BRIEF REPORT

Impact of English Language Proficiency on Receipt of Pap Smears Among Hispanics

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Our aim was to assess the impact of English language proficiency on Pap smear use among Hispanics. We performed a cross-sectional study using 2000 National Health Interview Survey data and included 2,331 Hispanic women, age ≥ 18 without a hysterectomy. After adjusting for sociodemographic and access factors, highly proficient English speakers were more likely to report a Pap smear in the past 3 years as compared to low proficient (adjusted prevalence ratio, 1.16; 95% confidence interval, 1.08 to 1.22). Also associated with Pap smear use were income, usual source of care, and health insurance. Our finding suggests that low English language proficiency is a barrier to receiving recent Pap smears among Hispanics.

KEY WORDS: Hispanics; Pap smear; English language proficiency; health disparities; cancer prevention.

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Despite sustained improvement in Pap smear use rates in the last decade, cervical cancer continues to disproportionately strike low-income, immigrant, and minority women.^{1,2} Hispanics, for instance, have one of the highest cervical cancer age-adjusted incidence and mortality rates.³ According to data from the Surveillance, Epidemiology, and End Results Program, from 1996 to 2000, Hispanics had an incidence rate of 16.8 per 100,000 as compared to 9.2 of white women.² In the year 2000, the cervical cancer mortality rate for Hispanics was 4 per 100,000, only surpassed by African Americans.³ While early detection can improve survival and mortality rates,⁴ Hispanics have one of the lowest Papanicolaou (Pap) smear screening rates.⁵

Although sociodemographics and access to health care continue to be the most important predictors of Pap smear use,^{6,7} cultural and attitudinal factors, such as fatalism,

low acculturation, and lack of knowledge of preventive care also contribute to low Pap smear use rates among Hispanics.^{8–10} Low English language proficiency has been associated with low Pap smear use rates in previous studies.^{9,11–13} However, despite national attention on racial/ethnic cancer screening disparities and multiple interventions aimed at improving Pap smear use rates in low-accultured groups, the impact of language proficiency on Pap smear use among Hispanics has not been reevaluated in a nationally representative sample in the past 10 years.

Hispanics represent the nation's largest ethnic minority and the group with the largest proportion of individuals with low English proficiency.¹⁴ Therefore, identifying factors that prevent Hispanics from receiving appropriate cervical cancer screening is an important public health goal. In this study, we used data from the 2000 National Health Interview Survey (NHIS) to assess the impact of English proficiency on receipt of Pap smears among Hispanic women.

METHODS

Data Source and Study Population

We analyzed data from the 2000 NHIS. The NHIS is an in-person household survey of the civilian, noninstitutionalized U.S. population conducted by the Census Bureau in English, Spanish, and other languages according to interviewees' preference or proficiency.¹⁵ In the year 2000, the sample included 38,633 households and 32,374 adults; the final response rate was 72.1%.

We included all Hispanic women age 18 or older without a hysterectomy. Women with a Pap smear in the past 3 years were considered to be in compliance with cervical cancer screening.

Variables of Interest

We constructed a multivariable regression model with self-reported Pap smear in the past 3 years as the dependent variable. English language proficiency, the main independent variable, was assessed with the question: in general, what language do you speak? Women who responded only or mostly English and those reporting English and Spanish

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about the same were included in the high-proficiency category. Women who reported speaking only or mostly Spanish were regarded to have low English proficiency. We considered several factors correlated with use of Pap smears in the past 3 years as potential confounders. These included age (18 to 30, 31 to 40, 41 to 50, and ≥ 51), marital status (married/not married), educational attainment (less than high school/high school or more), poverty level (annual income of less than \$20,000/\$20,000 or more), having health insurance (any coverage/none), and self-reported health status (excellent/very good/good vs fair/poor). Because Pap smear is regularly done as part of prenatal care, we also adjusted for parity (no children/one or more).

Analysis

All analyses were performed using SAS Callable SUDAAN version 7.5 (Research Triangle Institute, Research Triangle Park, NC) to obtain proper variance estimations that accounted for the complex sampling design. We first generated descriptive statistics for each study variable. To characterize factors associated with the outcome of interest, we conducted a bivariable analysis using χ^2 tests to compare categorical variables. Two-tailed *P* values less than .05 were considered statistically significant.

Next, to obtain adjusted odds ratios, we developed the multivariable logistic regression model described above. However, when the incidence of the outcome of interest is common among the study population like in our analysis, the use of odds ratios may give an impression of risk association magnitude that is exaggerated in relation to that expressed in terms of prevalence rate ratio. Thus, for a more comprehensive view, we presented the strength of the associations between dependent and independent variables in terms of odds ratios, as well as prevalence rate ratios, which were calculated using the method described elsewhere by Zhang and Yu.¹⁶

RESULTS

Our final sample included 2,331 women after excluding 514 because of hysterectomy or incomplete data. Slightly more than half (55.9%) were highly English proficient (Table 1). As compared to women who spoke only or mostly Spanish, the highly English proficient were younger (mean age 36.1 years vs 39.6; $P < .001$), more likely to report higher education, income, usual source of care, health insurance, and excellent, very good, or good health (Table 1). Highly English-proficient women were more likely to report a Pap smear ever (89.3% vs 79.3%; $P < .001$) and a Pap smear in the past 3 years (83.5% vs 70.9%; $P < .001$) as compared to their less proficient counterparts.

After adjusting for potential confounders in the logistic regression model, highly English-proficient women were more likely to report having a Pap smear in the past 3 years (adjusted prevalence ratio [aPR], 1.16; 95% confidence interval [CI], 1.08 to 1.22) as compared to the less proficient

Table 1. Characteristics of Hispanic Women Aged 18 and Older Without a Hysterectomy Included in the Analysis

	Total Sample N = 2,331	Low EP N = 1,040	High EP N = 1,291	P Value
Age, y				.002
18 to 30	37.4	33.3	40.7	
31 to 40	27.3	27.3	27.3	
41 to 50	18.0	18.5	17.6	
≥ 51	17.4	21.0	17.4	
Married				<.001
No	43.6	37.8	48.2	
Yes	56.4	62.2	51.8	
Education				<.001
Less than high school	41.5	63.5	24.1	
High school or more	58.5	36.5	75.9	
Annual family income				<.001
Less than \$20,000	31.3	40.9	23.7	
\$20,000 or above	68.8	59.1	76.4	
Has a usual source of care				<.001
No	19.8	29.6	12.0	
Yes	80.2	70.4	88.0	
Has health insurance				<.001
No	35.0	51.8	21.8	
Yes	65.0	48.2	78.2	
Self-reported health status				.008
Fair to poor	12.4	14.8	10.5	
Excellent to good	87.6	85.2	89.5	
Parity				<.001
Zero	22.0	16.4	26.4	
≥ 1	78.0	83.6	73.6	

Sample sizes reflect the number of respondents; however, percentages were obtained using the full sample weight, which yields national population estimates.

CI, confidence interval; EP, English proficiency; SE, standard error.

(Table 2). Other factors significantly associated with having a Pap smear in the past 3 years were: being married, household income of \$20,000 or higher, having a usual source of care, having health insurance, and having had at least one child (Table 2).

DISCUSSION

We found that Hispanic women with high English proficiency were more likely to report having a Pap smear in the past 3 years as compared to women who spoke only or mostly Spanish. In addition to English language proficiency, access factors such as household annual income, having a usual source of care, and health insurance also increased the likelihood of having a Pap smear in the past 3 years among Hispanics.

Low English proficiency has been associated with low use of Pap smears in previous studies,^{9,11-13} including two reports using data from national surveys.^{9,13} However,

Table 2. Adjusted Odds Ratios and Prevalence Rate Ratios Estimating Self-reported Pap Smear Screening over the Prior 3 Years Among Hispanic Women 18 Years and Older Without a Hysterectomy (N = 2,331)

Independent Variables Included in the Final Model	Crude Prevalence, %	Adjusted Odds Ratios (95% CI)	Adjusted Prevalence Rate Ratios (95% CI)
English proficiency			
Hispanic low EP	70.7	1.0	1.0
Hispanic high EP	83.3	1.86 (1.35 to 2.57)*	1.16 (1.08 to 1.22)*
Age, y			
18 to 30	71.9	1.0	1.0
31 to 40	84.7	1.25 (0.86 to 1.81)	1.06 (0.96 to 1.14)
41 to 50	82.0	0.93 (0.58 to 1.50)	0.97 (0.83 to 1.10)
≥51	75.0	0.66 (0.44 to 1.00)*	0.87 (0.74 to 1.00)*
Married			
No	68.8	1.0	1.0
Yes	84.7	1.80 (1.37 to 2.35)*	1.16 (1.09 to 1.22)*
Education			
Less than high school	73.8	1.0	1.0
High school or more	80.5	1.24 (0.90 to 1.73)	1.05 (0.97 to 1.12)
Annual family income			
Less than \$20,000	69.8	1.0	1.0
\$20,000 or above	81.4	1.32 (1.01 to 1.73)*	1.08 (1.003 to 1.15)*
Has a usual source of care			
No	60.7	1.0	1.0
Yes	82.0	1.82 (1.32 to 2.50)*	1.21 (1.10 to 1.30)*
Has health insurance			
No	66.3	1.0	1.0
Yes	83.9	1.83 (1.33 to 2.51)*	1.22 (1.11 to 1.31)*
Self-reported health status			
Fair to poor	77.1	1.0	1.0
Excellent to good	77.8	0.98 (0.67 to 1.45)	0.995 (0.90 to 1.08)
Parity			
Zero	58.0	1.0	1.0
≥1	83.3	3.99 (2.86 to 5.57)*	1.46 (1.38 to 1.53)*

The prevalence rate ratios were calculated from the logistic regression using the methods detailed in Zhang and Yu.¹⁶

* P < .05.

CI, confidence interval; EP, English proficiency.

despite a trend in the same direction as previous reports, a study using pooled 1990 and 1992 NHIS data found no significant difference.¹⁷ Misclassification of low proficient as high proficient may explain the inconsistency. While the 1990–1992 study assessed language proficiency with language of interview, the other studies used self-reported language use. Answering a questionnaire like NHIS in English does not necessarily imply high command of the English language. The fact that only 21% of participants in the 1990–1992 NHIS study were considered to have low English proficiency as compared to 44% in our study and over a third in the others supports this notion.

Low English proficiency can impact use of Pap smears among Hispanics in several ways. Language barriers limit access to general and preventive health care. Even after accounting for factors such as health insurance and usual source of care, less English-proficient Hispanics are less likely to use health services.¹⁸ According to a recent survey among Spanish speakers in the United States, nearly one in five delayed or refused needed medical care because of language barriers with an English-speaking physician.¹⁹ Once access is achieved, language barriers may interfere

with the physician's ability to describe the benefits of screening, and some may opt for postponing or omitting a recommendation for a Pap smear. Even if Pap smear is recommended, language barriers may impede adherence among the low proficient.

Currently, 28 million residents in the United States speak Spanish at home and about one third of them speak English "not well" or "not at all."¹⁴ This number is expected to increase according to Census projections.¹⁴ Our findings suggest that despite successful outreach programs and media strategies targeting low English-proficient Hispanics, increased efforts are needed to improve cervical cancer screening among these numerous groups.

There are several limitations to our study. NHIS data are based on self-report; participants may have provided socially desirable answers, or may have misrepresented their English proficiency. Previous studies have shown that self-report, rather than decreasing Pap smear use rates, can substantially overestimate them, especially among low-income, ethnic women.²⁰ We could not assess the impact of physician characteristics or use of interpreters on Pap smear use and recommendation of Pap smear by health

care providers because the database did not include items on those topics. Although we adjusted for the most relevant sociodemographic and access factors, our results may have been influenced by residual confounding by income, educational attainment, health insurance status, and self-reported health status or by factors not included in the analysis, such as geographic location.

Our findings may help guide future research and assist in the design of interventions to improve cervical cancer screening among low English-proficient Hispanics. Interventions aimed at improving communication between health care provider and patients, such as the use of interpreters, cultural competency training, and provision of culturally appropriate education materials, may improve Pap smear use rates in this population.

Our findings suggest that low English proficiency is a barrier to cervical cancer screening among Hispanics. Increased efforts are needed to improve Pap smear use rates in this sizable group with elevated cervical cancer burden.

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