Why Do Mexican American Children Outgrow the Epidemiologic Paradox?

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Short abstract

Mexican Americans have a weight distribution that categorizes them as healthy at birth but unhealthy only a few years later, leading scholars to question whether these children outgrow the epidemiologic paradox of good health despite low socioeconomic status. We address this question by considering whether factors established at birth contribute to Mexican Americans' greater risk of overweight in early childhood relative to children in other racial and ethnic groups. First, we analyze the relationship between birthweight and later weight to see whether Mexican American child weight is actually an artifact of their favorable birthweight distribution. Second, we analyze prenatal maternal characteristics to determine their association with child overweight independent of birthweight.

Extended abstract

Introduction. The epidemiologic paradox of relatively good health and mortality outcomes among some groups of Hispanics, despite those groups' relatively low levels of education, high rates of poverty, and limited access to health care, is well established (Hummer, Powers, Pullum, Gossman, and Frisbie, 2007; Markides and Coreil, 1986). At birth, Hispanic infants have similar rates of low birthweight to non-Hispanic white infants and lower rates of low birthweight than non-Hispanic black infants (Fuentes-Afflick, Hessol, and Pérez-Stable, 1999; Martin et al., 2009). A small number of studies have questioned whether this health advantage at birth erodes over time, and the answers vary according to the population observed and the measures of childhood health used (Guendelman, English, and Chavez, 1995; Padilla, Boardman, Hummer, and Espitia, 2002; Padilla, Hamilton, and Hummer, 2009).

When overweight is used to measure health in childhood, however, the pattern is clear. Even as early as age 3, Hispanic children are at a significantly higher risk of overweight and obesity than children in other racial and ethnic groups (Kimbro, Brooks-Gunn, and McLanahan, 2007; Ogden, Flegal, Carroll, and Johnson, 2002; Whitaker and Orzol, 2006). This relatively

high risk of overweight in early childhood puts Mexican American children at a greater risk of associated health problems, including diabetes, cardiovascular disease, and iron deficiency (Fagot-Campagna, Saadinem, Flegal, and Beckles, 2000; Nead, Halterman, Kaczorowski, Auinger, and Weitzman, 2004; Winkelby, Robinson, Sundquist, and Kraemer, 1999). The fact that Hispanic children are deemed healthy at birth based on their weight but unhealthy in early childhood by the same measure led Elena Fuentes-Afflick (2006: 657) to ask, do these "children outgrow the epidemiologic paradox?" This paper answers this question for Mexican Americans, the largest Hispanic sub-group in the United States and the group for which the epidemiologic paradox at birth has been most clearly defined (Hummer et al., 2007).

Birthweight, child weight, and a health crossover. We begin by assessing whether Mexican American children's weight is actually an artifact of their favorable birthweight distribution. Birthweight is linearly, positively related to later weight; in other words, heavier infants tend to be heavier later in life (Oken and Gillman, 2002). Therefore, it is possible that Mexican American children do not outgrow the paradox but are instead on course to be overweight in childhood because of their weight distribution at birth. If that is the case, then it would imply a different interpretation of the early lifecourse trajectory of Mexican American health: the health advantage at birth does not erode over time due to some set of risk factors, but the health advantage at birth itself presents a disadvantage that evolves later in life. No study has directly investigated the relationship between birthweight and later weight separately for Mexican American children. This clarification of whether Mexican American children do indeed outgrow the paradox is the first step of our analysis.

Our preliminary analysis rejects this first explanation on two bases. First, Mexican American children are heavier than other children across the entire birthweight distribution.

Second, the association between birthweight and later weight is not positive for Mexican American children. This means that some set of risk factors results in a crossover in the health trajectory of Mexican American children from healthy weight status at birth to unhealthy weight status only a few years later. As overweight is a direct outcome of an uneven balance between energy consumed and energy expended, obvious risk factors include early childhood diet and activity levels. Yet prior studies examining racial and ethnic differences in child overweight have been unable to account for the higher risk of overweight among Hispanic children even when adjusting for racial and ethnic differences in diet and child activities (Baker, Balistreri, and Van Hook, 2009; Kimbro et al., 2007).

It is possible that maternal prenatal characteristics that are associated with birthweight are also related to childhood overweight independent of the mediating role of birthweight. For example, Salsberry and Reagan (2005) find that both smoking during pregnancy and prepregnancy weight are associated with a childhood overweight net of birthweight. Research on the prenatal origins of obesity finds strong support for the role of other prenatal factors including pregnancy weight gain and gestational diabetes (Whitaker and Dietz, 1998). As such, we investigate a rich set of prenatal maternal factors that may be related to child overweight, including pre-pregnancy overweight, weight gain during pregnancy, gestational diabetes, and pregnancy smoking.

Data. We use data from the Fragile Families and Child Wellbeing Study (FFCSW), a birth cohort study of children born to predominantly unmarried mothers in large U.S. cities between 1998 and 2000. The data include clinical measures of prenatal maternal characteristics, including prepregnancy body mass index, pregnancy weight gain, gestational diabetes, and pregnancy smoking taken from medical records that were supplemented to the FFCSW. Child

height and weight data were collected at in-home interviews at the three and five year follow up interviews. The FFCSW includes a relatively large sample of Mexican American mothers, with nearly equal proportions of mothers born in Mexico and in the United States, allowing for an analysis of generational differences within the Mexican American population, which is important because both the epidemiologic paradox and child overweight differ according to parents' immigrant status (Hummer et al., 2007; Baker et al., 2009).

In the first step of the analyses, we investigate the bivariate relationship between infant birthweight and child body mass index graphically and with linear regressions for the entire sample and separately by race/ethnicity. An interaction effect between Mexican American ethnicity and birthweight is estimated to determine whether there is a significant difference in the relationship between birthweight and later weight for that group. In the second step of the analyses, we estimate the odds of child overweight, defined as above 85 percent of the gender- and age-specific body mass index distribution, for Mexican American children relative to non-Hispanic white and non-Hispanic black children adjusting for prenatal characteristics as well as a number of socioeconomic and demographic controls and relevant postnatal characteristics.

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