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The Effect of Access and Satisfaction on Regular Mammogram and Papanicolaou Test Screening in a Multiethnic Population

Carol P. Somkin, PhD^{*}, Stephen J. McPhee, MD[†], Tung Nguyen, MD[†], Susan Stewart, PhD[§], Sarah J. Shema, MS[‡], Bang Nguyen, DrPH[‡], and Rena Pasick, DrPH[§]

^{*} From the Kaiser Permanente Division of Research, Oakland, California;

[†] Vietnamese Community Health Promotion Project, Division of General Internal Medicine, Department of Medicine, University of California, San Francisco;

[‡] Northern California Cancer Center, Union City, California; and

[§] Comprehensive Cancer Center, University of California, San Francisco.

Abstract

Background—Access and satisfaction are determinants of preventive service use, but few studies have evaluated their role in breast and cervical cancer screening in multiethnic populations.

Objectives—We sought to investigate the relationship between race/ethnicity, access, satisfaction, and regular mammogram and Papanicolaou test receipt in 5 racial/ethnic groups.

Research Design—We conducted a telephone survey in 4 languages.

Subjects—Our subjects were black, Chinese, Filipino, Latino, or white women aged 40 to 74 residing in Alameda County, California.

Measures—Outcome: regular mammograms (last test within 15 months and another within 2 years prior) and Papanicolaou tests (36 months and 3 years, respectively). Independent: race/ethnicity, sociodemographic variables, access (health insurance, usual site of care, regular doctor, check-up within 12 months, knowing where to go, copayment for tests), and satisfaction (overall satisfaction scale, waiting times, test-related pain and embarrassment, test satisfaction).

Results—Among women who had ever had a mammogram or Papanicolaou test, 54% and 77%, respectively, received regular screening. In multivariate analyses, regular mammography was positively associated with increased age (odds ratio [OR] 1.05 per year), private insurance (OR 1.7), check-up in the past year (OR 2.3), knowing where to go for mammography (OR 3.0), and greater satisfaction with processes of care (OR 1.04 per unit), and negatively with not knowing copayment amount (OR 0.4), too many forms to fill out (OR 0.5), embarrassment at the last mammogram (OR 0.6), and Filipino race/ethnicity. Similar results were found for regular Papanicolaou tests.

Conclusions—Access and satisfaction are important predictors of screening but do little to explain racial/ethnic variation. Tailored interventions to improve regular mammography and Papanicolaou test screening in multiethnic populations are needed.

Keywords

access to care; mammography; race and ethnicity; cancer screening; patient satisfaction

Reprints: Carol P. Somkin, PhD, Kaiser Permanente Division of Research, 2000 Broadway, Oakland, CA 94612. E-mail: cps@dor.kaiser.org.

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Despite recent increases in overall rates of mammogram and Papanicolaou test screening,^{1–3} recent and repeat or “regular” screening rates are persistently low among some population subgroups,^{1–9} including Hispanic/Latino and Asian Pacific/Islander women, older women, and women with less education or income.^{2–5}

Few large studies have focused on regular screening which, although more difficult to measure than recent screening, is the key requirement for decreased cancer mortality.^{10,11} Estimates of regular screening vary according to numerous factors, including the measure used, the population studied, and the time frame in which the study was conducted. A recent study⁵ of low-income, mainly black women in Washington DC found that 65% had a second mammogram within 2 years of a previous one, and 75% had a Papanicolaou test within 3 years of a previous one. In a 1999 study⁶ of white and black women enrolled in a Michigan health maintenance organization, 66% of those who had a mammogram received another within 2 years. Only 42% of women in a multiethnic sample of San Francisco Bay Area women in 1992 had had 3 or more mammograms in the prior 5 years.⁹

Rates of regular screening vary across racial/ethnic groups. In one study,⁹ non-English-speaking Chinese women were least likely to have had 3 or more mammograms in the prior 5 years (7%), followed by non-English-speaking Latinos (21%), English-speaking Chinese (37%), English-speaking Latinos (46%), whites (51%), and blacks (53%). In a study using Medicare claims data from 1992 to 1998,⁷ repeat mammography occurred significantly less frequently in women of color compared with whites.

Limited access to care has been shown to impede the use of preventive services^{2,5,9,12–21} and may help explain the racial/ethnic and sociodemographic^{5–8,21} differences found in regular mammogram and Papanicolaou test screening. Although few studies have investigated this issue in multiple racial/ethnic groups, one recent study⁵ found that continuity of care, defined as having both a usual source of care and a regular clinician, was significantly associated with receipt of regular mammograms and Papanicolaou tests.

Although lacking uniform measurement criteria, the concept of “access to care” is multidimensional and is closely related to concepts of “quality of care” and “satisfaction with care.”²² Andersen, one of the principal authors of the Behavioral Model of Health Services Use, defines “access” as “the actual use of personal health services and everything that facilitates or impedes that use.”²³ In the Model,²⁴ “potential access” refers to enabling resources, such as income or insurance, whereas “realized access” refers to actual use of health services. Although early policy considerations focused principally on distributing care equitably,^{22,24–26} recent concerns also center on outcomes of care, and its quality. Thus, “effective access” occurs when the use of health services improves health status or results in consumer satisfaction, and “efficient access” occurs when health status or satisfaction increases relative to the amount of services used. The conceptual relationship of access and quality is reflected in the Institute of Medicine’s definition of access to care as “the timely use of personal health services to achieve the best possible outcome.”²⁷

Access has most often been operationalized simply as having insurance coverage.^{12,15,17,22,26,28} Lurie²⁹ has further distinguished between “primary access” (factors that affect the ability of individuals to get *into* a health care system) and “secondary access” (factors that impact the ability of individuals to receive care *after* they are in the system). Having insurance and a usual site of care and/or a regular doctor are the most commonly used measures of “primary access.”^{22,30} Indicators of “secondary access” include nonfinancial barriers, such as interpersonal factors (eg, perceptions of respect or discrimination) and organizational factors (eg, complex, bureaucratic health care delivery systems) that may delay receipt of care.^{29,31}

Satisfaction with care (including perception of the interpersonal and technical competence of staff³¹ and satisfaction with past screening) can be considered a secondary access variable.²⁹ Predictors of satisfaction with past screening include staff behavior and waiting times.³² Factors associated with avoiding repeat screening include embarrassment or distress, perceiving the clinic staff to be unhelpful or the screening test as neither worthwhile nor reassuring.³³ Discomfort has little effect on satisfaction or intention to return for repeat mammography.^{34,35}

Following Lurie's conceptualization of access as those factors facilitating the ability of individuals to receive care,²⁹ our study assessed the impact of primary and secondary access on breast and cervical screening. We hypothesized that access and satisfaction would mediate the effect of sociodemographic factors on regular mammograms and Papanicolaou tests and would explain racial/ethnic disparities in receipt of regular screening. No published research has examined this hypothesis simultaneously in 5 racial/ethnic populations, with data collected from women in their own language, using multiple measures of access and satisfaction.

METHODS

Study Design

The data for this study came from the baseline survey, conducted from 1999 to 2000, of the "Pathfinders Project." "Pathfinders," a randomized, controlled cohort trial that featured a linguistically and culturally tailored health promotion intervention, has been described elsewhere.³⁶ The Committee on Human Research at the University of California, San Francisco and Northern California Cancer Center, and the Institutional Review Board of the Kaiser Foundation Research Institute, approved the research protocol.

Site and Study Population

The initial sampling frame consisted of telephone prefixes associated with zip codes corresponding to geographic areas with low-income multiethnic residents in Oakland and Berkeley, California. We then applied the random digit dialing technique (RDD) developed by Mitofsky and Waksberg.³⁷ We later modified this sampling frame to delete prefixes that captured predominantly high-income respondents and oversample prefixes with high proportions of Chinese and Latino households. To recruit sufficient numbers of Filipinos and Chinese, we also generated a RDD sample using telephone prefixes in Union City, California, which has approximately 20% Filipino residents, and supplemented our RDD samples by obtaining ethnic surname listed samples for both Filipinos and Chinese throughout Alameda County.³⁸ The survey was administered by trained female bilingual interviewers.

During the initial telephone screening contact, the interviewer explained the study purpose, design, and monetary incentives to the respondent. Eligibility criteria included: (1) women aged 40–74 years; (2) identified as black, Chinese, Filipino, Latino, or white; (3) residence in Alameda County; (4) interviewable in English, Cantonese, Tagalog, or Spanish; (5) no history of cancer; and (6) intention to reside in the study area for the subsequent 3 years. Each participant agreed to: (1) be contacted every 6 months for the study period; (2) be randomly assigned to intervention or control group; (3) allow medical record validation of receipt of Papanicolaou tests and mammograms in the previous 5 years; and (4) provide contact information for herself and 2 family members or friends. The interviewer obtained verbal informed consent from eligible women and, to improve retention prospects, scheduled the interview approximately 2 weeks later.

The interviewers called a total of 46,206 telephone numbers, of which 32,521 (70%) numbers were households. Of 15,264 (47%) screened households, 2963 (19%) had an eligible

respondent. Although they attempted to screen all households, of the 17,257 not screened, a respondent could not be found (in 76%), did not complete the screener (in 14%), or refused (in 10%). Among eligible respondents, 1840 (62%) consented to participate, and 1463 (80%) of these were eventually recontacted and successfully interviewed, yielding a racially and ethnically diverse sample of 1463 women, 40 to 74 years of age who spoke English, Cantonese, Tagalog, and Spanish. Overall, of the total eligible sample of 2963, 1463 agreed to participate in our 3-year trial, yielding a response rate of 49%. Among eligible subjects, race/ethnic-specific response rates were: whites 68%, black 52%, Latinos 52%, Chinese 39%, and Filipinos 36%.

Dependent and Independent Variables

We asked women whether and when they had obtained previous breast and cervical screening. For women who had ever had a mammogram or Papanicolaou test, we asked the date of the most recent, and the year of the examination previous to that one. We used these answers to calculate our dependent variables, “regular” mammography and Papanicolaou testing. As recommended by published guidelines, we defined regular mammography³⁹ as having had the most recent mammogram within 15 months of the interview (12 months plus a 3-month “grace period”), and having the previous mammogram within 2 years of the most recent one. Regular Papanicolaou testing⁴⁰ was defined as having had a Papanicolaou test within 36 months of the interview, and having the previous Papanicolaou test within 3 years of the most recent one.

Sociodemographic variables included age (in years), education (in years), race/ethnicity (black, Chinese, Filipino, Latino, or white), language of interview (English or non-English), number of years in the United States (≤ 10 or > 10), annual household income ($< \$20K$, $\$20$ – $50K$, or $\geq \$50K$), and marital status (married/living with a partner or divorced/widowed/single).

Based on prior literature we measured primary access as having: (1) health insurance (group model HMO, other private coverage, Medicare without private insurance, MediCal HMO without Medicare, MediCal only [including 8 women with military coverage only], and none),^{12,15,17,26,28} (2) a usual site of care,^{9,12,15,28,30} (3) a regular doctor^{15,18,28} and needing copayments for, (4) doctor visits, (5) last mammogram,⁴¹ and (6) last Papanicolaou test⁴¹ (“yes,” “unknown amount,” or “no” for each).

Measures of secondary access included variables related to nonfinancial barriers to screening. We used receipt of a check-up in the last 12 months as a measure of preventive orientation⁴² and women’s knowledge of where to go for their next mammogram and Papanicolaou test as an indicator of ability to negotiate complex health care delivery systems. We also developed a scale to measure satisfaction with the interpersonal processes of general medical care.²⁹ Questions, adapted from Stewart et al,³¹ included: “How often do doctors: (1) give you the information you need? (2) give you enough time to ask questions? (3) listen carefully to what you have to say? (4) ask whether you have any questions? (5) treat you with respect? (6) seem to care about you? (7) respect your ideas about your health problem? and (8) discriminate against you?” The response categories for these items were “always,” “sometimes,” “rarely,” and “never.” A factor analysis with a varimax rotation of these items resulted in factor loadings > 0.60 for each item. Cronbach alpha for the scale was 0.88. These items were summed into a scale ranging from 8 to 32, with higher numbers reflecting greater satisfaction.

We included 2 other general measures of satisfaction: difficulty obtaining a doctor’s appointment^{29,30,43} and waiting time in the doctor’s office.^{29,30} We examined additional measures of satisfaction specifically related to having mammography or Papanicolaou testing (adapted from Loeken et al⁴⁴ and Cockburn et al³²). These questions inquired about perceptions of: (1) convenience of scheduling the test, (2) child care problems, (3) wait for the

test, (4) rudeness of clinic staff, (5) language problems, (6) number of forms to fill out, (7) pain from the test, (8) embarrassment from the test, (9) satisfaction with receipt of test results, and (10) overall satisfaction with mammography/Papanicolaou test experience (see Appendix 1).

Statistical Methods

In bivariate analyses, racial/ethnic differences in sociodemographic, screening, and access and satisfaction measures were assessed using χ^2 tests for categorical variables and analysis of variance for continuous variables. To evaluate the extent to which race/ethnic differences in screening were explained by sociodemographic, access, and satisfaction variables, we created 4 logistic regression models of regular screening that successively added these covariates.

Variables were added in blocks according to the previously defined constructs theoretically associated with screening to: (1) assess the relative contribution of each block to the final model using Nagelkerke R^2 and (2) determine the extent to which variables in each block explain the effects of those in previous blocks. Likelihood ratio χ^2 tests were calculated to compare the fit for successive models (the first model is compared with a model with intercept only). Separate sets of models were created for regular mammograms and regular Papanicolaou tests. To assess the effect of small group size on our results, we constructed models excluding variables with <40 women in comparison groups and obtained results that were almost identical to the original analysis. We therefore present results using all relevant variables. Because Papanicolaou tests are not always recommended for women with hysterectomies, we excluded these women from Papanicolaou test models.

RESULTS

Overall, 87% of women in the total sample reported ever having had a mammogram and 95%, ever having had a Papanicolaou test (Table 1). Among the 1273 women who had ever had a mammogram, 54% had had regular mammograms. Among the 1388 women who had ever had a Papanicolaou test, 77% had had regular Papanicolaou tests.

Table 2 presents significant differences in proportions or means across racial/ethnic groups for access and satisfaction variables. Latino women were least likely to have any kind of health insurance or a regular doctor. Chinese women were least likely to have a usual site of care. On average, Chinese, Latino, and white women were less likely than black or Filipino women to have had a recent check-up. Chinese and Latino women reported more difficulty in obtaining a doctor's appointment and expressed more concern about office waiting times. Chinese women were least likely to report obtaining a convenient mammogram appointment.

Filipinos were more satisfied with interpersonal processes of care than blacks, Chinese, and Latinos, and women from all of these racial/ethnic groups reported slightly greater satisfaction than whites. Satisfaction with the last Papanicolaou test was somewhat greater among blacks and Latinos than other racial/ethnic groups, but there were no significant racial/ethnic differences regarding satisfaction with the last mammogram. More Filipinos reported that their last mammogram was painful than other women and more Latinos that their last Papanicolaou test was painful. Chinese and Latinos were more likely than blacks, Filipinos, and whites to report that their mammogram experience was embarrassing. Latinos were more likely, and whites less likely, to report that their Papanicolaou test was embarrassing. Chinese, Filipino, and Latino women were more likely to report having childcare problems; Chinese and Latino women were more concerned about waiting times when obtaining screening; Latino women more often reported that the staff did not speak their language; and Chinese and Latino women more often reported too many forms to fill out.

Table 3 shows the results of the multivariate models for regular mammography. With race/ethnicity as the only predictor, Filipino (OR 0.65) and Latino (OR 0.55) women were less likely

than white women to have had regular mammography. After adding other sociodemographic variables, only Filipino race/ethnicity remained significant (OR 0.62). In addition, older women were more likely, whereas more recent immigrants and women with the lowest income were less likely, to receive mammograms regularly. When we added access variables, Filipino race/ethnicity and age remained significant predictors of regular mammography, but immigration status and income did not. Instead, having private health insurance (OR 1.88), having had a check-up within the past year (OR 2.37), and knowing where to obtain a mammogram (OR 3.22) were positively associated with regular mammography. Women who did not know the amount of mammogram copayment were less likely to receive regular mammograms (OR 0.41). When the model was expanded to include satisfaction variables, all of these findings remained significant. In addition, women with higher scores on the “interpersonal processes of care” satisfaction scale (OR 1.04 for each additional point) were more likely to receive regular mammograms. Women who reported too many forms to fill out and embarrassment at the last mammogram were less likely (ORs 0.51 and 0.59, respectively) to receive mammograms regularly.

Table 4 presents results of the multivariate models for regular Papanicolaou testing. Chinese (OR 0.35), Filipino (OR 0.44), and Latino (OR 0.40) women were all less likely than white women to have had regular Papanicolaou tests. When we added other sociodemographic variables, this association remained only for Chinese and Filipino women. Women with more education (OR 1.07 for each additional year) and married women (OR 1.56) were significantly more likely, whereas more recent immigrants were less likely (OR 0.46), to have regular Papanicolaou tests. Adding access variables, Chinese, Filipino, and Latino race/ethnicity and age remained significant predictors of regular Papanicolaou tests, but income and marital status did not. Instead, those who had group model HMO insurance (OR 2.37) or private insurance (OR 5.39) were more likely to have had regular Papanicolaou tests compared with those with no insurance. In addition, women who had had a check-up in the past year (OR 4.51), and those who knew where to obtain a Papanicolaou test (OR 7.00) were more likely, and women who did not know the amount of the Papanicolaou test copayment (OR 0.36) were less likely, to receive regular Papanicolaou tests. As with mammography, adding satisfaction variables did not change these relationships. However, satisfaction with the last Papanicolaou test experience (OR 1.58) was associated with regular Papanicolaou tests, although the nonsignificant likelihood ratio χ^2 test indicates that adding satisfaction variables does not improve the fit compared with the Papanicolaou test model with access variables alone.

DISCUSSION

To maximally decrease mortality, cancer screening must be performed regularly,^{10,11} yet few studies have investigated determinants of regular screening.^{5–8,20,21} In our study, rates of regular screening were markedly below desired levels for women of all 5 racial/ethnic groups. Among women who had ever had mammography, only half had had regular mammograms, and among women who had ever had a Papanicolaou test, only three quarters had had regular Papanicolaou tests (Table 1). Rates of regular mammograms and Papanicolaou tests also varied by race/ethnicity.

The data revealed significant differences in sociodemographic, access, and satisfaction variables across study subjects (Tables 1 and 2). Both primary and secondary access variables were independent predictors of regular screening. The primary access variable of health insurance coverage was important for both tests, as has been found in other studies.^{2,5,17,42} Secondary access variables, such as having had a check-up in the past year and knowing where to obtain the tests, were also associated with regular mammography and Papanicolaou tests in this multiethnic population.⁴²

In the unadjusted analyses (Tables 3 and 4), Filipinos and Latinos were less likely to have had regular mammograms than white women, and Chinese, Filipinos, and Latinos were less likely to have had regular Papanicolaou tests than white women. Sociodemographic variables, access, and satisfaction variables did little to explain these racial/ethnic disparities. After controlling for access and satisfaction and other sociodemographic differences, disparities in regular mammography remained for Filipinos and in regular Papanicolaou testing for Chinese, Filipinos, and Latinos. Thus, there may be other sources of influence on regular screening, such as patient knowledge, attitudes, and beliefs,⁴⁵ which we have not included in this analysis and which are the focus of a forthcoming article.

Somewhat surprising was the finding that respondents' language of the interview and number of years residing in the United States were not associated with regular mammography and Papanicolaou test screening in the full models. The reduced likelihood of regular mammograms and Papanicolaou tests among recent immigrants became insignificant when we controlled for access variables (Table 3 and 4). These findings suggest that adequate access to medical care may eliminate screening disparities among recent immigrants. Not surprisingly, women who do not obtain regular screening may not recall the required test copayment.

Several satisfaction variables, relating to both the doctor-patient relationship generally and the last screening experience specifically, were also independent predictors. Women who were satisfied with the interpersonal processes of their general medical care were more likely to obtain mammography regularly, whereas those who felt embarrassed or burdened by too much paperwork were less likely to be tested regularly. Women who were very satisfied with their last Papanicolaou test were more likely to have had regular Papanicolaou tests. These results suggest that, once a woman has the basic access afforded by insurance coverage and knows where to obtain screening tests, the sensitivity of her providers⁴⁶ and her interaction with them influence her regular return.

Although predictors of regular screening were similar for both tests, some differences are noteworthy. Satisfaction with the test experience overall was associated with increased likelihood of regular Papanicolaou tests but not mammograms. This suggests that women may perceive a greater need for mammography and will seek to obtain it regardless of the experience itself (though embarrassment was associated with decreased regular mammography). Also, as might be expected, increasing age was associated with increased likelihood of regular mammography, but lower likelihood of regular Papanicolaou test receipt. This may be due to the fact that published guidelines state that Papanicolaou testing may be done less frequently, or even stopped, in older women.⁴⁰ However, unlike findings from other studies,¹ regular mammography use did not decrease in women older than 65, for whom mammography is recommended if a woman is in good health and otherwise would be a candidate for treatment³⁹ (data not shown).

Our study had some limitations. First, screening rates in underserved racial/ethnic groups may be overestimated because of reliance on patients' self-reports. In a previous report from the same study population, we could validate only 69.4% and 75.4% of self-reported Papanicolaou tests and mammograms, respectively.³⁶ In addition, validation rates differed significantly by race/ethnicity and site of care. Nonetheless, while our results must be interpreted cautiously, self-report is the usual method for obtaining data on screening behavior.^{36,47,48}

Second, several issues may affect the generalizability of our results. Our study was conducted in one urban county with a large multiethnic population and active state and federal breast and cervical screening programs for low-income women without insurance. Providers in this county may have more experience with women from different racial/ethnic groups. Therefore, the levels of access and satisfaction in this study may not be generalizable to ethnic women

who live in more homogenous areas or where there are fewer subsidized programs. Also, these women may differ from other urban women in that they were willing to participate in a 3-year study about breast and cervical screening. Our low response rate, especially among Chinese and Filipino women, is likely to be a result of our longitudinal cohort design. However participants' baseline screening rates were similar to other women in the area⁴⁹ and nationally,³ and their use of regular screening was not especially high, therefore we believe that our results do not reflect a selection bias.

Blacks, Latinos, and whites were all surveyed using RDD, but Chinese and Filipinos were also oversampled using listed samples, which may have introduced some biases. However, this method is widely used,^{5,36} effective,³⁸ and necessary to reach recruitment targets.

Third, our study was not sufficiently powered and had too many variables with unevenly distributed cells to allow us to test for interactions, either between race/ethnicity and predictor variables or between primary and secondary access variables.⁵⁰ Nonetheless, the results in Tables 2 (access and satisfaction variables), 3 and 4 (predictors of regular screening) can be used to target racial/ethnic subgroups. Finally, inasmuch as our analyses are based on cross-sectional data, one should interpret cautiously the causal direction of our results.

Our study, the first to examine the effects of access and satisfaction on regular screening in 5 racial/ethnic groups, provides evidence that access to health care only partially mediates the effects of sociodemographic differences on regular screening. Satisfaction has explanatory power beyond more traditional measures of access. However, the combination of sociodemographic factors, access, and satisfaction variables do little to explain racial/ethnic differences in screening. To increase regular screening among these populations, we must use a tailored approach. It is clear that a "one size fits all" approach will likely fit none.

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APPENDIX. ACCESS AND SATISFACTION QUESTIONS USED IN ANALYSIS

Access to Medical Care (yes/no unless otherwise indicated)

Have health insurance [recoded to Group model HMO, other private coverage, Medicare, MediCal HMO, MediCal, none]

Is there one particular place where you usually go to see a doctor? [usual site of care]

Is there one particular doctor that you usually see when you need a check-up? [regular doctor]

When you go to the doctor, how much do you usually pay for each visit [recoded to copayment/unknown amount/no copayment]

Have you gone to the doctor for check-ups in the past 12 months even when you were well?

Do you know where you would go if you wanted a mammogram?

Did you pay with any of your own money when you got your last mammogram? [recoded to copayment/unknown amount/no copayment]

Do you know where you would go if you wanted a Papanicolaou test?

Did you have to pay with any of your own money when you got your last Papanicolaou test? [recoded to copayment/unknown amount/no copayment]

Satisfaction with Interpersonal Processes of General Medical Care Scale (always/sometimes/rarely/never)

In general, how often do doctors give you the information you need about your health?

How often do doctors give you enough time to ask your questions?

How often do doctors listen carefully to what you have to say?

How often do doctors ask if you have any questions?

How often do doctors treat you with respect?

How often do doctors seem to care about you?

How often do doctors respect your ideas about your health problems?

How often do you feel discriminated against by doctors?

Other Satisfaction Questions

Is it easy or difficult to get appointments with your doctor on short notice if you are sick? (easy/difficult)

When you go to your doctor's office, about how long do you usually have to wait before seeing a doctor? Is this okay or too long? (okay/too long)

Satisfaction with Last Mammogram (yes/no unless otherwise specified)

In getting your last mammogram, were you able to get an appointment at a convenient time?

If you have to watch children or someone under your care, did you have any problem finding someone to watch them?

Did you have to wait too long at the clinic before getting the mammogram?

In getting your last mammogram, was anyone on the staff rude or were they all friendly? (friendly/rude)

Did you have a problem with any of the staff's not speaking [language of interview]?

Did you have to fill out too many forms?

Was the mammogram painful?

Did you feel embarrassed at having the mammogram?

Were you satisfied with the way you got your mammogram result?

In general, how satisfied were you with that mammogram experience? (very satisfied/
somewhat satisfied/somewhat dissatisfied)

Satisfaction with Last Papanicolaou Test (yes/no unless otherwise specified)

In getting your last Papanicolaou test, were you able to get an appointment at a convenient time?

If you have to watch children or someone under your care, did you have any problem finding someone to watch them?

Did you have to wait too long at the clinic before getting the Papanicolaou test?

In getting your last Papanicolaou test, was anyone on the staff rude or were they all friendly? (friendly/rude)

Did you have a problem with any of the staff's not speaking [language of interview]?

Did you have to fill out too many forms?

Was the Papanicolaou test painful?

Did you feel embarrassed at having the Papanicolaou test?

Were you satisfied with the way you got your Papanicolaou test result?

In general, how satisfied were you with that Papanicolaou test experience? (very satisfied/
somewhat satisfied/somewhat dissatisfied)

TABLE 1

Demographic Characteristics and Receipt of Screening by Race/Ethnicity

	Black (n = 497)	Chinese (n = 199)	Filipino (n = 167)	Latino (n = 300)	White (n = 300)	Totals (n = 1463)
Demographics	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD
Age in years	52.1 (9.0)	52.3 (9.2)	54.8 (9.4)	50.7 (8.5)	52.6 (8.4)	52.3 (8.9)
Education in years	13.6 (2.4)	10.6 (4.4)	14.2 (3.1)	8.7 (4.5)	16.5 (2.9)	12.9 (4.3)
Income	%	%	%	%	%	%
< 20 k	43.6	46.0	16.0	48.6	17.4	496
20–50 k	35.6	38.1	28.8	40.5	31.2	483
> 50 k	20.9	15.9	55.1	10.9	51.3	397
Years in US						
< 10 years	0.2	32.2	20.4	23.3	0.7	171
≥ 10 years	99.8	67.8	79.6	76.7	99.3	1292
Language of interview						
Not English	0.0	85.9	33.5	73.3	0.0	447
English	100.0	14.1	66.5	26.7	100.0	1016
Marital status						
Married	32.2	85.4	73.1	65.7	54.3	812
Not married	67.8	14.6	26.9	34.3	45.7	651
Hysterectomy						
No	65.4	89.9	79.0	81.3	86.3	1139
Yes	34.6	10.1	21.0	18.7	13.7	324
Screening receipt						
Mammogram						
Ever	88.3	78.4	89.2	85.7	90.7	1273
Never	11.7	21.6	10.8	14.3	9.3	190
Papanicolaou test						
Ever	99.6	72.4	95.2	97.3	99.3	1388
Never	0.4	27.6	4.8	2.7	0.7	75
Regular (2 recent)						
Mammograms						
Yes	57.4	50.0	48.3	45.1	60.3	682
No	42.6	50.0	51.7	54.9	39.7	591
Regular (2 recent)						
Papanicolaou tests						
Yes	78.0	66.7	73.0	72.9	85.6	1066
No	22.0	33.3	27.0	27.1	14.4	322

Notes: Age, 1 missing case; income, 87 missing cases; education, 14 missing cases. Language of interview and years in United States tested among Chinese, Filipino, and Latino participants only.

*** All variables differ significantly by χ^2 or ANOVA tests across race/ethnicity $P < 0.001$, except:** Regular (2 recent) mammograms ($P = 0.002$); and* Years in United States ($P = 0.021$).

† Most recent mammogram was within 15 months of interview and the mammogram before the most recent was within 2 years (among women who ever had a mammogram).

‡ Most recent Papanicolaou Test was within 36 months of interview and the Papanicolaou test before the most recent was within 3 years (among women who ever had a Papanicolaou test).

TABLE 2

Distribution of Access and Satisfaction Questions by Race/Ethnicity

	Black (n = 497)	Chinese (n = 199)	Filipino (n = 167)	Latino (n = 300)	White (n = 300)	Totals(n = 1463)	PValue [†]
A. Whole Sample							
Access	%	%	%	%	%	n	%
Health insurance							
Group model HMO	39.0	24.1	47.3	28.3	35.7	513	35.1
Other private coverage	22.3	28.1	35.9	20.0	51.7	442	30.2
Medicare	11.3	10.1	4.8	4.0	1.0	99	6.8
MediCal HMO	8.0	5.0	1.2	6.3	1.3	75	5.1
MediCal	5.6	8.5	4.8	5.7	3.3	80	5.5
None	13.7	24.1	6.0	35.7	7.0	254	17.4
Have usual site of care	91.5	84.9	92.2	92.3	90.7	1327	90.7
Have regular doctor	80.9	82.9	85.0	64.7	85.7	1160	79.3
Copayment for doctor visit							
Yes	57.5	60.8	77.2	58.7	79.0	949	64.9
Unknown amount	2.4	9.5	3.0	7.7	6.3	78	5.3
No	40.0	29.6	19.8	33.7	14.7	436	29.8
Check-up in past 12 months	78.5	65.3	79.0	64.0	66.3	1043	71.3
Knows where to get	93.8	82.9	94.6	87.0	93.3	1330	90.9
mammogram							
Knows where to get	96.2	73.4	92.8	92.3	96.0	1344	91.9
Papanicolaou test							
Satisfaction							
Difficult to get doctor	27.0	31.2	22.2	36.0	25.3	417	28.5
appointment							
Wait for doctor is OK	76.7	69.8	75.4	62.3	76.3	1062	72.6
Satisfaction with inter-personal	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
processes of General Medical Care	27.6 (4.5)	27.3 (4.0)	29.4 (3.2)	27.8 (4.4)	26.4 (4.0)	1438	27.6 (4.3)
Scale							
B. Questions about Last Mammogram — only for people who ever had mammogram							
Access							
Copayment for last							
mammogram							
Yes	11.2	10.3	18.8	16.0	21.7	193	15.2
Unknown amount	1.1	3.2	4.7	4.7	11.4	60	4.7
No	87.7	86.5	76.5	79.4	66.9	1020	80.1
Satisfaction							
Convenient time for last	95.2	85.3	95.3	95.3	95.2	1197	94.0
mammogram							
Had child care problem last	1.6	6.4	3.4	2.7	1.5	33	2.6
mammogram							
Too long wait for last	4.3	14.1	4.7	12.5	6.3	97	7.6
mammogram							
Someone rude at last	1.8	1.3	2.0	1.2	1.5	20	1.6
mammogram							
Staff not speak language at last	0.0	5.1	0.0	18.3	0.0	55	4.3
mammogram							
Too many forms at last	2.1	7.7	4.7	11.3	3.3	66	5.2
mammogram							
Last mammogram was painful	34.6	35.3	61.7	40.1	33.8	494	38.8
Embarrassed having last	6.2	22.4	6.0	30.0	8.1	170	13.4
mammogram							

	Black (n = 497)	Chinese (n = 199)	Filipino (n = 167)	Latino (n = 300)	White (n = 300)	Totals(n = 1463)	P Value [†]
Satisfied with way got last mammogram results	93.4	89.1	96.0	91.4	88.2	1167	0.028
Very satisfied with last mammogram experience	72.0	67.3	69.8	70.4	68.8	893	0.813
C. Questions about Last Papanicolaou Test — only for people who ever had Papanicolaou test							
Access							
Copayment for Last Papanicolaou test							0.001
Yes	20.6	22.9	32.1	27.1	41.3	388	
Unknown Amount	1.4	6.9	5.0	3.4	7.7	58	
No	78.0	70.1	62.9	69.5	51.0	942	
Satisfaction							
Convenient time for last Papanicolaou test	94.5	88.2	93.7	94.2	93.0	1296	0.101
Had child care problem last Papanicolaou test	1.8	8.3	2.5	4.8	2.0	45	0.001
Too long wait for last Papanicolaou test	11.3	22.2	10.1	19.5	8.1	185	0.001
Someone rude at last Papanicolaou test	2.2	4.9	2.5	1.7	2.7	35	0.380
Staff not speak language at last Papanicolaou test	0.0	6.3	0.6	8.6	0.0	35	0.003
Too many forms at last Papanicolaou test	2.8	6.9	2.5	6.5	1.7	52	0.004
Last Papanicolaou test was painful	15.4	29.9	25.2	39.0	14.4	316	0.001
Embarrassed having last Papanicolaou test	23.6	23.6	28.3	57.2	13.1	402	0.001
Satisfied with way got last Papanicolaou test results	92.7	85.4	92.5	87.3	84.9	1237	0.002
Very satisfied with last Papanicolaou test experience	75.4	63.2	69.2	77.1	68.1	1002	0.005

* Note: Comparisons for staff not speaking language at last mammogram and staff not speaking language at last Papanicolaou test were only made among Chinese, Filipinos, and Latinos.

[†] P value for χ^2 or ANOVA tests of racial/ethnic differences.

TABLE 3
Predictors of Regular Mammogram Screening Odds Ratios and 95% Confidence Intervals (n = 1181)*

	Race/Ethnicity Only	+Demographics	+Access	+Satisfaction
Likelihood ratio χ^2	14.557	78.536	85.945	31.549
Degrees of freedom	4	7	13	13
P value	0.0057	0.0001	0.0001	0.0028
Nagelkerke R ²	0.0164	0.1013	0.1880	0.2182
Race/Ethnicity				
Black	0.90 (0.66, 1.22)	1.15 (0.81, 1.63)	0.97 (0.66, 1.41)	0.93 (0.63, 1.37)
Chinese	0.68 (0.44, 1.04)	0.92 (0.52, 1.62)	0.75 (0.41, 1.37)	0.78 (0.42, 1.44)
Filipino	0.65 (0.43, 0.98)	0.62 (0.40, 0.98)	0.50 (0.31, 0.80)	0.42 (0.25, 0.69)
Latino	0.55 (0.38, 0.79)	0.91 (0.55, 1.50)	0.85 (0.50, 1.43)	0.86 (0.50, 1.48)
White	1.00	1.00	1.00	1.00
Age (per year)		1.06 (1.04, 1.07)	1.05 (1.03, 1.07)	1.05 (1.03, 1.07)
Education (per year)		1.04 (0.99, 1.08)	1.03 (0.98, 1.08)	1.03 (0.98, 1.08)
Married/living with partner [†]		1.17 (0.88, 1.55)	1.15 (0.86, 1.55)	1.16 (0.86, 1.58)
Non-English interview [†]		1.13 (0.70, 1.83)	1.17 (0.71, 1.94)	1.24 (0.74, 2.09)
US residence ≤ 10 years [†]		0.49 (0.29, 0.84)	0.63 (0.36, 1.10)	0.66 (0.37, 1.18)
Household income				
< \$20K		0.66 (0.45, 0.96)	0.83 (0.53, 1.28)	0.82 (0.52, 1.28)
\$20–\$50K		0.79 (0.57, 1.09)	0.82 (0.58, 1.16)	0.83 (0.58, 1.17)
> \$50K		1.00	1.00	1.00
Health insurance				
Group model HMO			1.60 (0.99, 2.60)	1.45 (0.88, 2.39)
Other private coverage			1.88 (1.14, 3.11)	1.74 (1.04, 2.91)
Medicare			1.23 (0.64, 2.34)	1.14 (0.59, 2.21)
MediCal HMO			1.37 (0.68, 2.78)	1.18 (0.57, 2.45)
MediCal			0.81 (0.42, 1.58)	0.82 (0.42, 1.63)
None			1.00	1.00
Usual site of care [†]			1.18 (0.70, 1.97)	1.07 (0.63, 1.83)
Regular doctor [†]			1.31 (0.90, 1.90)	1.17 (0.80, 1.73)
Copayment for doctor visit				
Yes			0.92 (0.66, 1.27)	0.93 (0.67, 1.29)
Unknown amount			1.21 (0.60, 2.42)	1.16 (0.57, 2.35)
No			1.00	1.00
Copayment for last mammogram				
Yes			0.93 (0.65, 1.33)	0.95 (0.66, 1.37)
Unknown amount			0.41 (0.21, 0.80)	0.44 (0.23, 0.86)
No			1.00	1.00
Check-up in past 12 months [†]			2.37 (1.76, 3.20)	2.28 (1.68, 3.10)
Knows where to get mammogram [†]			3.22 (1.57, 6.59)	2.97 (1.44, 6.15)
Satisfaction with interpersonal processes of General Medical Care Scale				1.04 (1.01, 1.08)
Difficult to get doctor's appointment [†]				
Wait for doctor is OK [†]				1.01 (0.74, 1.37)
Last mammogram				1.10 (0.80, 1.52)
Time convenient [†]				1.39 (0.78, 2.47)
Childcare problem [†]				2.23 (0.98, 5.07)
Wait too long [†]				0.94 (0.55, 1.61)
Someone rude [†]				0.48 (0.16, 1.45)
Staff not speak language [†]				0.76 (0.32, 1.83)
Too many forms [†]				0.51 (0.26, 0.98)
Painful [†]				1.22 (0.92, 1.62)
Embarrassed [†]				0.59 (0.39, 0.90)

	Race/Ethnicity Only	+Demographics	+Access	+Satisfaction
Satisfied with way received result [†]				0.76 (0.46, 1.25)
Very satisfied in general [†]				1.27 (0.94, 1.73)

Notes: Final model Hosmer and Lemeshow goodness-of-fit $P = 0.88$. Bolded text refers to effects that were significant at the 5% level.

* Represents number of women with non-missing values.

[†] Yes versus No/Don't Know (referent).

TABLE 4

Predictors of Regular Papanicolaou Test Screening Among Women Without a Hysterectomy Odds Ratios and 95% Confidence Intervals (n = 994)*

	Race/Ethnicity Only	+Demographics	+Access	+Satisfaction
Likelihood ratio χ^2	22.192	29.506	146.74	13.23
Degrees of freedom	4	7	13	13
P value	0.0002	0.0001	0.0001	0.4302
Nagelkerke R ²	0.0352	0.0808	0.2884	0.3057
Race/Ethnicity				
Black	0.69 (0.43, 1.11)	0.96 (0.57, 1.60)	0.67 (0.37, 1.21)	0.67 (0.37, 1.21)
Chinese	0.35 (0.20, 0.61)	0.38 (0.19, 0.76)	0.26 (0.12, 0.58)	0.23 (0.10, 0.52)
Filipino	0.44 (0.25, 0.77)	0.47 (0.26, 0.87)	0.31 (0.15, 0.60)	0.29 (0.14, 0.60)
Latino	0.40 (0.25, 0.66)	0.57 (0.30, 1.10)	0.47 (0.22, 0.98)	0.44 (0.20, 0.95)
White	1.00	1.00	1.00	1.00
Age (per year)		0.99 (0.97, 1.01)	0.97 (0.95, 0.99)	0.97 (0.95, 0.99)
Education (per year)		1.07 (1.01, 1.13)	1.04 (0.98, 1.11)	1.05 (0.98, 1.12)
Married/living with partner [†]		1.56 (1.06, 2.28)	1.43 (0.94, 2.17)	1.42 (0.92, 2.19)
Non-English interview [†]		1.51 (0.82, 2.78)	1.88 (0.96, 3.68)	1.79 (0.90, 3.60)
US residence ≤ 10 years [†]		0.46 (0.26, 0.79)	0.66 (0.35, 1.22)	0.59 (0.31, 1.12)
Household income				
<\$20K		0.69 (0.41, 1.15)	1.01 (0.55, 1.85)	1.00 (0.54, 1.86)
\$20–50K		0.73 (0.46, 1.16)	0.83 (0.51, 1.37)	0.84 (0.50, 1.40)
\$50K or more		1.00	1.00	1.00
Health insurance				
Group model HMO			2.37 (1.35, 4.15)	2.57 (1.44, 4.59)
Other private coverage			5.39 (2.81, 10.36)	5.86 (3.00, 11.46)
Medicare			1.78 (0.72, 4.43)	1.79 (0.71, 4.48)
MediCal HMO			2.03 (0.88, 4.66)	2.34 (1.00, 5.48)
MediCal			2.11 (0.89, 4.99)	2.36 (0.99, 5.64)
None			1.00	1.00
Usual site of care [†]			0.83 (0.43, 1.58)	0.80 (0.41, 1.54)
Regular doctor [†]			1.37 (0.86, 2.16)	1.39 (0.87, 2.23)
Copayment for doctor visit				
Yes			0.78 (0.49, 1.25)	0.80 (0.50, 1.29)
Unknown amount			0.75 (0.32, 1.80)	0.81 (0.33, 1.98)
No			1.00	1.00
Copayment for last Papanicolaou test				
Yes			1.03 (0.67, 1.60)	1.06 (0.68, 1.66)
Unknown amount			0.36 (0.15, 0.84)	0.36 (0.15, 0.88)
No			1.00	1.00
Check-up in past 12 months [†]			4.51 (3.06, 6.64)	4.38 (2.95, 6.50)
Knows where to get Papanicolaou test [†]			7.00 (3.37, 14.54)	7.34 (3.49, 15.46)
Satisfaction with interpersonal processes of General Medical Care Scale				1.02 (0.97, 1.08)
Difficult to get doctor's appointment [†]				
Wait for doctor is OK [†]				1.29 (0.82, 2.02)
Last Papanicolaou test				1.03 (0.64, 1.64)
Time convenient [†]				
Childcare problem [†]				0.70 (0.31, 1.55)
Wait too long [†]				1.35 (0.49, 3.74)
Someone rude [†]				1.38 (0.75, 2.52)
Staff not speak language [†]				1.19 (0.38, 3.74)
Too many forms [†]				1.38 (0.41, 4.63)
Painful [†]				0.74 (0.32, 1.69)
Embarrassed [†]				1.44 (0.90, 2.29)
				0.91 (0.59, 1.42)

	Race/Ethnicity Only	+Demographics	+Access	+Satisfaction
Satisfied with way received result [†]				0.68 (0.35, 1.29)
Very satisfied in general [†]				1.58 (1.02, 2.46)

Notes: Final model Hosmer and Lemeshow goodness-of-fit $P = 0.98$ Bolded text refers to effects that were significant at the 5% level.

* Represents number of women with nonmissing values.

[†] Yes versus No/Don't Know (referent).