

Identifying Factors That Contribute to High Rates of Obesity in Mexican-Origin Children

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Alarming overall high rates of the body mass index (BMI) were found in our BMI measurements of 108 mothers and children in the Mexican-origin population. Baseline data from Mexican-origin mothers and children in Firebaugh and San Joaquin, CA indicate several factors that contribute to the high rate of obesity in this population. One factor that should be further explored is the potential impact of high food insecurity on nutritional decision-making in these families.

During the last 30 years, the rate of obesity among adults in the United States has increased at unprecedented rates. However, the rate of growth of obesity is not equally distributed across populations and age groups, suggesting that there may be different factors underlying the behaviors associated with this growing health problem.

Moreover, another alarming and emerging problem is that childhood obesity rates are also increasing. In 2009–2010, approximately one in six U.S. children and adolescents were obese and the prevalence of obesity disproportionately affected Latino and African American children. For example, over one in five (21.2%) of Latino children and adolescents and almost one and four (24.3%) non-Latino black children and adolescents were obese compared to less than one in seven white non-Latino children and adolescents. These differences across groups suggest a need to better define

the underlying factors of childhood obesity across groups to develop strategic and sustainable interventions.

California, with the largest Mexican-origin population in the United States, is uniquely situated in providing researchers an ideal environment to identify risk factors influencing the high rates of childhood obesity in this population, as well as testing innovative interventions. The unique partnership between UC faculty and UC Cooperative Extension allows for building on existing partnerships in rural communities to expand and enhance nutritional educational information to many isolated towns with this population. Both these factors provided an important comparative advantage that led eventually to U.S. Department of Agriculture (USDA) funding a \$4.8 million, 5-year study in 2011, focusing on preventing the rate of growth of childhood obesity among Mexican-origin children.

Situated in California's Central Valley in the rural agricultural towns of Firebaugh and San Joaquin, Niños Sanos, Familia Sana (Healthy Children, Healthy Family), is a multifaceted intervention study funded by the USDA National Institute of Food and Agriculture. The project provides a unique opportunity to test the impact of fruit and vegetable vouchers on consumption patterns on childhood obesity rates of low-income Mexican-origin families with children between the ages of 3–8 years of age. It also includes nutrition and physical education interventions targeting these families and their children.

The preliminary baseline data from this study gives not only a profile of this population, but also a glimpse of the

complexity of the risk factors associated with high rates of childhood obesity within the Mexican-origin population.

Baseline Data

The study design for this experiment can be described as quasi-experimental, with two communities that have very similar demographic and occupational characteristics. In addition, the target communities were selected as they were situated in the nation's poorest Congressional District, CD 20, according to the U.S. Human Development index.

We were also interested in not only targeting a specific ethnic group, i.e., Mexican-origin, but also one where there was no active and ongoing obesity prevention program. Figure 1 below provides the relative proximity of San Joaquin and Firebaugh within the Central Valley.

During our baseline data collection period, we obtained informed



Country of Birth (% from Mexico)	90.2%
Ethnicity: Mexican-origin, Chicana	99.0%
Language: (% Spanish only)	84.2%
Years in U.S.	13.6 yrs
Age Entered U.S.	21.3 yrs
Country of Education: (% in Mexico)	73.8%

consent and collected the following medical measurement data from participating families: height, weight, waist circumference, and skinfold thickness. We also collected a number of surveys to obtain background information about participants.

We collected a household survey which included information on demographics, household structure, decision-making, neighborhood conditions, income, expenditures, and assets. We also administered questionnaires targeted at medical history, food consumption frequencies, food insecurity, and acculturation.

Although all parents or guardians were eligible to participate both in the medical measurement and surveys with their children, in general, the female head of household completed

most surveys for her household—over 97%. This resulted in the adult data being provided primarily by the mothers of eligible children in this study.

This bias in response and measurement can be attributed to two important factors: (1) most female participants did not work outside the home on a regular basis and, hence, were more accessible, and (2) cultural factors within the Mexican-origin community, where “women” in general are more engaged in practical aspects of health and the well-being of their children.

As we can see from Table 1, 90.2% of the mothers in our study were born in Mexico and 99% identify as Mexican-origin. The average age for this sample was 35 years and their duration in the United States was well over a decade. Nonetheless, most of these women primarily spoke Spanish—84.2%.

Figure 2 provides an overview of the overall level of educational attainment of both the mothers and fathers in this study. These data reveal that for many of these women, the level of educational attainment is quite low: 26.8% completed high school, and 23.4% only completed an elementary school education.

On average, these families earn \$1800/month when they are employed. However, it is important to note that

most of the families are employed in highly seasonal labor and have months with no income. Among the adults in the sample, 63% percent of fathers are farm workers and 65% of mothers are homemakers. These baseline data capture the employment season.

BMI Rates

What is most alarming in our preliminary data are the overall high rates of Body Mass Index (BMI kg/m²) for the mothers and children in our study. Based on the 108 BMI measurements of participating mothers in the study, the average BMI was 31.1. However, within the sample, almost one-half were defined as obese and slightly over 86% were either overweight or obese. Adult men and women are considered overweight if their BMI is between 25 and 29.9. They are considered obese if their BMI is 30 or greater.

For children, since they are still growing, ideal BMI measures are more complicated to define. BMIs are compared to growth references for children of the same age and gender. Children are considered overweight if their BMI is equal or greater than the 85th percentile and obese if their BMI is equal or greater than the 95th percentile.

Thus, compared to the general U.S. population and Mexican-origin

Figure 2. Educational Attainment of Mothers and Fathers in Sample

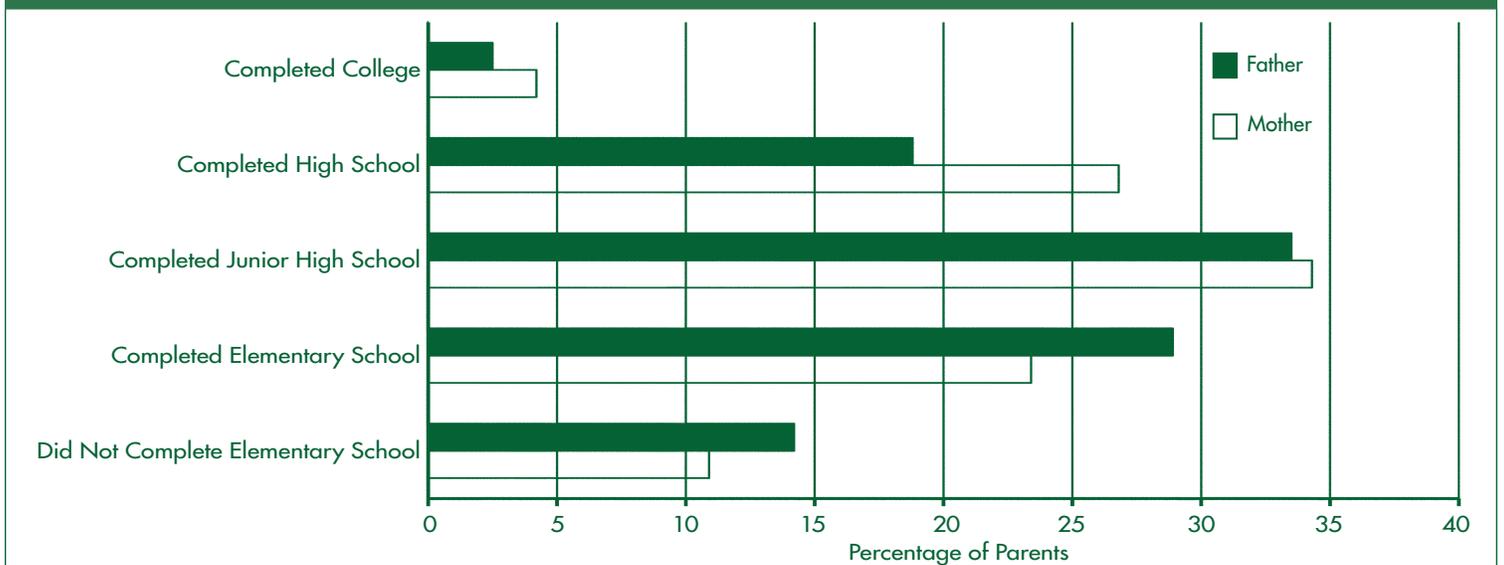
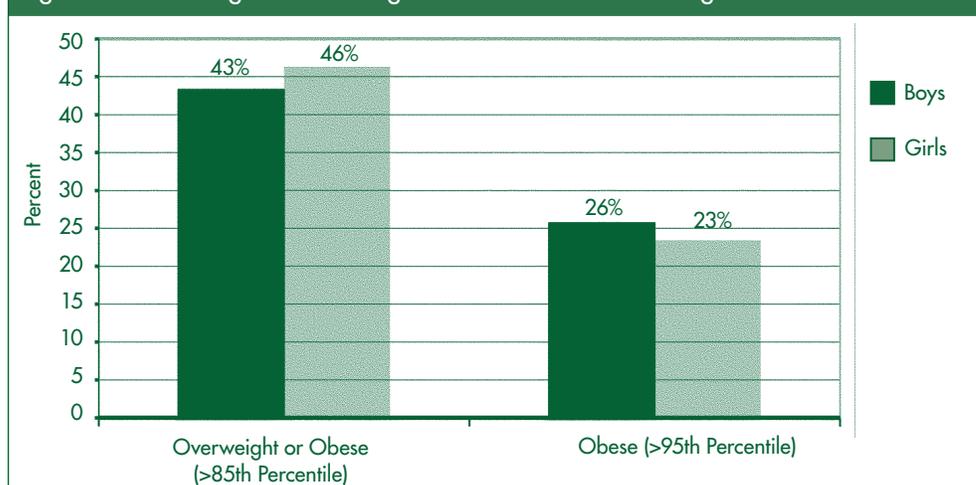


Figure 3. Percentage of Overweight and Obese Mexican-Origin Children



population, these women had a considerably higher rate of overweight and obesity status. Similarly, when examining their children, a pattern emerges of relatively high rates of overweight/obesity within this population. See Figure 3 for the distribution of overweight and obese children in the Mexican-origin population in our sample.

Food Security and Obesity

An important survey instrument used in our study was the 18-item USDA Food Security Survey (available on the Economic Research Service website). This instrument is used annually in the Current Population Survey to monitor household food security in the United States. The validity and reliability of this instrument is well-established in U.S. populations, including Mexican-origin households.

An interesting finding in our baseline data is that 37% of our sample indicated that they were food insecure (with 13% reporting very low food insecurity), which can generally be interpreted as meaning children and adults are very likely to be skipping meals due to low food access. In addition, 84.3% indicated that they participated in either food stamps and/or WIC, so they are indeed active participants in these programs.

Thus, an alarming risk factor that should be further explored is the

potential impact of high food insecurity on nutritional decision-making of these families. This high level of food insecurity may impact the observed overweight/obesity rates in this population.

Although our data is preliminary, other studies in Texas and California provide some support of the adverse impact of food insecurity on healthy food choices for Mexican-origin families.

Conclusion and Policy Implications

Based on our preliminary data, in addition to risk factors such as income and education that may influence relative overweight/obesity rates within rural Mexican origin communities, food insecurity may be an additional factor to consider in designing interventions for this population.

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For additional information, the authors recommend:

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