of reducing overall cancer death rate and increasing U.S. population-based registries of case information on reportable cancers.

**B. SIGNIFICANCE**

The significance of this research project lies in its focus on a largely underrepresented population, Vietnamese Americans, specifically those that are first-generation and their family members, in cancer research and cancer screening efforts. Furthermore, this study aims to identify culturally appropriate and community-driven approaches to encourage Hepatitis B screenings among individuals who identify as Vietnamese Americans. Though the U.S. population shows a national Hepatitis B prevalence rate of 0.3% [14], VA populations show rates as high as 9% [3]. Therefore, this study has importance in addressing the disparities in cancer screening for this Asian American minority group.

**Disparities and Cancer Screening.** This research study aims to reduce liver cancer disparities among at-risk VA families. Though Asian Americans show the lowest overall incidence and mortality rates in comparison to other races, cancer remains as their leading cause of death. As of 2016, despite a gradual decline over the past decade, Asian Americans/Pacific Islanders show greater rates of liver cancer incidence and mortality than those of White and Black racial status, and similar rates to those of Hispanics [15]. Within these Asian ethnicities, VAs display the highest of these rates [2,3]. Survival rates for patients with liver cancer are low due to late detection [16], thus making screening and testing all the more necessary. Currently, the U.S. Preventive Services Task Force and CDC recommend HBV screening in those born in regions with ≥ 2% prevalence of chronic hepatitis B as well as children of those born in regions with a prevalence of ≥ 8% [17]. Vietnamese Americans fit within this criteria since depending on the region, hepatitis B prevalence in Vietnam was found to be as high as 8% [18-20]. However, one study conducted from 2009 to 2010 (n=877) found that only 47% of VA participants had reported prior HBV screening and 19.8% had recalled their physician making a recommendation [8]. This is in alignment with already existing low rates of physician-recommended cancer screenings among Asian Americans [21]. The proposed project addresses these healthcare disparities, which may influence VA’s cancer screening and treatment.

**Targeting Multiple Levels of Influence to Effect Improvements in Screening.** When addressing liver cancer disparities among at-risk VA families, several factors must be considered at the institutional (e.g. physician awareness), interpersonal (e.g. family members), and individual levels (e.g. Vietnamese Americans). In a literature review of 4439 studies on U.S. chronic hepatitis B monitoring, a prominent provider-related barrier was a lack of disease knowledge and adherence to guidelines. This can be related to how there is a lack of clarity or lack of institutional guidelines for liver cancer screening [22]. Other contributing factors include the providers having differing priorities of in-clinic tasks and ineffective communication with
at-risk patients. This pattern was more often seen in primary care physicians versus subspecialists [23]. Recognizing these provider barriers is integral to creating an intervention since physicians serve as a highly prominent source of HBV information for VAs [24], in addition to being a factor in VA hepatitis screening.

At the interpersonal level, one must consider the intergenerational roles and conflicts that occur within VA families. Vietnamese core cultural values are based upon Confucian ideals, which emphasize filial piety and an interdependence of an individual within the group. Thus, the older adults are more likely to expect being cared for by their family members at home rather than seeking out institutional treatment [25]. However, there exists acculturation conflicts between the older and younger generations such that the latter adopts U.S. societal values of independence and personal autonomy, which in turn can lead to emotional distance and conflict between the two [26]. Therefore, the older generation is left at a greater risk for having unmet medical needs and lower quality overall health.

When looking at the individual level, studies have shown the following factors to be positively correlated to screening behavior: education, disease knowledge, perceived benefits, insurance coverage, and influence by physician and/or community [27-30]. Aside from physician/community influence and insurance coverage, many researchers rely on understanding barriers to screening using the Health Belief Model theoretical framework. This proposed project aims to address the factors relating to knowledge as well as peer influence. Only one factor was found to be negatively correlated to HBV screening: length of U.S. residency [9, 10, 31], indicating that more recent Vietnamese immigrants were more likely to undergo HBV screening. There is thus an indication of a generational gap in screening behavior within VA that may be addressed through a family-based program.

C. INNOVATION

Few studies in the past have focused on the family dynamics of VA and how they impact one another in regards to cancer preventive care, much less liver cancer. Because Vietnamese culture emphasizes an interdependence between family members [32], there is great value in addressing this population through their respective familial units. This is the first study, to our knowledge, that addresses liver cancer disparities in VA through a family-based approach. Furthermore, physician recommendation has often been cited as an influential factor in VA screening behavior [29, 30, 32], though there have been few interventions integrating physicians [29, 33]. Furthermore, this approach of addressing screening barriers at multiple levels (VA, family, health care professionals, and community) is novel, and expands upon existing literature. Working with APCO and VO will enable the study team to build the capacity of these organizations to conduct health research that benefits the VA community in Pima County, while building the university’s capacity to conduct research with this community.

**Multi-level Program to Improve Screening Rates among VA Families.** This project acknowledges the complexity of healthcare systems, navigation, and the need for multi-level interventions. The proposed project will address access to cancer screenings using a
socio-ecological approach [34] in which multiple perspectives (individual, family, and provider, community) are gathered to understand how current liver cancer screening procedures can be improved upon. A core value of the healthcare system is patient-centeredness, and in order to achieve this, it is pertinent that the patients, their families, and the surrounding community are engaged as active participants [35]. However, those who choose to be active participants may not necessarily be representative of the diversity of the VA patient population, which is why a collaborative research approach will be undertaken with APCO and VO. Acknowledging the influence that primary care providers have on VA healthcare, the proposed project is innovative in that it will add on to the current workflow of a local clinic as a means to support VA families as well as address the potential physician knowledge gaps regarding liver cancer screenings. Previous studies have shown physician recommendation to be a significant influence in VA HBV screening [36, 37], though that recommendation is seldom made to patients [30]. Given this information, the study team will integrate the perspectives of VA and providers and include them in the educational program development. Thus, this allows for a more holistic approach in designing this intervention, in addition to being culturally appropriate.

Community-Based Research and Improving Data Collection. Despite the heterogeneity of the Asian American population, reported statistics/health data often do not disaggregate by subgroup and also tend to include Native Hawaiian/Pacific Islanders [37]. This then renders certain ethnicities (i.e. Vietnamese Americans) vulnerable to inappropriate resource allocation and inaccurate conclusions as to what their health needs are. In one Californian study that analyzed data from 2011 to 2017, 36.4% of Vietnamese participants (n=1939) reported having fair or poor health, which was more than twice as often as did Asians overall [38]. The use of a community-based approach will foster a co-learning process between the local VA community (APCO and VO) and relevant stakeholders such that the process of data collection, analysis, and dissemination will remain equitable and relevant.

D. APPROACH

a. Rationale & Study Design. Due to the complex and innovative nature of this proposed project, a year will be dedicated to formative work of the intervention prior to testing this with a bigger population. Our long-term goal is to reduce liver cancer disparities among VA families through a culturally appropriate, community- and clinic-based intervention. In addition to focus group findings, the project will be culturally adapted with feedback from Community Partners (APCO and VO). The project uses a socio-ecological framework to address factors at the individual, family, and provider level to design an educational intervention. Previous clinic-based interventions utilized electronic prompts [32] and daily huddle sheets [33], both of which have shown significant increases in screening/vaccination rates in their intervention groups. This study hopes to build upon these successes and analyze the impact of additional influence from other community members. In Year One, we will use qualitative data from focus groups and provider surveys to assess the necessity of electronic prompts and the role that VA familial interactions play in cancer screening. In Year Two, we will implement the intervention
with pre/post assessment of data outcomes for both the VA participants and providers, as well as feasibility and acceptability. Local community health educators will engage with VA families via the program at Community Partner and clinical sites. These will vary from APCO and VO to centers associated with UArizona to family medicine sites. Using the pre/post assessment data, we will explore the preliminary efficacy of the intervention.

**Aim 1: Perform formative work regarding VA families and family physicians in relation to liver cancer prevention.** Based upon the data gathered from the focus groups and provider surveys, the research team will modify the structure and plan for the delivery of the EHR reminders in the clinic as well as the educational format of the CHW-led intervention. Focus groups will allow for the collection of viewpoints from VA family members, assessing their roles in caring for each other’s health, awareness of liver cancer in general and within the community, as well as any perceived barriers in accessing screening. Focus groups conducted will be guided by previous research [40] with a trained moderator. A total of six focus groups will be completed (N =24), with two consisting of VAs from each generation (adolescents, adults, elders). Focus group participants will be served food during the session. Audio transcripts and notes will be analyzed via coding for prominent themes. Following the methodology of Morgan for data analysis and interpretation [40], the research team will work with APCO and VO to consider Vietnamese American’s cultural health beliefs.

Surveys will be given to providers and in local Family Medicine clinics online via REDCap software, and will inquire about the following topics: provider demographics, length of time in practice, knowledge about liver cancer, and how often they see Vietnamese Americans as patients and refer them to screening. Responses will be inputted as a likert scale and multiple-choice format. This will help to quantify the need for EHR prompts in the clinic and how extensive the information they provide should be. A financial incentive to complete the survey will be provided in the form of a gift card. Detailed qualitative findings from the focus group and descriptive statistics from the survey will be reviewed with Community Partners APCO and VO.

**Aim 2: Develop a multi-level community-based and clinic-based liver cancer screening intervention program.** Data collected from the focus groups and surveys will be assessed and used to inform components of the intervention, which will be based on liver cancer screening education materials from the CDC. Development will also be informed by past studies and integrate factors that contributed to their successes [32, 41]. For instance, one study analyzed the mechanisms behind how lay health workers delivered a family-based intervention to promote smoking cessation among VA [42]. Relationship strategies (i.e. prepping a welcoming environment, employing humor and culturally specific language) will be utilized so as to promote a dialogic--rather than didactic--atmosphere. CHWs will be trained to conduct the educational program, with reference to past educational-based interventions. EHR prompts will be created for use in the family medicine clinic, providing information about Hepatitis B
screening and VA patients as an at-risk population. Physicians and relevant clinical workers will be trained to interpret the prompt and send referrals to the CHWs as necessary.

**Aim 3: Assess increases in knowledge and satisfaction outcomes among VA and providers as well as increases in self-reported screening and self-efficacy in patients.** Participants in the program, VA families (N=50), will complete baseline and post-intervention (6 months) knowledge, self-reported screening, and self-efficacy questionnaires, along with satisfaction measures. These questionnaires will be informed by APCO, VO, and validated instruments used in past interventions with Vietnamese American individuals and/or cancer research [24, 28]. These validated instruments will include: HBV Knowledge Survey [43] and the Health Belief Scale [44]. Satisfaction data collection will be informed by the University of Arizona Cancer Center’s Behavioral Measurement and Intervention Shared Resource (BMISR) in creating a five-point Likert scaled survey that can be completed via Web- and mobile-based means. In-person key informant interviews will be conducted with relevant clinical staff (N=12), including medical assistants and physicians, to assess changes in knowledge, and satisfaction outcomes. EHR data will enable the study team to verify other data outcomes (i.e. frequency of responses to EHR prompt, referrals). Both providers and VA participants will be compensated for their time for both the pre and post assessment.

**b. Specific Population & Community Institutions that will be Involved**

In addition to the University research team consisting of undergraduates, graduate students, and faculty, the proposed project is in hypothetical collaboration with Asian Pacific Community Organization (APCO). This non-profit organization, based in Pima County, is focused on improving health access and outcomes for the Asian community throughout Arizona, which includes Hepatitis B prevention and education. Vietnamese Organization is a multi-generational community advocacy organization with family-focused programming.

**c. Statistical Analysis**

On the patient side, participation metrics (feasibility and acceptability) will include the percentage of VA approached who choose to participate and the percentage of enrolled participants at each educational session. Primary quantitative outcomes will be pre- and post-intervention differences for the following measures: (1) Cancer screening knowledge; (2) Self-reported screening for VA; and (3) Self-Efficacy Scale. On the institutional side, primary quantitative outcomes will be (1) Cancer screening knowledge; (2) Number of provider responses to the EHR prompt; (3) Number of referrals to the CHW-led intervention; and (4) Number of VA patients seen during the study period.

Additional exploratory analysis will be explored so that potentially influential variables can be assessed with relation to the data outcomes, such as participant family health history (i.e. liver cancer), length of U.S. residency, age, and having a regular place of care. Specifically, we will examine whether changes in knowledge, self-efficacy, and self-reported screening are impacted by these variables. For example, based on previous studies, it is anticipated that VA
with family history of liver cancer and a regular place of care will show greater increases in HBV screening [46].

d. Interactions (Hypothetical) with APCO and VO

This project will be conducted in a hypothetical collaboration with the APCO and VO in that they will provide ongoing feedback on research methodology, including participant recruitment, training of CHWs, and development of educational materials. Both organizations will be responsible for overseeing current and future research collaborators on this project. Specifically, VA graduate students, undergraduate students, and VA faculty will be mentored on this project in community-engaged research to address cancer disparities. University, APCO, and VO staff in charge of outreach will continue to engage with the local VA community and provide oversight on the project’s relevance throughout Arizona.

e. Timeline

<table>
<thead>
<tr>
<th>Activities</th>
<th>Study Quarters (3 months)</th>
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<tbody>
<tr>
<td></td>
<td>Year 1</td>
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<tr>
<td>Aim 1 &amp; 2: Focus Group and Survey Data Collection (N=100)</td>
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<tr>
<td>Aim 1: Focus Group and Survey Data Analysis (N=36)</td>
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<tr>
<td>Aim 2: Intervention Design and Training</td>
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<tr>
<td>Aim 2 &amp; 3: Implement Intervention with Pre/Post Assessment (N=50) and Conduct Key Informant Interviews (N=12)</td>
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<tr>
<td>Aim 2 &amp; 3: Data Analysis</td>
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f. Strengths and Potential Challenges

The team brings together expertise in Vietnamese American liver cancer screening research (Huynh) and cancer research (Armin). Armin brings in research experience regarding barriers to cancer care for marginalized populations [46-48], and is Huynh’s mentor.

There is the potential for variation in the delivery and educational content of the program as CHWs and clinical workers become more familiar with the program. This potential limitation
will be monitored through regular discussions with those involved in implementing the program to ensure fidelity to the intervention protocol.

References Cited


