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CERVICAL CANCER CONTROL RESEARCH IN VIETNAMESE AMERICAN COMMUNITIES

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Abstract

Census data show that the US Vietnamese population now exceeds 1,250,000. Cervical cancer among Vietnamese American women has been identified as an important health disparity. Available data indicate the cervical cancer disparity may be due to low Pap testing rates rather than variations in HPV infection rates and/or types. The cervical cancer incidence rates among Vietnamese and non-Latina white women in California during 2000–2002 were 14.0 and 7.3 per 100,000, respectively. Only 70% of Vietnamese women who participated in the 2003 California Health Interview Survey reported a recent Pap smear, compared to 84% of non-Latina white women. Higher levels of cervical cancer screening participation among Vietnamese women are strongly associated with current/previous marriage, having a usual source of care/doctor, and previous physician recommendation. Vietnamese language media campaigns and lay health worker intervention programs have been effective in increasing Pap smear use in Vietnamese American communities. Cervical cancer control programs for Vietnamese women should address knowledge deficits; enable women who are without a usual source of care to find a primary care doctor; and improve patient-provider communication by encouraging health care providers to recommend Pap testing, as well as by empowering women to ask for testing.

Keywords

Cervical cancer; Pap testing; Vietnamese Americans

INTRODUCTION

The majority of Vietnamese Americans came to the United States (US) as refugees or immigrants over the last three decades (1). According to the 2004 American Community Survey, 11% of Asian Americans are of Vietnamese descent and the Vietnamese population now exceeds 1,250,000 (2). Vietnamese are the second fastest growing Asian American group, after South Asian Indians (1). California, Texas, and Washington State have the largest Vietnamese communities (3). Compared to the general US population and all Asian Americans, Vietnamese Americans are economically disadvantaged and linguistically isolated (Table 1).

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Over one-third (38%) have less than a high school education and nearly two-thirds (62%) have limited English proficiency (4).

The President's Advisory Commission on Asian Americans recently identified cervical cancer among Vietnamese women as one of the most important health disparities experienced by Asian American populations (5). Human papillomavirus (HPV) infection is a universal risk factor for cervical cancer (6,7). While little is known about HPV infection among Vietnamese American women, available data indicate that the cervical cancer disparity may be due to low Papanicolaou (Pap) testing rates rather than variations in HPV infection rates and/or types (8, 9).

American Cancer Society guidelines specify that women should be screened for cervical cancer every one to three years, depending on their risk factors for disease and previous screening history (10). Further, national cervical cancer screening goals for the year 2010 specify that at least 97% of women will have been screened on at least one occasion, and 90% will have received a Pap smear within the previous three years (11). In this review article, we present cervical cancer incidence data for Vietnamese women; provide information about levels of Pap testing, factors associated with Pap smear receipt, and cervical cancer control intervention programs; and summarize limitations of the available data.

CERVICAL CANCER INCIDENCE

Cervical cancer incidence data for Vietnamese populations are summarized in Table 2 (6,12–15). Twelve years ago, the Surveillance Epidemiology and End Results (SEER) program published a monograph addressing racial/ethnic patterns of cancer in the US. This monograph showed that Vietnamese women had higher rates of invasive cervical cancer that any other racial/ethnic group. For the 1988–1992 time-period, the age-adjusted invasive cervical cancer incidence rate among Vietnamese women was 43.0 per 100,000, compared to 7.5 per 100,000 among non-Latina white women, 13.2 per 100,000 among black women, and 16.2 per 100,000 among Latina women (14).

More recent cancer registry data indicate that cervical cancer incidence rates among Vietnamese Americans have gone down steadily during the last decade (15,16). However, the incidence rate among Vietnamese women in California was still nearly twice the incidence rate among non-Latina white women during 2000–2002 (14.0 versus 7.3 per 100,000) (6). In summary, available data show that Vietnamese American women experience a cervical cancer disparity relative to other racial/ethnic groups, but this disparity has decreased over time.

PAP TESTING LEVELS

McPhee and Nguyen previously summarized findings from population-based surveys of Pap testing use among Vietnamese women, conducted prior to 2000 (17). These California and Massachusetts surveys found that only about one-half (between 43% and 53%) of Vietnamese women aged 18 and older had ever received a Pap smear (18–21). Findings from more recent population-based surveys of Vietnamese women are given in Table 3 (22–27). Surveys conducted in Texas during 2000, 2004, and 2007; California during 2000; and Washington during 2002 consistently found that approximately three-quarters (between 74% and 78%) of Vietnamese women had ever been screened for cervical cancer (22,25,27, unpublished data). In contrast, a Washington survey of Vietnamese women, conducted during 2006 and 2007, found that 93% had received at least one Pap smear and 84% were adherent to interval screening guidelines (unpublished data).

California Health Interview Survey data from 2003 provide the most recent direct comparisons of cervical cancer screening rates among Vietnamese and other racial/ethnic groups. This

survey found that 70% of Vietnamese women aged 18 years and older reported Pap testing in the previous three years, compared to 84% of white, 87% of black, and 85% of Latina women. Pap testing levels among Filipino, Japanese, South Asian, Chinese, and Korean women were 86%, 75%, 73%, 68%, and 67%, respectively (26). Overall, recent survey data indicate that Vietnamese women have lower levels of adherence to Pap testing guidelines than most other racial/ethnic groups. However, recent survey data also indicate that adherence levels among Vietnamese women vary by geographic area of the US.

FACTORS ASSOCIATED WITH PAP TESTING USE

Older Vietnamese women have generally been shown to have lower levels of Pap testing participation than the female Vietnamese population in general (20–22,25,27). For example, Nguyen and colleagues reported that women aged 65 and older were significantly less likely to have ever been screened for cervical cancer than younger women ($p<0.01$) (22). Marital status has consistently been shown to be associated with Pap smear receipt among Vietnamese Americans. Specifically, never married women have lower levels of screening participation than currently/previously married women (18–22,25,27,28). Multiple studies have examined the associations between education, income, and Pap testing use among Vietnamese women with inconclusive findings (18–22,25,27).

To assess the impact of acculturation, researchers have considered the relationships between length of US residence (among immigrants), English language proficiency, and cervical cancer screening. A majority (but not all) of these studies found that higher Pap testing levels are associated with longer US residence (18–22,23,25,27). The relationship between English language proficiency and Pap smear receipt remains unclear (18–22,23,25,27,29). Table 4 shows the associations between demographic characteristics and recent Pap testing use among Vietnamese women aged 20–69 years who were surveyed in metropolitan Seattle during late 2006 and early 2007 (unpublished data).

Some have speculated that traditional health beliefs may be barriers to preventive care for Southeast Asian and other immigrant groups (30,31). However, several studies have failed to document an association between traditional Vietnamese beliefs and Pap testing (30,32). For example, while Do and colleagues found that 71% of Vietnamese women believed that proper observance of the “sitting month” (a set of traditional post-partum practices that include the avoidance of wind and water) protects women from cervical cancer, this belief was not associated with recent Pap smear receipt (32).

Nearly all the studies that examined the role of having a usual source of care and/or usual doctor in Pap testing participation among Vietnamese women have documented associations (20,22, 25,27,33). As would be expected, Kagawa-Singer and colleagues found that Vietnamese women who reported at least one doctor’s visit during the prior year were more likely to also report a recent Pap smear than those who did not (65% versus 43%, $p<0.01$) (28). Positive correlations have been found between having a female physician, having a non-Vietnamese physician, and cervical cancer screening (20–22,25,27). Additionally, one study found that women who received care at a community/county hospital clinic or a multi-specialty clinic were more likely to report a recent Pap smear than those who received care at a private physician’s office (25). Results from surveys that looked at health insurance coverage in relation to Vietnamese women’s cervical cancer screening behavior are inconsistent (19–22, 25,27)

Two recent studies have used the Pathways Model (which originated in the PRECEDE – PROCEED planning framework) and multivariable methods to systematically examine relationships healthcare system access and attitudes, and the Pap testing practices of Vietnamese women (22,27). In the first analysis (using 2000 data), having a female doctor

(OR=1.9, 95% CI=1.2–2.9), having a respectful doctor (OR=2.0, 95% CI=1.1–3.6), having a physician recommend testing (OR=8.0, 95% CI=5.7–11.9), and having requested the test (OR=8.7, 95% CI=5.8–13.0) were associated with receipt of at least one Pap smear (22). The second analysis (using 2004 data) showed that, in addition to factors identified by the earlier analysis, the following factors were associated with previous Pap testing: Having health insurance, having a usual place for health care, and having a Vietnamese male physician (negative association) (27).

Another study used the theoretical perspective of the Health Behavior Framework to examine individual factors associated with recent Pap testing, and found strong correlations ($p<0.001$) between the following variables and recent Pap smear receipt: Believing regular Pap tests decrease the risk of cancer and Pap testing is necessary for asymptomatic, sexually inactive, and post-menopausal women; reporting concern about pain/discomfort as a barrier to Pap testing; family members and friends had suggested Pap testing; and doctors had recommended Pap testing and had asked doctors for Pap testing. In a logistic regression model, believing Pap smears are necessary for asymptomatic women, doctors had recommended Pap testing, and had asked doctors for Pap testing were significantly associated with adherence to interval screening guidelines (33).

To summarize, levels of Pap testing use among Vietnamese American women have consistently been shown to be associated with some demographic and acculturation variables, but not others. Health care and physician factors are important determinants of cervical cancer screening participation. There is some evidence that beliefs about Pap testing are associated with adherence to cervical cancer screening guidelines.

INTERVENTION STUDIES

Since many Vietnamese Americans are relatively new immigrants with limited English speaking proficiency and access to culturally appropriate health care, community-based interventions may be the best way to educate women and encourage cervical cancer screening participation (17). Further, the Cochrane Collaboration recently concluded that lay health worker outreach is a promising approach to improving health outcomes among racial/ethnic minority populations (34). As shown in Table 5, The Vietnamese Community Health Promotion Project in San Francisco has evaluated the effectiveness of lay health worker interventions, as well as Vietnamese language media campaigns in increasing Pap testing use among Vietnamese women (27,35–40).

In one study, indigenous lay health workers conducted a series of small group educational sessions with Vietnamese women in San Francisco, while Sacramento served as a control community. Pre- and post-intervention surveys showed that the proportion of women reporting at least one Pap smear increased significantly in the experimental area (46% pre-intervention versus 66% post-intervention, $p<0.001$), but did not increase in the control area (40% pre-intervention versus 42% post-intervention, $p>0.05$) (36).

Another research project evaluated a Vietnamese language media campaign that included use of television, newspaper, and billboard advertising, as well as the distribution of audio-visual and print educational materials. Post-intervention, no differences in recent Pap testing use existed between women in two northern California experimental counties (Alameda and Santa Clara) and two southern California control counties (Los Angeles and Orange). However, women in the experimental area were significantly more likely to be planning future Pap testing than women in the control area (37).

The recently completed Vietnamese REACH for Health Initiative included a quasi-experimental study to evaluate a community-based cervical cancer control intervention, as well

as a randomized controlled trial of a Pap testing lay health worker intervention (27,40). The community-based intervention was multifaceted and included capacity-building activities, but primarily targeted women through a Vietnamese language media campaign (27,38,41). The intervention was implemented in Santa Clara County, California while Harris County, Texas served as a control community. Intervention impact was measured through cross-sectional, pre-intervention (2000) and post-intervention (2004) surveys in the experimental and control areas. The proportion of women reporting at least one Pap test increased in the experimental community (78% to 84%, p=<0.001), but not in the control community (74% to 71%, p>0.05) (27).

In the trial component of the Vietnamese REACH for Health Initiative, 1,005 women in Santa Clara County were randomized to lay health worker group education plus media-based education (combined intervention) or media-based education alone (media only intervention). Women provided information about their Pap testing history four months after randomization. The combined intervention was more effective than the media only intervention in increasing the rate of previous Pap testing receipt (66% to 82% versus 70% to 76%, p<0.001). Among those who had never been screened, significantly more women in the combined intervention group (46%) than in the media only group (27%) obtained Pap tests (p<0.001) (40).

We were only able to identify four studies that evaluated cervical cancer control intervention programs for Vietnamese women in the US, and all but one of these studies used a quasi-experimental design. However, our review of the limited intervention literature suggests that Vietnamese language media campaigns and lay health worker intervention programs have the potential to be effective in increasing Pap smear use in Vietnamese American communities.

LIMITATIONS OF AVAILABLE DATA

Swallen and colleagues examined the reliability of Vietnamese racial classification in population-based cancer registry data. Specifically, persons with cancer diagnosed in Northern California during 1989–1992, and whom the registry considered Vietnamese were interviewed and asked to specify their race/ethnicity. The study findings suggested that 20% of cancer cases classified as Vietnamese were probably not Vietnamese. It is possible that the observed changes in cervical cancer incidence rates among Vietnamese women over time are, at least partly, a result of reductions in racial classification errors (42).

Evidence exists that the quality of survey data may differ by race/ethnicity. For example, the Pathways Project found that test-retest reliabilities for the question “have you ever had a mammogram” were significantly lower among Chinese, Vietnamese, Latina, and black women than among white women (43). As another example, the Pathfinders Project examined medical records to validate Pap smear self-reports among survey respondents in multiethnic Alameda County, California. The proportions of Pap smear self-reports that could be validated among white, black, Latina, Chinese, and Filipina women were 85%, 66%, 66%, 68%, and 67%, respectively (44). Therefore, data from surveys of Vietnamese women may over-estimate cervical cancer screening use. Also, studies evaluating intervention programs should, ideally, verify women’s Pap testing self-reports with provider reports.

Some of the previous surveys of Vietnamese women have had relatively low response rates, and all have been cross-sectional in nature (Table 3). Survey responders and non-responders may have different levels of Pap smear participation. Indeed, the apparent increase in Pap testing levels between 2002 and 2006–2007 in Washington may be partly a reflection of the lower response rate in 2006–2007. It is also unclear whether higher levels of knowledge about cervical cancer and Pap testing lead to higher rates of cervical cancer screening participation,

or whether interactions with health care providers during Pap smear appointments result in increased knowledge.

As reported in this article, researchers from the Vietnamese Community Health Promotion Project have successfully used quasi-experimental approaches to evaluate several cervical cancer control programs for Vietnamese women. Specifically, they have documented increases in Pap testing rates among women in experimental communities with no change among women in control communities (together with an absence of any other promotional activities in the experimental and control communities) (27,37). However, other investigators have reported difficulties evaluating Pap testing interventions, using a two-community design, because of unanticipated promotional activities in their experimental and/or control communities (45, 46). Further, Murray and colleagues recently specified that group-randomized trials should be considered the gold standard for studies designed to evaluate cancer control interventions that operate at a group level, manipulate the social or physical environment, or cannot be delivered to individuals. They also specified that community intervention trials should be adequately powered with a sufficient number of randomized communities (47).

DISCUSSION

An analysis of 2001 California Health Interview Survey data indicated that disparities in Pap smear use among black, white, and Latina women no longer exist in California (48). Recent surveys suggest that disparities in Pap smear use between Vietnamese and other racial/ethnic groups have decreased over time in Washington, but not in Texas. Over the last five years, the Vietnamese community in King County, Washington has been the focus of targeted cervical cancer control efforts by the National Breast and Cervical Cancer Early Detection Program, as well as a community clinic system serving Asian Americans with limited English proficiency. The relatively high Pap testing levels among Vietnamese women who responded to the 2006–2007 King County survey may reflect the success of these efforts.

Our review suggests that (as in other disadvantaged and immigrant populations) the cervical cancer disparity among Vietnamese women is likely a marker for health care access inequities (31,49,50). Efforts to increase screening participation in Vietnamese communities should enable women who are without a usual source of care to find a primary care doctor. Additionally, intervention programs should improve patient-provider communication by encouraging health care providers (especially Vietnamese physicians serving women living in ethnic enclaves) to recommend Pap testing, as well as by empowering women to ask for testing.

While previous community intervention studies suggest that community-based approaches to cervical cancer control among Vietnamese American women hold promise, findings from these studies are inconclusive because the study samples only included two communities. Because most Vietnamese Americans live in a few geographic areas of the US, there are a limited number of Vietnamese communities available for randomization into group-randomized trials (3). However, there is a compelling need for well-designed, adequately powered community intervention trials to decrease the cancer burden experienced by Vietnamese immigrants.

During 1998–2002, the cervical cancer incidence rate among Cambodian Americans in California and the Puget Sound area of Washington State was 15.0 per 100,000 women, compared to 7.7 per 100,000 among non-Latina white women (51). Yang and colleagues examined cervical cancer among Hmong women in California. Their analysis showed that Hmong women experience high rates of invasive cervical cancer, and the incidence has not decreased over time. Specifically, the age-adjusted incidence rates during 1988–1991 and 1996–2001 were 37.5 and 33.7 per 100,000, respectively (52). While these other Southeast Asian groups come from the same geographic area and have similar recent immigration

histories to the Vietnamese, there are many cultural differences (1,53). With approximately 600,000 individuals of Cambodian, Hmong, and Laotian descent in the US, it is important that future efforts to increase Pap testing focus on these communities (3).

The US Food and Drug Administration recently approved the quadrivalent HPV vaccine (HPV 16, HPV 18, HPV 6, and HPV 11) for children, adolescents, and young women aged nine to 26 years (54). Future cervical cancer control intervention programs for Vietnamese and other racial/ethnic groups should promote use of the HPV vaccine for age-eligible individuals, as well regular interval Pap testing for adult women who may have already been infected with HPV.

CONCLUSION

In conclusion, there is a paucity of information about effective cervical cancer control interventions for Vietnamese women in the US. Survey data indicate that efforts to increase Pap testing receipt among Vietnamese women must address both cognitive and contextual influences. Future community intervention studies should use adequately powered, group-randomized designs to further evaluate Vietnamese language media campaigns and lay health worker programs, as well as interventions targeting the health care providers who serve Vietnamese women. When possible, such intervention programs should be evaluated using medical records verification of Pap testing self-reports. In the future, dissemination studies will be needed to examine effective methods of disseminating evidence-based cervical cancer control interventions to Vietnamese communities throughout the US (55).

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Table 1

Characteristics of Selected US Populations–2000

Characteristic	Vietnamese %	Asian %	US %
Less than high school education [a]	38	20	20
Below poverty level	16	13	12
Foreign-born	76	69	11
Speak language other than English at home	93	79	18
Do not speak English very well	62	40	8

[a] People aged 25 and over

Table 2

Age-adjusted Invasive Cervical Cancer Incidence Rates per 100,000 Women

Author, publication year	Group	Geographic area	Time period	Rate in Southeast Asian/ Vietnamese women	Rate in non-Latina white women
Taylor, 1996 (12)	Southeast Asian [a]	SEER regions [b]	1976–1984	39.4	8.2
Perkins, 1995 (13)	Southeast Asian [a]	California	1988–1992	35.2	7.5
Miller, 1996 (14)	Vietnamese	SEER regions [b]	1988–1992	43.0	7.5
Gomez, 2005 (15)	Vietnamese	Greater San	1990–1993	49.0	—
		Francisco Bay	1994–1997	26.3	—
			1998–2000	15.2	—
McCracken, 2007 (6)	Vietnamese	California	2000–2002	14.0	7.3

[a] Cambodian, Hmong, Laotian, and Vietnamese

[b] Los Angeles, San Francisco/Oakland, San Jose/Monterey, and Seattle/Puget Sound

Table 3

Cervical Cancer Screening Rates among Vietnamese Women Aged 18 Years and Older

Author, publication year	Survey year(s)	Geographic area	Survey method	Cooperation rate [a] %	Sample size	Ever screened %	Screened last year [b] %	Screened last three years [b] %
Nguyen, 2002 (22)	2000	Harris County, Texas	Telephone	54	768	74 [h]	66 [h]	—
Nguyen, 2002 (22)	2000	Santa Clara County, California	Telephone	63	798	78 [h]	60 [h]	—
Kandula, 2006 (23) [c]	2001	California	Telephone	64 [g]	425	—	—	62
Centers for Disease Control, 2004 (24)	2001–2002	Los Angeles, Orange, and Santa Clara Counties, California	Telephone	72	1667	—	—	66 [h]
Taylor, 2004 (25) [d]	2002 [c]	King County, Washington	In-person	84	544	74	45	68
Holtby, 2006 (26) [c]	2003	California	Telephone	—	—	—	—	70
Nguyen, 2006 (27)	2004	Harris County, Texas	Telephone	50	1005	71	53	—
Unpublished data [e]	2006–2007	King County, Washington	In-person	72	1332	93	56	84
Unpublished data [f]	2007	Harris County, Texas	Telephone	74	765	76	49	66

[a] Response among reachable and eligible women (completed/completed and refused)

[b] National guidelines for interval Pap testing changed from every year to every three years in 2002

[c] Study used California Health Interview Survey data

[d] Women aged 18–64 years

[e] Women aged 20–69 years

[f] Women aged 40 years and older

[g] Cooperation rate for all racial/ethnic groups

[h] Includes women without uteri

Table 4

Demographic Characteristics Associated with Recent Pap Testing among Vietnamese Women – King County, Washington: 2006–2007

Variable	n (%)	Screened last three years %	OR (95% CI) [a]
Age in years			
60–69	210 (16)	75 [c]	0.4 (0.2–0.9)
50–59	368 (28)	85	0.9 (0.5–1.8)
40–49	289 (22)	87	1.1 (0.6–2.1)
30–39	352 (27)	88	1.4 (0.7–2.5)
20–29	108 (8)	74	Reference
Marital status			
Currently married	1077 (81)	86 [c]	3.6 (2.3–5.8)
Previously married	124 (9)	81	3.3 (1.7–6,4)
Never married	125 (9)	63	Reference
Years of education			
>12	372 (28)	85	1.2 (0.8–2.0)
12	321 (24)	84	1.1 (0.7–1.6)
<12	634 (48)	82	Reference
Household income in dollars			
≥30,000	506 (38)	90 [c]	2.0 (1.3–3.2)
<30,000	603 (45)	82	1.4 (0.9–2.1)
Unknown	219 (16)	75	Reference
Years in US			
≥20 [b]	219 (16)	84	1.6 (0.9–2.8)
10–19	813 (61)	85	1.6 (1.1–2.4)
<10	297 (22)	80	Reference
English proficiency			
Speaks very well/fluently	175 (13)	82	0.6 (0.3–1.3)
Speaks quite well (so-so)	660 (50)	85	0.9 (0.6–1.3)
Does not speak well/at all	492 (37)	82	Reference

[a] Adjusted for all other demographic variables

[b] Includes eight US-born women

[c] $p<0.001$

Table 5

Cervical Cancer Control Intervention Studies [a]

Author, publication year	Study design	Assignment unit	Intervention component(s)	Evaluation method	Main finding(s)
Bird, 1998 (36)	Quasi-experimental	Community	Group educational sessions delivered by lay health workers Print educational materials Health fairs	Pre- and post-intervention cross-sectional surveys	Effective in increasing Pap testing use
Jenkins, 1999 37)	Quasi-experimental	Community	Vietnamese language media campaign Audio-visual and print educational materials	Pre- and post-intervention cross-sectional surveys	No effect on Pap testing behavior Increased Pap testing intentions
Nguyen, 2006(27)	Quasi-experimental	Community	Vietnamese language media campaign Print educational materials Community capacity-building activities [c]	Pre- and post-intervention cross-sectional surveys	Effective in increasing Pap testing use
Mock, 2007 (40)	Randomized controlled trial [b]	Individual	Group educational sessions delivered by lay health workers	Survey four months after randomization	Effective in increasing Pap testing use

[a] All the studies included women aged 18 years and older.

[b] Women in a community with an ongoing Pap testing Vietnamese language media campaign were randomized to a combined intervention group (lay health worker plus media education) or a media education alone group.

[c] Community capacity-building activities included restoration of a government-funded low cost screening program, a Pap testing clinic specifically for Vietnamese women, a Pap testing reminder system, and continuing medical education for Vietnamese physicians.