Effects of Socioeconomic Status and Health Care Access on Low Levels of Human Papillomavirus Vaccination Among Spanish-Speaking Hispanics in California

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Little is known about the effect of language preference, socioeconomic status, and health care access on human papillomavirus (HPV) vaccination. We examined these factors in Hispanic parents of daughters aged 11 to 17 years in California (n = 1090). Spanish-speaking parents were less likely to have their daughters vaccinated than were English speakers (odds ratio [OR] = 0.55; 95% confidence interval [CI] = 0.31, 0.98). Adding income and access to multivariate analyses made language nonsignificant (OR = 0.68; 95% CI = 0.35, 1.29). This confirms that health care use is associated with language via income and access. Low-income Hispanics, who lack access, need information about free HPV vaccination programs. (*Am J Public Health.* 2013;103:270–272. doi: 10.2105/AJPH.2012.300920)

In the United States, uptake of the recently recommended human papillomavirus (HPV) vaccine by Hispanic female adolescents could reduce cervical cancer disparities.[1-4] Little is known about HPV vaccine use among Hispanics; past studies have mostly focused on vaccine acceptability and awareness.[5-10] Research on populations with large immigrant subgroups, like Hispanics, can inform whether daughters of immigrants are less likely to be immunized and why. Parental correlates of vaccination are important because the vaccine is recommended for girls aged 11 to 17 years,[11] parents are primary decision-makers for childhood immunization, and most states require parental consent.[12,13] Previous research with Hispanic immigrants showed that speaking Spanish, low socioeconomic status (SES), and poor access to care all impede use of preventive health services.[14-16]

We examined whether language is independently correlated with HPV vaccination in the presence of other barriers (e.g., low SES, poor access) among Hispanic parents living in California. Specifying whether language is an additional barrier that needs to be separately addressed could improve the focus of HPV vaccine interventions and policies.

METHODS

We analyzed the 2007 California Health Interview Survey (CHIS), the largest random-digit-dial state health survey. Overall response rate was 18.3%.[17] Following federal standards, Hispanic ethnicity and racial group were ascertained.[18] To avoid any potential confounding effects by race,[19] we selected Hispanic parents of daughter(s) aged 11 to 17 years who reported their racial group as White (n = 1090).

Parents were asked whether their daughter had received the HPV vaccine. If there was more than 1 age-eligible daughter, 1 was randomly selected.

We used language spoken in the home as our primary independent variable. SES was measured with 2 variables—parent's education and annual household income as a percentage of the federal poverty level (FPL) according to the US Census. To measure health care access, we combined items assessing health insurance and usual source of care.[20]

We ran frequencies of all variables stratified by language. Univariate logistic regressions examined associations between daughter's vaccination status and independent variables. Because fathers may have paid less attention to HPV vaccine media messages than mothers as the vaccine was initially marketed as a preventive measure for a female cancer (cervical), we tested for an interaction between parental gender and language. Results showed no interaction; therefore, gender was not included as a confounder in multivariate analyses. We ran 3 multivariate logistic regressions. All models included language; models differed in whether SES variables or access were included. By "stepping" in these variables, we examined how their presence affected the language-vaccination association.

RESULTS

Table 1 shows sample characteristics stratified by language. About one third of parents spoke only Spanish. Fewer daughters of Spanish-speaking parents had received the HPV vaccine compared with those of English-speaking parents (12% vs 20%; $P = .041$).

In univariate models, uninsured parents or those without a usual source of care were less likely to have had their daughters vaccinated (Table 2). Vaccination rates were lower among parents whose income was 100% to 199% of the FPL compared with those with incomes of 300% of the FPL or greater (odds ratio = 0.41, 95% confidence interval = 0.25, 0.68).

Multivariate models showed that the association between language and HPV vaccination became nonsignificant if both SES variables or access were added (Table 2). Income and access were negatively associated with HPV vaccination in all models.

DISCUSSION

Among Hispanics in California, daughters of Spanish-speaking parents were less likely to receive the HPV vaccine than were daughters of English-speaking parents. However, language was not associated with vaccination in multivariate models when income, education, and health care access were included. Our findings suggest that interventions could reduce the influence of Spanish language as a barrier to vaccination by addressing health care access.

Language is a commonly used proxy for acculturation (extent to which immigrants adopt a new culture versus their indigenous culture[21-23]). Our and other studies suggest that income and access may have stronger associations with preventive behaviors than proxy measures of acculturation.[19,20] However, single item proxy measures are limited[21,24]; future research using a validated multidimensional acculturation measure would help determine the full impact of acculturation on adolescent HPV vaccination. Also, our data are prone to self-report bias. Similar to other random-digit-dial surveys,[25,26]

TABLE 1—Sample Characteristics by Language Spoken at Home for Hispanic Parents of Adolescent Girls Aged 11–17 Years: 2007 California Health Interview Survey

	Spanish Spoken at Home		English Spoken at Home	
	Unweighted No. (Weighted %[a])	95% CI	Unweighted No. (Weighted %[a])	95% CI
Total	317 (32.9)	28.0, 38.3	773 (67.1)	61.7, 72.0
Parent's age, y				
< 30	13 (4.6)	2.4, 8.8	28 (3.8)	2.1, 6.5
30–39	115 (37.3)	28.5, 47.1	268 (32.8)	27.9, 38.2
40–49	130 (40.1)	32.2, 48.6	349 (49.0)	43.0, 54.9
≥ 50	59 (17.9)	12.0, 25.9	128 (14.4)	11.3, 18.3
Daughter's age, y				
11–12	87 (27.8)	21.1, 35.5	246 (34.6)	27.8, 42.0
12–13	94 (32.3)	23.0, 43.2	230 (26.8)	22.4, 31.8
14–17	136 (40.0)	31.7, 48.8	297 (38.6)	32.4, 45.2
Parent's gender				
Male	106 (45.0)	36.9, 53.4	270 (47.1)	40.9, 53.4
Female	211 (55.0)	46.6, 63.1	503 (52.9)	46.6, 59.1
Parent's education				
No formal education	19 (9.2)	4.9, 16.7	8 (1.6)	0.6, 4.0
Grade 1–11	199 (68.8)	62.1, 74.8	182 (36.9)	31.1, 43.1
Grade 12/high school diploma	55 (14.3)	10.5, 19.2	217 (28.9)	24.3, 34.0
> high school diploma	44 (7.7)	4.6, 12.4	366 (32.6)	28.4, 37.2
Income, % FPL				
0–99	159 (51.5)	42.3, 60.6	153 (19.5)	15.4, 24.3
100–199	112 (35.7)	27.3, 45.1	225 (34.7)	28.6, 41.3
200–299	25 (9.3)	5.5, 15.4	130 (16.9)	13.3, 21.3
≥ 300	21 (3.5)	2.0, 5.9	265 (28.9)	23.6, 34.9
Health care access				
Uninsured or no usual source of care	165 (59.8)	51.3, 67.7	248 (38.3)	31.9, 45.2
Insured and has usual source of care	152 (40.2)	32.3, 48.7	525 (61.7)	54.8, 68.1
Daughter had HPV vaccine (≥ 1 dose)				
Yes	50 (12.0)	8.2, 17.2	147 (19.8)	16.1, 24.2
No	267 (88.0)	82.8, 91.8	626 (80.2)	75.8, 83.9

Note. CI = confidence interval; FPL = federal poverty level; HPV = human papillomavirus. Parents who reported speaking both English and Spanish in their home were grouped with those who only spoke English. The unweighted sample sizes were n = 317 for Spanish-speaking homes and n = 773 for English-speaking homes. Percentages may not add up to 100% because of rounding.

[a]Percentages reported are weighted to the California population based on CHIS's probability sampling method.

the CHIS response rate was low; but population estimates are representative.[27,28]

Our findings confirm previous studies showing that Hispanics' lack of cancer screening attributed to language barriers are, in fact, due to the same poor access faced by all low-SES individuals, regardless of language.[19,20] The presence of Spanish-speaking providers and translators is beneficial for improving health care access. One strategy to increase HPV vaccination is to ensure that both English- and Spanish-speaking Hispanics know about and use programs providing free vaccines.[29] Because HPV vaccine access and uptake is complex with several factors acting at multiple levels, [29,30] future research should explore why eligible children are not utilizing available public financing options and other factors associated with parental indecision.[31–33] ■

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Contributors

S. Chando and J. A. Tiro conceived this study and led the writing of this article. T. R. Harris assisted in the analysis and interpretation of data. N. Breen and S. Kobrin contributed to the study concept and assisted with the acquisition and interpretation of data. All authors contributed to the review and editing of drafts of the article and approved the version to be published.

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Human Participant Protection

This project was reviewed by the University of Texas Health Science Center at Houston Committee for the Protection of Human Subjects and deemed exempt from review.

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TABLE 2—Bivariate and Multivariate Logistic Regression Models for Human Papillomavirus Vaccine Uptake (> 1 Dose) Among Daughters Aged 11–17 Years of Hispanic Parents: 2007 California Health Interview Survey

	Univariate Models		Multivariate Model 1[a]		Multivariate Model 2[a]		Multivariate Model 3[a]	
Variables	OR (95% CI)	*P*	AOR (95% CI)	*P*	AOR (95% CI)	*P*	AOR (95% CI)	*P*
Language spoken in home								
Spanish	0.55 (0.31, 0.98)	.041	0.65 (0.34, 1.24)	.185	0.65 (0.38, 1.12)	.117	0.68 (0.35, 1.29)	.233
English (Ref)	1.00		1.00		1.00		1.00	
Income, % FPL								
0–99	0.61 (0.33, 1.14)	.118	0.70 (0.35, 1.41)	.315			0.77 (0.38, 1.58)	.474
100–199	0.37 (0.19, 0.74)	.005	0.39 (0.19, 0.82)	.014			0.41 (0.20, 0.86)	.019
200–299	1.27 (0.63, 2.58)	.496	1.34 (0.67, 2.70)	.408			1.29 (0.65, 2.56)	.465
≥ 300 (Ref)	1.00		1.00				1.00	
Parent's education								
No formal education	0.18 (0.04, 0.92)	.04	0.33 (0.06, 1.74)	.191			0.46 (0.09, 2.27)	.337
Grade 1–11	0.68 (0.38, 1.21)	.187	1.17 (0.60, 2.29)	.634			1.40 (0.71, 2.78)	.33
Grade 12/high school diploma	0.87 (0.50, 1.50)	.602	1.01 (0.56, 1.82)	.98			1.10 (0.63, 1.94)	.733
> high school diploma (Ref)	1.00		1.00				1.00	
Health care access								
Uninsured or no usual source of care	0.41 (0.25, 0.68)	< .001			0.45 (0.27, 0.73)	.002	0.48 (0.29, 0.80)	.005
Insured and has usual source of care (Ref)	1.00				1.00		1.00	
-2 log likelihood[b]	992.11		949.49		970.10		944.89	

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio.
[a]Language was included in all multivariate models; Model 1 included income and education; Model 2 included health care access; Model 3 included income, education, and health care access.
[b]–2 log likelihood for the univariate model of language and HPV vaccine uptake.

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