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Predictors of Cervical Pap Smear Screening Awareness, Intention, and Receipt Among Vietnamese-American Women

Tung T. Nguyen, MD, Stephen J. McPhee, MD, Thoa Nguyen, Tram Lam, BS, and Jeremiah Mock, MSc, PhD

From the Vietnamese Community Health Promotion Project, Division of General Internal Medicine, University of California, San Francisco, San Francisco, California

Abstract

Background—Compared with white women, Vietnamese women in the United States have a higher rate of cervical cancer and lower Papanicolaou (Pap) test utilization. We evaluated factors associated with awareness of the Pap test, intention to obtain it, and its receipt in Vietnamese-American women.

Methods—In 2000, we conducted a telephone survey of Vietnamese-American women aged ≥ 18 years living in Santa Clara County, California, and Harris County, Texas. We collected data on sociodemographics, healthcare system access and attitudes, as well as Pap test awareness, attitudes, intentions, and practices.

Results—Of 1566 subjects, 74% had heard of the Pap test, and 76% had had at least one. Only 42% of those who never had a Pap test had considered obtaining one. There were no significant differences between the two sites. Women aged ≥ 65 had the lowest rates for all three outcomes. For all women, younger age, being married, having requested a Pap test, physician recommendation, and preferring a female standby if the doctor was male were associated with Pap test intention. Being married, higher level of education, having a female doctor, having a respectful doctor, having requested the test, and physician recommendation were associated with Pap test receipt.

Conclusion—Vietnamese-American women have low rates of Pap test awareness, intention, and receipt. The patient–doctor interaction is an important determinant. Efforts to increase Pap test utilization in this population need to be directed at encouraging physicians to offer the Pap test and empowering women to ask for the test.

Medical Subject Headings (MeSH)

cervix neoplasms; ethnology; female; health behavior; health services accessibility; mass screening; patient acceptance of health care; primary prevention; Vietnam

Address correspondence to: Tung T. Nguyen, MD, Assistant Professor, University of California, San Francisco, Vietnamese Community Health Promotion Project, 44 Page Street, Suite 500, San Francisco, CA 94102. E-mail: tung@itsa.ucsf.edu.

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Background

From 1988 to 1992, the age-standardized cervical cancer incidence rate among Vietnamese-American women (43.0/100,000) was the highest of any ethnic group in the United States and 5 times that of whites (8.7/100,000).¹ For women aged 55 to 69, the rate was 10 times higher (181.6/100,000 vs 17.8/100,000).¹ Unpublished California data indicate that Vietnamese-American women are diagnosed at later stages compared with the general population (B. Topol, Northern California Cancer Center, personal communication, 1995).

Risk factors for cervical cancer, such as sexual behavior or human papillomavirus prevalence, are largely unstudied in Vietnamese-American women. National data for 2000 show that 95.8% of white, 95.4% of African-American, and 92.9% of Hispanic women aged ≥ 18 reported receiving at least one Papanicolaou (Pap) test, while 69.6%, 77.1%, and 75.8%, respectively, had one in the last year.² In contrast, recent data for Vietnamese-American women showed rates at or near 67% and 48%, respectively.^{3–6} Since sexual behavior data are often unavailable or unreliable, the National Cancer Institute considers women who have never had a Pap test and those without recent tests at high risk for cervical cancer.⁷

We recently launched a controlled intervention trial to increase Pap test awareness, intention, and receipt in Vietnamese-American women in Santa Clara County, California. In 2000, there were 99,986 Vietnamese in Santa Clara County and 58,357 in the control community of Harris County, Texas.⁸ The conceptual basis for our interventions and this article is the “pathways” model, which originated in the PRECEDE/PROCEED planning framework.^{9–11} Pathways differentiates between first screening and repeat screening outcomes. The model posits that early cancer detection involves a series of ordered events, each with its own set of predisposing, enabling, and reinforcing factors. Patients negotiate the community/sociocultural pathway with determinants such as socioeconomic status, culture, access, social reinforcement, and exposure to information. Providers negotiate the medical care pathway. Cultural concordance, patient education, and system capacity are the components of the interaction between these pathways and are the final determinants of screening receipt. This article presents the results of a pre-intervention survey and addresses the community/sociocultural pathway and its interaction with the medical pathway as determinants of first Pap test receipt.

Methods

Survey Development and Administration

Based on prior experience, we developed a 15-minute, computer-assisted telephone interview survey in English.^{12–15} The instrument was translated into Vietnamese, back-translated into English, pilot tested, and approved by the University of California, San Francisco, Committee on Human Research. The survey was administered between October 2000 and December 2000. Fourteen trained, bilingual interviewers conducted the survey in the language chosen by the respondents. Interviews were monitored. We made minor revisions to the survey after 60 pre-test interviews.

Survey Measures and Variables

Socioeconomic variables included age, marital status, education, employment, and income. We defined marital status as “never married” or “married,” which encompassed those who were married, divorced, widowed, separated, or living with a partner. Poverty status was established using 1999 U.S. Department of Health and Human Services criteria for household income. Acculturation was estimated by using year of immigration and English-language proficiency.

Awareness of cervical cancer and its risks and causes constituted exposure to relevant information. We assessed beliefs and attitudes by asking when women should have a Pap test, who should obtain one, and if they should see a doctor for a checkup, even if well.

For health status and behavior, respondents reported self-perceived health and tobacco exposure. For access, we asked if respondents had health insurance, a regular place of care, and a regular doctor. Cultural access was measured by asking if they had a Vietnamese doctor, a female doctor, and a translator, if needed. Social reinforcement was assessed by preference for a female standby if the doctor performing the Pap test was male.

To evaluate pathways interaction, we asked respondents about their perception of the provider and the system. For cultural concordance, we asked women if they preferred a female doctor and a Vietnamese doctor. We assessed quality of communication by inquiring if respondents perceived that their physicians were able to explain things clearly and to treat them respectfully. We also asked if the women had ever requested a Pap or if a doctor had ever offered one. Respondents also reported their level of trust of physicians and their perception of healthcare system bias against non-English speakers or ethnic minorities.

Our primary outcome variables were Pap test awareness, intention, and receipt. Pap test awareness was a positive response to the following question: “Have you ever heard of a ‘Pap test’?” Pap test receipt was defined as a positive response to “Have you ever had a ‘Pap test’?” after describing the test. For “no” responses, we defined Pap test intention as a positive response to “Are you planning on obtaining a ‘Pap test’?” Those who had a Pap test reported the date of the last test and their plan to obtain another in the next year.

Sampling

Using telephone directories and 37 Vietnamese surnames that account for 99% of Vietnamese surnames—Bui, Cao, Diep, Duong, Dao, Dang, Dinh, Doan, Do, Ha, Hoang, Huynh, Ho, Khuu, Lam, Le, Ly, Luong, Luu, Mai, Ngo, Nguyen, Pham, Phan, Phung, Quach, Quan, Ta, To, Ton, Tran, Trieu, Trinh, Truong, Vu, Vo, Vuong—a sampling company created sampling frames of 4699 telephone numbers in Santa Clara County and 3985 in Harris County.¹⁶ Of 2078 (44%) working household numbers in Santa Clara, we screened 1377 (66%), yielding 1265 (92%) eligible respondents. For Harris County, the numbers were 2438 (61%), 1499 (61%), and 1412 (94%), respectively. Eligible respondents were female, aged ≥ 18 years, a resident in either county, and self-identified as Vietnamese, Vietnamese-American, or Vietnamese-Chinese (ethnic Chinese who were born or had lived in Vietnam). In households with more than one eligible respondent, we randomly selected one woman.

Statistical Analysis

We conducted statistical analyses using the SAS program (SAS Institute, Cary, NC). We used chi-square tests of contingency for categorical variables and *t* tests for continuous variables to identify significant differences by site. Chi-square tests were also used to evaluate differences in cervical cancer outcomes among respondents by age (18 to 39, 40 to 64, and ≥ 65 years). Statistical significance was defined as $p < 0.05$. Women who had a hysterectomy were excluded from the analysis for the variables “last Pap within 1 year,” “plan to get next Pap test in next 1 year if have had one,” and “have thought about getting a Pap test if never had one.”

For multivariate analyses, multiple logistic regression models were specified separately for the three outcome variables: (1) Pap test awareness; (2) Pap test intention; and (3) Pap test receipt. A set of core variables were forced into the model for face validity, including study site, sociodemographics, health status, and access to health care. For the outcomes Pap test intention

and Pap test receipt, attitudes about healthcare providers were included. All other variables were assessed for model fitness based on a significance level of $p = 0.10$.

Results

Response Rates

Overall, of 2677 eligible women, 1566 (58%) completed surveys. The response rate was 63% in Santa Clara County and 54% in Harris County. Over 99% responded in Vietnamese.

Sociodemographic, general health care, and attitudinal characteristics—Table 1 shows respondents' baseline characteristics. The mean ages were 45.2 years (Santa Clara) and 44.8 (Harris). There were no significant differences in length of U.S. residency, English fluency, education, employment, marital status, or overall health status. There was a significant, although small, income difference. Santa Clara women were significantly more likely to have health insurance and access to regular or culturally concordant care.

There were small, but significant, site differences in healthcare system attitudes. Harris County women were more likely to perceive healthcare system bias by race or language and less likely to trust doctors and to perceive that doctors treated them respectfully.

Site differences in cervical cancer and Pap test variables—Table 2 illustrates cervical cancer and Pap test outcomes. Most women had heard of cervical cancer, and one fourth thought that they were at high risk for it. Three fourths were aware of the Pap test, and three fourths of the total sample reported having had a Pap test. Of those who had a Pap test, approximately 80% had one within a year and most planned on obtaining another within the next year. Of those who never had one, nearly half had not thought about obtaining one. While 43% had requested a Pap test, only 53% to 60% reported that a doctor had recommended one. Santa Clara County women were significantly more likely to prefer a Vietnamese doctor, but not a female doctor or a female standby.

Age differences in cervical cancer and Pap test variables—Table 3 shows results by age for cancer and Pap variables. Women aged ≥ 65 years were significantly less likely to have heard of cervical cancer or the Pap test, and were less likely to have had one. Of those who had one, women aged ≥ 65 were less likely to be up to date or to plan on another test in the next year. Of those who never had a Pap, only 20% of women aged ≥ 65 had thought about obtaining one. Similarly, women aged ≥ 65 were significantly less likely to request a Pap and to report that their doctors had offered it. Older women were significantly more likely to prefer a Vietnamese doctor, but not a female doctor or a female standby.

Multivariate Analysis

Table 4 presents results of the logistic regression models. Factors significantly associated with increased "Pap test awareness" were increasing age, greater English fluency, being married, higher educational attainment, having health maintenance organization (HMO) insurance, ever having requested a Pap, having a doctor recommend a Pap, and preferring a female standby. Factors significantly associated with lower Pap test awareness were low or unknown income, having Medicare insurance, and perceiving racial bias in the health-care system.

For those who never had a Pap, factors significantly associated with increased intention to obtain a Pap test were being married and preferring a female standby. Women who requested a Pap or whose doctor recommended one were nearly 7 and 5 times more likely, respectively,

to intend on obtaining one. Factors significantly associated with decreased likelihood of Pap test intention were increasing age and not knowing cervical cancer risk.

Factors significantly associated with increased likelihood of Pap test receipt were being married and higher educational attainment. Women whose doctor was female and women who perceived that their doctor treated them respectfully were more likely to have had a Pap. Women who requested a Pap or whose doctor recommended one were nearly 9 and 8 times more likely, respectively, to have had one.

Discussion

This study demonstrates that while 90% of Vietnamese-American women have heard of cervical cancer, 25% have never heard of the Pap test. The overall Pap test receipt rate of 76% for Vietnamese-American women was lower than that of other ethnic groups and low-income urban minorities.^{2,17-19} Paradoxically, 25% of the respondents believed that they were at high risk for cervical cancer, suggesting that public health efforts have succeeded in raising awareness if not screening. Yet increased awareness without an increase in screening may lead to anxiety.²⁰

Our data support prior findings regarding the socio-demographic factors related to Pap test receipt in this population.^{3-6,21} The oldest women were less likely to have had a Pap test. If they had never had a Pap, they were less likely to intend on obtaining one. Women who were less educated, less fluent in English, and of low income had lower Pap test awareness. However, only education was associated with Pap test receipt. Income did not play a role, possibly reflecting the success of programs to deliver care to low-income women. English fluency may not play a role, since most of these women had Vietnamese doctors, but could be significant in areas with fewer Vietnamese doctors.²²

As noted in earlier studies, married women were more likely to have heard of a Pap test, to intend on obtaining one, and to have had one.^{3,23,24} Married women may be more likely to visit a doctor for reproductive health care. Another explanation involves Vietnamese cultural attitudes regarding marriage and sex. In a study that included unmarried sexually active Vietnamese-American women, the belief that only married women needed a Pap was an important predictor of Pap test receipt.⁶ As a result, 39% of sexually active Vietnamese-American women, many of whom were unmarried, never had a Pap.⁶ Since premarital sex is stigmatized in Vietnamese culture, many Vietnamese physicians may assume that unmarried women are not sexually active and, thus, do not offer a Pap.²² Interventions to increase Pap test awareness and receipt should target unmarried women.

While lack of access to health care is an issue for Vietnamese-American women, as it is with other minorities, traditional access variables played a small role in Pap test outcomes in our study. Having HMO insurance was associated with increased Pap test awareness, likely through increased patient education by the HMO. Conversely, having Medicare insurance was associated with decreased Pap test awareness, perhaps reflecting physician preoccupation with other aspects of the older patient's health. Additionally, Medicare reimbursement for Pap testing was limited prior to 2001.²⁵ Physicians may have been reluctant to discuss a test if they thought that patients could not afford it. Although insurance was a significant factor in Pap test receipt in studies of other populations, as well as of Vietnamese-American women, we found no such effect even though one third of the women were uninsured.^{3-5,23,26-29} This may reflect the success of screening programs for uninsured women.

Studies of Vietnamese-American women and other populations have showed that having a regular place of health care or a regular physician was positively associated with test receipt.

4,17,27–32 We did not find this effect. Access to culturally concordant care may be more important than access to any care for the provision of Pap tests to Vietnamese-American women.²² We found that respondents were more likely to have had a Pap if their doctor was female. Taylor also found that having a female physician was associated with recency of Pap testing in Cambodian women.³³ Prior studies reveal that Vietnamese-American women with Vietnamese providers were actually less likely to receive Pap tests.^{3–5} This was not true in the present study, perhaps reflecting an increased orientation to preventive medicine among Vietnamese physicians and an increased proportion of female and U.S.-trained providers. Regardless of provider ethnicity, we found that women who perceived that they were treated respectfully were more likely to receive Pap tests, as previously observed in Hong Kong–Chinese women.³⁴ This finding is particularly important for cultures that emphasize “face,” or respect for one’s position and dignity.

Among women who never had a Pap, preferring a female standby if the doctor was male was associated with increased intention to obtain the test. This may stem from the complex interplay between the traditional Vietnamese values of modesty, respect for authority, and conflict avoidance.^{22,35} These women may want the test but be reluctant to have a male provider perform it, and yet unwilling to challenge the provider by asking for a female standby.

In the Pathways model, the interaction between patient and provider is a crucial component of screening receipt. In breast cancer screening, physician recommendation has a powerful effect on mammography receipt in white and African-American women, older African-American and older Chinese-American women, other Asian women, and in women at different stages of mammography adoption.^{36–45} In cervical cancer screening, physician recommendation has been correlated with Pap test receipt in Australian-Vietnamese women and Cambodian-American women.^{21,33} Similarly, women who request screening mammography are more likely to receive it.³⁶ Filipina women who felt comfortable asking their physician for a mammogram were more likely to have had one.⁴³ In the present study, the factors with the strongest effect on all three Pap test outcomes were patient request and physician recommendation.

Prior literature has suggested that cultural traits, such as traditional health beliefs and a lack of preventive care orientation, were significant barriers to medical care among the Vietnamese.^{35,46} Traditional access barriers were also important predictors of screening receipt.^{3–5} In this study, neither culture nor traditional access were highly significant predictors. The primary determinant was physician–patient interaction. This shift may reflect increasing acculturation and decreasing access barriers as policymakers become aware of health disparities in ethnic populations. Many Vietnamese-American women have been able to negotiate the community/sociocultural pathway, but the interaction with the medical pathway still presents barriers that are similar to the barriers for women from other ethnic groups. However, culture still matters. Effective interventions to empower Vietnamese-American women to request a Pap test from their physicians and to request a female standby from their male doctors must address specific cultural influences such as the reluctance to ask an authority figure for culturally appropriate care.²² Physician education should include culturally acceptable communication techniques and increasing awareness about cultural issues relating to sexuality, cervical cancer, and Pap testing.

This study has several limitations. Our results may not be generalizable because we had a response rate of 58% and only sampled two counties in two states. However, the sampled population comprises 15% of the overall U.S. Vietnamese population, and the socio-demographic characteristics of the sample are consistent with prior studies.^{3–5} Telephone sampling may have excluded a small number of women with unlisted numbers or no telephones.

Due to the difficulty of asking culturally sensitive questions in a telephone survey, we did not ask about sexual behavior, a potentially more accurate predictor than marital status of Pap test behavior. Although we did describe the Pap test to respondents, self-reports may be inaccurate, as physicians may have used different terminology and respondents may not have distinguished between a pelvic examination, a “woman’s exam,” and a Pap test. Since many Vietnamese-American women obtain care from private practitioners, self-report validation would have been difficult.

Conclusion

The rates of Pap test awareness, intention, and receipt remain unacceptably low for Vietnamese-American women, who are at high risk for cervical cancer. Efforts to increase awareness should target women who are older, unmarried, less fluent in English, less educated, and of low income. Modifiable factors most significantly associated with Pap test intention and receipt are patient request for the test and physician recommendation of the test. Future interventions to increase Pap test receipt among Vietnamese-American women should empower them to request the test from their physicians and should encourage physicians to offer the test to these women in a culturally appropriate manner.

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Table 1

Demographics, general health care, and attitudinal characteristics

Variable	Santa Clara County, California (n=798)		Harris County, Texas (n=768)		p value
Age, years, mean \pm SD					0.62
Residency in the United States, years, mean \pm SD		12.1 \pm 8.4		44.8 \pm 14.1	
	11.8 \pm 8.4	n	%	n	
	%				
Sociodemographics					
English fluency, poor/not at all	38	306	40	304	0.62
Education, <high school completion	42	332	42	320	0.93
Employment, currently unemployed	43	343	40	307	0.34
Marital status, never married	10	76	11	87	0.25
Household income below poverty level	22	174	27	204	0.03
Health and access to health care					
Health status, good/excellent	73	581	71	544	0.48
Never smoked cigarettes	99	787	97	745	0.03
Someone in household smokes cigarettes	32	255	37	281	0.05
Any insurance	69	550	59	452	<0.01
Medicaid/Medi-Cal	32	253	16	125	<0.01
Medicare	20	162	12	94	<0.01
Private	25	202	22	170	0.15
Health maintenance organization	41	328	33	253	<0.01
Have regular place for health care	93	738	85	647	<0.01
Have a regular doctor	85	679	76	587	<0.01
Have a female doctor	30	203	24	140	0.05
Have a Vietnamese doctor	86	586	81	475	0.02
Attitudes toward health/care system					
Your doctor treats you with respect	94	751	92	700	0.04
Your doctor explains things to you in a way you can understand	84	668	82	623	0.28
You can trust doctors and other healthcare providers to do what is best for the patient almost all/most of the time	79	631	74	568	0.02
Healthcare system never treats people unfairly based on their race or ethnicity	69	428	59	344	<0.01
Healthcare system never treats people unfairly based on how well they speak English	66	422	58	347	<0.01

SD, standard deviation.

Table 2 Cervical cancer and Papanicolaou (Pap) test awareness, attitudes, intentions, and practices by site

Variable	Santa Clara County, California (n=798)		Harris County, Texas (n=768)		pvalue
	%	n	%	n	
Heard of cervical cancer	92	730	88	675	0.03
Think "almost certain" or "very likely" to develop cervical cancer	29	235	24	185	0.02
Heard of Pap test ^a	76	603	73	544	0.09
Ever had Pap test ^b	78	612	74	561	0.10
Last Pap within 1 year (if have had one) ^c	84	470	81	409	0.13
Plan to get next Pap test in next 1 year (if have had one) ^d	94	513	92	446	0.11
Thought about getting a Pap test (if never had one) ^e	40	64	44	84	0.47
Ever requested a Pap test	43	347	43	329	0.85
Doctor ever recommended a Pap test for a Pap test	60	478	53	403	<0.01
Prefer Vietnamese-speaking doctor	68	540	61	468	<0.01
Prefer female doctor for a Pap test	57	452	58	444	0.57
Prefer female standby if male doctor performs a Pap test	54	432	52	396	0.36
Have had a hysterectomy	6	46	6	44	0.98

^aMissing cases = 28.

^bMissing cases = 19.

^cMissing cases = 108.

^dMissing cases = 141.

^eMissing cases = 39.

Table 3
Cervical cancer and Papanicolaou (Pap) test awareness, attitudes, intentions, and practices by age

Variable	Age 18–39 years (n=576)		Age 40–64 years (n=762)		Age ≥65 years (n=161)		pvalue
	%	n	%	n	%	n	
Heard of cervical cancer	88	507	94	716	81	129	<0.01
Think “almost certain” or “very likely” to develop cervical cancer	27	157	30	226	16	25	<0.01
Heard of Pap test ^a	72	406	80	602	62	98	<0.01
Ever had Pap test ^b	72	406	82	618	65	102	<0.01
Last Pap within 1 year (if have had one) ^c	85	315	82	464	74	64	0.03
Plan to get next Pap test in next 1 year (if have had one) ^d	93	336	95	513	85	71	<0.01
Thought about getting a Pap test (if never had one) ^e	45	68	45	59	20	11	<0.01
Ever requested a Pap test	41	236	49	372	30	48	<0.01
Doctor ever recommended a Pap test	53	303	61	461	52	83	0.01
Prefer Vietnamese-speaking doctor for a Pap test	52	301	70	533	79	127	<0.01
Prefer female doctor for Pap test	55	318	58	440	64	101	0.15
Prefer female standby if male doctor performs a Pap test	53	307	55	417	46	73	0.09
Have had a hysterectomy	4	21	8	51	10	16	<0.01

^aMissing cases = 26.

^bMissing cases = 16.

^cMissing cases = 105.

^dMissing cases = 138.

^eMissing cases = 37.

Table 4

Multivariate results for Papanicolaou (Pap) test awareness, intention, and receipt

	Pap test awareness	Pap test intention	Pap test receipt
Model specification			
Number of observations	1428	320	1441
Distribution of cases			
Yes	1078	133	1098
No	350	187	343
Likelihood ratio (<i>p</i> value)	363.29 (<0.01)	103.99 (<0.01)	565.73 (<0.01)
Predicted probabilities			
% concordant	81.6	81.7	87.8
% discordant	18.2	18.1	12.0
Independent variables	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age, each additional year	1.02 (1.01–1.03)	0.96 (0.94–0.99)	1.01 (0.99–1.02)
Residence in United States, each additional year	1.00 (0.98–1.02)	0.98 (0.94–1.02)	1.01 (0.99–1.04)
English fluency (fluent/well/so-so)	1.57 (1.11–2.21)	1.17 (0.57–2.41)	1.11 (0.75–1.63)
Married	2.70 (1.67–4.35)	3.74 (1.68–8.32)	5.49 (3.28–9.19)
Education			
Elementary	1.41 (0.68–2.94)	0.91 (0.22–3.72)	1.89 (0.86–4.16)
High school	2.80 (1.28–6.12)	0.99 (0.22–4.47)	2.36 (1.03–5.44)
University or higher	3.06 (1.33–6.99)	1.23 (0.26–5.97)	3.71 (1.53–8.99)
Income			
Below poverty level	0.59 (0.41–0.84)	1.43 (0.72–2.85)	0.87 (0.58–1.30)
Don't know	0.57 (0.38–0.83)	1.86 (0.85–4.09)	0.77 (0.49–1.19)
Employment status			
Reside in Santa Clara County, CA	1.11 (0.83–1.50)	0.70 (0.39–1.25)	0.95 (0.68–1.32)
Excellent/good health	1.24 (0.90–1.71)	0.94 (0.49–1.83)	0.98 (0.68–1.42)
Tobacco exposure			
Any health insurance	0.90 (0.63–1.29)	1.36 (0.67–2.77)	0.98 (0.65–1.48)
Medicaid/Medi-Cal	1.11 (0.72–1.71)	0.97 (0.39–2.40)	1.31 (0.79–2.15)
Private	0.56 (0.35–0.90)	0.83 (0.30–2.28)	0.60 (0.35–1.03)
Health maintenance organization	1.13 (0.75–1.70)	1.21 (0.53–2.75)	1.05 (0.67–1.66)
Have regular place for health care	1.75 (1.17–2.62)	1.22 (0.54–2.73)	1.52 (0.97–2.37)
Have regular doctor	1.47 (0.94–2.30)	1.95 (0.89–4.25)	1.19 (0.68–2.08)
Have female doctor	—	—	—
Have Vietnamese doctor	—	—	—
Your doctor treats you with respect	—	1.52 (0.63–3.65)	1.98 (1.09–3.60)
Your doctor explains things to you in a way you can understand	—	—	—
You can trust doctors and other healthcare providers to do what is best for the patient almost all/most of time	—	1.13 (0.57–2.22)	0.72 (0.48–1.08)
Healthcare system treats people unfairly based on their race or ethnicity	—	—	—
Very/somewhat/not too often	0.63 (0.45–0.89)	1.70 (0.75–3.83)	0.77 (0.47–1.25)
Don't know	0.92 (0.64–1.33)	1.70 (0.67–4.34)	1.06 (0.63–1.79)
Healthcare system treats people unfairly based on how well they speak English	—	—	—
Very/somewhat/not too often	0.93 (0.37–2.35)	1.15 (0.51–2.60)	1.17 (0.72–1.92)
Don't know	3.06 (2.23–4.20)	0.83 (0.49–1.41)	8.69 (5.82–12.97)
Doctor ever recommended a Pap test	2.93 (2.19–3.93)	6.50 (2.48–17.03)	7.98 (5.69–11.9)
Prefer Vietnamese-speaking doctor for a Pap test	0.53 (0.23–1.20)	4.73 (2.35–9.54)	—
Prefer female doctor for a Pap test	—	—	—
Prefer female standby if male doctor performs Pap test	1.35 (1.01–1.81)	1.82 (1.01–3.29)	—
How likely do you think it is that you will get cervical cancer?	1.07 (0.70–1.64)	0.47 (0.21–1.04)	—
Almost/very/somewhat likely	0.70 (0.44–1.12)	0.23 (0.09–0.56)	—
Don't know	—	—	—

Pap test awareness	Pap test intention	Pap test receipt
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Note: Items in boldface have significant OR; em dash (—) indicates items not included in the model because original $p > 0.1$. CI, confidence interval; OR, odds ratio.