Emergency Department Use Among Hispanic Adults
The Role of Acculturation

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Objectives: We provide the first known examination of differences in nonurgent and urgent emergency department (ED) usage between Hispanic and non-Hispanic white individuals, with varying levels of acculturation.

Materials and Methods: We pooled cross-sectional data for Hispanic and non-Hispanic white adults (ages 18–64) from the 2011 to 2013 National Health Interview Surveys. Using logistic regression models, we examined differences in past-year ED use, urgent ED use, and nonurgent ED use by acculturation level, which we measure by combining information on respondents' citizenship status, birthplace, and length of stay (immigrants <5, 5–10, >10 y in the United States; naturalized citizens; US born).

Results: Overall, 17.8% of Hispanic individuals and 18.5% of non-Hispanic white individuals use the ED annually. Compared with US-born non-Hispanic white individuals, the least acculturated Hispanic individuals are 14.4% points ($P < 0.001$) less likely to use the ED for any reason, 9.8% points ($P < 0.001$) less likely to use it for a nonurgent reason, and 5.3% points ($P < 0.01$) less likely to use it for an urgent reason.

Conclusions: Contrary to popular perception, the least acculturated Hispanic individuals are the least likely to use the ED. As acculturation level rises, so does one's likelihood of using the ED, particularly for nonurgent visits.

Key Words: acculturation, emergency department, hispanic

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The crowding of US emergency departments (EDs) is a known public health concern, and has been attributed, in part, to nonurgent ED use. Nonurgent ED visits are encounters that could have been safely delayed for up to 24 hours, or which could have been treated in a nonemergent care setting.[1–3] Both nonurgent ED visits and ED overcrowding have been linked to several negative consequences, including increased pain and suffering, longer wait times, higher costs, more unnecessary procedures, missed opportunities for patients to build relationships with primary care providers, and reduced disaster preparedness.[3–6]

Of the 116.8 million ED visits completed annually, almost 30% can be classified as nonurgent.[1,5] This phenomenon may worsen in the coming years, given the insurance expansions from the Affordable Care Act coupled with the shortage of primary care physicians in many communities.[7–9] Several national organizations, including the Agency for Healthcare Research and Quality and the US Senate's Subcommittee on Primary Health and Aging, have named reducing nonurgent ED visits as a key health policy priority.[10,11]

A perception exists, with limited empirical support, that minority populations contribute disproportionately to ED crowding and nonurgent ED visits.[12–14] The rapidly growing Hispanic population has come under particular fire, possibly due to concerns about health care service use among undocumented immigrants, a frequent media topic.[15,16] Although the most recent numbers available on this subject suggest that Hispanic individuals are more likely to use the ED for nonurgent or routine care, several accounts in the literature find otherwise.[17–20] One reason for this discrepancy might be the tendency to treat Hispanic individuals as a monolithic group, rather than accounting for heterogeneity within the population.[21] Accounting for the acculturation level of individuals is one increasingly popular mechanism for addressing these within-group differences.

Acculturation is defined as the degree to which an individual from one culture adopts the behaviors or characteristics of a different "host" culture.[22] Applied to the field of health care, acculturation might play an important role in individuals' willingness or ability to successfully navigate the health care system. A small but growing body of literature has examined the ways in which acculturation influences individuals' health services use. Generally, higher acculturation levels are associated with improvements in access to and uptake of primary and preventive care. More specifically, studies have found that Hispanic individuals with higher levels of acculturation (ie, greater assimilation into US culture) have better insurance coverage, have a higher uptake of preventive and primary care services, and are more likely to have a usual source of health care, compared with individuals with lower levels of acculturation.[23–33] In light of this body of evidence, one might expect

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that as Hispanic individuals become more acculturated, they are less likely to use the ED for nonurgent care, due to their better access to care in the community.

Despite a growing appreciation for the role of acculturation in health services use, no national-level study has examined how acculturation might affect the way in which Hispanic individuals interact with the ED. Two national studies have found that immigrants are less likely to use the ED, but did not examine the effect for Hispanic individuals alone.[34,35] Two smaller studies that have focused on Hispanic individuals alone had mixed results. In contrast, Nandi et al[36] found no relationship between acculturation level and ED use among undocumented Mexican immigrants in New York City. In contrast, Ortega et al[37] found that Mexican-born immigrants in the state of California are less likely to have used the ED in the past year, compared with US-born Mexican individuals. Lastly, no known study has examined the relationship between acculturation level and *nonurgent* versus *urgent* ED use. This is an important distinction, given that nonurgent ED use is a noted public health concern.

In this paper, we first present a national-level overview on the relationship between Hispanic ethnicity and nonurgent or urgent ED use. Then, we present the first known examination of how nonurgent and urgent ED use differs among Hispanic individuals with different acculturation levels. Findings from this study may inform policy conversations about ED services use by Hispanic individuals in general, and Hispanic immigrants (both recent and earlier) in particular.

MATERIALS AND METHODS

Data for this study come from the National Health Interview Survey (NHIS), an annual, nationally representative, cross-sectional survey of the civilian, noninstitutionalized population in the United States.[38] The annual sample size is approximately 35,000 households (about 87,500 individuals), with a response rate between 75% and 82% for the years analyzed. The survey includes questions on basic health and demographic items, along with questions about ED use.[38] We combine NHIS years 2011, 2012, and 2013 to form a pooled cross-section of data for individuals between the ages of 18 and 64. We limit our sample to individuals who identify either as Hispanic (any race) or as non-Hispanic white.

Our dependent variables of interest are binary indicators for any ED use, nonurgent ED use, and urgent ED use. Respondents were asked: "During the past 12 months, how many times have you gone to a hospital emergency room about your own health?" If a patient had any past-year ED use, he or she was asked whether any of 10 attributes applied to his or her *most recent ED visit*. Five of these pertain to visit urgency: the visit resulted in hospital admission; the patient was advised by a health provider to go to ED; the problem was too serious for doctor's office/clinic; only a hospital could help with the problem; or the patient arrived at ED by ambulance/other emergency vehicle. We use the information from these 2 questions to create dichotomous indicators for our outcome variables, consistent with the approach developed by Cunningham and colleagues.[17,39] An ED visit was classified as urgent if the individual indicated any of the above criteria applied; all other visits are classified as nonurgent.

We measure acculturation using a combination of several proxy variables that have been previously used in the literature: whether the individual is a US citizen (yes, no); whether the individual was born in the United States (yes, no); and the amount of time a Hispanic individual has spent in the United States.[40,41] All individuals who were born outside of the United States were asked how long they have been in this country (< 1 y, between 1 and 5 y, between 5 and 10 y, between 10 and 15 y, and ≥ 15 y). We use these measures to create 5 mutually exclusive categories of acculturation for the Hispanic individuals in our sample: (1) noncitizen immigrants who have been here for <5 years; (2) noncitizen immigrants who have been here for between 5 and 10 years; (3) noncitizen immigrants who have been here for 10 or more years; (4) immigrants who are naturalized citizens; and (5) US-born individuals. We create parallel categories for all non-Hispanic white individuals in our sample.

After the Andersen framework, we control for individual-level predisposing, enabling and need factors in our models.[42] Turning first to predisposing characteristics, we include a dichotomous indicator for female sex, a continuous measure of age in years, and a categorical measure of marital status (married or living with a partner; divorced, widowed, or separated; and never married).

To control for enabling characteristics, we include a dummy variable for having usual source of care in the community (USOC); and categorical variables for insurance status (uninsured, publically insured, and any private insurance), education level (less than high school, high school graduate, college graduate, and graduate degree), employment status (unemployed, employed part-time, or employed full-time), and income (< $25,000, between $25,000 and under $55,000, between $55,000 and under $75,000, and over $75,000). Need for health care services is controlled for using a dummy variable for individuals who reported having fair or poor health (vs. good, very good, or excellent). We also include dichotomous indicators for individuals who reported previous diagnosis of any of the following conditions: asthma, diabetes, myocardial infarction, stroke, and heart disease.

Of the 314,526 individuals participating in the NHIS from 2011 to 2103, 146,978 met our age and ethnicity criteria. Of these, 40% were randomly selected to answer questions about their ED use, and 98% of these had complete information on the acculturation variables and other control variables in our model; these individuals comprise our final analytic sample (N = 58,888).

In the first part of our analysis, we compare the unadjusted ED usage rates for Hispanic and non-Hispanic white individuals in our sample. We then repeat this comparison, breaking out the Hispanic individuals by acculturation level. For these 2 analyses, we use a test of proportions to determine statistical differences between groups. Finally, we estimate logistic regression models for each outcome of interest (any ED use, urgent ED use, and nonurgent ED use),

obtaining marginal effects for each model. Our reference group is US-born non-Hispanic white individuals.

All models include year indicators, and were estimated using Stata Version 13 (StataCorp, College Station, TX). Survey weights were applied to obtain national estimates.

RESULTS

Figure 1 displays the unadjusted rates of ED usage among Hispanic and non-Hispanic white individuals. Rates of any ED use and urgent ED use do not differ statistically between these 2 groups. However, Hispanic individuals are less likely to use the ED for a nonurgent visit, compared with non-Hispanic white individuals. Specifically, 7.7% of Hispanic individuals have used the ED for a nonurgent reason in the past year, compared with 8.5% of non-Hispanic white individuals ($P < 0.01$).

Figure 2 presents the unadjusted rate of urgent and nonurgent ED visits, by acculturation level, using US-born non-Hispanic white individuals as a reference group. Unadjusted rates of any ED use (urgent and nonurgent, combined) are available in Figure 1 of the online appendix, Supplemental Digital Content 1, http://links.lww.com/MLR/B118. Overall, higher levels of acculturation are associated with greater ED use for both urgent and nonurgent conditions, and the least acculturated individuals are the least likely to use the ED for any reason. Specifically, only 5.9% and 3.9% of recent Hispanic immigrants (< 5 y in the United States) had an urgent and nonurgent ED visit, respectively, compared with 10.1% ($P < 0.001$) and 8.5% ($P < 0.001$) of US-born non-Hispanic white individuals. Conversely, the most acculturated Hispanic individuals, especially US born, use the ED at similar or greater rates than non-Hispanic whites do.

Descriptive statistics for our analytic sample (Table 1) show a number of differences with respect to enabling and need characteristics. Less than 40% of the least acculturated individuals have a USOC, compared with over 80% in the non-Hispanic white group ($P < 0.001$). Wide variation across groups is also seen for insurance status, educational level, and income. The least acculturated Hispanics are healthier than US-born non-Hispanic whites, whereas more acculturated Hispanics have a lower health status.

Table 2 displays the differences in any past-year ED use by ethnicity and acculturation from the regression model. The full output for the model is available in Table 1 of the online appendix, Supplemental Digital Content 2, http://links.lww.com/MLR/B119. Our findings indicate that Hispanic individuals were less likely than US-born non-Hispanic whites to use the ED in the past year for any reason. Furthermore, these differences were more pronounced for those with lower levels of acculturation. Among the reference group of US-born non-Hispanic white individuals, the intercept indicates that the adjusted percentage of ED use was 19.4% after controlling for model covariates. Among the least acculturated Hispanic group, the adjusted percentage was 14.4% ($P < 0.001$) points lower, for an adjusted rate of 5.0%. The most acculturated Hispanic individuals were only 1.3% points less likely to use the ED compared with US-born non-Hispanic whites, for an adjusted rate of 18%.

Most of the relationship between Hispanic acculturation and ED use is driven by differences in nonurgent visits, as opposed to urgent ED visits. Specifically, the adjusted percentage of the least acculturated Hispanic individuals with a nonurgent visit was 9.8% ($P = 0.000$) points lower than that of US-born non-Hispanic whites. In comparison, US-born Hispanic individuals were only 1.2% ($P < 0.01$) points less likely to have a nonurgent ED visit than their non-Hispanic counterparts.

The estimate for nonurgent ED use among the least acculturated group represents a slight out-of-sample prediction. Notably, in the bivariate analysis before controlling for any confounders, this relationship was negative and highly significant due to the very small percentage of least acculturated individuals who use the ED for nonurgent reasons. In the multivariate analysis, this negative difference was slightly exacerbated after adding measures of socioeconomic resources. More specifically, the least acculturated group is less educated, has lower income, and is more likely to be uninsured or publically insured (vs. privately insured)—and each of these is associated with greater nonurgent ED.

In an alternative specification, we collapsed the 2 least acculturated categories (< 5 and 5–10 y) into 1 group, so that all noncitizens were classified as having been in the United States for either <10 years, or for 10 or more years. In this model, both of the noncitizen groups were the least likely to have a nonurgent ED visit. This is perhaps because the 10-year threshold may not capture meaningful variation in length of stay as it relates to ED use.

In a second specification, we eliminated the separate categories for naturalized citizens, rolling these individuals into their respective "years in US" categories. The positive relationship between acculturation level and ED use remained strong in this model, with the least acculturated individuals the least likely to use the ED. Finally, we reran our original models using US-born Hispanic individuals as our reference category. In this specification, the least acculturated individuals are again the least likely to use the ED, whereas naturalized Hispanic citizens use the ED at rates statistically similar to those of US-born Hispanic individuals.

We also conducted sensitivity analyses to assess whether interview language accounted for any of the observed associations. The NHIS collects language of interview data for only a nonrandom subset of about 40% of respondents.[43] As a sensitivity analysis, however, we did rerun our models on the subset of individuals without missing data on this measure and included a control measure for language spoken (English only, Spanish only, Spanish, and English). Our main results were robust to these sensitivity analyses, suggesting our findings may not be explained by differences in English language proficiency.

DISCUSSION

Using recent, national-level data, we find that Hispanic nonelderly adults overall use the ED for urgent visits at

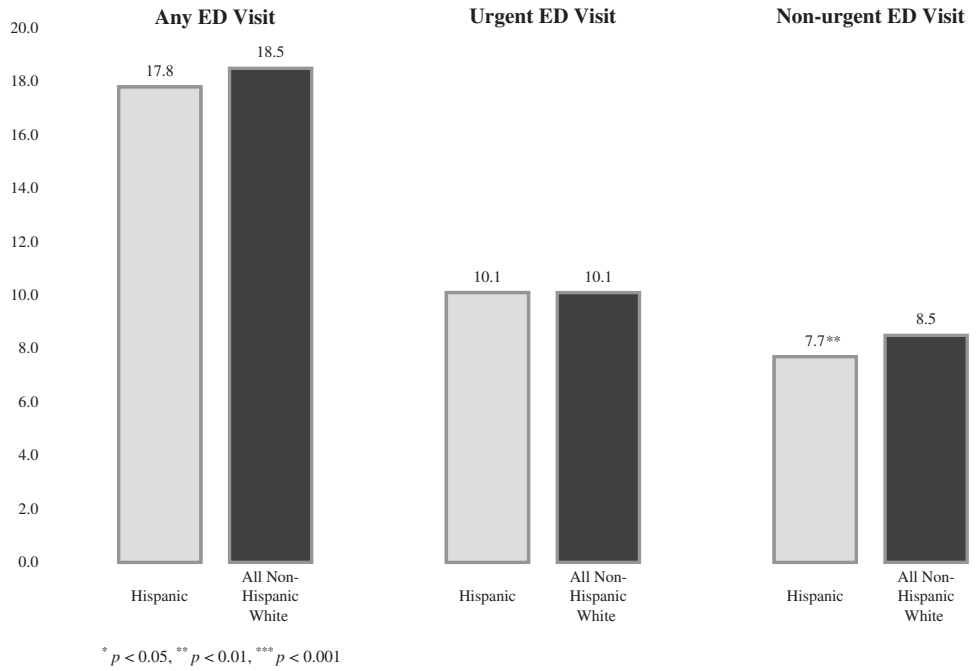

FIGURE 1. Unadjusted percentage of nonelderly adults with past-year emergency department (ED) use, by ethnicity.

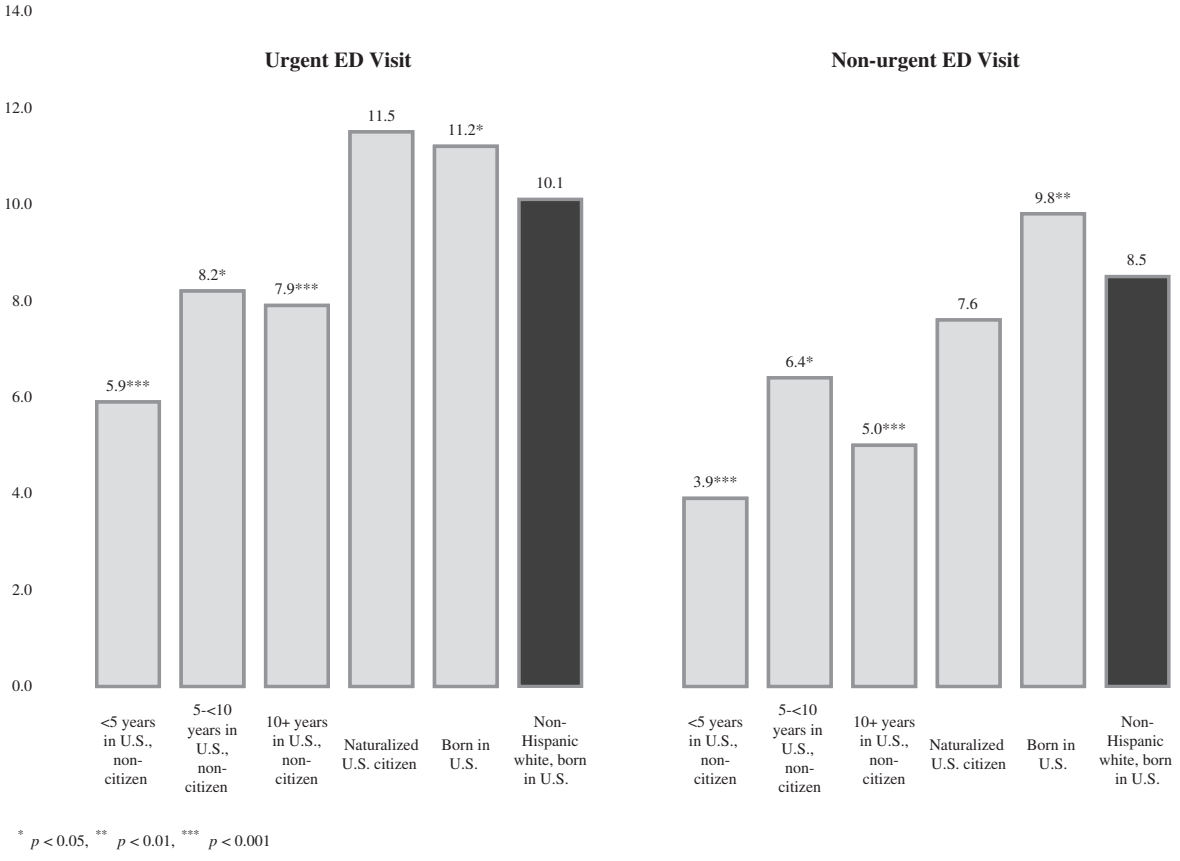

FIGURE 2. Unadjusted percentage of nonelderly adults with past-year emergency department (ED) use, by acculturation level.

TABLE 1. Weighted Summary Statistics for Hispanic Nonelderly Adults and Non-Hispanic White Individuals Born in the United States

	Hispanic					
	In the United States < 5 y, Noncitizen	**In the United States 5 to < 10 y, Noncitizen**	**In the United States 10 or More Years, Noncitizen**	**Born Outside the United States, Naturalized Citizen**	**Born in the United States**	**Non-Hispanic White, Born in the United States**
No. observations	522	1065	4018	3089	6204	41,984
Predisposing						
Female sex (%)	47.6	51.3	48.4	54.9***	52.7***	51.7
Age (mean)	31.5***	33.3***	39.9***	44.9***	35.2***	42.7
Marital status						
Currently married (%)	56.0	63.5***	66.3***	59.5***	45.9***	54.1
Never married (%)	35.8**	26.5	18.2***	17.3***	37.7***	26.3
Divorced or widowed (%)	8.1***	10.0***	15.6***	23.2***	16.4***	19.5
Enabling						
Has USOC (%)	39.9***	49.0***	58.8***	78.1***	75.0***	83.8
Insurance status						
Uninsured (%)	64.4***	74.0***	62.1***	27.9***	25.2***	15.0
Privately insured (%)	21.2***	15.2***	22.1***	50.5***	54.7***	72.4
Publically insured (%)	14.4	10.8	15.8**	21.7***	20.1***	12.6
Educational attainment						
Less than high school (%)	41.5***	52.2***	59.2***	28.3***	15.0***	7.2
High school graduate (%)	34.4***	33.6***	31.5***	41.5**	54.5***	46.1
College graduate (%)	17.8***	12.1***	8.1***	24.0***	25.7***	35.6
Graduate school graduate (%)	6.3**	2.2***	1.2***	6.3***	4.7***	11.2
Annual income (individual)						
Under $25,000 (%)	55.6***	53.8***	45.8***	30.0***	29.7***	22.0
$25,000 to <$55,000 (%)	29.5	33.5**	38.9***	35.5***	31.9***	27.3
$55,000 to <$75,000 (%)	7.0***	6.2***	8.1***	13.0	13.3	13.8
Over $75,000 (%)	7.9***	6.5***	7.1***	21.6***	25.1***	36.8
Employment status						
Unemployed (%)	36.7***	30.4**	31.3***	29.4**	30.7***	27.1
Employed, part time (%)	9.0	10.3	9.6	8.4**	10.8	10.7
Employed, full time (%)	54.3***	59.2**	59.1***	62.1	58.4***	62.2
Need						
Health status						
Reported health fair or poor (%)	10.0	9.6	13.7***	16.2***	12.1***	10.6
Asthma (%)	3.8***	5.2***	4.1***	11.3***	15.3	13.7
Diabetes (%)	2.0**	2.3***	7.4	9.7***	7.3**	6.2
Heart disease (%)	1.0	7.4**	1.2***	2.1	1.7***	2.8
Myocardial infarction (%)	0.6	0.6**	0.8***	1.5	1.3**	2.1
Stroke (%)	0.0	0.5	1.1	1.6	1.5	1.5

Note: Bivariate analyses comparing each Hispanic group to non-Hispanic white individuals born in the United States were conducted using the test of proportions in Stata. Weighted percentages are shown; counts are not weighted. Non-Hispanic white individuals born outside the United States were included in regression analysis, but for brevity, descriptive statistics for these groups are not shown. Income data come from a singly imputed dataset. *P*-values were adjusted using the Bonferroni correction.

**$P < 0.01$.

***$P < 0.001$.

USOC indicates usual source of care in the community.

similar rates to those of non-Hispanic whites, and at lower rates for nonurgent visits. When Hispanic individuals in our sample are broken out into groups by acculturation level, we find a positive relationship between acculturation level and ED use, counter to our hypothesis. After adjusting for patient level characteristics, the association becomes even more prominent, with the least acculturated individuals using the ED at remarkably lower rates than non-Hispanic whites, and the most acculturated individuals using the ED at rates almost identical to non-Hispanic whites.

Several factors may explain the acculturation finding. First, the literature suggests that less acculturated individuals use fewer preventive and primary care services, compared with their more acculturated counterparts.[23–33] When combined with our results, this suggests that less acculturated individuals may demand less health care overall, whereas more acculturated individuals appear to closely mimic their non-Hispanic white counterparts in terms of health services use.

A second explanation for our key findings concerning the association between acculturation and ED use have to do with documentation concerns. Contrary to concerns that immigrants might be straining health care resources, we find that Hispanic noncitizens of all acculturation levels are less likely to demand care in the ED. Recent immigrants in particular appear to avoid use of the ED for nonurgent reasons. For

TABLE 2. Adjusted Percentage Point Difference in the Likelihood of Having Any Past-year ED Use Among Hispanic and Non-Hispanic White Nonelderly Adults

	Percentage Point Difference (SE)		
	Any ED Visit	**Urgent ED Visit**	**Nonurgent ED Visit**
Hispanic, in the United States <5 y, noncitizen	−14.4*** (2.4)	−5.3** (1.8)	−9.8***,† (2.0)
Hispanic, in the United States 5 to <10 y, noncitizen	−7.9*** (1.4)	−2.1* (1.0)	−5.9*** (1.3)
Hispanic, in the United States 10+ y, noncitizen	−10.2*** (0.9)	−3.1*** (0.7)	−7.5 *** (0.7)
Hispanic, naturalized citizen	−2.6** (0.9)	−0.0 (0.7)	−2.7*** (0.7)
Hispanic, born in the United States	−1.3* (0.6)	−0.1 (0.5)	−1.2** (0.4)
Non-Hispanic white, in the United States <5 y, noncitizen	3.1 (3.8)	1.8 (2.8)	1.4 (2.3)
Non-Hispanic white, in the United States 5 to <10 y, noncitizen	−5.6* (2.9)	−6.0* (1.6)	−0.6 (1.9)
Non-Hispanic white, in the United States 10+ y, noncitizen	−0.7 (2.3)	1.0 (1.6)	−2.0 (1.8)
Non-Hispanic white, naturalized citizen	−2.0 (1.3)	−0.5 (0.9)	−1.6 (1.0)
Intercept (non-Hispanic white, born in the United States) (%)	19.4	10.9	8.4
Observations	58,888	58,888	58,888

Note: Results come from weighted logistic regression models that controlled for sex, age, marital status, usual source of care status, insurance status, education level, annual income, employment status, and health status.

*$P < 0.05$.

**$P < 0.01$.

***$P < 0.001$.

†An out-of-sample prediction occurs for nonurgent use by Hispanic noncitizens who have been in the United States for <5 years. This is due to a relatively smaller cell size for this population and outcome.

ED indicates emergency department.

immigrants who are undocumented, fear of discovery and subsequent deportation might play a role in the decision to seek care in the ED.[44] A recent survey of ED patients at 2 California hospitals found that 12% of undocumented Hispanic immigrants expressed a fear of discovery in the ED.[44] By virtue of the NHIS sample design, undocumented individuals are likely underrepresented in the dataset. To the extent that these individuals are represented in the sample, fear of discovery may provide one explanation for the lower rates of ED use by the least acculturated group. Furthermore, the possible underrepresentation of this group in the sample suggests that the association we estimated between acculturation and ED use may, in fact, be conservative.

Other unmeasured variables may also help explain the lower rates of ED use we estimated among the least acculturated. Although we do control for the health status elements available in the NHIS, the difference in care-seeking could be due to additional, unmeasured health needs. We also do not have measures available to assess differences in cultural views regarding how the ED is intended to be used (eg, for true emergencies only, as opposed to for nonurgent care when other care sites are not open or otherwise accessible). As individuals become more acculturated to the United States, they might also become more accustomed to American knowledge and beliefs surrounding the use of ED as a convenient alternative to other care sites.[45]

Our results have several important implications for future research. First, prior research has suggested that individuals who do not have access to primary care tend to seek treatment for nonurgent conditions in the ED more frequently than those who do have a primary care provider. If less acculturated Hispanic individuals are not receiving care in the community though a USOC, it is reasonable to anticipate that they would use the ED more frequently for both nonurgent treatment (ie, as a substitute for primary care) and urgent visits (eg, for acute exacerbations of ambulatory care sensitive conditions). Our results suggest that this is not the case for urgent or nonurgent ED use. Future research might seek to explain whether less acculturated individuals who do not seek care in a USOC or in an ED have a lower evaluated or perceived need for health care, or if they are forgoing needed care. Further, researchers should explore whether forgone care in any setting results in poorer outcomes or greater costs when these individuals eventually come into contact with the system.

Our results further suggest that treating Hispanic individuals as 1 group, without accounting for heterogeneity within the population, may be masking important within-group differences in health services use. Acculturation offers 1 mechanism for elucidating these within-group differences, and future research should continue to explore how this construct affects demand for health services among Hispanic individuals and other minorities.

We note several limitations and caveats to our study. First, only 40% of the adults in the NHIS were asked about their ED use.[46] Although this subsample of adults is randomly selected by the survey designers, we did note some differences in marital status and income between the adults who were asked about their ED use and those who were not. Specifically, those asked about their ED use were less likely to be married (55% vs. 73%) or have an income over $75,000 (31% vs. 41%). In addition, there are limitations related to measuring health care need. First, self-reported diagnoses (eg, diabetes) can be a biased indicator of need, as individuals with inadequate access to health care are less likely to receive a diagnosis from a provider. Second, due to language and other cultural norms, the same value of self-reported health status may be associated with a higher level of actual health status among Spanish-speaking Hispanics than among non-Hispanic whites value [eg, "fair" in English denotes subpar health, but its translation ("regular") in Spanish denotes okay health].[47,48] Since less acculturated individuals

are less likely to have a USOC, and more likely to take the survey in Spanish, the overall direction of bias resulting from these measurement errors is unknown.

A final limitation has to do with the way we proxy for acculturation, a construct that is difficult to measure.[41,49] Single-dimension proxy measures have been criticized as being limited in scope or sensitivity. However, they are often the only measures available in large survey datasets, such as the NHIS, and are frequently used in the literature for that reason. Future studies should explore the relationship between acculturation and ED use by using more comprehensive acculturation scales, such as those described by Thomson and Hoffman-Goetz,[41] should these data become available.

Despite these limitations, this study provides the first known examination of the association between acculturation and ED use, and provides updated, nationally generalizable insight on the relationship between Hispanic ethnicity and ED use. Overall, our results suggest Hispanic individuals in general, and recent immigrants in particular, are not disproportionally contributing to ED use. In fact, the converse appears to be true: recent immigrants demand the least care from the ED, especially for nonurgent conditions.

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