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Cancer, Cancer Risk Factors, and Community-Based Cancer Control Trials in Vietnamese Americans

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Abstract

Objectives—The purpose of this paper is to describe the epidemiology of cancer in Vietnamese Americans and reviews some of the successful intervention strategies that have been accomplished in Northern California.

Findings—Preventable cancers are among the leading causes of death in Vietnamese Americans, who have higher than average rates of smoking and lower than average rates for breast and cervical cancer screening, and lower rates of hepatitis B vaccination. Community-based intervention trials have shown good success in reducing these risk factors.

Conclusions—Despite successes, more work needs to be done. Continuing research and dissemination of successful intervention strategies will help improve the health of Vietnamese Americans, one of the fastest growing populations in the U.S.

DEMOGRAPHICS OF VIETNAMESE IN AMERICA

In the twenty-five years since 1975, more than 800,000 refugees have arrived in the United States from Southeast Asia. More Vietnamese refugees have settled in California than in any other state. Some came directly to California from Southeast Asia; others have been attracted to California from other states in a steady stream of secondary migration. These factors combined with a high fertility rate have made Vietnamese-Americans the fastest growing Asian-Pacific Islander group in California. According to the 1990 census, 280,223 Vietnamese, representing nearly half (46%) of all Vietnamese in the U.S., resided in California[1]. One in every hundred Californians is Vietnamese. In the 1990 Census, Texas had the second greatest concentration of Vietnamese, with 69,634 (11% of U.S. Vietnamese). Other states with large concentrations of Vietnamese include: Virginia, Washington, Louisiana, Florida, Pennsylvania, New York, Massachusetts, and Illinois.

The Bureau of Census projection for the 2000 U.S. population of Asians and Pacific Islanders is 11,245,000[2]. This is a growth rate of 55% from the 1990 population of 7,273,662. Assuming that the Vietnamese population growth rate is the same as that of the Asian and Pacific Islander population in general, the 2000 population of Vietnamese in the United States will be 915,675. For California, it will be 417,532 individuals. Demographers project that, by the year 2030, there will be 1,785,000 Vietnamese in California alone, and Vietnamese-Americans will form the largest Asian/Pacific Islander population in California, surpassing the number of Chinese,

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Japanese or Filipinos[3]. For the United States, the projection for 2030 is 3.9 million Vietnamese[4].

CANCER AMONG VIETNAMESE AMERICANS

Data on cancer incidence, staging or survival for Vietnamese are not currently available on the national level. Prior to 1980, the U.S. Census did not encode Vietnamese ethnicity, and the California Tumor Registry classification of Vietnamese as a separate group began only in 1988. An analysis of California vital statistics data for the years 1986 and 1987 showed that cancer and heart disease were the leading and second-leading causes of death respectively for Vietnamese. Preliminary data from the California Cancer Registry on the incidence of various forms of cancer among Vietnamese adult males and females is presented in Tables 1 and 2 below.

For the years 1988–1992, lung cancer, liver cancer, and prostate cancer were the leading sites of all cancers occurring among Vietnamese men and breast cancer; cervical cancer and lung cancer were the leading sites among Vietnamese women (written communication, Barbara Topol, California Cancer Registry, 1995). Similar patterns have been identified in Vietnam[5–6], in England and Wales[7], and elsewhere in the U.S.[8]

CANCER RISK FACTORS AMONG VIETNAMESE

Cigarette Smoking

Cigarette smoking poses a major health hazard for the Vietnamese. Nine surveys conducted by our research team and others have documented the magnitude of this problem in Vietnamese adults[9–16]. All surveys were conducted in the Vietnamese language using Vietnamese interviewers. These survey results are summarized in Table 3. Estimates of smoking prevalence range from 56% to 33% among men and from 9 to <1 % among women, with a trend toward a gradual decrease over time among Vietnamese males. In one study on validation of status by salivary cotinine content, while 5.6% of Southeast Asian women classified themselves as smokers, 14.8% actually had significant salivary nicotine content as opposed to 40.9% and 43.7%, respectively, for men[17]. This suggest that Vietnamese women may either under-report their smoking status or may have substantially high rates of exposure to environmental tobacco smoke, presumably from their spouses. By comparison, smoking rates in the general California population in 1996 were 21.5% for men and 15.6% for women[18]. Vietnamese men, therefore, are at disproportionate risk for diseases related to cigarette smoking, and Vietnamese women and children, for diseases related to environmental tobacco smoke.

Breast and Cervical Cancer

Breast and cervical cancer are major health problems for Vietnamese women. Data from the SEER program of the National Cancer Institute for the years 1988–92 indicate an average annual age-adjusted breast cancer incidence rate of 37.5 per 100,000 and a cervical cancer incidence rate of 43.0 per 100,000 for Vietnamese women in the U.S.[19] In California, data for the years 1988–93 show average annual age-adjusted incidence rates of 47.7 per 100,000 for breast cancer and 38.1 per 100,000 for cervical cancer among Vietnamese (written communication, Dee West, Ph.D., Northern California Cancer Center, 1996). These figures indicate that breast cancer is the most common cancer, and cervical cancer the second most common cancer, among Vietnamese women in California, as has been reported among Vietnamese women in Vietnam[5]. Vietnamese women have a lower breast cancer rate, but a disproportionately high incidence rate for cervical cancer when compared to women in the general population[20].

However, several surveys conducted by our research team and others have documented that Vietnamese women are less likely to report ever having had recommended screening tests for these cancers and are more likely to be overdue for them than women in the general U.S. population[9,11,21–26]. Table 4 summarizes the results of these surveys.

Our 1986 survey of Vietnamese in San Francisco and Alameda Counties revealed a general lack of knowledge about cancer[11]. For example, 13% of respondents had never heard of cancer, 27% did not know that cigarette smoking can cause cancer, and 28% believed that cancer is contagious. In addition, for each of five cancer screening tests, the Vietnamese respondents were more likely than the general U.S. population to report never having had the procedure. For example, after interviewers explained what the Pap smear was, 32% of Vietnamese women reported that they had never had a Pap smear (compared to only 9% of women in the general U.S. population). Among eligible women, 28% had never had a breast examination (versus 16% of U.S. women), and 83% had never had a mammogram (versus 62%). Also, more Vietnamese were overdue for each of the five procedures than their U.S. counterparts: 71% were either overdue for or had never had a Pap smear (vs. 40% of U.S. women), 66% were overdue for a breast examination (vs. 44% of U.S. women), and 89% were overdue for a mammogram (vs. 76% of U.S. women).

In our 1990 survey, we examined the knowledge, attitudes, and practices of 107 Vietnamese women in San Francisco regarding breast and cervical cancer screening[24]. Results showed that Vietnamese women frequently did not know common signs, symptoms and risk factors for breast and cervical cancer. Among the 107 respondents, over half (63%) said there was little one could do to prevent cancer. Of 80 women age >21, 41 (51%) had never had a Pap smear, and 33% had never had a pelvic examination. Recent immigrants and those covered by California medical assistance (Medi-Cal) were less likely to have had either Pap smear or pelvic examination: 76% of women who emigrated after 1980–81 had never had a Pap smear vs. 33% of women who had emigrated before 1981 and 74% of those covered by Medi-Cal or with no insurance had not had a Pap smear vs. 30% of those with private insurance or Medicare. Thirty-four per cent (10/29) of women over the age of 40 had never had a mammogram; this number was too small to allow further analysis.

In 1991, we conducted a Behavioral Risk Factor Surveillance Survey of 1,011 randomly selected adult Vietnamese throughout California for the Centers for Disease Control[9]. Results confirmed that Vietnamese women frequently reported never having had the screening tests for which they were eligible. For example, 51 % of 451 Vietnamese women reported that they had never had a Pap test, 47% had never had a breast examination, and 48% had never had a mammogram. Comparable 1990 Behavioral Risk Factor Survey data for California women in general show that 4.9% have never had a Pap smear, 11.3% have never had a clinical breast examination, and 29.1% have never had a mammogram. Overall, 62% of Vietnamese women were overdue for or had never had a Pap smear, 57% were overdue for or had never had a breast examination, and 54% were overdue for or had never had a mammogram. Further analysis showed that women who had less than a college education, who were unemployed, who were unmarried, who had lower household incomes, or who were more recent immigrants were less likely to have had a Pap smear. Similarly, women who were unmarried, had lower household incomes, and who were more recent immigrants were less likely to have had a clinical breast examination. Low income and recent immigration also were associated with lack of a mammogram.

In our 1992 survey of 933 Vietnamese women in Alameda, Santa Clara, Orange and Los Angeles counties, 40% had not heard of the Pap smear, 37% had never had a Pap smear, 53% had not had a Pap smear within the prior year, and 27% did not plan to have one. Among the 933 females, 14% had not heard of a clinical breast examination, 22% said they had never had

a clinical breast exam, 45% had not had a clinical breast exam within the prior year, and 20% did not plan to have one. In addition, 34% of the women had not heard of the mammogram, 60% said they had never had one, 45% had not had a mammogram during the prior year, and 25% did not plan to have one. In multiple logistic regression analyses, consistent positive predictors of ever having had these cancer screening tests included years of residence in the U.S., perhaps a marker for greater acculturation, and self-perceived good health, possibly a necessary condition for women to engage in preventive care activities. Other positive predictors included ever having been married, perhaps because these tests may be linked to receipt of gynecologic care during pregnancy or during the reproductive years, and having health insurance, whether private or public, possibly because of increased access to care. One negative predictor was poverty status, particularly refusal to report household income, which may be a marker for extremely low income. Having a Vietnamese physician was also a negative predictor. Possible explanations for this may be due to lack of training in preventive care as many Vietnamese physicians were trained in Vietnam, fewer scheduled appointments as opposed to drop-in visits in their schedules, and a heightened sensitivity to their patients' modesty[21].

In a separate study, we investigated barriers to breast and cervical cancer screening among Vietnamese women in San Francisco and Sacramento, CA. Face-to-face interviews were conducted in 1992 of 306 Vietnamese women in San Francisco and of 339 women in Sacramento. In both communities, only about one-half of Vietnamese women had ever had routine check-ups, clinical breast examinations, mammograms and Pap smear tests, and only about one-third were up-to-date for these screening examinations. Among women age 40 or older, 35% had never even contemplated having a mammogram. Several significant barriers to recognition, receipt and currency of screening tests were identified. Negative predictors of test recognition included low levels of education and not having a regular physician. Negative predictors of test receipt included: low levels of education, not having a regular physician, short duration of residence in the U.S., and never having been married. A major negative predictor of test currency was low levels of education. With a few exceptions, attitudes and beliefs generally were not important predictors[22].

Hepatitis B and Hepatocellular Carcinoma

Although hepatocellular carcinoma is a relatively uncommon tumor in the U.S., with an estimated 15,300 new cases in 2000[27], the disease is endemic in persons born in Southeast Asia. Epidemiological studies have established a close association between the occurrence of hepatocellular carcinoma and chronic hepatitis B (HBV) infection[28–29]. HBV may be the primary factor in development of hepatocellular carcinoma in as many as 80% of affected patients. In a prospective study in Taiwan, the relative risk of developing hepatocellular carcinoma in a chronic HBV carrier is more than 200, with a lifetime risk of approximately 50%[28]. In the past, it was thought that residents of such countries were infected with HBV during the perinatal period, so-called "vertical" (mother-to-newborn) transmission. However, cross-sectional seroprevalence study data from Southeast Asian refugees in the U.S. showed that so-called "horizontal" transmission, transmission from other chronically infected members of their household or social networks, may be an important factor in the spread of HBV infection[30]. One study of U.S.-born Southeast Asian children showed that 60% of the children with chronic HBV infection were born to HbsAg-negative mothers, indicating a higher rate of horizontal than vertical transmission[31].

The prevalence of hepatitis B surface antigen (HBsAg) positivity among Vietnamese refugees who arrived in the U.S. between 1984 and mid-1987 was 14.4%, which is 47 to 140 times the rate in the U.S. general population (0.1% to 0.3%)[32–33]. Thus, approximately one in seven Vietnamese is a chronic carrier of HBV and can transmit the virus to others. The CDC estimates

that 15% to 25% of those chronically infected with HBV die prematurely from hepatitis B-related liver disease, including cirrhosis and liver cancer[34]. For Vietnamese in the U.S., therefore, we can expect that from 2 to 4 of every hundred Vietnamese will die from hepatitis B-related liver disease. The data presented in Tables 1 and 2 suggest that primary liver cancer is the second most common cancer among Vietnamese men and the ninth most common cancer among Vietnamese women in California.

The high hepatitis B carrier rates account in large part for the high rates of liver cancer among Vietnamese. The cancer registry in Ho Chi Minh City, Vietnam reports that liver cancer is the most common cancer in men and the fifth most common cancer in women[6]. According to the National Cancer Institute, Vietnamese men have the highest liver cancer rate (41.8/100,000) of any race or ethnic group in the U.S.; this rate is over eleven times higher than the rate among white men (3.7 per 100,000)[19]. The comparable liver cancer incidence rates among U.S. Vietnamese women are not available from the National Cancer Institute.

Fortunately, however, among those who have not been infected, hepatitis B and its sequelae can be prevented. Hepatitis B vaccination is a safe and highly effective means to prevent HBV infection, including the HBV chronic carrier state, and to reduce or even eliminate the related morbidity and mortality[35–37]. The best evidence that hepatitis B vaccination can decrease the incidence of and mortality from liver cancer derives from a nationwide hepatitis B vaccination program implemented in Taiwan in 1984. This program led to a decline in the average annual incidence of hepatocellular carcinoma in children age 6 to 14 years from 0.70 per 100,000 children between 1981 and 1986 to 0.57 between 1986 and 1990, and to 0.36 between 1990 and 1994 ($p<0.01$). The corresponding rates of mortality from hepatocellular carcinoma also decreased[35–38].

Since 1991, tine Immunization Practices Advisory Committee of the Centers for Disease Prevention and Control and the American Academy of Pediatrics have recommended universal immunization of all infants against hepatitis B[39–40]. The CDC later amended this recommendation to add immunization of all 11-and 12-year-old children in the United States who have not previously been immunized against hepatitis B[41].

Unfortunately, surveys show a low level of awareness of the importance of hepatitis B in the Vietnamese community. Although hepatitis B and related hepatocellular cancer are endemic among Vietnamese, only 52% of respondents to our 1986 survey had ever heard of hepatitis B. Only 4% said that they had had hepatitis B, and only 18% reported knowing someone who had had hepatitis B. Only 6% reported knowing anyone who had been vaccinated against hepatitis B[11]. In a 1993 survey, we found that only 52% of adults had ever heard of hepatitis B, and only 23% had heard of hepatitis B vaccination. The percentage of adults who had had a hepatitis B serological test was 24%, and the percentage of children age <1 vaccinated was 71%, and the percentage of children ages 2–17 vaccinated was 41%. Among those who said they had been immunized against hepatitis B, only 26% reported completing all three of the injections required to confer immunity.

Another hepatitis B survey we conducted in 1998 showed that 44.1% of respondents had never heard of HBV infection. Parental reports, confirmed by their child's physicians, indicated that only 11%, 12% and 19% of Vietnamese children age 3 to 18 in Houston, Dallas and the Washington, DC area, respectively, had received 3 hepatitis B shots within the appropriate time interval recommended by the CDC[42–43].

Taylor and colleagues recently reported a telephone survey of 75 randomly selected Vietnamese households during 1998 to examine HBV knowledge among Seattle's Vietnamese community. Prior to being provided with a description of the disease, two-thirds of the respondents had never heard of hepatitis B, and <60% knew that asymptomatic individual

could transmit the infection to others. A majority knew that HBV infection could cause liver cancer (63%) and death (80%). However, 28% had never heard of the hepatitis B vaccine[44].

INTERVENTION TRIALS

Promotion of Cigarette Smoking Cessation

In two separate controlled trials, we evaluated the effectiveness of a culturally appropriate, media-led information and education smoking cessation campaign aimed at Vietnamese men. The first trial was a two-year trial in Santa Clara County, CA. We conducted pre- and post-test surveys of randomly selected Vietnamese men in Santa Clara County, CA, and in Houston, TX, which served as the comparison community. In both 1990 and 1992, adult males in both communities were more likely to smoke if they were younger ($p<0.005$), if they were more recent immigrants ($p<0.001$), if they had less than a high school education, or if their English proficiency was limited ($p<0.001$). Between 1990 and 1992, smoking prevalence remained constant in Santa Clara County (36% in 1990; 36% in 1992) and in Houston (40% in 1990; 41% in 1992). The proportion of recent quitters, although greater in Santa Clara County than Houston, did not change significantly between pretest and post-test in either community[15].

The second was a 39-month trial in San Francisco and Alameda Counties, CA; again, Houston served as the comparison community. The intervention methods included Vietnamese-language media, health education materials distribution, and activities targeting physicians, youths, and businesses. Evaluation involved pre-and post-test cross-sectional telephone surveys and multiple logistic regression analyses to identify variables associated with smoking and quitting. Between 1990 and 1992, smoking prevalence fell in San Francisco (36.1% in 1990; 33.9% in 1992) but remained constant in Houston (39.6% in 1990; 40.9% in 1992). At post-test the odds of being a smoker were significantly lower (OR=0.82, 95% CI=0.68,0.99), and the odds of being a recent quitter significantly higher (OR= 1.65, 95% CI=1.27,2.15) in the intervention community compared with the control community[13]. Despite the modest success of the intervention, the post-intervention smoking rate among Vietnamese men in San Francisco and Alameda Counties was still more than twice the goal of 15% set by the U.S. Public Health Service for Southeast Asian men for the year 2010, indicating that further efforts are needed to reduce smoking.

Promotion of Breast and Cervical Cancer Screening

We conducted a controlled trial of a separate media-based community outreach intervention and a physicians' office intervention to promote recognition, intention, receipt and currency of routine check-ups and breast and cervical cancer screening. Outreach efforts entailed development and distribution of Vietnamese-language health education materials that are appropriate to the culture and education of these recently emigrated women. Cancer prevention and early detection messages were disseminated through print media, videotapes, billboard advertising, and television spots. Project-sponsored Vietnamese community health fairs provided an additional venue for distributing printed materials. The intervention community consisted of Vietnamese American women in Alameda and Santa Clara Counties; women in Los Angeles and Orange Counties served as controls. Pretest telephone interviews were conducted on 451 women in the intervention community and 482 in the control community in 1992. To evaluate the impact of the intervention, posttest telephone interviews were conducted with 454 women in the intervention community while 422 women from the control community were interviewed in 1996.

Results showed that, at posttest, after controlling for demographic differences in the surveyed populations, the odds ratios for the media-led intervention effect were statistically significant for having heard of a general checkup, Pap test and clinical breast examination (CBE); planning

to have a checkup, Pap test, CBE and mammogram; and having had a checkup and Pap test. The intervention had no significant effect on being up to date for any of the tests. We concluded that a media-led education intervention succeeded in increasing recognition of and intention to undertake screening tests more than receipt of or currency with the tests[45].

We have also completed a controlled trial of a community outreach intervention to promote recognition and receipt of CBEs, mammograms and Pap smears among Vietnamese women. Over a 3-year period, indigenous lay health workers conducted small-group meetings of Vietnamese women in a geographically defined, low-income district of San Francisco, CA[46]. Women in Sacramento, CA served as controls. Lay workers instructed participants about preventive-care check-ups, breast and cervical cancer risks, and screening tests. Overall, they conducted 56 events on general prevention, 86 on cervical cancer, and 90 on breast cancer. Face-to-face surveys of 306 to 373 women were conducted in the study communities in 1992 and 1996[47].

Results showed that, in the intervention community, recognition of screening tests increased significantly between pre- and post intervention surveys: CBE, 50 to 85%; mammography, 59 to 79%; and Pap smear, 46 to 66% (p=.001 for all). Receipt of screening tests also increased significantly: CBE, 44% to 70% (p=.001); mammography, 54% to 69% (p=.006), and Pap smear, 46% to 66% (p=.001). When adjusted for control group rates and significant demographic and psychosocial variables in logistic regression models, the odds ratios for recognition, receipt and maintenance also were statistically significant (p<.0001). Thus, trained Vietnamese lay health workers had a strong impact on Vietnamese women's recognition and receipt of breast and cervical cancer screening tests[48].

The findings from these two trials seem to indicate that a media-based intervention is most efficacious in increasing Vietnamese women's recognition of cancer screening and their intentions to have screening tests, while a lay health worker intervention can have a favorable impact not only on recognition and intentions, but also on receipt and maintenance of screening[49].

Promotion of Hepatitis B Immunoprophylaxis

In a controlled trial, we evaluated the effectiveness of a culturally appropriate, media-led information and education campaign to promote hepatitis B immunoprophylaxis among Vietnamese in Santa Clara and Alameda Counties, CA. Following a one-year intervention, the percentage of adults who had ever heard of hepatitis B increased from 52% to 85% (p<0.001), and the percentage who had heard of hepatitis B vaccination increased from 23% to 81% (p<0.001). The percentage of adults who had had a hepatitis B serological test increased from 24% to 48% (p<0.001), and the percentage of children age <1 vaccinated increased from 71% to 85% (p=N.S.), and the percentage of children ages 2–17 vaccinated increased from 41% to 61% (p<0.05). The odds of a child age 2–17 being immunized increased with the number of hepatitis B media elements the parent recalled, from 1.14 for 1 element to 2.20 for 6 elements.

Finally, we are currently completing a controlled 2-year trial comparing the effect of various strategies on hepatitis B "catch-up" vaccinations of Vietnamese American children age 3 to 18 in Houston and Dallas, Texas. In Dallas, the East Dallas Counseling Center, a Vietnamese community-based organization, developed and implemented a plan to mobilize their community to improve hepatitis B knowledge and immunization rates. A coalition of community leaders and agencies was formed to conduct grass-roots, person-to-person community organizing activities to promote program goals and objectives. In Houston, Texas, the Research & Development Institute, a similar Vietnamese community-based organization, mounted a media-based hepatitis B education and outreach campaign involving local distribution of media products (brochure, calendar, videotape, paid television advertisements,

print media news articles and advertisements, billboard). The controlled trial also involved the Vietnamese community in the greater Washington D.C. area as the control (no hepatitis B intervention) community. The effectiveness of each intervention is being measured through computer-assisted telephone surveys of random samples of 500 Vietnamese in each of the intervention and control communities at both pretest and posttest. Evaluation will permit comparisons between intervention and control communities and comparisons between the two types of intervention communities[37–38].

CONCLUSIONS

Vietnamese-Americans are one of the fastest growing demographic groups in America. Cancer is the leading cause of mortality in this population. The most common cancers in this group are preventable, with lung and liver cancers being the highest in incidence in Vietnamese men while breast, cervical, and lung cancers the highest in Vietnamese women.

Prevalence of cigarette smoking, a significant risk factor for several of these cancers, is about twice as high in Vietnamese men compared to the general population. Vietnamese women, on the other hand, suffer from a lack of knowledge and are not adequately screened for breast and cervical cancer, both in receiving and being up to date for clinical breast exams, mammograms, and Pap smears. Both men and women are at higher risk for hepatitis B and hepatocellular carcinoma, and due to vertical as well as horizontal transmission, Vietnamese children are at higher risk as well.

Since many Vietnamese-Americans are new immigrants, are poorer, and may lack access to culturally appropriate care, community-based interventions may be the best way to educate and to encourage risk reduction. In our own work, we have shown that mass media campaigns and targeted interventions can be successful in decreasing the rate of smoking among Vietnamese men. Media campaigns and physician-directed interventions also increased the rate of recognition for breast and cervical cancer screening, while a lay health worker model actually led to increased receipt for cervical and breast cancer screening as well as encouraging women to remain in a maintenance phase. Media campaigns have also led to increased recognition of hepatitis B, increased screening for hepatitis B, and increased vaccination rates for hepatitis B among Vietnamese children.

Despite the successes, more work needs to be done for this population. Smoking rates remain higher in Vietnamese men than in the general population. Screening rates for breast and cervical cancer remain lower in Vietnamese women compared with the general population. Little is known about risk factors for other cancers in this population, and few studies on chemo-prevention include significant number of Vietnamese or other Asian participants. Continuing research and dissemination of successful intervention strategies will help improve the health of this vibrant and growing community.

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Table 1

Incidence of the most common cancers among California Vietnamese males compared to rates among California males and U.S. males

Rank	Site	Vietnamese Rate	California Rate	U.S. Rate
1	Lung	85.7	76.8	83.4
2	Liver	49.5	4.8	3.9
3	Prostate	36.0	127	99.4
4	Colorectal	33.7	52.5	60.8
5	Stomach	32.9	11.4	12.0
6	Nasopharynx	8.8	UNK.	0.9
7	Non-Hodgkin's lymphoma	16.1	17.6	16.4
8	Pancreas	11.0	10.2	10.8
9	Leukemias	9.7	12.7	13.3
10	Thyroid	3.4	2.5	2.5
ALL SITES		360.9	426	442.4

Average, annual rates age-adjusted to 1970 U.S. standard per 100,000 population Vietnamese and California rates are for 1988–1992, U.S. rates are for 1985–1989.

Source for Vietnamese data: California Cancer Registry, personal communication, Barbara Topol, Northern California Cancer Center, May 15, 1995. California data from the California Department of Health Services; U.S. data from the National Cancer Institute.

Table 2

Incidence of the most common cancers among California Vietnamese females compared to rates among California females and U.S. females

Rank	Site	Vietnamese Rate	California Rate	U.S. Rate
1	Breast	48.5	107	107.2
2	Cervix	40.5	9.9	8.6
3	Lung	36.1	43.9	38.2
4	Colorectal	33.1	36.9	42.3
5	Stomach	19.9	5.2	5.1
6	Thyroid	15.2	6.3	6.2
7	Ovary	13.5	15.0	14.2
8	Non-Hodgkin's lymphoma	10.4	10.9	11.0
9	Liver	9.9	1.7	1.4
10	Pancreas	9.9	7.9	8.1
11	Corpus uteri	9.5	20.5	21.0
12	Leukemias	8.2	7.6	7.7
13	Nasopharynx	4.2	UNK.	0.4
ALL SITES		342.8	338	338.2

Average, annual rates age-adjusted to 1970 U.S. standard per 100,000 population. Vietnamese and California rates are for 1988–1992, U.S. rates are for 1985–1989.

Source for Vietnamese data: California Cancer Registry, personal communication, Barbara Topol, Northern California Cancer Center, May 15, 1995. California data from the California Department of Health Services; U.S. data from the National Cancer Institute.

Table 3

Prevalence of Cigarette Smoking among; Vietnamese Adults

Year of Survey	Males			Females			Survey Site
	N	Current Smokers	95% CI	N	Current Smokers	95% CI	
1987	116	56%	47%–65%	94	9%	3%–15%	SF*/ ALA**
1989	107	39%	36%–54%	44	2%	0%–6%	SF*/ LA***
1990	1134	36%	34%–38%	--	--	--	ALA**/ SF*
1990	1322	36%	34%–38%	--	--	--	Santa Clara
1991	557	35%	31%–39%	454	<1%	0%–2%	CA Statewide
1992	1264	34%	32%–36%	--	--	--	ALA**/ SF*
1992	1249	36%	34%–38%	--	--	--	Santa Clara
1996	1146	35%	33%–38%	--	--	--	Santa Clara
1999	276	33%	--	283	1%	--	CA Statewide

* = San Francisco County;

** = Ahmeda County;

*** = Los Angeles County; CA = California

Table 4

Summary of Results of Studies of Breast and Cervical Cancer Screening among Vietnamese Women in the U.S.

Author, Date of Publication	Site, Date of Survey	Sample Size (N)	Response Rate	Type of Interview, Sampling	Mean Age (range or +/− SD)	# of Yrs. Resident in U.S. (range or +/− SD)		
Jenkins et al 1990	SF/ALA, 1987	94	55%	Face-to-face random	35(21–78)	7.6 (+/− 3.4)		
Pham et al 1992	SF/ALA, 1990	107	31%	Mailed random	37(19–77)	8.4 (+/− 4.7)		
CDC 1992	CA, 1991	454	59%	Telephone random	39.8 (+/ − 13.3)	1981 (+/−4.4)		
McPhee et al 1996	SF/SACTO, 1992	645	78%	Face-to-face random	44–55	5		
Yi 1994	W. MASS, 1991	141	61%	Telephone random	34(18–60)	5.7(1–20)		
McPhee et al 1997	SC/OC, LA/ALA	933	60%	Telephone random	42	9		
Nguyen et al 2000	ALA/LA/OC, 1996	788	40%	Telephone random	52	9.6		
Nguyen et al 2000	ALA/LA/OC, 1998	807	46%	Telephone random	52	10.5		
				Insurance				
Had Education past High School	Employed	Married	Below Poverty Level	Private	None	Ever Had Clinical Breast Examination	Ever Had Mammogram (Over 40 yrs. old)	Ever Had Pap Smear Test
41%	37%	--	53%	30%	15%	80%	17%	68%
43%	--	60%	44%	44%	25%	56%	66%	46%
45%	--	70%	28%	43%	--	53%	52%	47%
26%	27%	73%	68%	--	--	42%	50%	43%
19%	53%	48%	55%	64%	16%	50%	65%	52%
48%	46%	66%	32%	16%	19%	70%	30%	53%
39%	29%	81%	59%	45%	--	77%	65%	--
37%	39%	85%	54%	52%	--	84%	79%	--

SF = San Francisco County, CA; ALA = Alameda County, CA; SACTO = Sacramento, CA; W. MASS = Western Massachusetts, SC = Santa Clara County, CA; OC = Orange County, CA; LA = Los Angeles County, CA