

Is there a Hispanic American “Epidemiologic Paradox” in Late Life? A Closer Look at Chronic Morbidity

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Background

In March 2000, the estimated foreign-born population reached 28.4 million persons or 10.4 percent of the total U.S. population (Lollock 2001). Roughly half of the foreign-born were from Latin America. Many Hispanic immigrants have low levels of education and earnings, and limited English. The rapid growth in the Hispanic immigrant population combined with their low socioeconomic status has aroused public concerns about immigrant health problems and the demand for public assistance such as Medicaid. Immigrant health problems, should they add disproportionately to the burden of disease in the population, have potential negative implications for the nation’s welfare and health insurance programs.

Contrary to public concerns, over the past 30 years, a growing body of evidence indicates that Hispanic immigrants’ health is superior to what one might expect given their socioeconomic disadvantages. Research on infant mortality, mental health, and adult mortality, for example, highlights what has been called an “epidemiological paradox” (Markides and Coreil 1986; Rumbaut 1997). For instance, despite high levels of poverty and low rates of health insurance, Mexican-origin mothers have lower rates of infant mortality than non-Hispanic whites (Rumbaut 1997). In a national study of mortality, foreign-born persons, regardless of race/ethnicity, had a lower risk of death across nearly all ages and all causes of death compared to native-born adults (Rogers, Hummer, and Nam 2000).

Despite the growing interests in Hispanic epidemiological paradox, the evidence is largely circumscribed to “a few and not necessarily the most important health outcomes, notably birth weight, male adult mortality, and perhaps, broad health status at younger age” (Palloni 2007). Little is known about whether the health advantages of Hispanics persisted in later life. Here, we examine 7 self-reported physician diagnosed chronic diseases (hypertension, diabetes, heart disease, cancer, arthritis, chronic lung disease, and stroke) that have public health significant among a nationally representative

sample of people born before 1954 (N=15,894). We also examine several biomarkers including systolic blood pressure, diastolic blood pressure, pulse, total blood cholesterol, HDL cholesterol, blood glucose (HbA1c), and waist circumference (a good predictor of body weight) for the randomly selected one-half of the sample. We also assess the sensitivity of the health differentials to health behaviors and socioeconomic status (SES) to understand the degree to which these factors contribute – or do not contribute – to racial/ethnic/nativity differentials for specific morbid conditions. Evaluating the extent to which racial/ethnic/nativity differentials in chronic morbidity stem from social inequality and health behaviors is important in developing a nuanced understanding of the forces structuring the health of America's minority populations.

What are some of the factors that account for the reported health advantages of the Hispanic immigrants? Some researchers attribute health advantages to cultural factors in origin societies that have protective effects on health (Jasso et al. 2002). For example, first-generation immigrants from Mexico, despite socioeconomic disadvantages, are argued to benefit from strong family ties, better nutrition, and proscriptions for risky behaviors such as smoking, alcohol and/or drug abuse (Landale, Oropesa, and Gorman 2000; Markides and Coreil 1986). This perspective suggests that nativity differentials are relatively insensitive to socioeconomic status differentials across the groups, while immigrants have more beneficial health behaviors. Empirically, the general pattern of results from studies on morbidity and mortality is consistent with the cultural protection perspective (Bower 1998; Rumbaut 1997). Foreign-born Hispanics, for example, were less likely to smoke than their native-born counterparts and they were more likely to have diets higher in fruits and fiber and lower in fats (Lara et al. 2005).

Selectivity is another possible factor contributing to nativity differentials. Some research suggests, for example, that migrants are robust opportunity-seekers, willing to risk leaving a familiar environment for a better life in a foreign country (Jasso et al. 2002; Palloni and Arias 2004)– this has been characterized as the healthy migrant hypothesis. As a self-selecting group, migrants are argued to be healthier and more resilient than stayers in the sending countries as well as the average person in the receiving country (Palloni & Arias 2004; Jasso et al. 2002). Swallen (1997) found that among immigrants who came to the United States as adults, self-selection for good health was maintained

for cancer, heart disease, stroke, and lung disease in old age (70 years old and above). However, she emphasized that positive selection for health was not found for every disease. In addition, the presence of a shared border between the United States and Mexico increases opportunities for the return migration of Mexican immigrants in poor health – the salmon-bias hypothesis. This migration stream has the potential to lower morbidity and mortality rates of immigrants remaining in the United States than would otherwise be the case (Abraido-Lanza et al. 1999).

Although there is much discussion in the literature about the selectivity of immigrants and return migration, there has been little empirical research due to the lack of data with comparable information for both non-migrants in the origin country and for migrants to the United States with the exception of Palloni and Arias's work (2004). Focusing on older Mexican immigrants, they found that return migrants to Mexico reported worse health than Mexican immigrants who remained in the United States. This implies that the reported rates of foreign-born advantage in health for older Mexican immigrants reflect the loss of the least healthy via return migration.

In our study, we assume that race/ethnic/nativity differences in health behaviors and SES are established relatively early in life, and there is substantial evidence to support this assumption (e.g., Bulcroft and Bulcroft 1993; Johnson & Hoffmann 2000; Must et al. 1994; Padilla et al. 2002).

Our focus on chronic morbidity in late life adds to the extant literature on the “epidemiological paradox” in several ways. Most prior research has focused on infants and adult mortality – much less is known about whether Hispanic Americans' health advantage is also evident in other important health outcomes. Second, if there is an “epidemiological paradox” in certain health outcomes, we examine whether it is sensitive to SES and health behaviors controls. Third, we examine both self-reported physician diagnosed chronic diseases and biomarkers.

Based on previous research and literature, we expect that 1) foreign-born Hispanic Americans have equal or lower prevalence of chronic diseases than native-born whites, net of demographic controls; 2) with health behavior controls, foreign-born Hispanic Americans' health advantage to native-born whites in chronic conditions will be reduced; 3) with SES controls, foreign-born persons' health advantage to native-born whites (and

their native-born coethnics) in chronic conditions will persist. We also expect that results from biomarker data are largely consistent with the findings from self-reported physician diagnosed chronic diseases.

Data and Methods

Data

We investigated race/ethnic/nativity differentials in morbidity prevalence using the 2006 wave of the Health and Retirement Study (HRS). The HRS is a nationally representative sample of noninstitutionalized born before 1954 (N=15,894). The 2006 HRS is well suited for a study of Hispanics immigrants and native-born Hispanic Americans in chronic health problems in late life because of 1) the baseline oversample of Hispanics; 2) provides information on major domains of physical health that have public health significance; 3) contains information about lifetime socioeconomic status and health behaviors, which are key mechanisms thought to account for racial/ethnic/nativity differentials in health; 4) Starting in 2006, HRS began to collect biomarkers from half of the sampled adults. So we can look at both self-reported physician-diagnosed diseases and the biomarkers. We restrict our sample to age-eligible native-born and foreign-born Hispanic Americans, native-born non-Hispanic whites and blacks.

Measures

Dependent variables:

We examine the prevalence of seven major chronic conditions: heart disease, stroke, diabetes, high blood pressure, cancer, chronic lung disease, and arthritis. The chronic classification rests on the respondents' answers to the question whether a doctor has ever told them that they have a particular condition. For heart disease, the respondents were asked whether the doctor told them that they had a heart attack, coronary heart disease, angina, congestive heart failure, or other heart problems.

A plausible hypothesis, based on measuring medical conditions via doctor diagnosis, is that groups with a lower level of health care use (e.g., groups lower in SES) are less likely to report a condition when the condition is measured as "has the doctor ever told you...." Scientific evidence on this point is limited, but it suggests that the

race/ethnic differences observed in the self-reported physical diagnosis data are generally consistent with physical examination data. Our analysis on biomarkers will give us additional insights into the validity and reliability of race/ethnic/nativity differentials in self-reported data. Following Crimmins et al. (2007)'s work on Hispanic paradox in biological risk profiles, we classified the individuals into clinically high risk group vs. clinically low risk group of a particular health outcome (i.e., systolic blood pressure, diastolic blood pressure, pulse, total blood cholesterol, HDL cholesterol, blood glucose (HbA1c), and waist circumference). The classification was based on results from physical measurements and laboratory tests without consideration of prescription drug use. As Crimmins et al. suggested that although "drugs can be used to control hypertension and cholesterol levels, many people who take them do not achieve levels below the cutoff of what is considered high" (p. 1306).

Independent variables:

We measure race/ethnicity/nativity as a categorical variable based on place of birth and combination code it with self-reported race and Hispanic origin: native-born non-Hispanic whites (thereafter Whites), native-born non-Hispanic blacks (thereafter Blacks), native-born Hispanic Americans, and foreign-born Hispanic Americans. We use Whites as the reference category. In addition, we also examine nativity differentials within Hispanic Americans using native-born Hispanics as a reference category.

We investigate two major mechanisms posited by past research that may account for racial/ethnic/nativity differentials in health: SES and health behaviors. SES is multifactorial and is measured using education (years of completed schooling), total household income in the year prior to the survey, and net asset wealth. Education typically is completed prior to the onset of chronic health problems and is thus an important SES measure to probe the extent to which SES potentially accounts for race/ethnic/nativity health differentials. Asset wealth, although not immutable to health problems, is less sensitive than income to health changes. Household income and wealth are adjusted because of their skewed distributions by adding constants to all households to eliminate zero or negative income and wealth, and then the values are logged.

We control for health insurance coverage to compensate for nativity differences in the access to health care, because previous research shows that first-generation immigrants have lower level of health insurance coverage (NRC, 2002), which may lead to the under-reporting of conditions and a bias in favor of the healthy migrant hypothesis (Angel and Angel 1996). Respondents are classified as uninsured when they are covered neither by federal government health insurance programs nor by private insurance programs.

We examine four health-related “behaviors” that may account for the reported health advantages of immigrants: smoking status, alcohol consumption, exercise, and obesity. Smoking status is measured as a categorical variable including *current smokers* and *former smokers* with people who have never smoked as the reference group. Alcohol consumption is measured as a dummy variable with teetotalers as the reference group. *Exercise* is measured as a dummy variable including *exercise frequently* (3 times/week) with those who exercise occasionally or never exercise as a reference group. Obesity ((BMI \geq 30) -- weight divided by the square of height -- indirectly reflects diet and energy expenditure as well as genetic constitution.

Control variables include age, gender, and marital status. *Age* is measured as a continuous variable. *Gender* (male=1) is a dummy variable. Marital Status (married=1) is a dummy variable.

Methods

We estimate nested logistic regression models to identify the association between race/ethnicity/nativity and the self-reported morbidity outcomes. Each chronic condition is treated as an independent outcome to evaluate its overall association with nativity. We first estimate a model including race/ethnicity/nativity, controlling for basic demographic variables. Then, the measures of health behaviors and SES are entered respectively to assess whether the main effect of race/ethnicity/nativity is reduced or becomes stronger. The HRS was based on a complex sample design that involved stratification and oversamples of blacks, Hispanics, and residents of Florida. Consequently, we estimate our models using Stata, which adjusts standard errors for

complex sampling design. All models are based on weighted data¹. For biomarker data, we estimated the same sets of models for each health outcome.

Preliminary results

We found substantial differences in the characteristics of foreign-born Hispanic Americans, native-born Hispanic Americans, Blacks and Whites. The foreign-born Hispanic Americans have much lower SES compared to native borns – the lowest educational attainment, household income, and health insurance coverage of any of the groups. Race/ethnic/nativity differences in health behaviors are a mixed bag with foreign-born Hispanic Americans less likely to exercise regularly compared to Whites but at the same time having lower prevalence of smoking and drinking.

Is there a Hispanic American “epidemiologic paradox” in late life in terms of chronic morbidity? If you look at the self-reported data, for Hispanic immigrants, the answer is yes except for diabetes. Controlling for demographic variables, foreign-born Hispanic Americans, with the exception of diabetes, report similar rates of high blood pressure and stroke and significantly **lower** rates of heart disease, cancer, arthritis, and chronic lung disease compared to Whites. For native-born Hispanics, they in general report somewhat worse health than foreign-born Hispanic Americans with higher levels of hypertension, diabetes, cancer, stroke and arthritis. However, compared to Whites, the native-born Hispanic Americans still show similar or lower prevalence of most chronic conditions with the exception of diabetes and hypertension. Overall, though, older Hispanic’ reported health is surprisingly good (with the exception of diabetes) despite their substantial SES disadvantages. The health advantages are robust when socioeconomic conditions and health behaviors are controlled. For diabetes, the health disadvantage disappeared for foreign-born Hispanics when SES and health behaviors are controlled, but the disadvantage did not disappear for native-born Hispanics.

²We used personal-level analysis weight in the analysis, which is the product of the Household Analysis Weight, the Respondent Selection Weight and the Person-level Poststratification Weight. It compensates for unequal selection probabilities and also adjusts for geographic and racial differences in response rates.

Turning to biomarker data, we found similar patterns. Controlling for demographic variables, with the exception of blood glucose, the odds of having biological risk factors (systolic blood pressure, diastolic blood pressure, pulse, total blood cholesterol, HDL cholesterol) at high-risk levels were not statistically significant between foreign-born Hispanic Americans and Whites. However, it is worth noting that unlike the self-reported data, the foreign-born Hispanic Americans did not show superior health than Whites in any of the biological risk profiles, controlling for demographic factors.

We also plan to examine the heterogeneity among Hispanic immigrants by looking at the relationships between citizenship, duration of stay in the US, and the language proficiency and chronic morbidity indexed both self-reported data and biomarkers.

Despite the study's limitations (cross-sectional data), we think that our work will contribute significantly to the literature on Hispanic health paradox in late life.

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