

The Impact of Acculturation on Awareness of Genetic Testing for Increased Cancer Risk among Hispanics in the Year 2000 National Health Interview Survey

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Abstract

Previous studies suggest disparities in use of preventive cancer services among U.S. Hispanics are partly explained by knowledge and access factors. One area of emerging interest is uptake of genetic counseling and testing services by underserved populations. This study aims to estimate the percentage of Hispanics in five ethnic subgroups who are aware of genetic testing for inherited cancer risk, and to assess the influence of acculturation factors primarily related to language on test awareness. Weighted data from 4,313 Hispanic respondents (age >25 years) in the year 2000 National Health Interview Survey were analyzed. Overall, 20.6% of Hispanics had heard of genetic testing for cancer risk, with percentages highest among Puerto Ricans (27.3%) and lowest among Mexicans (14.3%). Completing the interview in Spanish and English [odds ratio (OR), 0.52; 95% confidence interval (95% CI), 0.35-0.78], or only

Spanish (OR, 0.60; 95% CI, 0.42-0.86), was inversely associated with test awareness (reference group, only English). Having an intermediate (OR, 0.66; 95% CI, 0.48-0.90) or low (OR, 0.63; 95% CI, 0.39-1.01) level of English language preference was also inversely associated (reference, high level) whereas being born outside the United States was weakly associated (OR, 0.80; 95% CI, 0.57-1.11). Estimates were adjusted for age, education, ethnicity, parents' cancer history, health care access, and selected health behaviors and beliefs. Results of this national survey indicate that acculturation factors related to language may affect cancer genetic test awareness in Hispanics. These factors must be taken into account when informing individuals about the role of genetics in cancer risk and providing cancer genetic health services. (Cancer Epidemiol Biomarkers Prev 2006;15(4):618-23)

Introduction

Hispanics are the fastest growing minority group in the United States and are expected to comprise 25% of the entire U.S. population by the year 2050. They are an ethnically and racially diverse group with origins in Mexico, the Caribbean, Central or South America, and Spain, tied together by a common language (1). Whereas Hispanics have lower incidence and mortality from cancers in general, they tend to be diagnosed at later stages for several cancers including the colon, prostate, lung, and breast and have lower survival rates compared with the general population (2-4). This differential in stage of cancer diagnosis among Hispanics may be partially associated with less knowledge, access, and utilization of preventive services such as cancer screening tests.

An additional area where a disparity may be emerging is in the use of cancer genetic counseling and testing services. In a national study of 646 patients who received genetic testing in community based (non-research) settings between the years 1998 and 2000, only 1% ($n = 7$) were Hispanic (5). As of yet, mutation prevalence, associated breast cancer risk, and the need for cancer genetic services are not well defined in Hispanics although *BRCA1/2* mutations have been documented (6-14). For example, among 10,000 high-risk individuals undergoing mutation testing at a commercial laboratory

who specified a single ancestry, the prevalence of *BRCA1/2* mutations was 16% among Europeans, 19% among Africans, 18% among Latin Americans/Caribbeans, 14% among Native Americans, and 12% among Asians (15). Whereas review articles and reports emphasize the need for and use of genetic counseling and testing services in the Hispanic community (16-18), there are less empirical data about factors that may contribute to utilization of these services, such as awareness of their availability (5, 19).

People with basic knowledge about inherited cancer risk and awareness of genetic testing for cancer susceptibility mutations can potentially make more informed choices about whether or not to seek such services (20). However, awareness of such concepts has been shown to vary by demographic characteristics and family history (21-25). In minority groups with a significant immigrant population, such as Hispanics, acculturation factors (e.g., primary language spoken, length of residence in the United States) may also influence access to information about genetic testing through the health care system or other dissemination channels (16).

Several studies have shown that language acculturation factors (i.e., use of English versus Spanish) are directly associated with awareness of, access to, and utilization of health care services (26-31). In a 2002 national survey of >3,000 Latinos residing in the United States, only 53% of Spanish dominant speakers had health insurance compared with 74% and 75% of bilingual or English dominant speakers, respectively. Spanish dominant speakers were over six times more likely (49%) than English dominant speakers (8%) to report difficulty in communicating with their health care provider (32). Thus, language barriers and lack of health insurance may contribute to decreased access to provider discussion about preventive health services (28-31) and possibly newer medical technologies.

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Limited evidence suggests this may occur with cancer genetic counseling and testing services. A previous analysis of the 2000 National Health Interview Survey (NHIS) indicates Hispanics were least likely to report having heard of genetic testing for increased cancer risk (20%) compared with African Americans (39%) and non-Hispanic whites (48%). Close to half of the Hispanic respondents reported Spanish as their only or primary spoken language, suggesting that exposure to information about inherited risk and genetic testing is partly mediated by acculturation factors (33).

No study to date has explored the effect of acculturation on awareness of genetic testing for inherited cancer susceptibility in a large, nationally representative, multiethnic sample of Hispanics residing in the United States. Although the proportion of respondents who are appropriate candidates for genetic counseling and testing is small in a national sample, valuable information can be obtained that is harder to assess in select high-risk clinical samples, where minority groups such as Hispanics are often underrepresented. First, it is possible to assess knowledge gaps that may contribute to underutilization or delayed uptake of cancer genetics services by high-risk individuals. This is particularly important for underserved Hispanic populations in the United States for whom there are little published data about use of such services (6, 14, 19, 34). Second, given the recent direct-to-consumer advertising campaigns targeting the general population (35) and translation of advertising materials into Spanish by genetic testing companies (36), identifying baseline levels of awareness may be important in developing messages about risk-appropriate use of testing. The major purpose of this study is to estimate, by ethnic subgroup, the percentage of Hispanic adults in the U.S. population who have heard of genetic tests for inherited cancer susceptibility and to assess the influence of acculturation factors on test awareness.

Materials and Methods

Survey Methods. The NHIS, conducted annually by the National Center for Health Statistics (Centers for Disease Control and Prevention, Hyattsville, MD), employs a stratified multistage sampling design in which African Americans and Hispanics are oversampled. An in-person, computer-assisted household interview is conducted by U.S. Bureau of the Census interviewers to obtain basic health and demographic information about the U.S. population. In 2000, a cancer control module was added to the core questionnaire to assess knowledge, attitudes, and practices related to cancer prevention and control. A more detailed description of the Year 2000 survey can be downloaded from the Internet at http://www.cdc.gov/nchs/nhis.htm#2000_NHIS.

A Spanish version of the questionnaire was used if a respondent preferred to complete the interview in Spanish. The Spanish version was developed in several stages. Initial stages included cognitive testing of questionnaires in English and Spanish. Then, a translator experienced in health surveys did a preliminary Spanish translation of the final NHIS questionnaire. Subsequently, NHIS staff convened a translation review conference with bilingual experts from various backgrounds, including senior field interviewers, survey designers, and topic matter experts. The group worked to improve meaning, clarity, and language flow. The revised Spanish instrument was then field tested in both languages; after which, final revisions were made in preparation for the actual survey (37).⁵ During the survey, interviewers recorded the language of interview (only English, Spanish and English,

only Spanish). Respondents who self-identified as Hispanic were asked to report their specific ethnic origin as Puerto Rican, Mexican, Mexican American, Cuban/Cuban American, Dominican, Central or South American, Other Latin American, Other Spanish, or Other.

In the interview, genetic testing was first defined for the respondents as "testing your blood to see if you carry genes which may predict a greater chance of developing cancer at some point in your life. This does not include tests to determine if you have cancer now." Respondents were then asked: "Have you ever heard of genetic testing to determine if a person is at increased risk of developing cancer?"

Conceptual Model. To formulate study hypotheses and guide the selection of variables for the present analysis, we used a conceptual framework originally developed to identify factors related to awareness of genetic testing in the NHIS survey for all race/ethnic groups combined (33). The framework was adapted from portions of Rogers's Diffusion of Innovations model (38), which describes five stages in the decision process for adoption of technological innovations: knowledge, persuasion, decision, implementation, and confirmation. The earliest form of knowledge, awareness that an innovation exists, is generally associated with demographic factors (e.g., higher education and income) and individual behavioral and need factors. The combined NHIS analysis identified several demographic, cancer history, health care access, health behavior, and health belief factors associated with test awareness including age, race/ethnicity, gender, region of the United States, education, time since last saw a health professional, health insurance status, parents' cancer history, vitamin supplement use, vigorous physical activity, and perceived occurrence of cancer in the family (33). In this study, we hypothesized that after adjustment for these factors, Hispanics may face additional barriers to awareness associated with acculturation.

Data Analysis. The statistical analysis was restricted to Hispanic men and women of ages ≥ 25 years ($n = 4536$) because educational level is presumably established for most people by age 25. Each respondent was assigned a basic sampling weight to adjust for the probability of selection in the stratified multistage sampling design. The sampling weight was further adjusted for survey nonresponse and poststratification (39). SUDAAN software (40) was used for the statistical analyses. Weighted percentages and SEs were calculated to estimate the proportion of Hispanics in the major ethnic subgroups (i.e., Mexican American, Mexican, Puerto Rican, Cuban/Cuban American, and Others) who had heard of genetic tests for increased cancer risk in the year 2000. A total of 223 Hispanic respondents were excluded from all analyses due to nonresponse to the NHIS Cancer Control Supplement or to the question about having heard of genetic testing for increased cancer risk. The denominator for these prevalence estimates included everyone with "yes," "no," or "don't know" responses to the awareness of genetic testing question ($n = 4,313$).

Bivariate analysis was conducted to further characterize awareness by demographic, cancer history, health care access, health behavior, health belief, and acculturation factors. The demographic characteristics were Hispanic ethnicity (Mexican, Mexican American, Cuban/Cuban American, Puerto Rican, Other Hispanic), gender, age (25-39, 40-59, 60+ years), region of residence in the United States (Northeast, Midwest, West, South), and education (less than high school, completed high school, 1-4 years college, beyond college). Because family income was missing for approximately one fourth of all NHIS respondents, education was used as the sole indication of socioeconomic status. Cancer history included personal and parents' cancer history (yes, no). Health care factors included: having a usual place to go when sick (yes, no) and health

⁵ Deborah Rose, personal communication.

insurance status (private, public, none). Health behaviors and beliefs included vitamin supplement use (yes, no), vigorous physical activity (some, none), perceived cancer risk in self (high, medium, low), and perceived amount of cancer occurrence in the family (high, medium, low).

Finally, the acculturation variables included having been born in the United States (yes, no), language in which interview was conducted (only English, English and Spanish, only Spanish), and level of English language preference. English language preference (low, medium, high) was quantified based on responses to eight questions about language. These questions were phrased in the form "(In) Which language...": (a) "...do you speak?"; (b) "...did you use as a child?"; (c) "...do you read better?"; (d) "...do you usually speak at home?"; (e) "...do you usually speak with your friends?"; (f) "...do you usually think?"; (g) "...are the T.V. programs you usually watch?"; (h) "...are the radio programs you usually listen to?" Responses were allowed on a Likert (1-5) scale with categories "Only Spanish," "More Spanish than English," "Spanish and English about the same," "More English than Spanish," and "Only English." Based on a method used by Berrigan et al. (41), we then classified respondents by language preference tertile. Summed scores of 8 to 13 for the eight questions were classified as low English language preference, scores of 14 to 27 as medium English language preference, and scores of 28 to 40 as high English language preference (Cronbach's $\alpha = 0.97$).

Weighted backward logistic regression was used to model the multivariate relationship of demographic, cancer history, health care access, health behavior, health belief, and acculturation factors to genetic test awareness. Of the 4,313 respondents in the study, 28 were excluded from the regression analyses because they answered "don't know" to the genetic testing awareness question, and an additional 699 were excluded because they did not respond to other key independent variables. Gender, region of United States, and personal history of cancer were not included in the regression model because they were not significantly ($P > 0.05$) associated with test awareness in bivariate analysis.

Results

Among the 4,313 NHIS Hispanic respondents of ages ≥ 25 years, 855 answered "yes" to having heard of genetic tests for increased cancer risk and 3,430 answered "no." Figure 1 shows the weighted percentage of test awareness for all Hispanic respondents combined, the four largest subgroups (Mexican Americans, Mexicans, Puerto Ricans, and Cuban/Cuban Americans), and all other subgroups (Dominicans, Central or South Americans, Other Latin American, and Other Spanish) that were combined due to insufficient sample size. A total of 20.6% (SE, ± 0.8) reported that they had heard of genetic tests for increased cancer risk, with subgroup

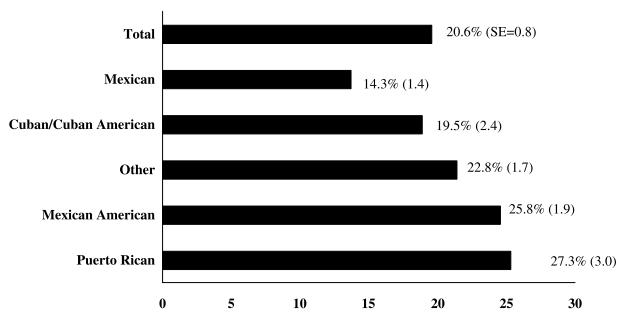


Figure 1. Weighted percentages (and SEs) of Hispanic respondents in the Year 2000 NHIS who heard of genetic testing for increased cancer risk by ethnicity.

estimates highest among Puerto Ricans and Mexican Americans, lower among Cuban/Cuban Americans, and lowest among Mexicans.

As shown in Table 1, awareness varied by several acculturation factors. Most notably, 34.8% (± 1.8) of respondents who expressed a high level of English language preference had heard of tests, compared with 18.5% (± 1.3) with an intermediate level and 9.5% (± 1.1) with a low level. Additionally, awareness was almost thrice higher among individuals who completed the NHIS 2000 interview only in English ($28.7 \pm 1.3\%$) compared with those who completed it in both Spanish and English ($10.3 \pm 1.6\%$) or only in Spanish ($10.7 \pm 1.1\%$). Finally, awareness was twice as high among those who were born in the United States ($30.4 \pm 1.6\%$) than among those born in another country ($15.1 \pm 0.9\%$).

Regarding demographic characteristics, awareness decreased substantially with decreasing levels of education, ranging from $45.0 \pm 5.1\%$ among people who had greater than a college education to $11.1 \pm 1.0\%$ among those with less than high school education. Test awareness was slightly lower among individuals of ages ≥ 60 years, males, and those living in the South and West. Awareness was higher among people with a personal history of any cancer or at least one parent with a history of any cancer. Furthermore, awareness was highest if the parents had breast, ovarian, or colon cancer (major cancer sites for which genetic testing was available at the time of this survey) compared with other cancers or none at all. Test awareness also varied according to health care use and access factors, with higher awareness observed among people who last saw or talked with a health professional within the past year. Awareness among those with private or military health insurance ($27.4 \pm 1.2\%$) was nearly double that of individuals with public ($13.3 \pm 1.6\%$) or no health insurance ($13.9 \pm 1.3\%$). Awareness was somewhat higher in individuals with health behaviors and beliefs suggestive of general health awareness, including vitamin supplement use, engaging in some vigorous physical activity, and perceiving a high personal risk of cancer or cancer occurrence in the family.

Multivariate Analysis. After adjustment for demographic and other covariates, several language factors were independently associated with genetic test awareness (Table 2). Those who expressed an intermediate or low level of English language preference were approximately one third less likely to report test awareness than those who reported a high English language preference. Those who completed the interview in Spanish and English, compared with those completing the interview only in English, were about half as likely to report test awareness. Completion in Spanish only was also inversely associated.

Lower test awareness was associated with decreasing educational level (Wald test for linear trend, $P = 0.03$). Compared with individuals who had an education beyond college, those who only completed high school [odds ratio (OR), 0.41; 95% confidence interval (95% CI), 0.25-0.67] or did not complete high school (OR, 0.33; 95% CI, 0.20-0.54) were less likely to be aware of genetic testing for cancer risk. In addition, test awareness was inversely associated with not engaging in physical activity, perceiving low or intermediate cancer occurrence in the family (Wald test for linear trend, $P = 0.01$), and marginally, with having public health insurance or not using vitamin supplements. ORs were suggestive of increasing test awareness with increasing age (Wald test for linear trend, $P < 0.01$).

Discussion

In the present study, the prevalence of genetic testing awareness was significantly lower among individuals who had intermediate to low English language utilization, after

Table 1. Weighted percentages and SEs of Hispanic respondents in the year 2000 NHIS who reported having heard of genetic tests for increased cancer risk by population characteristics

Population characteristics	Unweighted frequencies*	Heard of tests (%)	SE (%)
All combined	4,313	20.6	0.8
Acculturation factors			
English language preference* ($P = 0.00$)			
High	1,321	34.8	1.8
Medium	1,396	18.5	1.3
Low	1,443	9.5	1.1
Language of interview* ($P = 0.00$)			
Only English	2,304	28.7	1.3
Spanish and English	507	10.3	1.6
Only Spanish	1,419	10.7	1.1
Born in United States* ($P = 0.00$)			
Yes	1,660	30.4	1.6
No	2,653	15.1	0.9
Demographics			
Hispanic ethnicity* ($P = 0.00$)			
Mexican American	1,065	25.8	1.9
Mexican	1,536	14.3	1.1
Puerto Rican	437	27.3	3.0
Cuban/Cuban American	306	19.5	2.4
Other	969	22.8	1.7
Gender ($P = 0.10$)			
Male	1,860	19.6	1.1
Female	2,453	21.6	1.1
Region of United States ($P = 0.08$)			
Northeast	677	21.5	2.2
Midwest	245	28.8	3.0
South	1,576	19.7	1.4
West	1,815	19.6	1.2
Education* ($P = 0.00$)			
<High school	2,072	11.1	1.0
Completed high school	954	20.4	1.6
1-4 y of college	1,116	34.2	1.8
>College	135	45.0	5.1
Age* ($P = 0.01$)			
25-39 y	2,032	20.7	1.1
40-59 y	1,522	21.5	1.2
60+ y	759	18.1	2.0
Personal and family history of cancer			
Self ($P = 0.08$; $P = 0.19$ for breast ovarian, others, and never had cancer)			
Yes (any cancer)	106	31.4	4.9
Breast, ovarian, or colorectal cancer only	37	31.4	9.0
Other Cancers	69	31.4	6.2
No	4,203	20.3	0.8
Parents' history of cancer* ($P = 0.04$; $P = 0.05$ for breast ovarian, others, and never had cancer)			
Yes (any cancer)	713	25.3	2.2
Breast, ovarian, or colorectal cancer only	166	31.7	4.3
Other Cancers	547	23.4	2.3
No	3,435	19.8	0.9
Health care factors			
Time since last saw or talked with a health professional* ($P = 0.00$)			
<1 y	3,113	22.4	1.0
>1 y or never	1,191	16.6	1.3
Health insurance* ($P = 0.00$)			
Private or military	2,025	27.4	1.2
Public	849	13.3	1.6
None	1,426	13.9	1.3
Health behaviors and beliefs			
Vitamin supplement use* ($P = 0.00$)			
Yes	1,768	25.7	1.4
No	2,525	17.1	1.0
Vigorous physical activity* ($P = 0.00$)			
At least some	1,195	32.2	1.7
None	3,102	15.8	0.8
Perceived cancer risk in self* ($P = 0.00$)			
High	324	30.4	3.0

Table 1. Weighted percentages and SEs of Hispanic respondents in the year 2000 NHIS who reported having heard of genetic tests for increased cancer risk by population characteristics (Cont'd)

Population characteristics	Unweighted frequencies*	Heard of tests (%)	SE (%)
Medium	776	27.1	2.0
Low	2,883	18.9	0.9
Perceived cancer occurrence in family* ($P = 0.00$)			
High	266	37.2	4.0
Medium	678	21.5	2.0
Low	3,192	20.0	0.9

NOTE: Prevalence estimates are weighted to account for the survey design.

*Frequencies for individual variables may not add up to 4,313 due to item nonresponse and 'don't know' responses.

adjustment for key demographic, cancer history, health care access, and health behavior and belief factors. Results were consistent when both language of interview and a scale representing language preferences for activities, such as speaking, reading, and accessing electronic media, were used. In contrast, Hispanic ethnicity and place of origin were not independently associated with test awareness. This indicates that acculturation factors particularly related to language preference and use are important determinants of awareness of genetic testing.

Interestingly, respondents completing the interview in both languages were less likely to be aware of genetic testing than those who completed the interview entirely in Spanish. This may reflect a group of individuals who overestimated their ability to complete the lengthy interview in English, but due to limited language proficiency, reverted back to Spanish when necessary. English proficiency, arguably a factor that facilitates optimal health care system access, is one reason for the differences in knowledge and behavior related to cancer screening use among Hispanics (26, 42, 43).

The findings of our study show that some associations are similar whereas others are different for Hispanics compared with the U.S. population overall, as reported in a previous NHIS study (33). For example, higher education and engaging in routine physical activity were associated with increased awareness of genetic testing in both populations. Having public or no health insurance or not using vitamin supplements, which were inversely associated with genetic testing in the U.S. population (33), were only marginally associated among Hispanics. Older age (60+ years) was a significant predictor of genetic test awareness in the Hispanic sample although the reverse was observed in the U.S. population (33), suggesting an age-ethnicity interaction.

Findings for associations of test awareness with familial factors were also not consistent between Hispanics and the U.S. population. Individuals in the U.S. population who perceived a moderate occurrence of cancer in the family were less aware of tests (33), whereas among Hispanics, the inverse association was observed among those who perceived either a low or moderate occurrence. Cancer history in self or parents was a modest determinant of test awareness in the U.S. population but was not independently associated among Hispanics. Although this may indicate a trend toward risk-appropriate awareness of testing among Hispanics, it is important to consider differential reporting or knowledge of family history (44, 45) as an explanation. For example, in populations with recent migration to the United States, such as certain Hispanic ethnic groups, actual and perceived cancer occurrence in the family may be underestimated due to loss of family health information associated with less frequent personal contact.

Although providing important information related to awareness of cancer genetic testing, the present study has some limitations that must be considered when interpreting results. First, people with higher educational attainment may have overreported awareness due to social desirability (46). Conversely, people with lower educational attainment and general health knowledge may have confused genetic tests with other types of blood tests or cancer screening tests. Additionally, there may be subtle differences in language that may have influenced the Spanish wording of the

question on test awareness and that in turn may have affected study participants' responses. Despite extensive efforts to translate survey items into Spanish, this process did not include back translation, which is a common method to establish the validity of materials translated into Spanish (47).

Finally, there is currently controversy about if or how acculturation should be measured in the context of health research (48). Some argue that there has been a lack of underlying conceptualization of the definition of acculturation which precludes accurate measurement of this construct; however, most agree that language use is a central issue in assessing acculturation (48). Two of the three measures of acculturation we used related to language use. Additionally, there is concern that studies which measure acculturation fail to consider other important variables such as Hispanic subethnicity and socioeconomic status (48). In our study, we have attempted to address this issue by simultaneously including these factors in a multivariate model, allowing us to assess their independent effects on awareness. We recognize that other aspects of acculturation such as perceived ethnic identity, residence patterns, and knowledge of country of origin (48), not measured in the present study, may have also influenced awareness of genetic testing for cancer risk.

Table 2. ORs and 95% CIs of Hispanic respondents who reported having health of genetic tests for increased cancer risks in the year 2000 NHIS

Population characteristics	ORs* (95% CIs)
All combined	
Acculturation factors	
English language preference	
High	1.00
Medium	0.66 (0.48-0.90)
Low	0.63 (0.39-1.01)
	<i>P</i> for trend = 0.06
Language of interview	
Only English	1.00
Spanish and English	0.52 (0.35-0.78)
Only Spanish	0.60 (0.42-0.86)
	<i>P</i> for trend = 0.00
Born in United States	
Yes	1.00
No	0.80 (0.57-1.11)
Demographics	
Hispanic ethnicity	
Mexican American	1.00
Mexican	1.25 (0.88-1.77)
Puerto Rican	1.20 (0.78-1.85)
Cuban/Cuban American	1.38 (0.87-2.20)
Other	1.21 (0.82-1.77)
Education	
>College	1.00
1-4 y of college	0.75 (0.48-1.18)
Completed high school	0.41 (0.25-0.67)
<High school	0.33 (0.20-0.54)
	<i>P</i> for trend = 0.03
Age (y)	
25-39	1.00
40-59	1.23 (0.99-1.52)
60+	1.46 (1.04-2.05)
	<i>P</i> for trend = 0.00
Family history of cancer	
Parents' history of cancer	
Breast, ovarian, or colorectal cancer	1.00
Other cancers	0.84 (0.54-1.29)
No cancer	0.94 (0.61-1.44)
Health care factors	
Time since last saw or talked with a health professional	
<1 y	1.00
>1 y or never	1.02 (0.78-1.34)
Health insurance	
Private or military	1.00
Public	0.72 (0.50-1.04)
None	0.86 (0.66-1.13)
Health behaviors and beliefs	
Vitamin supplement use	
Yes	1.00
No	0.85 (0.68-1.05)
Vigorous physical activity	
At least some	1.00
None	0.57 (0.46-0.72)
Perceived cancer occurrence in family	
High	1.00
Medium	0.38 (0.23-0.64)
Low	0.53 (0.32-0.86)
	<i>P</i> for trend = 0.01

*ORs are weighted to the U.S. population and adjusted for covariates in the table.

Conclusion

In a review of genetic counseling issues in the Hispanic community, language was cited as one of the potential barriers to optimal utilization of genetic counseling and testing services (16). Results of this national survey indicate that acculturation factors, particularly those related to language, may affect awareness of cancer genetics services in the Hispanic community. Although genetic tests to predict cancer risk would not be indicated for most individuals in the general Hispanic population, this study strongly suggests that Spanish language translations, and perhaps other cultural factors not addressed here, need to be considered when informing individuals about the role of genetics in cancer risk and providing cancer genetic health services.

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