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Revisiting the Hispanic mortality advantage in the United States: The role of smoking

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ABSTRACT

More than three decades of health disparities research in the United States has consistently found lower adult mortality risks among Hispanics than their non-Hispanic white counterparts, despite lower socioeconomic status among Hispanics. Explanations for the "Hispanic Paradox" include selective migration and cultural factors, though neither has received convincing support. This paper uses a large nationally representative survey of health and smoking behavior to examine whether smoking can explain life expectancy advantage of Hispanics over US-born non-Hispanics whites, with special attention to individuals of Mexican origin. It tests the selective migration hypothesis using data on smoking among Mexico-to-US migrants in Mexico and the United States. Both US-born and foreign-born Mexican-Americans exhibit a life expectancy advantage vis-à-vis whites. All other Hispanics only show a longevity advantage among the foreign-born, while those born in the United States are disadvantaged relative to whites. Smoking-attributable mortality explains the majority of the advantage for Mexican-Americans, with more than 60% of the gap deriving from lower rates of smoking among Mexican-Americans. There is no evidence of selective migration with respect to smoking; Mexicans who migrate to the US smoke at similar rates to Mexicans who remain in Mexico, with both groups smoking substantially less than non-Hispanic whites in the US. The results suggest that more research is needed to effectively explain the low burden of smoking among Mexican-Americans in the United States.

Introduction

More than three decades of health disparities research in the United States has consistently found lower adult mortality risks among Hispanics than among their non-Hispanic white counterparts (Elo, Turra, Kestenbaum, & Ferguson, 2004; Hummer, Rogers, Amir, Forbes, & Frisbie, 2000; Markides & Coreil, 1986). This occurs despite lower average education and income and higher rates of poverty among Hispanics, which gives rise to the term "Hispanic Paradox" (Markides & Eschbach, 2005; Palloni & Arias, 2004). The phenomenon has been identified and thoroughly described using nationally representative surveys, small-sample cohort studies, and vital statistics. The Hispanic advantage in life expectancy is non-trivial, amounting to 2.5 years at birth according to recently-released life tables by Hispanic origin produced by the National Center for Health Statistics (Arias, 2010). Corresponding advantages are observed for many chronic health conditions including cardiovascular disease, cancers, and chronic respiratory diseases. The topic has received a large amount of attention in the literature, has been investigated extensively, and a number of possible hypotheses have been offered. However, despite its ubiquity, the Hispanic paradox has previously eluded a convincing explanation.

Examining Hispanics as a homogeneous group with a singular mortality experience is problematic. The US Hispanic population has origins in many different countries with varied social and economic circumstances and health profiles. The heterogeneity of mortality experiences among subgroups within the Hispanic population is as large as that between Hispanics and other race/ethnic groups in the US (Hummer et al., 2000), and recent research contends that the Hispanic paradox is not a feature of all Hispanics, only of certain subgroups. In addition to being the largest Hispanic subgroup, the Mexican population also shows perhaps the most consistent mortality advantage relative to non-Hispanic whites (Abraido-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999; Hummer et al., 2000; Sorlie, Backlund, Johnson, & Rogot, 1993). According to the 2010 Census, there were more than 30 million individuals of Mexican descent in the US, making up more than 10% of the total population and nearly two-thirds of all Hispanics (US Census Bureau, 2011). Indeed, the "Hispanic paradox" is largely a "Mexican paradox", as Palloni and Arias (2004) contend that the advantage exists primarily

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among Mexicans. Evidence for the advantage among the next largest subgroups, Puerto Ricans and Cubans, is more mixed (Abraido-Lanza et al., 1999; Sorlie et al., 1993). Puerto Ricans, especially those born in the 50 states, differ from other Hispanic subgroups in that they are often disadvantaged relative to whites with respect to mortality (Hummer et al., 2000; Markides & Eschbach, 2005). Related to the Hispanic paradox is the immigrant paradox, the tendency for foreign-born populations to outlive the native-born despite lower socioeconomic status. A similar pattern is observed within Hispanic populations, and some research asserts that the Hispanic paradox exists only for the foreign-born (Palloni & Morenoff, 2001). Although other studies find an advantage for US-born Hispanics, it is at best greatly diminished compared with that of foreign-born Hispanics (Singh & Siahpush, 2002). Since nearly 60% of adult Hispanics are foreign-born, it is inappropriate to consider Hispanic immigrants and US-born Hispanics in combination, and explaining the Hispanic paradox necessarily requires attention to the role of nativity.

This paper uses data from a nationally representative survey to examine the contribution of cigarette smoking to the adult life expectancy advantage of Hispanics relative to US-born non-Hispanic whites. The focus of the paper is the experience of foreign- and US-born Mexican-Americans. In addition, the paper combines data from national surveys in Mexico and the United States to test whether the findings with respect to smoking might reflect a prominent explanation for the paradox: the *selective migration hypothesis*. Individuals who move from their origin country to the United States are likely to be in better health than those who remain in the origin country on a number of dimensions that are relevant to the Hispanic paradox (Abraido-Lanza et al., 1999).

Evidence for the Hispanic mortality advantage

The major sources of data on Hispanic mortality are US vital statistics and nationally representative surveys. Studies using vital statistics suffer from issues related to differences in the identification of Hispanic origin on death certificates and the census, and have the potential to underestimate Hispanic mortality (Arias, Schauman, Eschbach, Sorlie, & Backlund, 2008). Representative surveys with prospective mortality follow-up partially solve this issue, since origin is self-reported and respondents are matched to records in the National Death Index. Surveys also allow the researcher to examine the Hispanic advantage across a variety of other covariates and to examine the mortality of multiple Hispanic subgroups (Palloni & Arias, 2004). Although evidence for the Hispanic paradox is abundant, empirical evidence for the most prominent explanations is somewhat unconvincing. The two broad hypotheses for explaining the paradox are *selective migration* and *culture*.

Selective migration hypothesis

Since most adult Hispanics in the United States are foreign born, any examination of the Hispanic mortality experience must consider to what extent immigrants are a select group of their origin country populations. If migrants differ significantly from non-migrants, our estimates of the mortality of the foreign-born in the US may be biased. Selective migration can refer to both in-migration of healthy individuals (healthy migrant effect) and out-migration of unhealthy individuals (salmon bias). The former concerns the greater human capital and health resources that may be necessary to undertake an international move, such that we observe a highly select group of individuals from sending countries, potentially offsetting the negative effects of their poor socioeconomic profile (Abraido-Lanza et al., 1999). The latter suggests that foreign-born individuals in the United States may return to their countries of origin when they become ill, leaving a healthier subset in the US (Palloni & Ewbank, 2004).

The specific mechanisms through which selection operates are kept relatively vague in conceptual formulations of the hypothesis (Palloni & Ewbank, 2004). Migrants may be selected on aspects of underlying health or robustness, which are generally difficult to measure, or on social characteristics that impact health, such as educational attainment or wealth. Migrant selection may also operate through health-related behaviors if characteristics such as poor diet, low physical activity, or cigarette smoking present greater barriers to migration owing in part to the negative health effects of the behaviors (Buttenheim, Goldman, Pebley, Wong, & Chung, 2010). In general, direct investigation of health selection with respect to immigration from Mexico to the US is lacking. The most comprehensive recent study was by Rubalcava, Teruel, Thomas, and Goldman (2008) who examined differences between Mexican immigrants to the United States and Mexicans who remained in Mexico on several measures of health, and found overall weak evidence for health-selective migration. No studies have considered migrant selection on health behaviors.

Cultural hypothesis

As with their mortality experience, it may be inappropriate to classify Hispanics as having a singular consistent culture or assume that attitudes and practices are similar between or within all Hispanic subgroups. Heterogeneity in the cultural practices and attitudes among Hispanic subgroups is certainly large and attributing health outcomes of the Hispanic population to cultural characteristics may ignore important variation (Rodriguez, 1995). Still, certain aspects of shared culture may promote better health and prevent mortality among specific Hispanic subgroups (Marin & Marin, 1991). Indeed, Mexican-Americans living in enclaves with a high proportion of Mexican immigrants appear to retain Mexican cultural traditions more effectively (Eschbach, Ostir, Patel, Markides, & Goodwin, 2004). These populations may benefit from strong familial and friendship networks that provide a needed source of social support. The positive effects of social support may be manifested in a number of ways including the tendency to engage in healthier behaviors.

Cigarette smoking and the Hispanic paradox

Cigarette smoking may play a key role in the Hispanic mortality advantage for two reasons. First, cigarette smoking has a strong negative impact on individual mortality and is the single greatest cause of premature death in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004). Smoking is responsible for more than 20% of adult deaths among Americans (Preston, Glei, & Wilmoth, 2010). Second, survey data indicate that Hispanics in the US have a relatively low prevalence of the behavior. Hispanics who do smoke are also less likely to do so every day, smoke fewer cigarettes per day, and have smoked for fewer years on average than non-Hispanic whites (Siahpush, Singh, Jones, & Timsina, 2010). Non-Hispanic whites are more likely than Hispanics to smoke and are likely to have higher amounts of accumulated physiological damage from a history of heavy smoking (Bethel & Schenker, 2005). As this evidence has grown in recent years, several studies have considered the relevance of smoking to the Hispanic paradox (Perez-Stable et al., 2001). The Hispanic advantage is largest for causes of death that are strongly associated with smoking including lung cancers, respiratory diseases, and ischemic heart disease (Singh & Siahpush, 2002). Blue and Fenelon (2011) were the first to directly examine the contribution of smoking to the Hispanic paradox. They used an indirect method to estimate