

Differences in Perceived Importance of Preventive Services and Healthcare Provider Trust Among Hispanics

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Abstract

Background: Knowledge and attitudes toward health and maintenance, where and how health information is received, and access necessary to meet healthcare needs differ within the Hispanic population. Subpopulations within the Hispanic community must be understood in order for preventive health needs to be addressed. **Methods:** This study seeks to evaluate the relationship of language dominance and foreign birth on attitudes towards preventive medicine in the Hispanic population using two cross-sectional data sources. **Results:** Linear regression demonstrated a predictive relationship between foreign birth ($B=0.011$) and Spanish language dominance ($B=0.018$) with considering the importance of obtaining an annual exam ($p\text{-value}<0.0001$). This indicates the importance placed on receiving annual exams among both populations of the Hispanic community. **Conclusions:**

The findings of this study may be used to support the use of new data sources as well as to better understand the health behaviors, attitudes, and access among Hispanics in the U.S regarding annual exams and vaccination.

Keywords: Health disparities, Preventive Medicine, Linear Regression, Survey Data

Introduction

According to the Pew Research Center's Hispanic Trends Tabulation Project, based on the 2000 census and the 2012 American Community Survey, the U.S. has seen a 50% increase in the Hispanic population, which now represents 17% of the total U.S. population (Pew Research Center, 2017). It is predicted that by 2020 there will be nearly 60 million Hispanics in the U.S. (Owens, 2006). The growing Hispanic population varies in risk factors, health outcomes, access to care by country of origin, level of education, and language dominance (Fiscella, 2002; Vega, 1994). In a 2008 study by DuBard and Gizlice, it was reported that Spanish-speaking Hispanics report far worse health status, preventive care methods, and access to care than English-speaking Hispanics (Dubard, 2008). Preventative health can save the individual from experiencing poor health outcomes while also saving the health system money. Studies show that Hispanics participate in regular checkups and preventative care less frequently than non-Hispanic whites (Dubard 2008; Fiscella, 2002; Vega, 1994). A 2008

study found that compared to English Speaking Hispanics, Spanish speaking Hispanics did not have health insurance (55% vs 23%), lacked a personal doctor (58% vs 29%), and were less likely to have had a checkup within the last year (45% vs 36%) (Dubard, 2008). Further, Spanish-speaking Hispanic patients were significantly less likely than non-Hispanic white patients to have had a physician visit (RR=0.77; 95% CI, 0.72–0.83), mental health visit (RR=0.50; 95% CI, 0.32–0.76), or influenza vaccination (RR=0.30; 95% CI, 0.15–0.52) (Fiscella, 2002).

With the growing Hispanic community in the United States, it is apparent that communication between patient and doctor is a key factor in increasing preventive healthcare in this population (Dubard, 2008). Unfortunately, racial and ethnic minorities often experience a decrease in the effectiveness of patient-doctor communication (Welch, 1937). This paper analyzes the differences in perceived importance of preventative services, including annual exams; and healthcare provider trust among Hispanics using data from the MARS Community Healthcare survey (MCHS) and the Scarborough Marketing Research Survey (SMRS).

Methods and Materials

This is a secondary analysis of two cross sectional studies: The Scarborough Marketing Research Survey (SMRS) and the MARS Community Healthcare Survey (MCHS). The Scarborough

Survey is a national survey conducted by the Nielsen Company which collects demographic and behavioral information. More than 210,000 adults (>18 years of age) are interviewed annually. Detailed information, including health status, health care access, use of health services, attitudes towards health care, services, and providers, is collected. Although the MARS survey does not have as many participants as the Scarborough Survey, it is reported that MARS data are projectable to 80% of the US population (Kantar Media, 2015). The Scarborough Survey contracts with MCHS to pull in the MARS data and “fuses” it with the Scarborough data. By doing this, MCHS assigns health behavior and attitude data to Scarborough participants who closely match demographically to the MCHS participants. This matching process uses 50 “hook” variables, a term used by MCHS to describe the variables used to join the responses from the smaller sample of MCHS participants to a larger sample of similar participants in the SMRS. “Hook” variable examples include sex, age, race, education, occupation, income, marital status, numbers and ages of children, and use of hospital services. Each “hook” is assigned a weighting factor depending on its relative importance to determine health attitudes. The weighting factor and other details of the fusion process are proprietary and not made available to the researcher.

Data Management

Access to the MARS data was gained through the website myprimelingo.com, a portal for access and a system for analysis. Clients of the MCHS Company pay for access to myprimelingo.com to understand a specific consumer base and craft marketing strategies around consumer information.

For this study, individual level data was accessed through myprimelingo.com and analyzed using SPSS 22.0. Descriptive statistics were used to analyze sample population demographics. Linear regression was used to analyze the relationship between nativity, Spanish language dominance, and various outcome variables. Differences in health attitudes and behaviors among Hispanics by nativity and language were measured with nonparametric equivalents of the paired t-test. At 95% Confidence Intervals, results with a p-value<0.05 were considered significant.

Data Analysis

Frequency tables were generated to better understand the population. Then, normality of the data across the responses of “time since last annual exam,” “considering an annual exam to be important,” and “trusting doctor to recommend vaccines” was explored within this population. The two smallest values on the Likert scale were combined for “annual exam importance” and “trust doctor to recommend vaccines,” to yield a normal distribution. For the variable “time since last annual exam,” the categories of 3-5 years and 2-3 years were combined to yield a normal

distribution. Finally, multiple Logistic Regression was used to analyze the relationship between “trusting doctor to recommend vaccines” and “truly receiving a vaccine.”

Results

The weighted demographic frequency table is presented in Table 1. Over one-quarter of the population surveyed attended college (26.2%), 23.3% had an income between \$35-\$50k, 80.6% of the population surveyed reportedly had insurance, 23.8% were aged between 25-34 years old, and nearly half were married (48.9%) (Table 1). The language dominance between English and Spanish speakers is similar (50.1% versus 49.9%, respectively), 65.8% of the participants did not receive a flu shot, and there is a higher proportion of females than males (53.0% versus 47.0%, respectively) (Table 1).

Table 1. Examining the weighted data frequencies of the MARS survey for Hispanic participants.

Variables	Response	Valid % ¹	Mean	S.D. (variance)
Education ²	< 8th Grade	12.1	3.243	1.178 (1.388)
	Some High School	8.5		
	H.S. Grad or GED	37.7		
	Some College	26.2		
	College Graduate+	15.4		
Household Income ³	Less than 10k	6.1	4.845	1.801 (3.244)
	10k-20k	7.9		
	20k-25k	7.3		
	25k-35k	16.2		
	35k-50k	23.3		
	50k-75k	14.7		
	75k+	24.4		
Insurance	Insured	80.6	0.190	0.396 (0.156)
	Uninsured	19.4		
Language Dominance	English	50.1		
	Spanish	49.9		
Flu Vaccine ⁴	No	65.8	0.342	0.474 (0.225)
	Yes	34.2		
Age ⁵	18-24 years	19.5	2.971	1.510 (2.282)
	25-34 years	23.8		
	35-44 years	22.0		
	45-54 years	16.7		
	55-64 years	10.2		
	65 years +	7.6		
Sex	Male	47.0	1.530	0.499 (0.249)
	Female	53.0		
Marital Status ⁶	Married	48.9	1.800	1.095 (1.199)
	Never Married (Single)	38.5		
	Widowed	3.1		
	Separated	2.6		
	Divorced	6.8		

¹Valid Percent refers to percentage of Participants in each variable category accounting for missing data. All data is weighted using weighting factors provided in data. For example, the 1.530 mean in the “sex” category indicates that for every 1 female a male is counted as 1.530 to account for the higher percentage of females in the survey.

²Education in 5 categories: Less than 8th grade, Some High School, Completed High School or GED, Some College, and College Graduate or more.

³Income in 7 categories: <10k, 10-20k, 20-25k, 25-35k, 35-50k, 50-75k, 75k+

⁴Flu Vaccine” refers to a participant who received a flu vaccine via injection or nasal mist.

⁵Age in 6 categories: 18-24, 25-34, 35-44, 45-54, 55-64, 65+

⁶Marital Status in 5 categories: Married, Never Married, Widowed, Separated, Divorced.

In the logistic regression equation “trusting doctor to recommend vaccines” was the largest predictor of being a member of the category “any vaccine” ($\beta=0.701$; OR = 2.015), followed by “born in the US” ($\beta=0.156$; OR = 1.169). Interestingly, those with trust in a doctor (“trusting doctor”) had 2 times the odds of receiving any vaccine (OR = 2.015) and those “Born in US” only had slightly higher odds of receiving a vaccine (OR=1.169) (Table 2).

Table 2. Multiple Logistic Regression: Outcome Variable is Receiving Flu Vaccine (n=23,972).¹

Variables	β	Exp(β)
Age ²	0.117	1.125
HouseholdIncome ³	0.024	1.025
Education ⁴	0.062	1.063
TrustDoctor ⁵	0.701	2.015
BornInUS	0.156	1.169
Constant	-4.26	0.014

¹Hierarchical block forced entry model selection was used. Demographic variables were placed in the first block:

Age, Household Income, and Education Level. The variable in the second block is “Trusting Dr. to recommend vaccine.” And in the 3rd block are Born in the US and Spanish Language Dominant

²AGE in 12 categories: 18-20,21-24,25-29, 30-34, 35-39, 40-44, 45-49,50-54,55-59,60-64,65-69,70+

³HHLIDINCOME in 13 categories: <10k,10-20k, 20-25k, 25-30k, 30-35k, 35-40k, 40-45k, 45-50k,50-75k, 75-100k,100-150k, 150-250k, 250k+

⁴EDUCATION in 7 categories: Less than 8th grade, Some High School, Completed High School or GED, Some College, and College Graduate, Some post Graduate, Post Graduate Degree

⁵Trust Dr. in 4 categories: Any Disagree, neither agree nor disagree, agree a little, agree a lot.

Multiple linear regression was run to determine the predictors for “trusting doctor to recommend vaccines.” “Born in the US” and “Spanish language dominance” were input as independent variables and the WLS was weighted with the defined MCHS weight. The adjusted R2 was low (R2=0.003), the F-statistic was high (F=44,567.74), and p-value indicated significance (p<0.001). Upon examining the independent variables more closely, “Spanish language dominance” was protective and significant (B=-0.122; p<0.001) whereas “born in the US” was protective (-0.022), but not significant (p=0.151) (Table 3).

Multiple linear regression was also used to examine the influence of “reside in US” and “Spanish language dominance” on “trusting doctor to recommend vaccine.” This regression was run only among Hispanics not born in the US (n=9,958). The adjusted R2=0.008 was low, p-value was significant (p-value<0.001), and F-statistic=39.18 was greater than 1. In this model, “Spanish language dominance” was non-significant (p-value=0.087), but “reside in US” was significant (p<0.001) when compared to “trusting a doctor to recommend vaccines” (Table 3).

Table 3. Multiple Linear regression model results for multiple variables and outcomes (n=23,972).

Variable	B	Std. Error	Sig.
“Trusting Doctor to Recommend Vaccine” (n=23,972) as Outcome Variable^{1, a}			
(Constant)	3.885	--	<0.001
SpanishDominant	-0.112	--	<0.001
BornInUS	-0.022	--	0.1510
Foreign born Hispanics (n=9,958) and “trusting doctor to recommend vaccine”²			
(Constant)	3.573	0.042	<0.001
SpanishDominant	-0.043	0.025	0.0870
ResideInUS3	0.049	0.006	<0.001
Outcome variable “time since last annual exam” (n=23,972)²			
(Constant)	3.053	0.032	<0.001
AnnualImportance4	0.534	0.007	<0.001
SpanishDominant	-0.118	0.018	<0.001
BornInUS	0.004	0.002	0.0800
Outcome variable “considering an annual exam to be important” (n=23,972) ^{2,4,b}			
(Constant)	3.242	0.001	<0.001
Age	0.073	0.000	<0.001
BornInUS	-0.011	0.000	<0.001
SpanishDominant	-0.018	0.000	<0.001
Foreign born Hispanics only outcome variable “annual exam importance” (n=9,958)^{2,c}			
(Constant)	3.243	0.001	<0.001
Age	0.068	0.000	<0.001
SpanishDominant	-0.066	0.001	<0.001
ResideInUS5	0.022	0.000	<0.001

¹Regression run among Hispanics only and data is weighted.

²Data is weighted

³Reside in US in 4 categories: < 5 years, 10-14 years, 15-19 years, 20+ years.

⁴ANNUALIMPORTANCE IN 4 CATEGORIES: Any Disagree, neither agree nor disagree, agree a little, agree a lot

⁵Reside in US in 4 categories: < 5 years, 10-14 years, 15-19 years, 20+ years.

^aDependent Variable: TrustDoctor

^bDependent Variable: ANNUALIMPORTANCE

^cDependent Variable: ANNUALIMPORTANCEordinalnormal

Multiple linear regression was run among those considered “Spanish Language Dominant” who were “Born in the US”

to determine if a relationship existed in this population between “considering an annual exam to be important” and “time

since last exam.” The regression was run using a Hierarchical Forced Entry model selection with 2 blocks. For the second model, the adjusted R² increased (R²=0.192) and the model was significant (p<0.001). This is a slight R² change when subpopulation differences are added. “Annual Exam Importance,” “Spanish Dominance”, and “Born in US” were all significant predictive factors of “time since last annual exam”, but “Spanish Dominance” was the only variable that exhibited a protective factor (B=-0.118; p<0.001) (Table 3). “Annual exam importance” was significant (p<0.001), but “born in the US” was not significant (p=0.080) (Table 3). Although the coefficients are small, a trend that “Spanish language dominance” is predictive of longer periods of time between annual exams is observed. Multiple linear regressions were also run among Hispanics only (n=23,972), examining relationship of “Spanish language dominance” and “being born in the US” with “considering an annual exam to be important” and the demographic variable age. The adjusted R² was once again small (R²=0.043), the F statistic was high (F=491,680.440), and p<0.001. Finally, the logistic coefficients for “Spanish language dominance” β = -0.018 and “born in US” β = -0.011, but all were significant (p<0.001) (Table 3). Again, the coefficients are small but demonstrate interesting directionality, especially being “born in the US” as an inverse predictor of “considering an annual exam to be important.”

Discussion

Surprisingly, “Spanish language dominance” and being foreign born did not have the predictive power expected for the outcome variables of interest: receiving vaccine, trusting doctor to recommend vaccine, length of time since annual exam, and considering an annual exam to be important. This may be due to the outcome variables, which were negatively skewed with most responses falling in the 4 or 5 values of the Likert scale. Lower values were combined to create a more normal distribution, but normality was not achieved in this study.

In the multivariate logistical model, the “Spanish language dominance” had a positive log likelihood, but when linear regression was run “with trusting doctor to recommend vaccines” as the outcome, “Spanish language dominance” was predictive of lower trust. This could indicate that language is a more challenging barrier Stateside than initially thought, particularly regarding preventive medicine. Further, when linear regression was run again with the same outcome variable among foreign born Hispanics only, “Spanish language dominance” was no longer significant (p=0.080). These results are similar to those published in a 2018 study from the Netherlands, which reported that nonverbal communication by the physicians did not influence trust differently in immigrant versus non-immigrant patients but smiles in-fact did make a difference in trust levels (Hillen, de Haes, Verdam, & Smets, 2018).

Additionally, “being born in the US” was a predictor for a lower outcome in “considering annual exams to be important” ($\beta=-0.011$), but when compared among only foreign-born Hispanics, “time of residence in the US” was a predictor of higher outcomes in “considering annual exams to be important” ($\beta=0.022$). This is interesting because in a recent study published in South Carolina, the same trend was identified among non-immigrant and immigrant patients with diabetes. Srivastava et al. (2018) examined diabetes and preventive medicine care among recent immigrants and found that those with the highest risk of not attending preventive exams are those who immigrated less than 15 years prior (Srivastava, 2018). Comfort level in a new country as well as fear of deportation likely improve as the individual remains in the country. Studies such as this can aid in identifying vulnerable populations that may not seek help when needed, or that have difficulties communicating with physicians regarding the status of their health (Srivastava, 2018).

Strengths and Limitations

One limitation is that the MARS survey is not conducted in Spanish. This creates an issue with generalizability of the data collected from those who responded that they were Spanish language dominant while still being able to fill out the survey and complete the interview in English. Further, participants more comfortable speaking Spanish, or with

limited English proficiency, may have responded differently than had the survey been available in Spanish. Also, this potentially created selection bias within the Hispanic population, particularly with those with a moderate amount of English proficiency being able to participate in the survey. Fear of consequences, such as deportation, for being in the US illegally is often a large factor as to whether undocumented Hispanics will participate in a survey. The advantage that non-government surveys such as MARS have is that participants might feel more comfortable participating over other surveys conducted by the government or affiliated entities. The lack of participation of undocumented Hispanics may have reduced the sampling of lower income foreign born Hispanics. Another issue with the SMRS representativeness is the survey’s low response rate (16%). In one meta-analysis of Random Digit Dialing (RDD) surveys response rates ranged from 42%-79% with an average of 62% (Massey, 2007). Thus, these data may work well in conjunction with a government affiliated survey, such as the Behavioral Risk Factor Surveillance Survey (BRFSS) to capture more of the population. In a pilot study conducted as part of the 2005 BRFSS, comparing mail surveys to RDD surveys, a response rate of 22.5-45.8% was found across a sampling of states for RDD surveys and a mail survey response rate of 20-36.9% and 26.2-40.3% upon a second mailing (Link, 2008). However, for RDD surveys low response rates and non-response bias often do not significantly reduce the

representativeness of the data (Keeter, 2006).

Potential Public Health Implications
Combined with recent literature on the effects of foreign birth and Spanish language dominance on the health behaviors and attitudes of Hispanics it should be common practice to ensure proper sampling of Hispanic subgroups. Furthermore, factors should be considered when designing public health interventions and strategies. Given the breadth of information packed into audience research data sets, these data could be useful to uncovering additional information about discrepancies in behavior and action.

This gives public health professionals an avenue to approach increasing the frequency of annual exams by increasing the perceived importance of such exams and working with healthcare providers to increase the perceived efficacy of annual exams. This could be achieved through more thorough communication during appointments. Models in this study show that Spanish language, as an inverse predictor of time since last exam, must be considered and more focus given to the Spanish dominant Hispanic population. Both language and nativity are significant predictors of perceived importance of preventative services as well as trust in health care providers. It is imperative, therefore, that public health agencies collecting population health information and designing health interventions continue to work closely with the healthcare provider system to better equip practitioners to increase trust

and perceived importance of preventative services among the foreign born and Spanish language dominant Hispanic population.

Conclusion

The relationships described in this manuscript need to be further evaluated in the Public Health arena. The findings of this study may be used as additional evidence to support the use of these new data sources as well as to promote research to better understand the health behavior, attitude, and access disparities among Hispanics in the U.S regarding preventive medicine, including specifically annual exams and vaccinations.

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