

## Assessing the Effectiveness of Breast Cancer Education Workshops among Samoan and Pacific Islander Women in Southern California

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### Abstract

**Background:** Samoans experience among the worst five-year breast cancer survival rates in the U.S., largely due to late stage diagnosis. There is great potential for screening interventions to reduce cancer mortality among Samoans. This paper examines the effectiveness of a culturally and linguistically tailored breast cancer education workshop for Samoan and other Pacific Islander women in Southern California. **Methods:** Educational workshops were conducted in churches, homes, and the Samoan National Nurses Association office to Pacific Islander women. Effectiveness was assessed using pre- and post-tests. Self-administered questionnaires queried participants about demographics, access, personal or family breast cancer history, screening knowledge and behaviors, and plans to obtain screening (n=495). **Results:** Participants were predominantly Samoan, with 57% reporting they were  $\geq 40$  years of age. At pre-test, half of the participants did not know how to perform Breast Self Examination (BSE), 40% never had a Clinical Breast Examination (CBE), and 30% never had a mammogram. Less than 40% reported having a mammogram in the past two years. At post-test, 98% reported increased knowledge. Older women were more likely to report plans for screening at post-test. **Conclusions:** Health educators in Samoan and other Pacific Islander communities must recognize and appropriately address screening barriers such as cultural beliefs and lack of knowledge, and should consider working with important institutions such as the church.

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### Cancer and Pacific Islanders in Southern California

Existing literature generally portrays older Asian Americans and Pacific Islanders in aggregate as experiencing equal or better health than non-Hispanic whites. However, aggregating these data masks the high variability among subgroups (Tanjasiiri, 1995). Pacific Islanders are the people of Polynesia, (*e.g.*, Samoans, Tongans, Native Hawaiians); Micronesia, (*e.g.*, Chamorro, the indigenous people of Guam and the Northern Mariana Islands, Marshallese); and Melanesians (*e.g.*, Fijians). Pacific Islanders include diverse populations that differ in

language and culture (U.S. Bureau of the Census, 1993). As a group, they are socio-economically disadvantaged, with high rates of risky health behaviors, obesity and disability (National Academy Press, 1998), and serious cancer disparities (Goggins, 2007).

Breast cancer represents the most common cancer among Hawaiian and Samoan women in Los Angeles, with the number of cases increasing from 1991 to 2006 (Cockburn, 2009). Controlled studies have shown that regular use of screening mammography among asymptomatic women 50 years and older reduces mortality by up to 25% (Lee, 2002;

Nystrom, 2002). Pacific Islanders as a group experience high rates of breast cancer diagnosis at late stage, and experience worse five-year mortality rates than whites. Samoans in particular experience worse five-year mortality rates than all other ethnic groups studied, with an alarming 3.1 adjusted relative risk as compared with whites (Goggins, 2007). Available data indicate that Pacific Islanders experience screening rates that are far below national objectives (Special Services for Groups, 2001; Mishra, 2001; Tanjasiri 2001; Levy-Storms, 2003). Yet, few studies have examined the potential for culturally and linguistically appropriate interventions to ameliorate cancer disparities among high-risk Pacific Islander sub-groups such as Samoans. Little is known about how best to design and deliver culturally tailored cancer education in this population. Therefore, there is great potential for targeted, culturally and linguistically appropriate screening interventions to reduce cancer mortality in these groups.

The purpose of this paper is to present the results of an evaluation of a breast health screening education program for Samoan and other Pacific Islanders in Southern California. It was hypothesized that this program, which provided breast health and screening educational workshops, would enhance participants' awareness of the risk of breast cancer, the benefits of early detection, how to perform self-examination and obtain screening services, and influence participants' intentions to obtain such services. The findings of this study have the potential to provide valuable information for designing effective cancer control programs for Samoans and other Pacific Islanders.

## **Methods**

### **Educational Workshop**

Breast cancer workshops were an educational outreach to promote breast cancer early detection, made possible through a collaborative effort of the Weaving Islander Network in Cancer Awareness, Research & Training (WINCART), the National Cancer Institute (NCI), and the Samoan National Nurses.

Association (SNNA). SNNA is a non-profit organization based in Long Beach, CA. SNNA's mission is to improve the quality of life of Pacific Islanders throughout the United States and the Pacific Islands by providing quality health education, recommendations, resources, guidance and services, and to raise awareness of health issues in encouraging and assisting them through health promotion, disease prevention, policy advocacy, and research programs. These workshops were designed and presented by SNNA nurses to promote breast cancer early detection among Samoan and other Pacific Islander women.

### **Participants and Procedures**

From February of 2006 to November of 2008, workshops were conducted in churches, homes, and at the SNNA office to Pacific Islander women ages 18 and older. A majority (89.7%) of the workshop participants were Samoan, with the remainder being Tongan, Chamorro, Marshallese, and other Pacific Islander. Workshops were presented by bilingual SNNA nurses in both English and Samoan to accommodate limited-English speaking participants. A slide presentation provided an overview of the normal anatomy of the breast, basic breast cancer biology, statistics regarding breast cancer among Pacific Islanders, and information about early detection and treatment. Flip charts covering the same material were used in venues that were not set up to accommodate slide presentations. In addition, silicone breast models and bilingual pamphlets were used throughout the workshops as visual aids to illustrate important information presented regarding breast self-examination, clinical breast examination, and mammogram.

Breast self-examination (BSE) is one option for early detection that can be performed by women starting in their 20's (Smith, 2008). The workshop presenters were certified by the American Cancer Society to teach BSE, and participants were shown the proper way to perform one so that they could detect any abnormalities in their breast. Silicone breast models embedded with different sizes and types of lumps were used to help women identify what

a lump feels like when doing their BSE.

Clinical breast examination (CBE) is a breast examination done yearly by a doctor or a nurse, and is important because the doctor or nurse may be able to detect something not found in a BSE. In the workshop, women were encouraged to request a CBE when they went in for their yearly pap smear. They were also told to let the doctor know if there are any changes in their breasts and not to be afraid to ask questions.

At the time of this study, women ages 40 and older were encouraged to get a mammogram every one to two years. It was explained that mammograms can detect abnormal lumps or growths that are too small to feel. Participants were taught when to get a mammogram, how to prepare, what to expect, and what to do afterwards. Presenters educated women about myths of mammograms, and stressed their importance. Participants were made aware of dates and times of free screenings offered by SNNA quarterly. At each workshop, a Samoan cancer survivor shared her personal story in order to make the message of early detection more meaningful and relevant to the workshop participants. Workshops lasted approximately two hours.

### Measurement

At the beginning of each workshop, a self-administered questionnaire was used to query participants about demographic data (*i.e.*, age, ethnic identification), access to care (*i.e.*, regular primary care provider, health insurance), personal or family history of breast cancer, and knowledge, attitudes, and behaviors with respect to breast health screening. Cancer related items were obtained from the National Health Interview Survey (CDC, 2000) and the California Health Interview Survey (UCLA, 2001). The questionnaire assessed participant knowledge of breast cancer, breast self-examinations, clinical breast examinations, mammograms, and past utilization of screening. For example, knowledge items included, “Do you know the importance of early detection of breast cancer?”; “Do you know how to perform self-breast examination?”; and “Do you know

what a mammogram is?” Examples of utilization items were “Have you ever had a clinical breast examination by your doctor?”, and “Have you ever had a mammogram?” At the end of the workshop, a self-administered questionnaire assessed each participant’s perceptions of her improvement in knowledge, self-confidence to perform BSE, and intentions regarding getting screened as a result of the workshop. All questionnaires were printed in both English and Samoan.

### Data analysis

Responses to pre- and post-workshop questionnaires were entered, analyzed, and interpreted by WINCART and UCLA research staff using SPSS 16.0 and Stata 9.2. First, descriptive statistics were performed on demographic variables to report percentages, means, and frequencies of each item. Second, bivariate analyses were conducted using logistic regressions to obtain unadjusted odds ratios to present any significant associations between variables representing *breast cancer risk* (age, personal or family history); *access to care* (having health insurance, having a primary care physician); *past utilization* (ever had a CBE, ever had a mammogram); and variables representing *knowledge, confidence to perform BSE, and intention to obtain screening*. Lastly, multivariate logistic regressions were performed to obtain the odds of post-workshop self-report of (1) increased knowledge of CBE, and (2) increased knowledge of mammogram, controlling for potential confounding variables associated with pre-workshop knowledge, breast cancer risk, access, and past utilization.

## Results

### Demographic Characteristics

A total of 1,297 women were educated in 132 workshops conducted from 2006 to 2008 throughout Southern California. Pre- and post-workshop questionnaires were completed by 495 Pacific Islander participants associated with 72 of the workshops, for a 38.2% participation rate. Table 1 presents data on the characteristics of the women who participated in the health education workshops and completed the pre- and

**Table 1**

Participant Self-reported Demographic Characteristics (n=495)		
	n	Percent
<u>Age</u>		
18-30	113	22.8
31-39	98	19.8
40-55	155	31.3
55+	129	26.1
<u>Ethnic self-identification</u>		
Samoan	444	89.7
Tongan	5	1.0
Chamorro	2	0.4
Marshallese	3	0.6
Other	5	1.0
Missing/Refused to state	36	7.3
<u>Access</u>		
Have a primary care physician	429	86.7
Have health insurance coverage	425	85.9
Have a personal or family history of breast cancer	154	31.1

post-workshop questionnaires. Breast cancer risk is elevated among women who are older and who have a family history. Participants were fairly widely distributed with respect to age, with approximately 57% reporting that they were age 40 or older (and thus likely eligible for routine screening mammography). The women ranged from ages 18-55+ years. Nearly one-third, or 31.1% of the participants reported that they had a personal or family history of breast cancer. In terms of access to care, participants reported relatively high rates of having a regular primary care physician, and having some form of health insurance coverage. Of the 495 participants 86.7% reported that they had a primary care physician and 85.9% reported that they had at least some form of health insurance coverage.

### Knowledge and Past Utilization

Results of participants' self-reported knowledge and past utilization are presented in Table 2. The pre-workshop questionnaire results showed that 83% of the participants had at least some knowledge of breast cancer prior to the

presentation. A majority (81.1%) reported that they knew the importance of early detection. However, approximately half of participants did not know how to perform a BSE, and approximately 40% never had a CBE. With respect to mammograms, 83.3% of participants reported that they knew what a mammogram was. Of eligible women (age 40+), 30% never had a mammogram. Among those eligible women who ever had a mammogram, only 64% reported having a mammogram in the two years prior to the workshop.

**Table 2**

Participant Questionnaire Results (n=495)		
Self-reported Endorsement of Item		
	n	Percent
<u>Pre-workshop questionnaire</u>		
<u>Knowledge</u>		
Know how to perform BSE	245	50.1
Know what a mammogram is	410	83.3
<u>Past Utilization</u>		
Ever had a CBE	298	60.7
Ever had a mammogram (among those age 40+ years)	198	70.2
Years since most recent mammogram <sup>1</sup>		
1	7	4.1
2	101	59.8
3	34	20.1
4	18	10.7
5+	9	5.3
	n	Percent
<u>Post-workshop questionnaire</u>		
<u>Knowledge</u>		
Increased BSE knowledge	444	90.2
Increased CBE knowledge	316	64.2
Increased mammogram knowledge	327	66.5
Know importance of mammogram	488	99.4
<u>Self-Efficacy</u>		
More confident about performing BSE	416	85.6
<u>Intention</u>		
Plan to schedule an examination	387	78.7

<sup>1</sup> Among those who ever had a mammogram

**Table 3**

**Bivariate Associations Between Risk Factors, Access to Care, Pre-Workshop Knowledge and Utilization**

	Knowledge of breast cancer	Know importance of early detection	Know how to perform BSE	Know what a mammogram is	Ever had a CBE
	<u>Odds Ratio (95% Confidence Interval)</u>				
<u>Risk Factors</u>					
Age 40+	1.2 (0.76-1.9)	1.4 (0.90 – 2.2)	<b>2.7 (1.9 – 3.9)</b>	<b>2.2 (1.4 – 3.6)</b>	<b>5.6 (3.8 – 8.3)</b>
Personal or family history	1.7 (1.0 – 3.0)	<b>2.4 (1.4 – 4.2)</b>	<b>2.5 (1.7 – 3.7)</b>	<b>2.2 (1.2 – 3.9)</b>	<b>1.6 (1.1 – 2.5)</b>
<u>Access</u>					
Health insurance	<b>6.8 (3.8, 11.9)</b>	<b>4.4 (2.6, 7.7)</b>	<b>4.7 (2.5, 8.9)</b>	<b>4.1 (2.3, 7.3)</b>	<b>4.2 (2.4, 7.4)</b>
Primary care physician	<b>8.6 (4.9, 15.2)</b>	<b>4.4 (2.5, 7.6)</b>	<b>5.8 (2.9, 11.4)</b>	<b>5.6 (3.1, 9.9)</b>	<b>5.7 (3.1, 10.4)</b>

Items in bold are statistically significant (p<.05).

Following the presentation, the majority of participants reported that their knowledge had increased with respect to breast cancer screening, and nearly all of the participants (99.4%) reported that they knew the importance of mammograms. As a result of the educational presentation, 85.6% of the women were more confident in performing BSE. More than three-fourths (78.7%) reported that they intended to schedule a CBE after the workshop.

**Bivariate Associations with Knowledge, Confidence, and Intentions**

Bivariate results between risk, access to care, knowledge, confidence and intention are

presented in Table 3. Variables representing risk factors for breast cancer were positively associated with pre-workshop knowledge and prior utilization of screening measures. Variables representing access to care were significantly and positively associated with all pre-workshop knowledge and prior utilization items.

As shown in Table 4, individuals indicating risk factors for breast cancer were less likely than others to self-report increased knowledge in either CBE or mammograms post-workshop. For example, older women were 0.43 times, or less than half as likely to report an increase in

**Table 4**

**Bivariate Associations Between Risk Factors, Access to Care, and Post-Workshop Self-Assessment Items**

	Self-Reported Increased Knowledge of			Increased confidence to perform BSE	Increased awareness of mammogram importance	Plan to have CBE
	BSE	CBE	Mammo-gram			
	<u>Odds Ratio (95% Confidence Interval)</u>					
<u>Risk Factors</u>						
Age 40+	0.78 (0.43 – 1.4)	<b>0.43 (0.29, 0.63)</b>	<b>0.50 (0.34, 0.74)</b>	1.5 (0.96 – 2.5)	1.0 (0.22 – 4.6)	<b>2.5 (1.6, 3.9)</b>
Personal or family history	1.5 (0.78 – 3.0)	<b>0.55 (0.37, 0.81)</b>	<b>0.65 (0.44, 0.97)</b>	1.2 (0.76 – 2.2)	*	<b>0.59 (0.38, 0.93)</b>
<u>Access</u>						
Health insurance	<b>2.3 (1.2 – 4.6)</b>	<b>1.8 (1.1, 3.1)</b>	1.6 (0.93 – 2.6)	1.2 (0.64 – 2.4)	2.5 (0.47 – 13.0)	<b>2.7 (1.5, 4.7)</b>
Primary care physician	<b>2.5 (1.3 – 5.0)</b>	1.4 (0.8 – 2.3)	1.1 (0.66 - 1.9)	1.5 (0.79 – 2.9)	<b>5.1 (1.1 – 23.1)</b>	<b>3.8 (2.2 – 6.5)</b>

\* No estimate due to colinearity

knowledge regarding CBE, and were half as likely to report increased knowledge regarding mammograms as compared with younger women ( $p < 0.05$ ). Women with a personal or family history of breast cancer were similarly less likely to report increased knowledge regarding CBE and mammograms as compared with other women (O.R. = 0.55 and 0.65, respectively,  $p < 0.05$ ). In terms of intention to have a CBE, findings were mixed: older women were more likely to report plans to schedule a CBE than younger women (O.R. = 2.5,  $p < 0.05$ ), but those with a personal or family history of breast cancer were actually less likely to report such plans (O.R. = 0.59,  $p < 0.05$ ).

### Multivariate Logistic Regressions

Lastly, multivariate logistic regressions were performed to predict post-workshop increases in knowledge regarding CBE and mammograms. These analyses allowed us to determine whether the breast cancer risk factors of older age and/or personal or family history were due to higher knowledge at baseline (and thus less room for improvement), prior utilization, and/or differences in baseline access to care such as insurance status or having a primary care physician (see Tables 5 and 6). We found that older age and personal or family breast cancer history remained significantly and negatively associated with increased knowledge for both CBE and mammogram even after controlling for baseline knowledge, access to care, and prior utilization of screening services.

**Table 5**

Multivariate Associations Between Risk Factors, Access to Care, and Post-Workshop Increases in CBE Knowledge

	Odds Ratio	S.E.	P value
Importance of early detection	1.9	0.50	0.01
Age 40+	0.34	0.08	<0.001
History	0.48	0.10	<0.001
Health Insurance	2.6	1.1	0.02
Primary Care Physician	0.47	0.21	0.08
Past Utilization	1.5	0.36	0.09

### Discussion

Community-based health education by trusted individuals is a common strategy to promote increased cancer screening in disparity populations (Eng et al., 1995; Nguyen et al., 2009). In our experience, high proportions of Samoan women reported that, as a result of the educational workshop, their knowledge increased, and that they felt more comfortable

**Table 6**

Multivariate Associations Between Risk Factors, Access to Care, and Post-Workshop Increases in Mammogram Knowledge

	Odds Ratio	S.E.	P value
Importance of mammogram	1.4	0.38	0.27
Age 40+	0.40	0.10	<0.001
History	0.64	0.13	0.03
Health Insurance	2.3	0.90	0.04
Primary Care Physician	0.50	0.22	0.11
Past Utilization	1.4	0.37	0.21

performing BSE and sharing information about breast health and cancer screening with others. We found, however, that results varied with risk factors and access to care measures. We found a significant negative association between older age (40+) and self-reported, post-workshop increase in knowledge. In other words, the intervention appeared to have less of an impact in terms of increasing knowledge among older women. A similar pattern was found for women with a personal or family history of breast cancer. This finding is of concern because these are the women at highest risk for breast cancer, and for whom routine use of these screening tests are most strongly recommended. A reasonable explanation is that older women and/or women with a family history may already have higher awareness of these screening tests as compared with other women. However, these associations were not explained by controlling for baseline knowledge, differences in access to care, or prior utilization in the multivariate analysis.

An alternative explanation for the age finding is that the workshops may have been somewhat less effective for educating older women. If this interpretation was correct, recommendations for increasing the effectiveness of the intervention might include those reported in the literature on maximizing the effectiveness of educational interventions for older learners including awareness of approaches to engagement, as well as appropriate lighting, print size, sound volume and acoustics, duration, and simplicity and clarity of the educational messages (Kicklighter, 1991). It is also important to be aware of issues of general and health literacy levels among older generations. Also, older women may have felt less comfortable or more self-conscious admitting knowledge gaps and asking questions in the multi-generational settings (*e.g.*, in front of adult children and other younger community members), in which the workshops were conducted. Older women, however, were more likely than younger women to report that they actually planned to schedule a CBE after the workshop. This could be consistent with the interpretation that older women were previously aware of the importance of breast cancer screening, but that the additional information about breast cancer risks resulted in motivating these women to take action.

Women with greater access to care were more likely to report that their knowledge of BSE and CBE increased as a result of the intervention. It is possible that in this cohort of participants, health insurance is correlated with higher (unmeasured) levels of socio-economic status, such as education level and health literacy, and it is possible that the intervention was more effective among such individuals. It is possible that the intervention may have worked to reinforce messages women have received previously from their health plans or health care providers. If true, these issues would point to the need to ensure that educational interventions are tailored for participants of diverse educational and health literacy levels.

### **Limitations**

This study is subject to some limitations. First, given the pre/post workshop evaluation study design, we cannot decipher to what extent the

various intervention components were effective at changing women's knowledge, attitudes or behavioral intentions. Furthermore, data are based on participant self-report on a questionnaire that was self-administered in a group setting, and it is possible that participants may have reported information based on pride (*i.e.*, not wanting to admit to needs or lack of knowledge), or to match what they believed evaluators wanted to hear. In particular, women may have over-reported information such as health insurance coverage and health knowledge. We suspect that any systematic measurement error of these variables is likely to be in the direction of over-report, indicating that these barriers to access are likely more common than reflected by these data. Second, the questionnaire item assessing baseline knowledge may not have allowed for sufficient detail to discriminate between different levels of knowledge, limiting our ability to assess improvements in knowledge due to the workshop. Third, self-reported intentions may not predict behavior. Thus, the questionnaire item assessing intentions to obtain screening tests in the future would not be expected to completely predict actual screening behavior. Nonetheless, intentions represent an important precursor of participant readiness to undertake a behavior. Lastly, with a convenience sample of 38% of workshop participants and no data on non-respondents, the degree to which participants are representative of Samoan and Pacific Islander women in Southern California is unknown.

### **Conclusion**

As a result of this work, we have identified various barriers in the Samoan community regarding breast health and breast cancer screening issues, including lack of knowledge about breast cancer and the lifesaving potential of early detection and treatment. We have to educate Samoan women regarding the importance of preventive health measures, and arm them with practical information regarding how to access preventive services. To overcome some of these barriers, we believe that knowing the community's cultural background is the key. For instance, in the Samoan community, one

must recognize that God is revered in everything they do (Kaholokula, 2008; Puaina, 2008). We recommend emphasizing to Samoan women the importance of taking care of themselves, so that they can be able to do the work of God and take care of their families.

In order to reach various age groups, we also recommend tailoring workshops to be age-specific. This is because education may prove more effective for older Samoan women when materials are presented or taught in the “appropriate” Samoan language, which is dependent on age, status, and generational interaction, determining whether one’s colloquial speech is “common” or “honorific.” Older Samoan women are also more comfortable and less intimidated with women their own age. Older women do not want to share their problems with younger family members or talk about private body parts such as “*susu*” (breast), and vice versa. Reinforcing for the older participants that education about the breast is not in any way sexual is also important. These uncomfortable issues have to be addressed and followed through on in a non-threatening environment, such as Samoan churches. The nature of the problem or issue should determine whom to contact in the church. In the case of breast cancer or other “female” issues, it should be the pastor’s wife or head of the women’s group. Approaches should be tailored specifically depending upon program objectives, and be developed to be culturally sensitive and acceptable to the intended audience. Overall, knowing the community and delivering the message accordingly are the most important ways to promote community-based breast cancer education and screening.

## References

- Centers for Disease Control and Prevention. (2000). National Health Interview Survey: Cancer Control Module 2000. Hyattsville, M.D., National Center for Health Statistics.
- Cockburn, M., Liu, L. C., & Deapen, D. (2009). *Cancer in Los Angeles County: Trends by Race/Ethnicity, 1976-2006*. Los Angeles: Los Angeles Cancer Surveillance Program, USC/Norris Comprehensive Cancer Center.
- Edwards, B.K., Brown, M.L., Wingo, P.A., et al. (2005). Annual report to the nation on the status of cancer, 1975-2002, featuring population-based trends in cancer treatments. *Journal of the National Cancer Institute*, 97(19):1407-27.

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- Eng, E., Smith, J. (1995). Natural helping functions of lay health advisors in breast cancer education. *Breast Cancer Research and Treatment*, 35(1):23-29.
- Goggins, W.B., Wong, G.K.C. (2007). Poor survival for US Pacific Islander cancer patients: evidence from the Surveillance, Epidemiology, and End Results database: 1991-2004. *Journal of Clinical Oncology*, 25(36):5738-5741.
- Kaholokula, J. K., Saito, E., Mau, M. K., Latimer, R., & Seto, T. B. (2008). Pacific Islanders' perspectives on heart failure management. *Patient Education and Counseling*, 70(2), 281-291.
- Kicklighter, J.R. (1991). Characteristics of older adult learners: A guide for dietetics practitioners. *Journal of the American Dietetic Association*, 91(11):1418-22.
- Lee, C.H. (2002). Screening mammography: proven benefit, continued controversy. *The Radiologic Clinics of North America*, 40(3):395-407.
- Levy-Storms, L., Wallace, S.P. (2003). Use of mammography screening among older Samoan women in Los Angeles County: A diffusion network approach. *Social Science and Medicine*, 57:987-1000.
- Mishra, S.I., Luce, P.H., Hubbell, F.A. (2001). Breast cancer screening among American Samoan women. *Preventive Medicine*, 33:9-17.
- Nguyen, T.T., Le, G., Nguyen, T., et al. (2009). Breast cancer screening among Vietnamese Americans: a randomized controlled trial of lay health worker outreach. *American Journal of Preventive Medicine*, 37(4):306-313.
- Nystrom, L., Andersson, I., Bjurstam, N., et al. (2002). Long-term effects of mammography screening: Updated overview of the Swedish randomized trials. *Lancet*, 359(9310): 909-919.
- Pacific Partnerships for Health. (1998). Washington, D.C.: National Academy Press.
- Puaina, S., Aga, D. F., Pouesi, D., & Hubbell, F. A. (2008). Impact of traditional Samoan lifestyle (fa'a Samoa) on cancer screening practices. *Cancer Detection and Prevention*, 32 Suppl 1, S23-28.
- Smith, R.A., Cokkinides, V., Brawley, O.W. (2008). Cancer screening in the United States, 2008: A review of current American Cancer Society guidelines and cancer screening issues. *CA: A Cancer Journal for Clinicians*, 58:161-179.
- Special Services for Groups. (2001). Report on the breast and cervical cancer screening needs and recommendations for Cambodians, Chamorros, Laotians, Thais, Tongans, and Vietnamese. Los Angeles, CA: Special Services for Groups, Inc.
- Tanjasiri, S.P., Wallace, S.P., Shibata, K. (1995). Picture imperfect: Hidden problems among Asian Pacific Islander elderly. *The Gerontologist*, 35(6):753-60.
- Tanjasiri, S., P., Sablan-Santos, L. (2001). Breast cancer screening among Chamorro women in Southern California. *Journal of Women's Health and Gender-Based Medicine*, 10(5):479-85.
- UCLA (2001). California Health Interview Survey: Adult Questionnaire 2001. Los Angeles, CA: University of California, Los Angeles, Center for Health Policy Research.
- U.S. Bureau of the Census, Department of Commerce, Economics and Statistics Administration. (1993). We the Americans: Pacific Islanders. Washington, D.C.: U.S. Government Printing Office.

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