



Published in final edited form as:

J Cancer Educ. 2012 December ; 27(4): 725–730. doi:10.1007/s13187-012-0394-4.

What Promotes Cervical Cancer Screening among Chamorro Women in California?

Sora P. Tanjasiri, DrPH, MPH,
California State University, Fullerton

Michele Mouttapa, PhD,
California State University, Fullerton

Lola Sablan-Santos, and
Guam Communications Network

Lourdes F. Quitugua
Guam Communications Network

Abstract

Objectives—Pacific Islander women represent a significant at-risk population for cervical cancer, yet little is known about the modifiable factors associated with routine Pap testing. Therefore, the aims of this paper are to report and discuss the known and unknown factors associated with cervical cancer screening among Chamorro women in California.

Design—This cross-sectional study explored the factors associated with receipt of regular Pap testing among Chamorro women age 18 years and older in California. A self-administered survey was designed and distributed to women in order to understand their knowledge, beliefs and behaviors regarding routine receipt of Pap tests.

Results—Only about two-thirds of women had received a Pap test within the past two years, which is below the U.S. average of 72%. Significant predictors included age, health insurance coverage, knowledge of screening frequency, and beliefs regarding risk groups. These factors, however, accounted for less than 16% of the variance in Pap testing behavior.

Conclusion—We discuss the poor predictive value of existing demographic and theoretical variables, and discuss potentially new areas of research that can aid in the development of future intervention studies. Study limitations and implications are also discussed.

Keywords

cervical cancer; Pap testing; Pacific Islander; Chamorro

INTRODUCTION

Although cervical cancer is one of the most preventable cancers in the United States, Pacific Islanders have some of the highest age-adjusted cervical cancer incidence rates: 12.3 per 100,000 for Native Hawaiians and 15.1 per 100,000 for Samoans, compared to 8.1 per 100,000 for non-Hispanic whites. (Miller, Chu, Hankey, & Ries, 2007) Furthermore, nearly 60% of cervical cancers among Native Hawaiian and Samoan women are found at the regional or distant stage, compared to only about 40% of cervical cancers in non-Hispanic

whites. Pap testing is severely underutilized in this country among Asian Americans and Pacific Islanders, with only about 71% of such women age 25 years and older receiving a Pap test within the last three years, compared to the national rate of 82% (Kagawa-Singer & Pourat, 2000). Mishra et al. (2001) reported that only 46% of Samoans in American Samoa, Hawaii and Los Angeles reported having a Pap test within the past three years (Mishra, Luce-Aoelua, & Hubbell, 2001). Women who received Pap tests were younger, married, more highly educated, more acculturated, and had higher income and health.

Chamorros are indigenous people from Guam and the Commonwealth of the Northern Mariana Islands (CNMI). California is home to the largest population of Chamorros outside of Guam and CNMI (33,849), with over half residing in Southern California (18,471) (APALC, 2005). Despite primarily speaking English, when compared to the state average, Chamorros in California are poorer, have younger families (32% have children 0–17 years of age) and less formal education (20% have less than a high school degree) (APALC, 2005). Chamorros in Guam have a higher age-adjusted cervical cancer incidence rate (16.2 per 100,000) compared to the U.S. average (Haddock, Whippy, Talon, & Montano, 2009). The aim of this paper is to identify the factors influencing Pap testing among Chamorro women in California.

METHODS

The data for this paper consisted of cross-sectional surveys of Chamorro women in 2005, the majority of whom participated in a larger breast screening intervention study aimed at increasing breast cancer screening. The larger study was conducted from 2002–2005 using a quasi-experimental (intervention vs. comparison) pre/post-test design to assess the impacts of culturally tailored lay health education on Chamorro women's breast screening behaviors. The study involved the active collaboration between three community-based organizations - Guam Communications Network (GCN), I Famalao'an, and the Bay Area Women's Social Club - and the California State University, Fullerton. Community-based participatory research (CBPR) facilitated partnership between academic and community researchers to conceive, plan, implement and evaluate all study efforts (Minkler & Wallerstein, 2003; Tanjasiri, Kagawa Singer, Nguyen, & Foo, 2002). The processes and outcomes from the larger breast screening intervention study are described in more detail in a previous publication (Tanasiri, Sablan-Santos, Merrill, Quitugua, & Kuratani, 2008).

In addition to the sample obtained from the larger intervention study, an additional sample of women was recruited through family and social networks throughout the community during the same year (2005). All women completed the survey that included questions regarding: demographics; health care access; breast and cervical cancer knowledge, attitudes and beliefs; and breast and cervical cancer screening behaviors. Cancer-related questions were taken from the National Health Interview Survey Cancer Control Supplement, the California Health Interview Survey, and previous surveys used in past community-university efforts of selected partners (CDC, 2000; Kagawa-Singer et al., 2006; UCLA, 2001). Since English is the official language of Guam and the CNMI, all surveys were developed in English then tailored with selected Chamorro words and phrases inserted throughout.

Screening Status

Women were asked to recall the month and year of their last Pap test. Screening status, the primary dependent variable in this study, was defined as completion of a Pap test within the past two years, according to the guidelines from the American Cancer Society (ACS, 2009). Over one in seven women (14.1%) did not provide complete data for this variable, and were subsequently coded as not screened; this provided a conservative measure of Pap testing in the sample.

Knowledge of Screening Frequency and Cancer Risk Factors

Knowledge of the recommended frequency for Pap tests was assessed with the question, “How often do you think women your age should get a Pap exam?” Women were also asked the question, “Which of these things do you think increases a woman’s chance of getting cancer of the cervix? (Check all that apply).” A list of 12 answers was provided. The following were the “correct” answers: “getting older in age”; “smoking”; “using birth control pills”; “beginning to have sex at an early age”; “having had many sexual partners”; and “if husband has many sexual partners.” Cronbach’s alpha for the six items was .64 in this study.

Beliefs about Pap Tests

Women were asked three questions that assessed their endorsement of the beliefs that women do not need to receive routine Pap tests under certain circumstances, specifically when: they reach menopause; they stop having children; and when they are not sexually active. Responses to these questions were “Agree” and “Disagree.” Cronbach’s alpha for the six items was .77 in this study.

Perceived Social Support

Perceived social support was defined as self-reported receipt of encouragement to get a Pap test from their network of family or friends. The question was the following: “I have friends or family who encourage me to get Pap smears.” Possible responses were “Yes” and “No.”

Demographic Variables

Previous research suggests that older women, women with health insurance, married women, women with higher household incomes, and women with higher levels of education are more likely to receive routine breast and cervical cancer screenings (Kagawa-Singer et al., 2007). Therefore, age, health insurance status, and marital status (married/living with a partner vs. not married/not living with a partner) were considered as potential demographic covariates in the study. Furthermore, acculturation to the United States is associated with higher rates of routine breast and cervical cancer screenings among APIs (Maxwell, Bastani, & Warda, 2000). For this reason, we also considered preferred language to speak, a proxy for acculturation, as a potential demographic covariate. Lastly, questions regarding use of traditional Chamorro healing practices were also asked.

Data were analyzed using SPSS version 16.0. First, general characteristics of the sample were assessed using frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. Next, we used chi-square tests and t-tests to determine whether screened and non-screened women varied on the categories of the independent variables (knowledge of screening procedures and risk factors, false beliefs about Pap tests, and social support) and the demographic variables (age, current health insurance status, marital status, household income, and educational attainment). Variables that were significantly associated with screening status at the $p < 0.05$ level in the previous analyses were examined for multicollinearity, and then included in a forward stepwise multiple logistic regression model, to detect the adjusted associations of such variables with screening status. The criterion for a variable to remain in the logistic regression model was $p < .10$. Nagelkerke R² statistics were computed for each block to determine the proportion of variance in Pap testing that was predicted by the given block; this statistic ranges from 0 to 1, and its intended purpose is to measure the overall strength of the association between the predictor variables and a dichotomous dependent variable (Nagelkerke, 1992).

RESULTS

Response Rates

A total of 404 Chamorro women who participated in the larger breast screening intervention study were attempted to be contacted to take the post-test survey that contained the Pap testing questions, of which a total of 297 agreed (for a response rate of 73.5%). In addition, a total of 172 women were identified via family and social networks and approached to take the survey, of which 121 agreed to participate (for a response rate of 70.3%). There were no significant differences in demographic characteristics between the two samples of women, leaving an overall sample of 418 women who completed the survey. After excluding women who did not answer any of the Pap questions, the final analytic sample comprised 409 women.

Demographic Characteristics

The majority of women were at least 50 years old; slightly over half were married, and nearly one in five were widowed. The majority indicated that they had health insurance at the time of the assessment, and the majority was equally comfortable speaking both English and Chamorro. Less than half of the women who reported their monthly household income had a monthly income of \$2,942 or less, considered the cut-off for poverty status in 2002. Because over 20% of the sample did not answer this question, it was not taken into consideration as a potential demographic variable in subsequent analyses.

Demographic Characteristics by Screening Status

Nearly two thirds of the women reported receiving a Pap test within the past two years. Only about two-thirds of women had received a Pap test within the past two years, which is below the U.S. average of 72% (Sirovich & Welch, 2004). As shown in Table 1, screened and non-screened women varied on age, health insurance coverage, and preferred language. Women under the age of 50 were more likely to be screened according to guidelines. Nearly all of the women who were screened had health insurance during the time of the assessment (95.4%), while only 86.7% of women who were non-screened had health insurance. Women who were most comfortable speaking “only English” and “mostly English” were more likely to be screened.

Factors Associated with Screening Status

The majority of women (72.3%) indicated that women their age should take a Pap test once a year, and have family members and friends who encourage them to get a Pap test (61.4%). Of the six evidence-based risk factors for cervical cancer listed on the survey, women correctly identified two of them. Endorsement of the three false beliefs about Pap tests was relatively low. Those who believed that women their age should receive a Pap test once a year were significantly more likely to be screened compared to those who answered this question differently. Similarly, women who indicated that they have family and friends who encourage them to receive a Pap test had significantly higher rates of screening compared to those who did not have such encouragement. Screened women endorsed significantly fewer false beliefs about Pap tests compared to those who were non-screened. Screened women correctly identified more cervical cancer risk factors compared to non-screened women, although the difference was not significant.

Chi-square tests that were performed between all possible pairs of the independent variables indicated that there was no multicollinearity. However, knowledge of the correct frequency for Pap tests was negatively associated with false beliefs about Pap tests, and positively associated with encouragement from friends and family to get Pap tests. Furthermore, encouragement from friends and family was negatively associated with false beliefs about

Pap tests. There were no significant differences between screened and non-screened women on the utilization of traditional cultural practices, with Florida water (usually composed of water, alcohol and floral essential oils) the most commonly reported.

Table 2 displays the associations of the independent variables with screening status. These associations are presented as odds ratios adjusted for other variables that remained in the final logistic regression model. The final model included the following variables: knowledge of the correct frequency for Pap tests, endorsing fewer false beliefs about Pap tests, age category and having health insurance. Nagelkerke's R^2 for this model was .157 suggesting that while predictors were statistically significant, these standard sociodemographic and cultural variables explained a very small proportion of the variance in screening status among Chamorro women.

DISCUSSION

Pap testing remains the most effective means of detecting cancerous and precancerous lesions of the cervix. This paper reports on the results from a cross-sectional survey of cervical cancer knowledge, beliefs and behaviors among Chamorro women in California. Similar to other studies of Asian American and Pacific Islander women (Islam, Kwon, Senie, & Kathuria, 2006; Kagawa-Singer & Pourat, 2000; Kagawa-Singer, et al., 2007; McPhee et al., 1997; Sadler, LaHousse, Riley, Mercado, Trinh, & Cruz, 2010), we found that selected demographics (namely, younger age and health insurance coverage), knowledge (regarding screening frequency), and valid beliefs (about cervical cancer risk irrespective of menopause status, parity, and sexual inactivity) were significantly associated with having received a Pap test in the past two years.

Despite these statistically significant findings we remain deeply concerned regarding the low predictive value (0.17) of these combined variables for Pap testing behavior. Although it has been suggested that R^2 statistics for logistic regression models should be interpreted with caution because they are not directly comparable with linear regression R^2 statistics, such low value raises the serious question as to the applicability of cognitive constructs (e.g., knowledge and perceived support) in promoting health behaviors in culturally diverse populations as Chamorro. Recently, Pasick and her colleagues (2009) argued for exploration of the social context of behaviors for women of color, including relational culture which represents the "processes of interdependence and interconnectedness among individuals and groups, and the prioritization of these connections above virtually all else" such as above individual health behavior change (Pasick, Barker, Otero-Sabogal, & Burke, 2009, p.95S). For Chamorro and other Pacific Islander women, the prioritization of others' wellbeing over themselves may be especially true. Culturally, Chamorro women are the caretakers of the family, and hence place greater importance on the wellbeing of others before themselves. For instance, in the case of the oldest girl or woman in the family, they are often expected to not only physically care for their immediate and extended families of siblings, aunts, uncles and cousins, but also to provide financial support. A Chamorro woman represents her family clan by being present at community activities and events (fiestas, weddings, funerals, birthdays, baptisms, and church activities) and giving *Chenchule* (money and/or food). This is especially true if the parents have died, and this role is carried on throughout her life. Thus these cultural values and roles may continue despite cultural behaviors (such as use of traditional healing practices that were not found to be associated with cancer screening) decreasing in importance among Chamorros and other Pacific Islanders in the continental U.S.

There were several study limitations that hinder the generalizability of study findings to Pacific Islander and other populations. First and foremost, women in this study were

recruited via non-probability sampling, and thus may not be representative of the larger population of Chamorro women in California and the U.S. In addition, more than half of all Chamorros are multiracial (APALC, 2005), and thus it is unclear the extent to which the women in this study identified themselves as more culturally Chamorro compared to others in their community. The analyses also relied on self-reported Pap testing behavior, which may be influenced by recall bias (although previous research of women in a health maintenance organization has found Pap testing self-reports to be fairly accurate compared to medical records) (Caplan et al., 2003). Despite these limitations, however, our findings underscore the pressing need to identify socially-contextualized influences to promote Pap screening among Pacific Islanders (Rosario, 2010). One such effort is a recently-funded study from the National Cancer Institute to test the effectiveness of active male support to promote Pap tests among Chamorro, Samoan and Tongan women. We urge our colleagues to continue to identify and understand interpersonal and community-level assets that can be harnessed to promote more culturally consistent cancer early detection efforts among Pacific Islanders, and other ethnically diverse health disparity populations, in the future.

Acknowledgments

We are extremely grateful to the Chamorro organizations and groups throughout California for their participation in this study, as well as to the team of academic and community researchers who collaborated on the project design, data collection and analyses: Janet Sanchez, who was president of I Famalao'an; Maria T. Quinata and Rose F. Pangelinan, who were past and current presidents of the Bay Area Women's Social Club; Dr. Allan Hubbell, Dr. Linton Freeman, Mary Anne Foo, Jacqueline H. Tran, Annalyn Valdez, Darrah Kuratani and Roger Sur. Support for this grant was provided by the California Breast Cancer Research Program (grant numbers 7BB-1900 and 7BB-1901), the CDC Foundation (grant number 12295-0100-01) through the generous support of The California Endowment, and the National Cancer Institute's Center to Reduce Cancer Health Disparities (grant numbers 5U54CA153458 and 5R01CA149324).

References

- APALC. The Diverse Face of Asians and Pacific Islanders in California. Los Angeles: Asian Pacific American Legal Center; 2005.
- Caplan LS, McQueen DV, Qualters JR, Leff M, Garrett C, Calonge N. Validity of women's self-reports of cancer screening test utilization in a managed care population. *Cancer Epidemiol Biomarkers Prev.* 2003; 12(11 Pt 1):1182–1187. [PubMed: 14652278]
- CDC. National Health Interview Survey: Cancer Control Module 2000. Centers for Disease Control and Prevention; 2000. From website: http://www.cdc.gov/nchs/about/major/nhis/quest_data_related_1997_forward.htm
- Haddock RL, Whippy HJ, Talon RJ, Montano MV. Ethnic disparities in cancer incidence among residents of Guam. *Asian Pac J Cancer Prev.* 2009; 10(1):57–62. [PubMed: 19469625]
- Islam N, Kwon SC, Senie R, Kathuria N. Breast and cervical cancer screening among South Asian women in New York City. *J Immigr Minor Health.* 2006; 8(3):211–221. [PubMed: 16791531]
- Kagawa-Singer M, Park Tanjasiri S, Lee SW, Foo MA, Ngoc Nguyen TU, Tran JH, et al. Breast and cervical cancer control among Pacific Islander and Southeast Asian Women: participatory action research strategies for baseline data collection in California. *J Cancer Educ.* 2006; 21(1 Suppl):S53–60. [PubMed: 17020504]
- Kagawa-Singer M, Pourat N. Asian American and Pacific Islander breast and cervical carcinoma screening rates and healthy people 2000 objectives. *Cancer.* 2000; 89(3):696–705. [PubMed: 10931471]
- Kagawa-Singer M, Pourat N, Breen N, Coughlin S, McLean TA, McNeel TS, et al. Breast and cervical cancer screening rates of subgroups of Asian American women in California. *Med Care Res Rev.* 2007; 64(6):706–730. [PubMed: 17804823]
- Maxwell AE, Bastani R, Warda US. Demographic predictors of cancer screening among Filipino and Korean immigrants in the United States. *Am J Prev Med.* 2000; 18(1):62–68. [PubMed: 10808984]

- McPhee SJ, Stewart S, Brock KC, Bird JA, Jenkins CN, Pham GQ. Factors associated with breast and cervical cancer screening practices among Vietnamese American women. *Cancer Detect Prev.* 1997; 21(6):510–521. [PubMed: 9398991]
- Miller BA, Chu KC, Hankey BF, Ries LAG. Cancer incidence and mortality patterns among specific Asian and Pacific Islander populations in the U.S. *Cancer Causes Control.* 2007; 19:227–256. [PubMed: 18066673]
- Minkler, MM.; Wallerstein, N. *Community-Based Participatory Research for Health.* San Francisco: John Wiley & Sons, Inc; 2003.
- Mishra SI, Luce-Aoelua PH, Hubbell FA. Predictors of papanicolaou smear use among American Samoan women. *J Gen Intern Med.* 2001; 16(5):320–324. [PubMed: 11359551]
- Rosario AM. Meeting Chamorro women's health care needs: Examining the cultural impact of mamahlao on gynaecological screening. *Pac Health Dialog.* 2010; 16(1):81–90. [PubMed: 20968239]
- Sadler GR, LaHousse SF, Riley J, Mercado B, Trinh AC, Cruz LAC. Predictors of breast and cervical cancer screening among Chamorro women in Southern California. *Journal of Cancer Education.* 2010; 25(1):76–82. [PubMed: 20112139]
- Sirovich BE, Welch HG. The frequency of Pap smear screening in the United States. *J Gen Intern Med.* 2004; 19(3):243–250. [PubMed: 15009779]
- Tanasiri SP, Kagawa Singer ML, Nguyen TUN, Foo MA. Collaborative research as an essential component for addressing cancer disparities among Southeast Asian and Pacific Islander women. *Health Promotion Practice.* 2002; 3(2):144–154.
- Tanasiri SP, Sablan-Santos L, Merrill V, Quitugua LF, Kuratani DG. Promoting breast cancer screening among Chamorro women in Southern California. *J Cancer Educ.* 2008; 23(1):10–17. [PubMed: 18444041]
- UCLA. California Health Interview Survey: Adult Questionnaire 2001. UCLA Center for Health Policy Research; 2001. From website: http://www.chis.ucla.edu/pdf/CHIS2001_adult_q.pdf

Table 1

Selected Variables by Screening Status

	Screened (n = 261)		Not Screened (n = 148)		χ ²	p
	n	%	n	%		
Age category					13.59	0.04
Under 50 years	75	29.3	29	19.7		
50–54 years	34	13.3	16	10.9		
55–59 years	46	18.0	18	12.2		
60–64 years	30	11.7	19	12.9		
65 years and older	71	27.7	65	44.3		
Married	150	61.0	76	53.1	7.81	0.10
Has health insurance	230	95.4	117	86.7	9.35	0.00
Language most comfortable speaking					12.96	0.01
Only English	56	22.5	23	16.3		
Mostly English	37	14.9	8	5.7		
Both English and Chamorro	152	61.0	104	73.8		
Mostly Chamorro	4	1.6	6	4.3		
Recommended frequency for Pap test ^a	197	79.8	75	58.1	25.08	0.00
Perceived support from family and friends	175	75.1	81	63.3	5.60	0.02
Traditional healing practices					χ ²	p
Drank traditional Chamorro herbs	103	41.5	61	42.4	0.03	0.87
Used <i>suruhana</i> (traditional healer)	58	23.3	37	26.4	0.48	0.49
Used traditional message	83	34.4	50	35.5	0.41	0.84
Used an herbal douche	40	16.9	30	22.2	1.61	0.21
Rubbed Florida water (water with floral oils)	126	52.7	80	60.2	1.91	0.17

Note. Frequencies for each variable do not add up to the total sample size because of missing responses

^aCorrect answer was once per year according to ACS guidelines during the study period

Table 2

Predictors of Screening Status

	AOR	p	Nagelkerke R ²
<i>Block 1: Demographics</i>			.084
Age category	0.84	0.03	
Has health insurance	4.41	0.03	
Chamorro language most comfortable speaking	--	--	
<i>Block 2: Knowledge, Beliefs and Support</i>			.073
Recommended frequency of Pap tests	2.49	0.01	
Cervical cancer risk factors	--	--	
Beliefs about Pap tests	0.41	0.05	
Perceived support from family and friends	--	--	
<i>Final Model</i>			.157

-- Not estimated in the model because it did not reach statistical significance ($p < .10$) when entered into the model in its appropriate block.