



Published in final edited form as:  
*J Cancer Educ.* 2008 ; 23(1): 37–45.

## Colorectal Cancer Screening in Vietnamese Americans

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### Abstract

**Background**—Rates of colorectal cancer screening in Vietnamese Americans are lower than those in non-Hispanic whites. This paper describes rates of colorectal screening, identifies determinants, and recommends educational strategies to improve screening.

**Methods**—A cross-sectional sample of 867 Vietnamese aged 50 to 74 drawn from a sampling frame of individuals in the Alameda and Santa Clara Counties, California and Harris County, Texas area telephone directories with Vietnamese surnames were interviewed in 2004.

**Results**—Colorectal screening recognition, receipt, currency, and intention rates were low. Conclusions: While the screening rates are low, Vietnamese are receptive to screening if providers recommend it.

### INTRODUCTION

Colorectal cancer is the fourth most common cancer in the United States<sup>1</sup> and the third most common cancer in both Vietnamese American men and women.<sup>2</sup> Since 1990, the age-adjusted incidence rate per 100,000 has increased for Vietnamese in the Greater San Francisco Bay Area (from 30.8 in 1990–1993 to 33.1 in 1998–2002).<sup>3</sup> Screening can reduce incidence and mortality by removing premalignant polyps and detecting early cancers.<sup>4–9</sup> Most major professional organizations<sup>10–13</sup> recommend that patients at average risk should begin screening at age 50 through either annual fecal occult blood testing (FOBT), sigmoidoscopy alone every 5 years, FOBT every year plus sigmoidoscopy every 5 years, or colonoscopy every 10.<sup>14</sup> Despite the effectiveness of colorectal screening in reducing colorectal cancer incidence and mortality and such recommendations, screening rates remain low in the general and Vietnamese American populations.<sup>15–18</sup> Studies have shown that rates of colorectal screening in Vietnamese Americans are lower than those in non-Hispanic whites.<sup>16–18</sup> This paper describes the baseline colorectal screening rates among participants in an on-going intervention study designed to increase such screening in Vietnamese Americans aged 50 to 74, identifies factors associated with screening, and recommends educational strategies to increase screening rates in this population.

### MATERIALS AND METHODS

A cross-sectional sample was drawn from a sampling frame consisting of all individuals in the study area telephone directories with Vietnamese surnames previously used in a number of Vietnamese American studies.<sup>19–25</sup> Eligibility included: 1) self-identified as Vietnamese or Vietnamese American, 2) aged 50 to 74, 3) lived in Alameda or Santa Clara Counties, California or Harris County, Texas, and intended to stay in this study area for 2 years, and 4) understood either English or Vietnamese. Roughly equal numbers of respondents were interviewed in California and Texas.

The telephone survey instrument included questions adapted from the instruments of National Health Interview Survey and previous cancer control surveys of Vietnamese Americans.<sup>16, 17, 20</sup> To reach a wide range of respondents, researchers wrote the survey questions in English at a fifth grade level in lay language. Research staff translated and back translated the questionnaire using a process developed by Brislin<sup>26</sup> and adapted in the Pathways studies.<sup>27</sup> Trained interviewers conducted 16 in-person cognitive interviews<sup>28–29</sup> to pre-test the survey and 30 pilot tests using the computer-assisted telephone interviewing (CATI) system prior to administering the main CATI survey in Vietnamese or English according to the respondent's language preference between July and October 2004. Each participant completing the survey was sent a payment of \$10. The Institutional Review Boards of the Northern California Cancer Center and the University of California, San Francisco approved the protocol on 7/8/03 and 8/6/03, respectively.

The dependent variables were colorectal cancer screening test 1) recognition, 2) receipt, 3) currency, and 4) intention. Recognition of a colorectal screening test was defined as having ever heard of an FOBT, a sigmoidoscopy, or a colonoscopy. Receipt of a colorectal screening test was defined as having ever had an FOBT, a sigmoidoscopy, or a colonoscopy. Currency for a colorectal screening test was defined as having had an FOBT during the interviewed year or in the previous calendar year, a sigmoidoscopy within the previous 5 calendar years, or a colonoscopy within the previous 10 calendar years. In cognitive interviews to pre-test the survey in Vietnamese, most of the respondents interpreted the intention question "Are you planning to have an FOBT?" as taking an active effort to have an FOBT. They did not consider passively accepting a doctor's recommendation for a colorectal screening test in the future as "planning" because it did not require any effort on their part. As a result, the intention question was revised to two questions: 1) "If your doctor recommends a fecal occult blood test, will you have one?" and 2) "If your doctor does not mention a fecal occult blood test, would you ask the doctor for one?" If the respondent answered "yes" to the second question, he or she was then asked "What year do you plan to have a fecal occult blood test?" Questions for sigmoidoscopy and colonoscopy were similarly revised. Intention to accept a colorectal screening test was defined as having answered "yes" to the first question. Intention to ask for a colorectal screening test was defined as having answered "yes" to the second. Intention to ask for a colorectal screening test in the recommended intervals was defined as planning to ask for the test in the period recommended by major professional organizations.<sup>14</sup>

Independent variables included demographics (age, gender, marital status, years in U.S., education, employment, health insurance, English-language proficiency, income, and residence); health care characteristics (health status, having a regular place of care, having a personal doctor, and doctor's ethnicity); and knowledge of and attitudes toward colorectal cancer and screening (having heard of colon polyps; worrying about colon cancer; thinking might develop colon cancer; thinking need FOBT, sigmoidoscopy, or colonoscopy even if feeling healthy; being afraid that FOBT, sigmoidoscopy, or colonoscopy might find cancer; thinking sigmoidoscopy or colonoscopy painful; and thinking sigmoidoscopy and colonoscopy preparation troublesome). The authors analyzed the data using SAS software (SAS Institute Inc., Cary, North Carolina, 2004) from 2004 to 2006. Frequency distributions were tabulated for demographics, health care characteristics, knowledge and attitudes, and colorectal screening rates. Multiple logistic regression models were developed to identify factors associated with such screening. The demographics, healthcare characteristics, and knowledge and attitudes were selected to be independent variables in the models because these variables were found to be associated with cancer screening test utilization among Vietnamese Americans in previous studies.<sup>16, 17, 20</sup>

## RESULTS

Call attempts were made to 7,675 potential survey respondents. Of these, 1,330 (17.3%) reached non-working numbers (14.0%), business or government numbers (3.2%), and “do not call list” numbers (0.1%). An additional 2,805 calls (36.5%) reached families who were not eligible for interview for reasons such as not in the study area (0.7%), not being Vietnamese or Vietnamese American (5.7%), not having age-eligible members in the household (24.4%), not intending to stay in the study area for two years (2.5%), not understanding English or Vietnamese (3.0%), and already completed interviews (0.2%). It was not possible to determine eligibility for 2,496 (32.5%) call attempts because calls reached busy signals, answering machines, or unanswered phones after 7 attempts (25.5%); those who answered the telephone but refused before eligibility could be ascertained (6.0%); or respondents who were not available in the study period (1.0%). The remaining call attempts reached 1,044 eligible respondents, of which 894 agreed to complete the interview for a response rate of 86%. The number of participants in the response rate calculation includes 28 participants who completed the pilot study. Pilot participants are not included in the analysis. All but 3 interviews were conducted in Vietnamese.

Table 1 describes the respondents’ demographic and healthcare characteristics. The Vietnamese Americans surveyed had many disadvantaged characteristics. A substantial proportion had lived in the U.S. 10 years or less, did not speak English very well or at all, had less than high school education, were not employed, had annual household income less than \$20,000, did not have health insurance, and received indigent care from the counties. Almost all of the participants were born in Vietnam (99%). Table 2 shows respondents’ knowledge of and attitudes toward colorectal cancer and screening. Participants had low levels of knowledge of colorectal cancer and screening since only half had ever heard of “colon polyps.” Table 3 shows respondents’ colorectal screening rates. In general, the rates of colorectal screening recognition, receipt, currency, and intention were low.

Table 4 describes the factors associated with receipt of colorectal screening tests among respondents. Factors positively associated with ever having been screened were being in the older age group (65 to 74 years), residing in California, having private or public insurance, having a regular place of care, having a personal doctor, having heard of colon polyps, worrying about colon cancer, thinking might develop colon cancer, thinking need FOBT and sigmoidoscopy/colonoscopy even if feel healthy, and thinking sigmoidoscopy/colonoscopy preparation troublesome. Factors negatively associated included having annual household income less than \$20,000, being employed, having a Vietnamese doctor, and thinking sigmoidoscopy/colonoscopy painful.

Table 5 describes the factors associated with currency for colorectal screening. Factors positively associated with currency included being in the older age group (65 to 74 years), being married, residing in California, having private or public insurance or receiving indigent care from counties, having a regular place of care, having a personal doctor, having heard of colon polyps, being worried about colon cancer, thinking need FOBT or sigmoidoscopy/colonoscopy even if feel healthy, being afraid FOBT might find cancer, and thinking sigmoidoscopy/colonoscopy preparation troublesome. The only factor negatively associated with currency was thinking sigmoidoscopy/colonoscopy painful.

## DISCUSSION

The rates of colorectal screening recognition, receipt, currency, and intention are low among Vietnamese Americans. Only half of the respondents recognized FOBT and only about a third recognized sigmoidoscopy or colonoscopy. The rates of receipt of and currency for

sigmoidoscopy or colonoscopy are less than 25%. Although the rate of currency for any colorectal screening test is higher (46%), it is still below the American Cancer Society 2015 goal of 75% of adults older than 50 having a recent test.<sup>30</sup>

Our results are generally similar to findings in other studies of Vietnamese Americans. The rates of receipt of sigmoidoscopy and colonoscopy and of currency for FOBT, sigmoidoscopy, colonoscopy, and any colorectal screening test are comparable to the rates reported by Walsh et al.<sup>17</sup> The rate of receipt of sigmoidoscopy/colonoscopy (36%) is identical to the rate reported by Wong et al.<sup>18</sup> The factors associated with colorectal screening receipt among Vietnamese Americans found in this study are similar to those found by Wong et al: age, income, having health insurance and a regular place of care.<sup>18</sup> Several of the factors associated with screening currency found in this research are similar to those found by both Wong et al and Walsh et al (age and insurance),<sup>17,18</sup> by Walsh et al (marital status, having heard of colon polyp, thinking needing FOBT or sigmoidoscopy/colonoscopy if healthy, and thinking sigmoidoscopy/colonoscopy preparation troublesome),<sup>17</sup> or by Wong et al (having a regular place of care).<sup>18</sup>

The colorectal screening receipt and currency rates in Vietnamese Americans found here are lower than those of non-Hispanic whites. This study's rates of receipt of FOBT, sigmoidoscopy, and colonoscopy and of currency of sigmoidoscopy and colonoscopy in Vietnamese Americans (48%, 20%, 26%, 16%, 23%, respectively) are lower than rates of non-Hispanic whites reported by Walsh et al (60%, 50%, 34%, 36%, 31%, respectively).<sup>17</sup> Similarly, this study's rate of receipt of FOBT (48%) and sigmoidoscopy/colonoscopy (36%) in Vietnamese Americans are lower than the rates in non-Latino whites reported by Wong et al (58% and 57%, respectively).<sup>18</sup>

To increase colorectal screening rates in this population, interventions to educate the public, policy makers, and health care providers would be appropriate strategies to address knowledge and attitude, access, and provider factors. Public education such as media and lay health workers have shown to increase cancer knowledge, attitudes, and screening in Vietnamese Americans.<sup>23, 31, 32</sup> Vietnamese Americans have low levels of knowledge about colorectal cancer and screening. Many did not understand that colorectal screening can prevent cancer by removing polyps because half of the respondents had never heard of colon polyps. The strong association between having heard of colon polyps with receipt and currency suggests that public education to improve knowledge might improve screening. Public education also needs to change some attitudes among Vietnamese Americans. About half of the respondents did not think that they might develop colon cancer and were not worried about colon cancer. In addition, understanding that screening when asymptomatic might prevent disease is often lacking among Vietnamese Americans<sup>33</sup> since less than half of the respondents thought they needed FOBT and about a third thought they needed sigmoidoscopy or colonoscopy if they felt healthy. Perhaps as a result, only about half of last sigmoidoscopies and colonoscopies were done because of routine screening; the remainders were done because of symptoms or for follow-up of abnormal tests.

The positive association of the factors "being afraid FOBT might find cancer" and "thinking sigmoidoscopy/colonoscopy preparation troublesome" with receipt of screening might seem puzzling at first. These factors are often interpreted as potential barriers to screening. However, the positive association may simply indicate that respondents who have had FOBTs are more likely to have had the experience of being afraid that the test might find cancer while waiting for results. Similarly, those who never have had sigmoidoscopy or colonoscopy would not know that the preparation is troublesome. However, the negative association of "thinking sigmoidoscopy/colonoscopy painful" with receipt of colonoscopy and currency for colonoscopy and any colorectal screening test might indicate that fear of pain is a genuine potential barrier to screening. Educational messages targeting the public need to include: 1)

Vietnamese Americans are susceptible to colorectal cancer, 2) colorectal screening can prevent cancer by removing polyps, 3) screening for colorectal cancer is needed even when healthy, 4) the benefits of sigmoidoscopy and colonoscopy may outweigh the pain, and 5) health care providers recommend these tests (since the Vietnamese Americans place considerable trust in physicians).<sup>34</sup>

Policy outreach and education targeting policy makers such as elected officials and health agency administrators can improve access to screening. Access is a barrier to colorectal screening. Access to screening (having health insurance/a regular place of care) is positively associated with receipt of colonoscopy and currency for colonoscopy and any colorectal screening test. People who did not have any health insurance but received indigent care from the counties on a regular basis were more likely to be current for FOBT. During the public intervention period from October 2004 to September 2006, one in five of 559 callers to the Northern California Cancer Center's Colon Screening Project hotline inquired about how they could access to colorectal screening services if they had no health insurance. In addition, obtaining sigmoidoscopy and colonoscopy at county hospitals generally required a lengthy waiting period. Hotline callers who were willing to pay cash for the inexpensive FOBT sometimes reported being discouraged from doing so by private practice physicians due to the ethical problems these physicians have in being unable to provide expensive follow-up colonoscopy for patients with positive FOBT results. Programs such as the "Breast and Cervical Cancer Early Detection Program: Every Woman Counts!" (BCCEDP) have been successful in increasing breast and cervical cancer screening rates by providing access to these types of screening. The "REACHing Vietnamese Women: A Community Model for Promoting Breast and Cervical Cancer Screening" project successfully restored a BCCEDP program in Santa Clara County, California by building a coalition of community-based organizations and mobilizing thousands of community members to sign petitions at health fairs and community events to outreach and educate policy makers. For colorectal cancer, recommended policy outreach and education objectives include: 1) providing a colorectal cancer screening, follow-up, and treatment program to low- and moderate-income individuals for free or based on an ability to pay, and 2) increasing the capacity of sigmoidoscopy and colonoscopy services in various health systems to accommodate the anticipated increase in demand for these services.

Provider interventions such as continuing medical education (CME) seminars have been shown to improve screening knowledge of Vietnamese health care providers.<sup>35</sup> Having a personal doctor increased the likelihood of colorectal screening receipt and currency. However, having a personal doctor who was Vietnamese decreased the likelihood of sigmoidoscopy receipt. In prior studies, with rare exception,<sup>36</sup> having a Vietnamese physician has been negatively associated with screening behaviors for breast and cervical cancer.<sup>23, 31, 37, 38</sup> Although the rates of intention to accept colorectal screening tests when recommended by a health care provider were high, ranging from 75% to 85%, the rates of intention to ask for a colorectal screening test if the health care provider did not mention it were very low, ranging from 21% to 26%. This difference demonstrates the importance of health care providers' recommendation for colorectal screening. Patient-physician relationships have a significant impact on screening behaviors. Physician recommendation may be the main facilitator of colorectal cancer screening in Vietnamese American populations.<sup>17</sup> Since most Vietnamese Americans have Vietnamese providers (84%) and trust their doctors,<sup>34</sup> provider intervention such as CME seminars targeting Vietnamese American healthcare providers would be appropriate. For Vietnamese American physicians, recommended CME educational objectives include increasing knowledge of colorectal cancer burden, risk factors, and screening practices and guidelines and encouraging them to prescribe colorectal cancer screening tests for their patients.



There are several limitations to this study. First, the listed surname sample excludes households that do not have telephones and households with telephone numbers that are not listed. Second, the results of this study may not be generalizable to all Vietnamese in the United States, because the sample was drawn from two urban areas with high concentrations of Vietnamese Americans. Third, screening out persons who anticipated moving from the areas in the next two years introduces a systematic bias against more mobile individuals.

Based upon these findings, an intervention focusing on the Vietnamese American public and their health care providers to increase colorectal screening rates among Vietnamese is in progress in Alameda and Santa Clara Counties, California. The public intervention component includes health education materials development and distribution, media campaign, and community events. The provider intervention includes CME seminars and distribution of patient counseling materials, newsletters, and videos to providers. Pre- and post-intervention community surveys and pre- and post- CME surveys are planned to evaluate the effectiveness of the provider and public interventions. A detailed description of the interventions and their impact will be published later.

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**Table 1**  
Demographics and Healthcare Characteristics of Vietnamese American Survey  
Participants (N=867)

	n	%
<u>Demographics</u>		
Age (in years)		
50–54	249	29%
55–59	194	22%
60–64	190	22%
65–74	234	27%
Gender		
Women	409	47%
Years lived in U.S.		
Less than 10 years	171	20%
10–19 years	393	46%
20 years or more	287	34%
Residence		
Alameda and Santa Clara Counties, California	434*	50%
Harris County, Texas	433*	50%
English language proficiency		
Fluently or well	93	11%
So so	257	30%
Not very well or not at all	508	59%
Education		
College graduate or higher	124	15%
High school graduate or some college	353	42%
Less than high school graduate	373	44%
Employment status		
Employed	365	44%
Unemployed	60	7%
Homemaker	169	20%
Student	5	1%
Retired	165	20%
Disabled	67	8%
Marital status		
Married or living with a partner	672	79%
Separated/widowed/divorced	154	18%
Never married	25	3%
Health insurance		
Private	304	35%
Public	317	37%
Indigent care from counties	121	14%
None	119	14%
Annual household income		
<\$20,000	330	38%
\$20,000–\$39,999	153	18%
\$40,000 or more	147	17%
Don't know/Refused	237	27%
<u>Healthcare Characteristics</u>		
Self perceived health status		
Excellent/very good	77	10%
Good	291	39%
Fair	203	27%
Poor	180	24%
Had a particular place for care	580	67%
Community/neighborhood clinic	43	8%
Public hospital	65	12%
Private hospital or HMO	59	10%
Private doctor's office	397	70%
Had a personal doctor	713	82%
Personal doctor was Vietnamese <sup>†</sup>	599	84%
Language access		
Spoke to doctor in Vietnamese <sup>†</sup>	600	84%
Used an interpreter	27	4%
Spoke English well or were interviewed in English	33	5%
Had no interpreter and did not speak English well	53	7%

\* Roughly equal numbers participants interviewed in California and Texas by design

<sup>†</sup> Of those who stated they had a personal doctor

**Table 2**

Knowledge of and Attitudes Toward Colorectal Cancer and Screening of Vietnamese American Survey Participants (N=867)

	n	%
Knew someone with colon cancer	141	23%
Had ever heard of colon cancer	638	74%
Had ever heard of colon polyps	434	50%
Believed colon cancer can be cured	565	88%
Worried about colon cancer	261	41%
Had ever thought might get colon cancer	220	34%
Thought need FOBT* even if feel healthy	374	43%
Were afraid FOBT* might find cancer	123	14%
Thought need sigmoidoscopy/colonoscopy even if feel healthy	311	36%
Were afraid sigmoidoscopy/colonoscopy find cancer	114	13%
Thought sigmoidoscopy/colonoscopy painful	330	38%
Thought sigmoidoscopy/colonoscopy preparation troublesome	325	37%

\* Fecal occult blood test

**Table 3**  
Colorectal Screening Rates among Vietnamese American Survey Participants (N=867)

	FOBT % <sup>1</sup>	Sig % <sup>2</sup>	Col % <sup>3</sup>	Any test % <sup>4</sup>
<u>Recognition</u> (Having ever heard of):	55	40	36	72
<u>Receipt</u> (Having ever had):	48	20	26	62
Reason for last test				
Routine screening	76	56	52	N/A
Symptoms	10	18	21	N/A
Follow-up	10	24	25	N/A
Don't know	4	2	3	N/A
<u>Intention:</u>				
Intention to accept test(s)	85	76	75	92
Intention to ask for test(s)	26	20	21	39
Intention to ask for test(s) in recommended interval(s)	14 <sup>5</sup>	10 <sup>6</sup>	13 <sup>7</sup>	26 <sup>8</sup>
<u>Currency</u> (Being up-to-date with):	25 <sup>9</sup>	16 <sup>10</sup>	23 <sup>11</sup>	46 <sup>12</sup>

<sup>1</sup> Fecal occult blood test

<sup>2</sup> Sigmoidoscopy

<sup>3</sup> Colonoscopy

<sup>4</sup> Any FOBT, sigmoidoscopy, or colonoscopy test

<sup>5</sup> Ask for fecal occult blood test in the next year

<sup>6</sup> Ask for sigmoidoscopy in the next 5 years

<sup>7</sup> Ask for colonoscopy in the next 10 years

<sup>8</sup> Ask for fecal occult blood test in the next year, sigmoidoscopy in the next 5 years, or colonoscopy in the next 10 years

<sup>9</sup> Had fecal occult blood test within the interviewing or previous year

<sup>10</sup> Had sigmoidoscopy in the last 5 years

<sup>11</sup> Had colonoscopy in the last 10 years

<sup>12</sup> Had fecal occult blood test within interviewing or previous year, sigmoidoscopy in the last 5 years, or colonoscopy in the last 10 years

**Table 4**  
 Factors Associated with Ever Being Screened for Colorectal Cancer Among Vietnamese American Survey Participants

	FOBT* (n = 832) 95%CI	Sigmoidoscopy (n = 828) 95%CI	Colonoscopy (n = 828) 95%CI	Any Test† (n = 827) 95%CI
<b>Demographics</b>				
Age group				
65–74 years	1.3 (0.9, 1.9)	<b>2.0 (1.3, 3.3)</b>	0.9 (0.6, 1.4)	1.3 (0.9, 2.1)
50–64 years	1.0	1.0	1.0	1.0
Marital Status				
Married	1.0 (0.7, 1.5)	1.4 (0.8, 2.3)	1.4 (0.9, 2.1)	1.2 (0.8, 1.8)
Unmarried	1.0	1.0	1.0	1.0
Household Income				
< \$20,000	<b>0.6 (0.4, 1.0)</b>	1.2 (0.7, 2.0)	0.8 (0.5, 1.4)	0.7 (0.4, 1.1)
Don't Know/Refused	0.8 (0.5, 1.2)	1.1 (0.6, 2.0)	0.7 (0.4, 1.3)	0.9 (0.6, 1.5)
≥ \$20,000	1.0	1.0	1.0	1.0
Employment Status				
Employed	0.7 (0.5, 1.0)	1.2 (0.8, 2.0)	<b>0.5 (0.3, 0.9)</b>	<b>0.6 (0.4, 0.8)</b>
Not Employed	1.0	1.0	1.0	1.0
Residence				
California	<b>2.1 (1.5, 2.9)</b>	<b>1.8 (1.2, 2.6)</b>	1.0 (0.7, 1.4)	<b>2.3 (1.6, 3.2)</b>
Texas	1.0	1.0	1.0	1.0
Health coverage				
Private insurance	0.9 (0.6, 1.5)	1.0 (0.5, 2.0)	<b>2.6 (1.3, 5.0)</b>	1.3 (0.8, 2.2)
Public insurance	1.4 (0.8, 2.4)	0.8 (0.4, 1.6)	<b>2.1 (1.1, 4.3)</b>	1.6 (0.9, 2.7)
Received county indigent care	1.7 (0.9, 2.9)	0.7 (0.3, 1.6)	0.6 (0.2, 1.4)	1.3 (0.7, 2.3)
None	1.0	1.0	1.0	1.0
<b>Healthcare Characteristics</b>				
Had a regular place of care	1.1 (0.8, 1.5)	<b>1.6 (1.0, 2.5)</b>	<b>1.5 (1.0, 2.3)</b>	1.3 (0.9, 1.9)
Had a personal doctor	1.6 (0.9, 3.0)	<b>2.5 (1.2, 5.3)</b>	1.3 (0.6, 2.7)	<b>2.2 (1.2, 4.1)</b>
Personal doctor was Vietnamese	0.8 (0.5, 1.3)	<b>0.5 (0.3, 0.9)</b>	0.8 (0.5, 1.3)	0.7 (0.4, 1.2)
<b>Knowledge and Attitudes</b>				
Had heard of colon polyps	<b>1.5 (1.1, 2.0)</b>	<b>1.7 (1.1, 2.5)</b>	<b>1.9 (1.3, 2.7)</b>	<b>1.7 (1.2, 2.3)</b>
Worried about colon cancer	1.3 (0.9, 1.9)	1.2 (0.8, 1.8)	1.2 (0.8, 1.8)	<b>1.4 (1.0, 2.1)</b>
Thought might get colon cancer	0.9 (0.6, 1.3)	<b>1.5 (1.0, 2.4)</b>	<b>1.4 (1.0, 2.2)</b>	1.1 (0.7, 1.7)
Thought need FOBT* if feel healthy	<b>1.4 (1.0, 1.9)</b>			1.3 (0.9, 2.0)
Afraid FOBT* might find cancer healthy	1.0 (0.7, 1.6)	1.0 (0.7, 1.5)	<b>1.8 (1.2, 2.6)</b>	0.8 (0.5, 1.5)
Thought need sigmoidoscopy/colonoscopy if feel healthy				1.0 (0.7, 1.5)
Afraid sigmoidoscopy/colonoscopy might find cancer		0.6 (0.3, 1.1)	0.9 (0.6, 1.6)	1.0 (0.5, 1.9)
Thought sigmoidoscopy/colonoscopy painful		1.1 (0.8, 1.7)	<b>0.5 (0.3, 0.7)</b>	0.8 (0.5, 1.1)
Thought sigmoidoscopy/colonoscopy preparation troublesome		<b>1.5 (1.0, 2.2)</b>	<b>2.7 (1.9, 4.0)</b>	<b>1.6 (1.2, 2.3)</b>

\* Fecal occult blood test

† FOBT, sigmoidoscopy, or colonoscopy test

‡ Adjusted for gender, education, years in U.S., English fluency, health status, and all variables tabulated

Table 5  
Factors Associated with Being Up-to-Date with Colorectal Cancer Screening Among Vietnamese American Survey Participants

	FOBT* (n = 832) 95%CI	OR†	Sigmoidoscopy (n = 828) 95%CI	OR†	Colonoscopy (n = 828) 95%CI	OR†	Any Test‡ (n = 827) 95%CI
<b>Demographics</b>							
Age group							
65–74 years	0.9 (0.6, 1.4)		<b>1.7 (1.0, 2.8)</b>		0.8 (0.5, 1.3)		1.0 (0.7, 1.4)
50–64 years	1.0		1.0		1.0		1.0
Marital Status							
Married	0.8 (0.5, 1.2)		<b>1.9 (1.1, 3.5)</b>		<b>1.6 (1.0, 2.6)</b>		1.2 (0.8, 1.7)
Unmarried	1.0		1.0		1.0		1.0
Household Income							
< \$20,000	1.0 (0.6, 1.6)		1.2 (0.7, 2.2)		0.8 (0.5, 1.3)		1.0 (0.7, 1.5)
Don't Know/Refused	1.1 (0.6, 1.9)		1.2 (0.6, 2.3)		0.7 (0.4, 1.2)		1.0 (0.6, 1.6)
≥ \$20,000	1.0		1.0		1.0		1.0
Employment Status							
Employed	0.7 (0.5, 1.1)		1.2 (0.7, 2.1)		0.6 (0.4, 1.0)		0.7 (0.5, 1.1)
Not Employed	1.0		1.0		1.0		1.0
Residence							
California	<b>1.8 (1.3, 2.6)</b>		<b>1.7 (1.1, 2.6)</b>		0.9 (0.6, 1.3)		<b>1.6 (1.2, 2.2)</b>
Texas	1.0		1.0		1.0		1.0
Health coverage							
Private insurance	1.1 (0.6, 2.2)		0.9 (0.5, 1.9)		<b>2.3 (1.1, 4.5)</b>		1.4 (0.8, 2.5)
Public insurance	1.6 (0.9, 3.1)		0.8 (0.4, 1.7)		<b>2.2 (1.1, 4.6)</b>		<b>1.9 (1.1, 3.3)</b>
Received county indigent care	<b>2.6 (1.4, 5.1)</b>		0.7 (0.3, 1.7)		0.6 (0.2, 1.4)		1.6 (0.9, 3.0)
None	1.0		1.0		1.0		1.0
<b>Healthcare Characteristics</b>							
Had a regular place of care	1.3 (0.9, 1.9)		<b>1.8 (1.1, 3.1)</b>		<b>1.8 (1.1, 2.8)</b>		<b>1.8 (1.3, 2.5)</b>
Had a personal doctor	1.3 (0.7, 2.7)		2.1 (0.9, 4.9)		1.1 (0.5, 2.4)		<b>1.8 (1.0, 3.4)</b>
Personal doctor was Vietnamese	1.3 (0.7, 2.1)		0.6 (0.4, 1.1)		0.9 (0.5, 1.5)		0.8 (0.5, 1.3)
<b>Knowledge and Attitudes</b>							
Had heard of colon polyps	1.2 (0.8, 1.7)		<b>1.8 (1.2, 2.8)</b>		<b>1.8 (1.2, 2.6)</b>		<b>1.6 (1.2, 2.2)</b>
Worried about colon cancer	1.1 (0.7, 1.6)		<b>1.5 (1.0, 2.4)</b>		1.2 (0.8, 1.8)		<b>1.5 (1.0, 2.1)</b>
Thought might get colon cancer	0.7 (0.5, 1.1)		<b>1.5 (1.0, 2.4)</b>		1.3 (0.8, 1.9)		1.0 (0.7, 1.4)
Thought need FOBT* if feel healthy	<b>2.1 (1.5, 3.0)</b>						<b>1.5 (1.0, 2.1)</b>
Afraid FOBT* might find cancer	<b>1.7 (1.1, 2.7)</b>						1.2 (0.6, 2.1)
Thought need sigmoidoscopy/colonoscopy if feel healthy			1.1 (0.7, 1.7)		<b>2.1 (1.4, 3.1)</b>		1.0 (0.7, 1.5)
Afraid sigmoidoscopy/colonoscopy might find cancer			0.7 (0.4, 1.3)		0.9 (0.5, 1.6)		0.9 (0.5, 1.7)
Thought sigmoidoscopy/colonoscopy painful			1.1 (0.7, 1.7)		<b>0.5 (0.3, 0.7)</b>		<b>0.7 (0.5, 1.0)</b>
Thought sigmoidoscopy/colonoscopy preparation troublesome			<b>1.7 (1.1, 2.5)</b>		<b>2.8 (1.9, 4.1)</b>		<b>1.6 (1.2, 2.3)</b>

\* Fecal occult blood test

† FOBT, sigmoidoscopy, or colonoscopy test

‡ Adjusted for gender, education, years in U.S., English fluency, health status, and all variables tabulated