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# Self-Reported Willingness to Have Cancer Screening and the Effects of Sociodemographic Factors

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## Abstract

**Background—**The relative effects of race/ethnicity and other sociodemographic factors, compared to those of attitudes and beliefs on willingness to have cancer screening, are not well understood.

**Methods—**We conducted telephone interviews with 1148 adults (31% African American, 27% Puerto Rican American, 43% white) from 3 cities in mainland United States and Puerto Rico. Respondents reported their sociodemographic characteristics, attitudes about barriers and facilitators of cancer screening, and willingness to have cancer screening under 4 scenarios: when done in the community vs one's doctor's office, and whether or not one had symptoms.

**Results—**Racial/ethnic minority status, age, and lower income were frequently associated with increased willingness to have cancer screening, even after including attitudes and beliefs about screening. Having screening nearby was important for community screening, and anticipation of embarrassment from screening for when there were no cancer symptoms. Associations varied across 4 screening scenarios, with the fewest predictors for screening by one's doctor when there were symptoms.

**Conclusions—**Sociodemographic characteristics not only were related to willingness to have cancer screenings in almost all cases, but were generally much stronger factors than attitudinal barriers and facilitators. Cancer screening campaigns should affect attitudinal change where possible, but should also recognize that targeting screening to specific population groups may be necessary.

### Keywords

cancer screening; knowledge, attitudes, and beliefs; minority health

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## INTRODUCTION

Cancer screening is crucial to identifying cancer in its early stages, when the disease is more amenable to treatment or cure. Screening rates among racial and ethnic minorities vary compared to whites, with minorities having lower screening rates for certain types of cancer, such as cervical and colorectal cancer.[1-3] Individuals with less education and income receive cancer screening less often than do those with higher levels of each.[4] These differential rates in screening may lead to disparities in cancer-related mortality[5-8] and highlight the need to understand the reasons for cancer screening disparities.[9-11] Several studies have examined the association of race/ethnicity with potential barriers to screening utilization, such as access to care through health insurance; relationship with health care providers; provider recommendation of screening; patient knowledge, and attitudes and beliefs about screening.[12-25] Often, these studies, many of them qualitative in nature, have focused on understanding the dynamics of these issues among a single racial/ethnic group, and they emphasized the importance of identifying the health beliefs of certain groups to help tailor interventions and understand their decisions for cancer screening.

However, the relative effects of race/ethnicity on willingness to have cancer screening, compared to other sociodemographic factors (including education, income, and employment status), as well as to attitudes and beliefs about screening, are not well understood.[26] Although race has been associated with numerous negative predictors of cancer screening, it may be that many of the factors associated with race, rather than—or in addition to—race itself, are important driving forces behind such associations, as has been found with regard to health care utilization in general.[27,28] Prior findings also suggest that negative attitudes towards cancer screening, including fear of pain or diagnosis, disbelief in the efficacy of screening tests, or generalized distrust of others may be more predominant among racial and ethnic minorities and thus account for their lower rates of cancer screening.[16,17,21,23-25,29,30] It may be that such factors, which are closely associated with race, actually drive the race differences in cancer screening, but whether this is the case has not been well examined. An additional limitation of prior research on various minority populations which has examined the effects of attitudes and beliefs about cancer screening is that it has often included only limited sample sizes from single geographic areas. Further, few studies have specifically examined either the effects of having cancer-related symptoms (or not), or the type of setting in which cancer screening is provided, on individuals' willingness to have screening. Presentation of symptoms and screening setting both have the potential to impact the decision to seek testing,[31-33] so attention to these issues is important for a full understanding of patient attitudes about cancer screening.

Although it is important to identify barriers for specific subsets of the population for different types of cancer screening, there is also value in understanding general attitudes of patients about cancer screening in general in order to highlight common barriers for future research and interventions. While 2 recent papers by our research group addressed this latter issue and reported that blacks and Hispanics, after adjusting only for demographic factors, were either as or more likely than whites to self-report willingness to have cancer screenings, and perceived a higher risk of "not getting a thorough cancer screening" than did whites, neither of those analyses delved into underlying reasons for those observed differences.[34,35] Therefore, the purpose of this current analysis is to examine general willingness to engage in cancer screening, in the context of varied symptoms and screening settings, and among a diverse cohort from multiple geographic areas, with an emphasis on assessing the influence of race/ethnicity, relative to sociodemographic factors, to both positive and negative attitudes and beliefs about cancer screening on this willingness to utilize screening in general. We hypothesized that the association between race and willingness to receive cancer screening would be attenuated after taking into account a wide

variety of attitudes, barriers, and facilitators to cancer screening, and after accounting for positive attitudes for screening.

Further, we anticipated that in the setting of both the greatest urgency (eg, the presence of symptoms) and most accessible and comfortable screening location (eg, one's doctor's office), the effects of barriers and facilitators to screening would be minimized. Our work was guided by the health decision model (HDM),[36] which is an expanded version of the patient-focused health belief model[37] and includes factors beyond the patient's own attitudes and beliefs, which might influence health decisions, such as sociodemographic factors, experiences with the health care system, and knowledge. In the HDM, there is not a particular causal ordering of factors influencing health decisions; rather, each of the domains of health beliefs, patient preferences, experience, and knowledge influence one another, and are also affected by social interaction and sociodemographic factors. Thus, in this study, we used the HDM as a guide for thinking about the various sociodemographic factors, barriers, facilitators hypothesized to affect willingness to have cancer screening, but not for positing causal relationships among the elements.

## METHODS

### Study Sample and Procedures

To ensure a wide geographic, racial/ethnic representation which included substantial representation of whites, African Americans, and Hispanics, we contacted a random sample of residents of 3 cities—San Juan, Puerto Rico; Baltimore, Maryland; and New York, New York—from September to December 2003. We conducted random-digit-dial telephone interviews to noninstitutionalized adults residing in telephone-equipped homes. A total of 1148 adult African Americans, Puerto-Rican Hispanics, and whites responded, with response rates of 58%, 51%, and 45%, respectively, and an overall completion rate of 82.6%. The final study sample consisted of 356 African Americans, 313 Puerto Rican Americans, and 493 non-Hispanic whites. Since we did not collect identifying information about respondents, our institutional review board (IRB) determined this study to be "exempt" from full IRB review.

## MEASURES

### Questionnaire

We administered a questionnaire to all study participants, which contained all measures used in this analysis, and which has been fully described (as regards development, administration, and data analysis decisions) in our prior publications based upon this survey.[34,35,38] The questionnaire was administered either in English or Spanish, at the preference of the respondent.

### Dependent Variables

**Willingness to have cancer screening under specific conditions—**We asked questions about individuals' self-reported willingness to participate in cancer screening exams under 4 different conditions. These questions assessed the respondent's self-reported likelihood to have a cancer screening: (1) by their own *physician* when there are *no* symptoms ("doctor/no symptoms;" the question read, "How likely are you to go for a regular annual cancer screening exam given by your doctor, if you have NO symptoms?"); (2) by their own *physician* when there *are* symptoms ("doctor/symptoms;" the question was: "If your own doctor told you that you have some symptoms and needed a cancer screening exam, how likely are you to go and have *that* cancer screening exam?"); (3) when it is a free cancer screening exam in the *community* when there are *no* symptoms ("community/no

symptoms:" the question read "Some group in your community, such as a school, church, or the Lions' Club, offers you the opportunity to have a free cancer screening exam. How likely are you to participate at a community-level *free* cancer screening exam if you *have no symptoms?"*); and (4) when it is a free cancer screening exam in the *community* when there *are* symptoms ("community/symptoms;" the question was: "Some group in your community, such as a school, church, or the Lions' Club, offers you the opportunity to have a free cancer screening exam. How likely are you to participate at a community level *free* cancer screening exam if you *have symptoms*?"). Responses for all questions were on a 5-point scale with 1 signifying "very unlikely" and 5 signifying "very likely." The respondent was not given a definition of what "by your doctor" referred to, so responses are based on their subjective interpretation of each item.

## Independent Variables

**Barriers to and facilitators of cancer screening—**The questionnaire also included items to assess the impact of attitudes and beliefs about potential *barriers* to screening, including fear of: (1) getting AIDS; (2) being a "guinea pig;" (3) test results not being private or confidential; (4) how the disease would upset one's family; (5) hearing one has cancer; (6) feeling that one is unlikely to get cancer; (7) lack of trust in medical professionals; (8) fear that the test might be painful; and (9) fear of being embarrassed in the cancer screening exam. In addition, the questionnaire asked about factors that might *facilitate* an individual's participation in cancer screening, including: (1) the belief that early detection might save one's life; (2) having close friends or a relative encouraging participation in cancer screening; (3) having close friends or a relative participating in cancer screening; (4) having a close friend or relative who has had cancer; (5) encouragement of one's physician to be screened; (6) encouragement of one's dentist to be screened; (7) having one's insurance company paying for the screening exam; and (8) having a nearby location for the screening. A 5-point Likert scale was used for responses to all questions, ranging from "not at all" to "totally." These were analyzed as single items.

**Sociodemographic factors—**Respondents were asked to self-report their sex, race, ethnicity (Puerto Rican Hispanic or not), year of birth, income (in $5000 increments), highest education attained, whether they were currently employed, and health status (response categories: excellent, very good, good, fair, poor).

## Covariates

**General attitudes—**We assessed respondents' general attitudes towards cancer screening exams, asking how effective the respondent believed cancer screening exams are in detecting cancer (higher scores indicate stronger beliefs in effectiveness). In addition, to understand if willingness to participate in cancer screening might be associated with a person's general trust in people, we included the Trust in People scale.[39] This scale includes the following questions: Generally speaking, would you say that: (1) most people can be trusted or that you can't be too careful in dealing with people?; (2) most of the time, people try to be helpful, or that they are mostly just looking out for themselves?; (3) most people would try to take advantage of you if they got the chance or would they try to be fair? The scale is the sum of these 3 items (range, 0-3); a higher score indicates greater trust in people.

## Statistical Analysis

Initially, we examined descriptive statistics for all variables, including distributions of responses to each of the dependent variables by race/ethnicity. To explore whether the dependent variables regarding willingness to have cancer screening would function better as a scale or several scales, we conducted exploratory factor analyses but found that the factors

did not lead to scales with acceptable internal consistency reliability. Thus, we retained 4 separate items for the outcome variables. Next, we examined bivariate associations between each independent variable and the dependent variables, examining dependent variable means by each category of the independent sociodemographic variables and 0-order correlations between each barrier or facilitator and the dependent variables. Then, we computed multiple linear regression models to examine the effects of race/ethnicity and other sociodemographic factors, after adjusting for the barriers and facilitators to willingness to have cancer screening, under the four conditions.

## RESULTS

### Sociodemographic Characteristics of the Sample

The mean age of respondents was 44.9 years (not shown); 54.5% of the sample were female (Table 1). Puerto Rican Hispanics comprised 22.4% (n = 311) of the sample, while 31.1% were non-Hispanic African American (n = 355) and 46.5% were non-Hispanic white (n = 482). Regarding income, 24.2% earned less then $20 000; 24.5% earned between $20 000 and 34 999; 16.0% earned between $35 000 and $49 999; 16.7% earned between $50 000 and $74 999; and 18.6% earned more than $75 000. More than half of the sample (59.6%) was employed, 12.1% had a high school education or less, and 52.7% indicated a health status of excellent or very good.

### Ranking of the 4 Scenarios by Willingness to Have Cancer Screenings by Race/Ethnicity

To examine the overall likelihood of respondents indicating they were “very likely” to obtain screening within the 4 scenarios (screening by one’s own physician with and without symptoms; and screening in the community with and without symptoms), we found that the 4 scenarios were ranked in the same order by African Americans, Puerto Rican Hispanics, and whites: (1) “own MD, with symptoms” (with 92%-93% responding “very likely” across the racial/ethic groups); (2) “community screening, with symptoms” (47%-71%); (3) “own MD, no symptoms” (44%-50%), and (4) “community event, no symptoms” (23%-45%) (results not shown). With the exception of the first scenario, in which greater than 90% of each of the 3 racial/ethnic groups responded “very likely,” Puerto Rican Hispanics were the most willing to have a cancer screening under each of the 3 other scenarios ($p \leq .0001$).

### Factors Associated With Willingness to have cancer Screening

**Screening by one’s own physician given no symptoms—**Bivariate analyses indicated that female sex, older age, and more education were associated with more willingness for cancer screening by one’s own physician when there are no symptoms (Table 1). Beliefs in one’s likelihood of getting cancer, fear of pain or embarrassment upon screening, the perception that screening saves lives, friends/family encouraged one to get screened, also participate in screening, and have had cancer, encouragement from one’s physician or dentist, having insurance and screening nearby were all significantly associated with willingness to have screening (Table 2).

When we then adjusted for the effects of potential barriers and facilitators of screening by one’s own physician given no symptoms, we found that the barrier of fear of getting cancer was associated with a greater likelihood of having screening, while beliefs about cancer screening’s effectiveness, perceptions of likelihood of getting cancer, less concern about being embarrassed by the screening exam, and perceiving that screening saves lives were associated with the likelihood of having screening (Table 3). Although education was no longer significant in the multivariate model, we found that those with income levels between $50 000 and $75 000 were less likely to be willing to have cancer screening by one’s own

physician, compared to those of the highest income level, as were younger persons and males, while African Americans were more willing to have screening than whites.

**Free community screening given no symptoms—**Bivariate results (Table 1) indicated that Puerto Rican Hispanics and African Americans were more willing to obtain cancer screening in the community, given no symptoms, than were whites, as were those with lower incomes. In addition, those with the lower levels of education were more likely to express willingness to be screened in a community setting given no symptoms than those with more education. Fear of getting AIDS, cancer, lack of trust in the medical establishment, fear of pain, as well as the perception that screening saves lives, friends/family encouraged one to get screened, also participate in screening, and have had cancer, having insurance and screening nearby were all significantly associated with willingness to have screening (Table 2).

In the multivariate model, only 1 barrier—embarrassment—remained significant after adjustment for other factors (greater embarrassment was associated with less likelihood of screening). Two facilitators were significantly associated with screening willingness—physician encouragement, which was associated with less likelihood to get screening, and having screening nearby, which was associated with a greater willingness to be screened. Being Puerto Rican Hispanic or African American, having lower income and less education were each associated with greater willingness for community cancer screening with no symptoms.

**Free community screening given symptoms—**In bivariate analyses, almost all sociodemographic factors were associated with screening willingness in this context: being male, younger, being Puerto Rican Hispanic or African American, having lower income, and less education were associated with greater likelihood of indicating willingness for community screening given symptoms. Fear of getting AIDS or cancer, or having pain, as well as the perception that screening saves lives, friends/family encouraged one to get screened, also participate in screening, and have had cancer, having insurance and screening nearby were all significantly associated with willingness to have screening (Table 2).

In the final model, no barriers were significant, but beliefs in the effectiveness of screening were significantly associated with the outcome, and having screening nearby was associated with greater willingness for screening. Male sex, being Puerto Rican Hispanic, being of younger age, and having lower income were also all positively associated with willingness for community screening given symptoms.

**Screening by one's own doctor given symptoms—**No sociodemographic variables were associated with the likelihood of getting screening by one's own physician, given symptoms, in bivariate analyses (Table 1). Fear of begin a guinea pig, the perception that screening saves lives, having family or friends who have had cancer, having a physician or dentist encourage one to have screening, and having insurance were all significantly associated with willingness to have screening (Table 2).

In the full model (Table 3), no barriers or facilitators were significantly associated with screening willingness. Only being employed and having greater trust in people were significantly associated with increased willingness to participate in cancer screening by one's own physician, given symptoms; there were no significant effects of race/ethnicity.

## SUMMARY OF RESULTS

Across the multivariate models for all dependent variables, health status was never significantly associated with screening willingness, and being employed was only associated with willingness for screening by one's physician when one has symptoms. Respondents' ratings of the effectiveness of screening were associated with likelihood of screening in 3 of the 4 scenarios. Trust in people was associated with screening willingness (in the context of having symptoms, and screening by one's physician such that more trust was associated with greater willingness to be screened). In bivariate results, Puerto Rican Hispanics and/or African Americans were significantly more willing than whites to have all types of screening, except for the scenarios in which screening would be done by one's own physician with or without symptoms (there were no race/ethnic differences and very few sociodemographic differences overall in endorsement of this outcome, with 92% to 93% of each racial/ethnic group indicating "very likely" for this specific scenario). Thus, some effects of race/ethnicity persisted across almost all multivariate models (except for screening by a physician when symptoms existed), such that the effect remained, although it was slightly attenuated, even after adjusting for other sociodemographic factors, barriers and facilitators of screening.

## DISCUSSION

We examined the effects of race/ethnicity and other sociodemographic characteristics on willingness for cancer screening, after accounting for the effects of attitudes about potential barriers and facilitators of cancer screening, drawing on data from a diverse sample. We considered these dynamics in the context in which screening would be done (community vs by one's own physician) and in the context of whether or not the respondent had cancer-related symptoms.

On the bivariate level, numerous sociodemographic factors were associated with willingness to have screening, with the exception of physician-administered screening when there were symptoms, where no sociodemographic variables were significant. Notably, the effects of the sociodemographic factors (especially race/ethnicity and income) consistently persisted in multivariate models. This suggests that effects of these characteristics are not attenuated by the inclusion of attitudes and beliefs, and points to the probable independent impact of these characteristics on screening willingness. The relative size of the effects we observed also supports this notion, as the size of the effects for sociodemographics were generally greater than those for the attitudinal/belief variables.

However, across the models, several barriers and facilitators of screening were associated with screening willingness, again with the exception of physician-administered screening with symptoms present. Thus, we conclude that sociodemographic factors are associated with willingness to have cancer screening in almost all cases, but that perceived barriers and facilitators also matter sometimes, as well.

Almost no variables in our multivariate models were significantly associated with willingness to have screening done by one's own physician given the presence of cancer-related symptoms. This suggests that the urgency or concern associated with such a screening, to be conducted in the relative privacy and familiarity of one's own doctor's office, overshadows any of the attitudinal or sociodemographic dimensions we measured. Thus, in situations where screening seems less "discretionary," neither sociodemographic factors nor attitudes contributed strongly to willingness for screening. Similarly, for community screenings in the presence of symptoms, almost no attitudes were significant, although sociodemographics were.

Being Puerto Rican Hispanic or African American was a fairly consistent predictor of willingness to have cancer screening. Thus, race/ethnicity may be a factor that needs to be considered in the case of public health outreach for cancer screening, but it seems less important in the context of individual clinicians recommending cancer screening within their own setting. These findings also support the idea that making free cancer screening available in the community will help to attract more African Americans and Hispanics.

The strengths of this study included the focus on an ethnically and racially diverse sample from multiple geographic areas, the availability of data on both sociodemographic and attitudinal factors and the inclusion of multiple questions about cancer screening in a variety of contexts. While it can be argued that this study was limited by its reliance on questions about potential willingness to seek cancer screening in general (vs actual receipt of screening), prior health behavior research has shown that intentions for health behavior are important predictors of actual health behavior.[40] There is also value in understanding individuals' beliefs about cancer screening in general, different from their thoughts about specific cancers and screening tests for them. We were unable to account for the effects of having a primary care physician, compared to not, which may impact willingness to seek screening, although our questions did ask about willingness to have cancer screening by one's own physician. Similarly, we did not have data on the proportion of patients having their own primary care physician available for this analysis, which is a limitation of the study. Our questionnaire also did not ask about other potential factors associated with screening, such as history of screening and family history of cancer. The general Trust in People scale may not translate into trust in the medical community, yet we felt it important to account for individuals' general levels of trust, which would likely affect their trust in the medical establishment as well. As previously noted, our questionnaire addressed cancer screening in general, though there is some evidence that willingness to screen may vary with the type of cancer. However, information of general attitudes towards cancer screening may be helpful in designing future interventions and campaigns to improve overall screening rates.

Our results document the important effects of sociodemographic factors on willingness to have cancer screening and echo others' findings that knowledge and attitudes about 1 particular cancer screening—mammography—did not independently predict its use.[41] As others have noted, more needs to be known about cancer screening practices among Hispanics in the United States.[4] The results of this investigation clearly show that Puerto Rican Hispanic ethnicity is an important predictor of willingness to have community based screening. This study contributes new information to the literature indicating that the relationship between race/ethnicity and willingness to be screened are not attenuated by attitudes about potential barriers and facilitators to screening, and also that screening site may influence individuals' willingness to be screened.

In summary, our results indicate that willingness to seek cancer screening is influenced by sociodemographic characteristics, over and above attitudes about screening, and yet, in some contexts, these latter factors should also be considered in promoting screenings. Since most sociodemographic characteristics are not easily mutable, their potential impact on cancer screening availability and awareness campaigns must be recognized, so as to target such campaigns to the populations which can most benefit from the needed cancer screening. In addition, it appears that both the location of screening and the potential urgency of screening influence the relative importance of each type of factor, suggesting that future efforts to increase screening should consider location and emphasize urgency, where appropriate.

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**Table 1**

Characteristics of Study Sample and Association of Sociodemographics With Dependent Variables

| | | | | Mean of Each Dependent Variable by Sociodemographic Characteristics | | | |
|---|---|---|---|---|---|---|---|
| | **N** | **%** | **95% CI** | **MD/ No Symptoms** | **Community/ No Symptoms** | **Community/ Symptoms** | **MD/ Symptoms** |
| | | | | *P* = .02 | *P* = .61 | *P* = 0.04 | *P* = .35 |
| Male | 401 | 45.5 | 41.2-49.8 | 3.59 | 3.28 | 4.06 | 4.81 |
| Female | 747 | 54.5 | 50.2-58.8 | 3.89 | 3.21 | 3.78 | 4.87 |
| Race/ethnicity | | | | *P* = .20 | *P* < .0001 | *P* < .0001 | *P* = .52 |
| Puerto Rican | | | | | | | |
| Hispanic | 311 | 22.4 | 19.1-25.7 | 3.85 | 3.70 | 4.32 | 4.86 |
| Black | 355 | 31.1 | 27.3-35.0 | 3.87 | 3.69 | 4.23 | 4.89 |
| White | 482 | 46.5 | 42.5-50.4 | 3.63 | 2.73 | 3.50 | 4.81 |
| Age | | | | *P* < .0001 | *P* = .09 | *P* < .0001 | *P* = .43 |
| 18-39 | 216 | 22.9 | 19.9-27.4 | 3.27 | 3.45 | 4.35 | 4.79 |
| 40-59 | 679 | 53.4 | 49.2-57.7 | 3.78 | 3.27 | 3.98 | 4.88 |
| ≥60 | 253 | 23.7 | 19.9-27.5 | 4.17 | 2.97 | 3.32 | 4.82 |
| Income | | | | *P* = .41 | *P* < .0001 | *P* < .0001 | *P* = .07 |
| <$20 000 | 327 | 24.2 | 20.5-27.8 | 3.74 | 3.62 | 4.37 | 4.83 |
| $20 000-$34 999 | 246 | 24.5 | 20.6-28.4 | 3.59 | 3.59 | 4.15 | 4.82 |
| $35 000-$49 999 | 155 | 16.0 | 12.7-19.3 | 3.95 | 3.32 | 3.68 | 4.81 |
| $50 000-$74 999 | 149 | 16.7 | 13.3-20.2 | 3.62 | 2.98 | 3.81 | 4.95 |
| ≥$75 000 | 146 | 18.6 | 15.0-22.2 | 3.88 | 2.56 | 3.40 | 4.83 |
| Education | | | | *P* = .02 | *P* < .0001 | *P* = .01 | *P* = .08 |
| High school or less | 182 | 12.1 | 9.3-14.8 | 3.67 | 3.72 | 4.20 | 4.83 |
| Tech school | 312 | 27.1 | 23.3-30.9 | 3.69 | 3.44 | 4.04 | 4.77 |
| Some college | 241 | 22.8 | 19.1-26.5 | 3.54 | 3.25 | 3.98 | 4.86 |
| College grad | 252 | 23.9 | 20.3-26.6 | 3.87 | 3.20 | 3.89 | 4.89 |
| Postgraduate | 153 | 14.1 | 11.1-17.1 | 4.12 | 2.55 | 3.35 | 4.95 |
| Employed | | | | *P* = .26 | *P* = .78 | *P* = .64 | *P* = .28 |
| Yes | 666 | 59.6 | 55.4-63.7 | 3.70 | 3.22 | 3.94 | 4.87 |

| | N | % | 95% CI | Mean of Each Dependent Variable by Sociodemographic Characteristics | | | |
|---|---|---|---|---|---|---|---|
| | | | | MD/ No Symptoms | Community/ No Symptoms | Community/ Symptoms | MD/ Symptoms |
| No | 479 | 40.4 | 36.3-44.6 | 3.84 | 3.26 | 3.88 | 4.81 |
| Health status | | | | *P* = .83 | *P* = .18 | *P* = .35 | *P* = .60 |
| Excellent | 216 | 19.4 | 16.0-22.8 | 3.76 | 3.25 | 4.01 | 4.91 |
| Very good | 354 | 33.3 | 29.3-37.2 | 3.69 | 3.11 | 3.73 | 4.81 |
| Good | 333 | 27.8 | 24.0-31.5 | 3.76 | 3.20 | 3.97 | 4.84 |
| Fair | 194 | 15.9 | 12.7-19.2 | 3.90 | 3.59 | 4.09 | 4.88 |
| Poor | 49 | 3.6 | 1.2-6.1 | 3.83 | 3.10 | 3.79 | 4.67 |

**Table 2**

Zero-Order Correlations Between Each Barrier and Facilitator and the Dependent Variables

| | MD/No Symptoms | | Community/ No Symptoms | | Community/ Symptoms | | MD/Symptoms | |
|---|---|---|---|---|---|---|---|---|
| | R | p | R | p | R | p | R | p |
| How effective screening | −0.18 | <.0001 | −0.01 | .83 | −0.06 | .22 | −0.16 | .003 |
| Trust | 0.11 | .01 | −0.20 | <.0001 | −0.22 | <.0001 | 0.11 | .03 |
| Barriers | | | | | | | | |
| AIDS | −0.02 | .431 | 0.11 | .012 | 0.11 | .014 | 0.01 | .867 |
| Guinea pig | −0.03 | .428 | 0.02 | .614 | 0.08 | .076 | 0.08 | .055 |
| Privacy | −0.01 | .521 | −0.03 | .481 | 0.03 | .427 | 0.05 | .296 |
| Upsetting family | −0.08 | .730 | 0.12 | .003 | 0.10 | .017 | 0.05 | .244 |
| Fear of cancer | −0.03 | .317 | 0.06 | .139 | 0.10 | .019 | −0.01 | .896 |
| Unlikely to get cancer | −0.10 | .639 | 0.03 | .396 | 0.11 | .007 | 0.04 | .326 |
| Lack trust in medicine | 0.03 | .380 | 0.11 | .008 | 0.07 | .100 | −0.04 | .282 |
| Fear of pain | −0.07 | .909 | 0.08 | .052 | 0.08 | .067 | 0.01 | .904 |
| Embarrassment | −0.16 | .002 | 0.01 | .773 | 0.06 | .145 | −0.06 | .193 |
| Facilitators | | | | | | | | |
| Saves lives | 0.26 | <.0001 | 0.17 | .000 | 0.12 | .017 | 0.19 | .024 |
| Friends/family encouraged | 0.12 | .014 | 0.13 | .005 | 0.12 | .008 | 0.11 | .056 |
| Friends participate | 0.13 | .014 | 0.14 | .003 | 0.11 | .016 | 0.15 | .015 |
| Friends/relative w/cancer | 0.12 | .000 | 0.10 | .030 | 0.14 | .003 | 0.20 | .004 |
| MD encourages | 0.25 | <.0001 | 0.01 | .760 | 0.00 | .995 | 0.21 | .008 |
| Dentist encourages | 0.19 | <.0001 | 0.04 | .346 | 0.01 | .899 | 0.16 | .020 |
| Insurance | 0.16 | .013 | 0.14 | .002 | 0.09 | .057 | 0.17 | .012 |
| Screening nearby | 0.12 | .002 | 0.23 | <.0001 | 0.20 | <.0001 | 0.13 | .042 |

**Table 3**

Bivariate and Multivariate Analyses for Each Dependent Screening Variable

| | Screened by MD/ No Symptoms Q8 | | | | Screened by Community Group/No Symptoms q9 | | | | Screened by Community Group/Symptoms q9a | | | | Screened by MD/ Symptoms q10 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | |
| | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* |
| Male | −0.3 | .019 | −0.32 | .028 | 0.07 | .606 | 0.28 | .079 | 0.27 | .043 | 0.39 | .014 | −0.06 | .354 | −0.03 | .707 |
| Female | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | | 0 | |
| Hispanic | 0.21 | .174 | 0.23 | .221 | 0.97 | <.0001 | 0.69 | .001 | 0.82 | <.0001 | 0.75 | <.0001 | 0.04 | .526 | 0.05 | .446 |
| Black, non-Hispanic | 0.24 | .109 | 0.36 | .028 | 0.96 | | 0.53 | .009 | 0.73 | <.0001 | 0.35 | .079 | 0.07 | .256 | 0.07 | .404 |
| White, non-Hispanic | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | | 0 | |
| 18-39 | −0.9 | <.0001 | −0.95 | <.0001 | 0.47 | 0.027 | 0.44 | .108 | 1.03 | <.0001 | 1.24 | <.0001 | −0.03 | .770 | −0.04 | .771 |
| 40-59 | −0.39 | .007 | −0.32 | .048 | 0.3 | 1.113 | 0.30 | .188 | 0.66 | .000 | 0.94 | <.0001 | 0.06 | .484 | 0.03 | .747 |
| ≥60 | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | - | 0 | |
| <$20 000 | −0.15 | .436 | 0.18 | .454 | 1.06 | <.0001 | 0.86 | .003 | 0.97 | <.0001 | 0.61 | .015 | 0 | .970 | 0.11 | .408 |
| $20 000-$34 999 | −0.29 | .153 | −0.01 | .958 | 1.03 | <.0001 | 0.84 | .001 | 0.75 | .001 | 0.53 | .027 | −0.01 | .888 | 0.07 | .486 |
| $35 000-$49 999 | 0.07 | .770 | 0.28 | .223 | 0.76 | 0.003 | 0.61 | .018 | 0.28 | .291 | 0.07 | .779 | −0.02 | .887 | 0.05 | .659 |
| $50 000-$74 999 | −0.26 | .261 | −0.50 | .024 | 0.42 | .089 | 0.49 | .043 | 0.41 | .120 | 0.19 | .486 | 0.12 | .158 | 0.03 | .698 |
| ≥$75 000 | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | - | 0 | |
| High school or less | −0.45 | .021 | −0.21 | .412 | 1.17 | <.0001 | 0.64 | .041 | 0.84 | .000 | −0.04 | .900 | −0.12 | .089 | 0.00 | .973 |
| Technical school | −0.43 | .015 | −0.44 | .066 | 0.88 | <.0001 | 0.37 | .172 | 0.68 | .003 | 0.11 | .696 | −0.18 | .020 | −0.12 | .292 |
| Some college | −0.59 | .003 | −0.27 | .256 | 0.7 | .002 | 0.40 | .114 | 0.63 | .010 | 0.17 | .507 | −0.10 | .127 | −0.04 | .690 |
| College graduate | −0.25 | .151 | 0.02 | .913 | 0.65 | .003 | 0.63 | .011 | 0.54 | .024 | 0.35 | .151 | −0.06 | .330 | 0.03 | .681 |
| Postgraduate | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | - | 0 | |
| Employed | −0.14 | .258 | 0.08 | .637 | −0.04 | .776 | −0.01 | .952 | 0.06 | .642 | −0.21 | .211 | 0.07 | .283 | 0.21 | .006 |
| Not Employed | 0 | | 0 | | 0 | | 0 | | - | - | 0 | | 0 | - | 0 | |
| Health status | 0.04 | .427 | −0.05 | .435 | 0.07 | 0.221 | −0.11 | .135 | 0.03 | .551 | 0.07 | .294 | −0.02 | .498 | 0.00 | .963 |
| How effective screening | −0.31 | <.0001 | −0.20 | .034 | −0.02 | .826 | −0.05 | .528 | −0.1 | .222 | −0.26 | .002 | −0.12 | .003 | −0.07 | .191 |
| Trust in People | 0.15 | .015 | 0.11 | .121 | −0.29 | <.0001 | −0.07 | .377 | −0.31 | <.0001 | −0.12 | .100 | 0.07 | .026 | 0.09 | .045 |
| Barriers | | | | | | | | | - | - | - | - | | - | | |

| | Screened by MD/ No Symptoms Q8 | | | | Screened by Community Group/No Symptoms q9 | | | | Screened by Community Group/Symptoms q9a | | | | Screened by MD/ Symptoms q10 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | | Bivariate Associations | | Multivariate Associations | |
| | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* | Coeff | *P* |
| AIDS | −0.02 | .624 | 0.05 | .361 | 0.12 | .012 | 0.06 | .278 | 0.11 | .014 | 0.07 | .227 | 0 | .867 | −0.02 | .262 |
| Guinea pig | −0.02 | .535 | −0.06 | .185 | 0.02 | .614 | −0.03 | .588 | 0.08 | .076 | 0.03 | .556 | 0.03 | .055 | 0.02 | .166 |
| Privacy | −0.01 | .884 | 0.08 | .116 | −0.03 | .481 | −0.11 | .055 | 0.03 | .427 | −0.07 | .237 | 0.02 | .296 | 0.04 | .059 |
| Upsetting family | −0.07 | .081 | −0.10 | .134 | 0.13 | .003 | 0.09 | .172 | 0.1 | .017 | −0.06 | .465 | 0.02 | .244 | 0.01 | .734 |
| Fear of cancer | −0.03 | .456 | 0.16 | .007 | 0.07 | .139 | −0.01 | .878 | 0.1 | .019 | 0.04 | .546 | 0 | .896 | 0.00 | .918 |
| Unlikely to get cancer | −0.1 | .032 | −0.15 | .011 | 0.04 | .396 | −0.11 | .078 | 0.13 | .007 | 0.05 | .402 | 0.02 | .326 | 0.04 | .101 |
| Lack trust in medicine | 0.03 | .538 | 0.10 | .084 | 0.13 | .008 | 0.06 | .362 | 0.08 | .100 | −0.04 | .585 | −0.02 | .282 | −0.03 | .342 |
| Fear of pain | −0.08 | .091 | −0.05 | .458 | 0.1 | .052 | 0.10 | .168 | 0.09 | .067 | 0.06 | .393 | 0 | .904 | −0.02 | .389 |
| Embarrassment | −0.2 | .000 | −0.18 | .029 | 0.02 | .773 | −0.15 | .032 | 0.08 | .145 | −0.04 | .556 | −0.03 | .193 | 0.01 | .707 |
| Facilitators | | | | | | | | | - | - | | | | - | | |
| Saves lives | 0.36 | <.0001 | 0.23 | .029 | 0.26 | .000 | 0.08 | .321 | 0.18 | .017 | 0.03 | .717 | 0.11 | .024 | 0.05 | .414 |
| Friends/family encourage | 0.13 | .012 | 0.08 | .326 | 0.15 | .005 | −0.03 | .709 | 0.14 | .008 | −0.02 | .715 | 0.05 | .056 | −0.01 | .831 |
| Friends participate | 0.13 | .009 | 0 | .946 | 0.16 | .003 | 0.11 | .238 | 0.12 | .016 | −0.01 | .915 | 0.07 | .015 | −0.01 | .653 |
| Friends/family w/cancer | 0.14 | .008 | 0.03 | .607 | 0.12 | .030 | −0.01 | .930 | 0.16 | .003 | 0.05 | .498 | 0.10 | .004 | 0.07 | .069 |
| MD encourages | 0.31 | <.0001 | 0.11 | .271 | 0.02 | .760 | −0.22 | .031 | 0 | .995 | −0.14 | .110 | 0.12 | .008 | 0.03 | .577 |
| Dentist encourages | 0.2 | <.0001 | −0.03 | .638 | 0.05 | .346 | 0.10 | .286 | 0.01 | .899 | 0 | .996 | 0.07 | .020 | 0.02 | .339 |
| Insurance | 0.17 | .001 | 0.03 | .658 | 0.16 | .002 | −0.01 | .927 | 0.1 | .057 | −0.02 | .744 | 0.08 | .012 | 0.00 | .886 |
| Screening nearby | 0.13 | .010 | −0.06 | .283 | 0.27 | <.0001 | 0.19 | .009 | 0.22 | <.0001 | 0.18 | .004 | 0.06 | .042 | 0.00 | .902 |