

Health Trajectories and Their Determinants among the Children of Immigrants

Margot I. Jackson
Princeton University
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INTRODUCTION

This project examines trajectories of health behaviors and health conditions, particularly those that are associated with obesity and its related diseases, among the children of immigrants to the United States. Socially patterned health trajectories are well-documented among adult immigrants, but less is known about their children, many of whom are immigrants themselves. This raises the question of how the newest members of this country fare with respect to their health and development, and what explains observed patterns. The behaviors and diseases associated with obesity provide a useful case study, given their high prevalence among the U.S. population, even at early ages. I use data from the National Longitudinal Study of Adolescent Health (Add Health) to study several questions. First, are the rapid decreases in healthy behaviors and increases in rates of obesity seen among foreign-born adults with increasing time in the U.S. also observed among the younger population? Or does the epidemiologic advantage that immigrants' children exhibit at birth over their peers persist into adolescence and young adulthood? Secondly, what are the cultural and age-related factors associated with the observed trends? Given strong associations between early-life health and eventual socioeconomic success and later-life health, there is a clear need to understand these questions among the children of U.S. immigrants.

BACKGROUND

Race and ethnicity are strongly associated with health in the United States. Although significant disparities exist between native-born blacks and whites with respect to incidence and prevalence of disease and health care quality, the trends are not as simple among Latinos, the

other largest U.S. racial/ethnic group. Despite their greater likelihood of social and economic disadvantage, Latino adults exhibit what has been called a “mortality paradox;” that is, they experience lower rates of many diseases than non-Latino whites, including heart disease, stroke, and many cancers, as well as lower rates of infant mortality, activity limitations from chronic conditions, and higher life expectancy (Albraido-Lanza et al., 1999; Lansdale et al., 2000; National Center for Health Statistics, 2004). These trends vary across Latino subgroups.

Despite any advantage upon arrival, the health of Latino adults declines as time in the U.S. increases: significant variation exists by generation and years since arrival (e.g., Antecol and Bedard, 2006). The explanations for a Latino paradox and its reversal over time are unclear, as is the extent to whether and why it applies to children and adolescents. Among adults, it is difficult to separate the cultural and selection determinants of changes in health over time. With respect to cultural changes related to obesity, immigrants may adapt their dietary and exercise patterns upon arrival to the United States (Abraido-Lanza et al, 1999; Franzini et al, 2001). It is also possible that those who migrate to the U.S. represent the healthiest adults, especially among socioeconomically disadvantaged populations (Goldman et al., 2007), and that those who become ill are more likely to return to their native country, making those who remain positively selected on health status. In this framework, some degree of “regression to the mean” is likely over time, as very healthy immigrants’ behaviors and levels of health converge to those of the native population (Jasso et al, 2004). Disentangling the effects of cultural and selection factors is therefore a challenging task.

Studying younger populations contributes to our understanding of immigration and health in two ways. First, examining adolescent health over time sheds light on how a large segment of the U.S. population is faring, an important contribution given the dearth of knowledge in this area. Whether or not their parents are positively selected on health, it is important to understand the degree to which adolescents’ health declines toward or surpasses levels among their peers with native-born parents, as well as the determinants of any change. Understanding the

determinants of adolescents' health trajectories also sheds light on the family-level changes that occur with immigration. There is some evidence that adolescents who experience low levels of cultural adaptation are less likely to smoke and engage in risky sexual behaviors, and more likely to engage in other healthy behaviors (Aneshensel et al., 1990; Chen et al., 1999; Ebin et al., 2001). Among younger children, Kimbro et al. (2007) find that Hispanic children begin to exhibit obesity at higher rates as early as age three, and demonstrate the early origins of the established high prevalence of obesity among Hispanic children (U.S. DHHS, 2000). Popkin and Udry (1998) examine the generational component of this pattern, showing a higher prevalence of obesity among adolescents who are second generation and beyond. Little is known, however, about how these trends evolve over the life course among the same adolescents, or what explains existing trends. Balistreri and Van Hook (2007) find that nativity status could play an important role in determining young people's health trajectories, suggesting the need for a longitudinal examination of trends and their cultural and demographic explanations.

I consider two factors in particular that may influence the progression of adolescents' behaviors and health as they relate to obesity. First, as has been observed among adults (Franzini et al., 2001; Morales et al, 2002), adolescents and their families may alter their diets and levels of physical activity over time by replacing fiber-rich and unprocessed foods with refined and processed foods. Physical activity may also decline if adolescents attend schools with little structured activity, or live in neighborhoods that are unsafe or lack facilities (Winkleby and Cubbin, 2004). Changes in these behaviors may occur at both the family and adolescent levels and could be brought about by a number of factors, including access to high-quality foods and contextual changes related to shifts in parents' kin and non-kin networks. Regardless of the reason, negative changes in dietary and exercise patterns could partially explain increases in obesity over time. Secondly, among adolescents who are immigrants themselves, the age of their arrival to the United States could influence the extent to which they adopt particular behaviors and develop signs of obesity and poor health. The length of exposure in both the U.S. and one's

native country to particular behavioral and health influences could be an important factor in explaining differences in adolescents' trajectories. There may be critical and sensitive ages at which exposure to a new health environment is particularly influential (Ben-Schlomo and Kuh, 2002).

DATA AND METHODS

Data from the National Longitudinal Study of Adolescent Health (Add Health), a longitudinal study of adolescents' health behaviors and their determinants, are used in this investigation of the health changes associated with immigration. The first wave of this school-based sample of adolescents was conducted in 1994-1995, when students were in grades 7-12. Information was gathered from schools, adolescents and parents. Data collection has continued and has resulted in, to date, two subsequent waves that occurred two and six years later. The large Latino and foreign-born sample make the data well-suited to studying the relationship between immigration and adolescent health over time. In addition, there is detailed information across all three waves about adolescents' diet/exercise patterns, height/weight, health conditions (in wave 3), family relationships and social background, allowing examination of the relationship between behavioral changes and changes in health.

The analysis addresses several questions. Some analyses include the total sample of adolescents, including those whose parents are immigrants (over 3,000), and some include only adolescents who are immigrants themselves (over 1,000). First, among the total sample of adolescents, what are the trajectories of dietary/exercise patterns and obesity? Do they remain stable, improve or decline over time? Do these patterns differ across racial/ethnic and nativity groups: that is, how does any "paradox" at birth (measured with birth weight) change over time? Secondly, what are the determinants of these trajectories and of obesity-related diseases (diabetes, asthma, high cholesterol) in young adulthood (wave 3)? Using growth curve models and multivariate regression models, I predict behavioral and obesity trajectories, and wave-three

health status, as a function of age, race/ethnicity and social background. Among adolescents who are immigrants themselves, I consider the role of their age of arrival to the U.S. to clarify the health consequences of the timing of immigration. With enough data points (three or more), growth curve models, a type of multilevel model, provide an effective method of modeling the extent to which individuals' trajectories vary around the mean, and the extent to which that variation can be predicted by particular covariates (George and Lynch, 2003).

Finally, in an attempt to better understand the role of cultural and behavioral changes in generating any declines in health, I use both growth curve models and models with individual fixed effects to examine the extent to which changes in behaviors determine changes in obesity. The fixed effects models test the acculturation hypothesis in a way that helps to remove any confounding influence of non-behavioral family and child-specific factors that are correlated with both behaviors and obesity and do not change over time.

CONCLUSIONS

I use longitudinal data on a diverse sample of adolescents to study the behavioral and health-related changes that occur with immigration. Very little is known about how the children of immigrants fare over time with respect to health, and how the timing of immigration and changes that occur at both the adolescent and family levels explain trends over time. Given the substantial size of this population and the demonstrated linkages between health during childhood and adolescence and later-life socioeconomic success, gaining this understanding is important from both research and policy perspectives.

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