Published in final edited form as:

J Health Care Poor Underserved. 2010 August ; 21(3): 839–850. doi:10.1353/hpu.0.0338.

Factors Associated with Pap Testing among Hmong Women

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Abstract

This paper reports the baseline data on the proportion of Hmong women ($n=402$), ages 18–65, in Sacramento, California who reported that they had a Pap test for the early detection of cervical cancer. We assessed the association between socio-demographic characteristics and Pap test receipt using chi-squared and multiple logistic regression analyses. Only 74% had ever had a Pap test, with 61% tested in the previous three years, compared with 91% and 86%, respectively, of California women overall. Women were more likely to have had a recent Pap test if they were age 21–30 ($OR=3.0$ vs. age 51–65, 95% CI 1.4–6.7) or 31–40 ($OR=3.0$, 95% CI 1.4–6.4), and less likely if they were single ($OR=0.4$ vs. married/partnered, 95% CI 0.2–1.0) or born in the U.S. ($OR=0.3$ vs. ,10 years in U.S., 95% CI 0.1–0.8).

Keywords

Hmong; cervical cancer; Pap testing; cancer

The cancer burden confronting Asian Americans is uniquely and unnecessarily heavy.¹ The cancer burden for Asian Americans is unique in that Asian Americans are the only U.S. racial/ethnic group for which cancer is the leading cause of death.² The cancers experienced by Asian Americans include both those of infectious origin (which disproportionally affect them; e.g., cervical, liver, nasopharyngeal, and stomach³) as well as chronic cancers (which are increasing at faster rates than in other races; e.g., breast⁴). Death due to these cancers is often preventable, particularly for the cancers that can be treated if detected early.¹ The Pap test identifies early signs of cervical cancer, when it is potentially curable, for example.⁵

Despite this, various Asian American ethnic groups are among the least likely to be screened for cervical cancer.^{6–8}

This paper reports on a baseline measurement of Pap testing among 402 Hmong women, ages 18–65, served by the Hmong Women's Heritage Association in Sacramento, California in 2006. The purpose of gathering these data was to document empirically the proportion of Hmong women who had ever been screened for cervical cancer and those who had a Pap test within the previous three years so that a baseline would be established to assess future interventions. Increasing the proportion of Hmong women who adhere to the current American Cancer Society recommended Pap test screening intervals⁵ was expected to contribute to reducing avoidable cervical cancer deaths in this population. Based on data for other Southeast Asian women and Minnesota Hmong,⁹ we suspected that the Pap testing rates for Hmong women would be lower than for women of other racial/ethnic groups^{6–8,10,11} and hypothesized that certain socio-demographic factors (such as educational attainment and English language fluency) might be related to lower Pap testing rates for Hmong women.

To place our study in context, we begin by introducing the Hmong people and then review published cervical cancer data for Hmong. The Hmong have ancient roots in southwestern China.^{12–13} In the late 19th century, Hmong migrated to Vietnam, Laos, and Thailand. During the U.S. war in Southeast Asia in the 1970s, the Hmong supported the American military. Staying in Laos after the U.S. withdrawal would have led to their persecution by the government that prevailed in the war.^{14–15} Thus, beginning in the early 1980s, the U.S. government resettled the Hmong, principally to California and Minnesota.^{13,16} Unlike most other Asian American groups who claim an affiliation with an Asian country, the Hmong are not strongly affiliated with any particular Asian country. Since many Hmong refugees had escaped from Laos, where many were also born, Hmong were frequently counted as Laotian in Census data¹⁷ and in Surveillance, Research and End Results (SEER) data for tabulating cancer rates.

In the 2000 Census, the Hmong numbered 186,310, a 97% increase from 1990.¹⁶ Some researchers estimated that the actual numbers are 18% higher,¹⁷ while Hmong community leaders and Hmong community organizations estimated that the Hmong population exceeded Census figures by 30%.¹⁶ In the latest known U.S. Census Bureau American Community Survey (2007), the number of Hmong alone or in any combination had increased to 206,738.¹⁸ Demographically, the Hmong in the U.S. are a young population (median age=19.7 years, compared with 36.7 for the entire U.S. population). The average Hmong household had 5.47 members per household (compared with 2.61 members per household for the overall U.S. population). Nationally, the *per capita* income for Hmong is \$10,837 (versus \$26,668 for the U.S. as a whole); 25.7% of the Hmong have incomes below poverty (versus 13.0% of the U.S. overall population); and 92.7% speak languages other than English in the home, with 44.0% speaking English “less than very well” (compared with 19.7% of the U.S. population as a whole who speak languages other than English in the home and 8.7% speaking English “less than very well”).¹⁸

The highest incidence rate for any cancer type among Californian Hmong is for cervical cancer.^{14,19} The Californian Hmong cervical cancer rate (36.6 per 100,000) is more than three times as high as the aggregated Asian Pacific Islander rate (11.8 per 100,000) and more than four times as high as the California non-Hispanic White rate (8.0 per 100,000).¹⁴ The Californian Hmong cervical cancer incidence rate would place among the highest rates of all U.S. racial/ethnic groups as measured by Surveillance, Epidemiology and End Results (SEER).³ Additionally, fewer Hmong women (67.1%) had their cervical cancers detected at the earlier *in situ* or localized stages than Asian Pacific Islander women (82.7%) and far fewer than non-Hispanic White women (91.6%).²⁰

In terms of cervical cancer mortality, the overall annual rates for 1988 through 2000 were 10.5 per 100,000 for Californian Hmong women; 3.7 per 100,000 for Asian Pacific Islander women; and 2.5 per 100,000 for non-Hispanic White women.¹⁴ Even with such a high mortality rate, more than half of Hmong women chose no treatment, compared with 5.8% of Asian Pacific Islander women and 4.8% of non-Hispanic White women.¹⁴ Consequently, considerably fewer Hmong women (67%) with cervical cancer survived at 11 months post-diagnosis than Asian Pacific Islander women (92%) or non-Hispanic White women (88%). Only 48% of Hmong women survived after five years compared with 69% of Asian Pacific Islander women and 66% of non-Hispanic White women.¹⁴ These higher mortality rates may be attributable to the preference for *no* treatment as the first course of treatment (51.0%) compared with Asian Pacific Islander women (5.8%) or non-Hispanic White women (4.8%).¹⁴ Furthermore, other possible risk factors for cervical cancer that affect Hmong women, particularly high parity²¹ and low socio-economic status,¹¹ may also contribute to higher incidence and mortality rates. Seeking treatment from Hmong traditional healers who do not use invasive means,^{19,22–25} rather than Western medical care, appears to be based on a variety of socio-cultural and linguistic access factors.²⁶ We initiated a baseline study to characterize demographically Hmong women who have been screened versus those who have not been screened with the intention of identifying characteristics that appear to either favor or disfavor Pap testing.

Methods

The Hmong Women's Heritage Association (HWAH) in Sacramento, California conducted this study in association with researchers associated with the National Cancer Institute-funded Asian American Network for Cancer Awareness, Research and Training. The HWAH is a 501(c)3 community-based organization that started as a support group in 1993 and became incorporated as a non-profit organization in 1994. Its mission is to empower Hmong women and their families in the Sacramento region to lead healthy lives. To fulfill its mission, the HWAH provides culturally sensitive programs and services that educate and support Hmong families as they thrive.

In 2006, the HWAH provided services to over 600 Hmong families, as documented by the presence of case files. These files included their existing long-term clients as well as those recruited through outreach events such as the annual Hmong Family Day. In those families, 402 women were between 18 and 65 years old; they were invited to participate in this study.

The HWH staff serves these women by helping them navigate through the health care system, providing crisis intervention services and paraprofessional counseling, and providing interpretation and translation services (Hmong to English; English to Hmong). For this study, 402 is the number of women who were surveyed (denominator) for determining the proportion having Pap testing. The numerator is the number of Hmong women who are current in their Pap test screening, operationally defined as those who were tested within the previous three years.

In order to characterize this population, the first author constructed or adapted questions on demographic characteristics, acculturation and language proficiency, and Pap test histories, first writing in English and then translating the questions into Hmong. This author focus group-tested the questionnaire with Hmong clients both in Hmong and in English for their feedback and comments prior to adoption. Where necessary, wording was improved.

A detailed description of the Pap test was given at the beginning of the questionnaire: “Doctors or nurse practitioners perform Pap smears in their office. During this exam, an instrument is placed in the vagina so that the cervix can be seen. A small brush and thin stick are used to scrape some cells and these are sent to a laboratory to see if there are signs of cervical cancer.” The final questionnaire comprised three sections. The first section consisted of 10 questions on demographic characteristics including age, country of birth, years lived in the U.S., marital status, educational level, employment status, and health insurance coverage. These variables were included because of the relationships that have been established between low socioeconomic status and educational level and lower rates of using screening services and increased risk for cervical cancer.²⁷ The second section consisted of five questions on acculturation and language proficiency. The items used to measure acculturation asked what language the respondent reads and speaks; how she typically finds out about news, information, or upcoming events within the Hmong community; and the language of the television programs she watches, radio programs she listens to, and newspapers and pamphlets she reads. The items were based on the AANCART core questionnaire²⁸ and the Lao Family's Hmong Smoking Prevalence and Tobacco Uses Survey, whose items were adapted from Marin et al.²⁹ The last section consisted of five questions on Pap testing screening history. Respondents were asked if they ever had a Pap smear. Those who reported being screened for cervical cancer were asked when they last had a Pap test. Women who never had a Pap smear were asked to explain the reasons for not been screened. Respondents' explanations will guide the HWH staff to develop an intervention campaign to increase cervical cancer screening for the Hmong women in Sacramento County, California.

Eligibility requirements included being of Hmong ancestry, being a woman 18–65 years old, and residing in Sacramento County. The HWH staff approached Hmong women at community settings, including churches and events such as Hmong Family Fun Day, Sacramento Hmong New Year, and Birth and Beyond Family Resource Day, during home visits, or at the HWH office. Once participants consented, the interviewer immediately administered the questionnaire either in Hmong (15 minutes) or English (10 minutes), according to the respondents' choice.

The University of California, Davis Institutional Review Board approved the human subjects protocol. The HWHHA staff conducted face-to-face interviews to complete the questionnaire between September 21 and December 15, 2006.

We first descriptively characterized our entire sample; then we differentiated the women based on their Pap testing history and compared (a) Hmong women who had never had a Pap test with those who had ever had a Pap test, and (b) women who had not been screened within the past three years with those who had been screened within the past three years. We used chi-squared tests for comparisons of categorical variables, and then computed adjusted odds ratios and 95% confidence intervals using multiple logistic regression models to assess the association of demographic factors with ever having had a Pap test and having had a Pap test in the past three years. Statistical significance was assessed at the 0.05 level, 2-sided. All data analysis was performed using SAS software, Version 9.2 of the SAS System for Windows (copyright © 2007 SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA).

Results

All 402 Hmong women served by the Hmong Women's Heritage Association agreed to participate. Table 1 displays the demographic characteristics of the Hmong women who participated in this study. Overall, the women in this sample were evenly divided between women ages 18–30 and 31–65; were most likely to have been born in Laos or Thailand rather than the U.S.; were long-time residents of the U.S. (more than 10 years for 53% of those born outside the U.S.); spoke mostly or only Hmong (69%); were married (67%); had children (81%); had less than a high school education (68%); were unemployed (63%); and had public insurance (69%).

Self-reported cervical cancer screening history is given in Table 2. Within this sample, the proportion of Hmong women who had ever had a Pap test was 74%; 61% had been screened in the past three years. The percentage of women who had ever been tested who had an abnormal Pap test or who did not know their test results was 10%. Among those who had never been screened, lack of awareness of the test (e.g., “never heard of Pap test”; “never thought of it”; “did not know that I needed this test”) appeared to be the most important reason for never having been tested.

Age, years in the U.S., language, marital status, number of children, and insurance status had significant bivariate associations with Pap test receipt (see Table 3). After adjustment for other demographic characteristics, ever having had a Pap test was positively associated with being age 31–40 (odds ratio (OR) = 2.5 vs. age 51–65, 95% confidence interval (CI) 1.0–6.1) and having lived more than 10 years in the U.S. (OR=3.2 vs. less than 10 years, 95% CI 1.6–6.7) and negatively associated with single marital status (OR=0.2 vs. married or partnered, 95% CI 0.1–0.6).

Receipt of a Pap test in the past three years was positively associated with being age 21–30 (OR=3.0 vs. age 51–65, 95% CI 1.4–6.7) or age 31–40 (OR=3.0 vs. age 51–65, 95% CI 1.4–

6.4) and negatively associated with having been born in the U.S. (OR=0.3 vs. less than 10 years in the U.S., 95% CI 0.1–0.8) and single marital status (0.4 vs. married or partnered, 95% CI 0.2–1.0).

Discussion

Our study was the first of which we are aware systematically examining factors associated with cervical cancer screening (Pap testing) among Hmong women with the intention to follow these same women longitudinally with an intervention to increase their screening rates.

Just 74% of the Hmong women in our study had ever had a Pap test, and 61% had been screened in the past three years. In comparison, the proportion of Californian women who had ever had a Pap test was 91% and in the past three years was 86%.³⁰ Our data corroborate other studies of Pap testing among Southeast Asian women. In the only other known published study of Hmong women, 27.7% of a sample size of 112 in Fresno, California reported having had a Pap test.²¹ Other investigators have documented low Pap testing rates in other Southeast Asian populations.^{21,31–33} It must be noted that using self-report, as in the present study, could very well result in an under-count of the actual receipt rates.³⁴ Questions about Pap test receipt can pose difficulty for respondents.³⁵ It is possible that some women in our study did not recognize the description of the test or did not realize that they had received the test. Over-reporting is also possible, since respondents may have wished to give a socially desirable answer.

The factors associated with never having had a Pap test in our study are consistent with those found in other studies:^{21,36–37} older age, fewer years in the U.S., and being single. As expected, women over age 50 and single women were less likely than married women in their childbearing years to have had a recent Pap test. However, we were surprised to find that women who were born in the U.S. were less likely than recent immigrants to have been screened in the past three years, even after adjusting for age, marital status, and other potentially confounding factors.

Other investigators^{6,7,11} have noted that limited English proficiency is a deterrent to having been screened for cervical cancer. Thus, we were surprised to find increased likelihood of having been screened for cervical cancer among English-limited Hmong women. This result may be due to the excellent patient navigation given to English-limited HWA clients. The finding that single Hmong women were not as likely to be screened was not surprising, given prevailing Hmong beliefs that there should be no reason for a woman to be examined for sexual functioning if she were not married.

This finding of Hmong women in need of screening being U.S.-born (and English-fluent) is surprising in light of data reported for other Asian American women where English limitation^{6,7,11} is associated with lower likelihood of participating in cervical cancer screening. Thus, our data point to the need for addressing the Pap testing needs of English-fluent, U.S.-born Hmong women.

There are at least three limitations to this study. First, all of the participants in this study were current HWA clients and thus did not constitute a random sample of Hmong women. By being HWA clients, they represented women who had expressed needs and determined that HWA could meet their needs. Thus, the participants represent the Hmong women who have good access to the HWA and are willing to accept services; the overall prevalence of access to and willingness to undergo Pap testing among Hmong in Sacramento County is not necessarily evident from our data. However, our cohort exemplifies most of the prevailing 2007 Census Bureau American Community Survey characteristics of Hmong (namely primarily being foreign-born, English-limited, speaking mostly Hmong, and having many children).

Second, this study focused exclusively on patients, without reference to the health care system with which they will need to interact. We did not explore the role of the medical provider in encouraging patients to obtain Pap testing at the proper intervals, nor did we explore other options of reducing barriers between providers and patients, which we presume to include linguistic and cultural differences.³⁸ Increasing the proportion of Hmong women to receive Pap testing at the proper intervals may require different or multi-faceted interventions and will certainly require linguistically appropriate, culturally competent approaches.

Third, we defined the currency of being tested for Pap testing as being within three years. However, since the true measure of whether women have adhered to the ACS recommendations for Pap test screening intervals requires adjusting for a variety of intimate individual factors, we used Pap testing within the past three years as a proxy measure for being current with screening intervals. This standard of considering Pap testing in the past three years has been used by others as a proxy measure of adherence to screening guidelines.^{7,11}

Our study also has major strengths. These include 100% participation of the Hmong women, ages 18–65, who are served by the HWA. This suggests both considerable satisfaction and trust among these women towards the HWA, a tribute to the trust that the HWA staff have earned in this community. In fact, this sample of Hmong women represents the largest number of Hmong women ever gathered together for a baseline study on Pap testing prevalence. Nevertheless, we acknowledge that some women may have felt obligated to participate in order to show their appreciation for services received. Second, the data we gathered were analyzed both bi-variately and using multiple logistic regression modeling to ascertain those factors that would statistically differentiate those who had Pap testing in the previous three years from those who had not been screened. These findings would help us better target our interventions. Third, our research team included the leadership of HWA; a doctorally-prepared social work researcher of Hmong ancestry; an Asian American cancer control researcher; and a biostatistician. This diverse team facilitated multiple perspectives that promoted cultural competence, linguistic appropriateness, and scientific credibility for the study.

Conclusions

Interventions to increase the proportion of Hmong women who receive Pap testing at the proper intervals are needed. In particular, single, U.S.-born (English-fluent) Hmong women appear to need attention. Factors to be considered include knowledge gaps about Pap testing, culturally influenced reluctance to be tested, and collaborating with medical providers to ensure that women receive and understand routine recommendations for Pap testing.

Acknowledgments

We thank Hmong Women's Heritage Association (HWA) staff for administering the surveys and Helen Chew, MD, Sacramento AANCART Medical Director, for her medical oversight. This research and its publication were made possible by U01 CA114640 from the National Cancer Institute to the Asian American Network for Cancer Awareness, Research and Training. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Cancer Institute.

Notes

1. Chen MS Jr. Cancer health disparities among Asian Americans: what we know and what we need to do. *Cancer*. Dec 15; 2005 104(12 Suppl):2895–902. [PubMed: 16270313]
2. Centers for Disease Control and Prevention. Mortality tables. Centers for Disease Control and Prevention; Atlanta, GA: 2008. Available at: <http://www.cdc.gov/nchs/datawh/statab/unpubd/mortabs.htm>
3. Miller BA, Chu KC, Hankey BF, et al. Cancer incidence and mortality patterns among specific Asian and Pacific Islander populations in the U.S. *Cancer Causes Control*. Apr; 2008 19(3):227–56. Epub 2007 Nov 27. [PubMed: 18066673]
4. Deapen D, Liu L, Perkins C, et al. Rapidly rising breast cancer incidence rates among Asian-American women. *Int J Cancer*. Jun 10; 2002 99(5):747–50. [PubMed: 12115511]
5. Smith RA, Cokkinides V, Eyre HJ. American Cancer Society guidelines for the early detection of cancer. *CA Cancer J Clin*. Jan-Feb;2006 56(1):11–25. [PubMed: 16449183]
6. Ponce, NA.; Gatchell, M.; Brown, R. Cancer screening rates among Asian ethnic groups (Health Policy Fact Sheet). Center for Health Policy; Los Angeles, CA: 2003.
7. Ponce NA, Chawla N, Babey SH, et al. Is there a language divide in Pap test use? *Med Care*. Nov; 2006 44(11):998–1004. [PubMed: 17063131]
8. Kem R, Chu KC. Cambodian cancer incidence rates in California and Washington, 1988–2002. *Cancer*. Sep 15; 2007 110(6):1370–5. [PubMed: 17654663]
9. Ross JA, Xie Y, Kiffmeyer WR, et al. Cancer in the Minnesota Hmong population. *Cancer*. Jun 15; 2003 97(12):3076–9. [PubMed: 12784344]
10. Taylor VM, Yasui Y, Burke N, et al. Pap testing adherence among Vietnamese American women. *Cancer Epidemiol Biomarkers Prev*. Apr; 2004 13(4):613–9. [PubMed: 15066927]
11. De Alba I, Ngo-Metzgner Q, Sweningson JM, et al. Pap smear use in California: are we closing the racial/ethnic gap? *Prev Med*. Jun; 2005 40(6):747–55. [PubMed: 15850875]
12. Quincy, K. Hmong: history of a people. Eastern Washington University Press; Spokane, WA: 1995.
13. Lee, SC.; Xiong, ZB.; Yuen, FKO. Explaining Hmong early marriage.. In: Holgate, H.; Evans, R.; Yuen, FKO., editors. Teen pregnancy and parenthood: global perspectives, issues, and interventions. Taylor & Francis; London, United Kingdom: 2006.
14. Mills PK, Yang RC, Riordan D. Cancer incidence in the Hmong in California, 1988–2000. *Cancer*. Dec; 2005 104(12 Suppl):2969–74. [PubMed: 16247793]
15. Lee, GY. The Hmong rebellion in Laos: victims of totalitarianism or terrorists?. In: Tan, ATH., editor. A handbook of terrorism and insurgency in Southeast Asia. Edward Elgar Publishing Limited; Northampton, MA: 2007.

16. Pfeifer, ME.; Lee, S. Hmong population, demographic, socioeconomic, and educational trends in the 2000 census. Hmong National Development, Inc.; Washington, DC: 2005.
17. Carroll W, Udalova V. Who is Hmong? Questions and evidence from the U.S. Census. *Hmong Studies J.* 2005; 6:1–20.
18. U.S. Census Bureau. American Fact Finder, S0201 Selected Population Profile in the United States (Hmong alone or in any combination, 2007. American Community Survey 1-Year Estimates). U.S. Census Bureau; Washington, DC: 2007.
19. Mills PK, Yang R. Cancer incidence in the Hmong of central California, United States, 1987–94. *Cancer Causes Control.* 1997 Sep. 8(5):705–12.
20. Yang RC, Mills PK, Riordan DG. Cervical cancer among Hmong women in California, 1988 to 2000. *Am J Prev Med.* Aug; 2004 27(2):132–8. [PubMed: 15261900]
21. Yang RC, Mills PK, Dodge JL. Cancer screening, reproductive history, socioeconomic status, and anticipated cancer-related behavior among Hmong adults. *Asian Pac J Cancer Prev.* Jan-Mar;2006 7(1):79–85. [PubMed: 16629521]
22. Hoang GN, Erickson RV. Guidelines for providing medical care to Southeast Asian refugees. *JAMA.* Aug; 1982 248(6):710–4. [PubMed: 7097923]
23. Meyers C. Hmong children and their families: consideration of cultural influences in assessment. *Am J Occup Ther.* Aug; 1992 46(8):737–44. [PubMed: 1379779]
24. Pinzon-Perez H. Health issues for the Hmong population in the U.S.: implications for health educators (EJ794124). *Intl Electronic J Health Educ.* Jul 6.2006 9:122–33.
25. Kagawa-Singer M, Tanjasiri SP, Valdez A, et al. Outcomes of a breast health project for Hmong women and men in California. *Am J Public Health.* Oct; 2009 99(Suppl 2):S467–73. Epub 2009 May 14. [PubMed: 19443830]
26. Plotnikoff GA, Numrich C, Wu C, et al. Hmong shamanism. Animist spiritual healing in Minnesota. *Minn Med.* Jun; 2002 85(6):29–34. [PubMed: 12092436]
27. Khan MJ, Partridge EE, Wang SS, et al. Socioeconomic status and the risk of cervical intraepithelial neoplasia grade 3 among oncogenic human papillomavirus DNA-positive women with equivocal or mildly abnormal cytology. *Cancer.* Jul 1; 2005 104(1):61–70. [PubMed: 15889450]
28. Choi S. Korean translation of the AANCART questionnaire. *Korean Korean Am Stud Bull.* 2003; 13(1/2):98–111. [PubMed: 17344935]
29. Marin G, Sabogal F, Marin BV, et al. Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences.* 1987; 9(2):183–205.
30. California Health Interview Survey. Adult questionnaire: women's health. Center for Health Policy Research; Los Angeles, CA: 2007. 2007
31. Taylor VM, Jackson JC, Yasui Y, et al. Evaluation of an outreach intervention to promote cervical cancer screening among Cambodian American women. *Cancer Detect Prev.* 2002; 26(4):320–7. [PubMed: 12430637]
32. Do HH, Taylor VM, Burke N, et al. Knowledge about cervical cancer risk factors, traditional health beliefs, and Pap testing among Vietnamese American women. *J Immigr Minor Health.* Apr; 2007 9(2):109–14. [PubMed: 17165138]
33. Nguyen TT, McPhee SJ, Nguyen T, et al. Predictors of cervical pap smear screening awareness, intention, and receipt among Vietnamese-American women. *Am J Prev Med.* Oct; 2002 23(3): 207–14. [PubMed: 12350454]
34. McPhee SJ, Nguyen TT, Shema SJ, et al. Validation of recall of breast and cervical cancer screening by women in an ethnically diverse population. *Prev Med.* Nov; 2002 35(5):463–73. [PubMed: 12431895]
35. Pasick RJ, Stewart SL, Bird JA, et al. Quality of data in multiethnic health surveys. *Public Health Rep.* 2001; 116(Suppl 1):223–43. [PubMed: 11889288]
36. Do HH, Taylor VM, Yasui Y, et al. Cervical cancer screening among Chinese immigrants in Seattle, Washington. *J Immigr Health.* Jan; 2001 3(1):15–21. [PubMed: 16228798]
37. Taylor VM, Jackson JC, Tu SP, et al. Cervical cancer screening among Chinese Americans. *Cancer Detect Prev.* 2002; 26(2):139–45. [PubMed: 12102148]

38. Hyman I, Cameron JI, Singh PM, et al. Physicians and Pap testing in the Chinese and Vietnamese communities in Toronto. *J Health Care Poor Underserved*. Nov; 2003 14(4):489–502. [PubMed: 14619551]

Table 1

DEMOGRAPHIC CHARACTERISTICS OF A SAMPLE OF HMONG WOMEN SACRAMENTO COUNTY, CALIFORNIA, 2006 (N=402)

	Number	Percent
Age (year)		
18–20	45	11
21–30	155	39
31–40	92	23
41–50	51	13
51–65	59	15
Country of Birth		
Laos	236	59
Thailand	107	27
U.S.	58	14
Other	1	0
Years in U.S. ^a		
< 10	160	47
10–20	100	29
Over 20	84	24
Language Reads and Speaks		
Only/Mostly Hmong	277	69
Hmong & English Equally	42	11
Only/Mostly English	81	20
Marital Status		
Married/Partnered	267	67
Formerly Married	59	15
Single	74	19
Number of Children		
None	78	19
1–2	59	15
3–4	91	23
5–18	174	43
Education		
< High School Grad	273	68
High School Grad	46	11
> High School Grad	82	20
Employment Status		
Employed	149	37
Unemployed	252	63
Insurance		
None	35	9
Medicare/MediCal	275	69

	Number	Percent
Private	89	22

^a Among those born outside the U.S.

Table 2

CERVICAL CANCER SCREENING HISTORY OF A SAMPLE OF HMONG Women Sacramento County, California, 2006 (n=402)

	Number	Percent
Ever Had a Pap Test		
Yes	296	74
No	106	26
Time Since Last Pap Test		
Up to 3 Years Ago	244	61
More than 3 Years Ago	49	12
Don't Remember	3	1
Never	106	26
Ever Had an Abnormal Pap Test ^a		
Yes	19	6
No	265	90
Don't Know	12	4
Most Important Reason Never Had a Pap Test ^b		
Never Heard of Pap Test	38	38
No Reason/ Never Thought About It	24	24
Did Not Know I Needed This Test	12	12
Never Had Any Problems	9	9
Other	16	16

^a Among those ever tested.

^b Among those never tested.

Table 3

ASSOCIATION OF DEMOGRAPHIC CHARACTERISTICS WITH CERVICAL CANCER SCREENING
AMONG HMONG WOMEN, SACRAMENTO COUNTY, CALIFORNIA, 2006 (N=402)^{a,b}

	Ever Had Pap Test		Had Pap Test in Past 3 Years	
	% Screened	OR ^c (95% CI)	% Screened	OR ^c (95% CI)
Age				
18–20	44	1.2 (0.4, 3.9)	44	2.4 (0.8, 7.1)
21–30	75	2.4 (1.0, 5.9)	65	3.0 (1.4, 6.7)
31–40	86	2.5 (1.0, 6.1)	74	3.0 (1.4, 6.4)
41–50	80	1.4 (0.6, 3.6)	59	1.5 (0.7, 3.4)
51–65	68	1.0	44	1.0
Years in U.S.				
Born in U.S.	47	1.5 (0.4, 5.0)	34	0.3 (0.1, 0.8)
More than 10 Years	85	3.2 (1.6, 6.7)	62	0.7 (0.4, 1.3)
Less than 10 Years	71	1.0	69	1.0
Language Reads and Speaks				
Only/Mostly English	54	0.6 (0.1, 2.3)	43	0.9 (0.3, 3.0)
Hmong & English Equally	86	1.5 (0.3, 6.5)	74	1.6 (0.5, 5.1)
Only/Mostly Hmong	77	1.0	64	1.0
Marital Status				
Single	41	0.2 (0.1, 0.6)	34	0.4 (0.2, 1.0)
Formerly Married	78	0.8 (0.4, 1.7)	54	0.7 (0.4, 1.4)
Married/Partnered	82	1.0	70	1.0
Number of Children				
5 or More	80	1.4 (0.4, 4.6)	66	1.5 (0.5, 4.3)
1–4	81	1.4 (0.4, 4.3)	67	1.0 (0.4, 2.7)
None	46	1.0	37	1.0
Education				
> High School Grad	63	1.1 (0.2, 5.2)	52	1.3 (0.4, 4.4)
High School Grad	74	1.3 (0.3, 5.9)	59	1.2 (0.4, 3.7)
< High School Grad	77	1.0	64	1.0
Employment Status				
Employed	75	1.3 (0.6, 2.6)	63	1.5 (0.8, 2.8)
Unemployed	73	1.0	59	1.0
Insurance				
Insured	76	1.7 (0.7, 4.3)	63	2.1 (0.9, 5.2)
Uninsured	49	1.0	31	1.0

OR = odds ratio

CI = confidence interval

^a Chi-square tests of independence: bivariate associations are significant at $p < .05$ for all variables except education and employment status.

^b Logistic regression models (n = 393)

^c Adjusted for all variables tabulated