

Obesity

Assessing the Prevalence of Childhood Obesity Among Limited-Resource Latino and Non-Latino Families in Virginia

Elena L. Serrano and Ruby H. Cox, Virginia Polytechnic Institute and State University

Contact:

Elena Serrano, Assistant Professor
Human Nutrition, Foods and Exercise
252 Wallace Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24601
Phone: 540-231-3464
Serrano@vt.edu

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Obesity among U.S. children is an increasing concern. Nationwide data from 2000 show that an estimated 15 percent of children and adolescents age 6-19 are overweight, a rate that has tripled within 30 years. The risk of obesity crosses all socioeconomic and ethnic groups, but obesity is slightly more prevalent in low-income groups, and in Native American, Hispanic, and African American populations. In Virginia, few data exist on the prevalence of overweight or obesity among the youth population, particularly Latinos, a growing population in the South. This study investigated the prevalence of overweight among Latino and non-Latino low-income Virginia youth. The research also identified potential contributors to obesity and examined alternative methods for determining overweight.

Data were gathered from two population groups: Latina mothers (Part I) and Latino and non-Latino children (Parts II & III). In Part I, 85 Latina mothers were recruited through the Virginia Expanded Food and Nutrition Education Program (EFNEP) and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Demographic information, acculturation, and dietary and physical activity patterns were assessed using bilingual written survey instruments.

Part II involved the collection of height, weight, and waist circumference data from 217 children from 5 ethnically diverse elementary and middle schools attended by low-income students in rural and urban areas of Virginia. A sub-sample of this population (Part III) was used to evaluate body figure scales developed specifically for Latinos. A short survey instrument exploring dietary and physical activity patterns was also administered. Informed consent was obtained from all subjects and parents.

The results indicated that the Latinas included in the study were mainly from Bolivia and El Salvador, demonstrated limited acculturation, and spoke Spanish as a primary language. Almost half the participants were overweight or obese (based on reported height and weight), nearly 50

percent reached the 5-A-Day goal for fruits and vegetables, and only 15 percent met the recommendations for physical activity. Fifty percent of subjects were female, 41.7 percent White, 25 percent Black, and 20.7 percent Latino. Body Mass Index (BMI) percentiles, based on age and sex, ranged from 3.6 to 99.9, with a mean percentile of 64.9 and a median of 68.5. Less than 5 percent (4.5 percent) of subjects were considered underweight, one-sixth (14.7 percent) were at risk of overweight, and almost one-quarter (22.6 percent) were overweight, based on Centers for Disease Control and Prevention (CDC) cutoff points. Females had significantly higher BMI percentiles than males, with means of 67.4 and 64.5, respectively. Multivariate regression found an interaction between rural/urban residency and ethnicity. White rural children were significantly heavier and had larger waist circumferences than those living in urban areas. Conversely, Latino and Black children living in urban areas were significantly heavier than those living in rural areas.

The study also examined an alternative method to determine overweight. Respondents were asked to choose the body figure, a visual representation of different body weights that most closely resembled their own. Results indicated that respondents with higher BMI were more likely to choose a figure choice that indicated overweight.

The study documented a rate of obesity among Latino and non-Latino low-income youth and mothers that is much higher than national averages. The study used a convenience sample, and thus it may not be representative of other regions and/or population sub-groups.

The Food Insecurity-Obesity Paradox in Women

Christine M. Olson and Myla S. Strawderman, Cornell University

Contact:

Christine M. Olson, Professor

Dept. of Nutritional Science

376 Martha Van

Cornell University

Ithaca, NY 14850

Phone: 607-255-2634

Cmo3@cornell.edu

Grant awarded by the Department of Nutrition, University of California, Davis

This study examined the relationship between food insecurity and obesity and the mechanisms through which food insecurity might lead to obesity in a sample of 436 healthy adult women from rural upstate New York.

The study had a prospective cohort design and women were followed from early pregnancy until 2 years postpartum. Data were collected through self-administered behavioral questionnaires, food frequencies, and a medical record audit. Height and weight measurements at all time points were measured by healthcare providers following standardized study protocols.

Study results indicated that food insecurity at the beginning of pregnancy was positively associated with major weight retention at 2 years postpartum, but only in initially obese women (at a marginal significance level of 0.007). Initial obesity was also associated with increased risk of becoming food insecure (at a marginal significance level of less than 0.05). Measures of quantity of food intake, dietary quality, eating patterns, and physical activity were examined as potential mediators. Consuming fewer than three fruits and vegetables per day and a more binge-like pattern of eating were associated with initial food insecurity and major weight retention at 2 years postpartum (at a marginal significance level of less than 0.05). When these variables were added to the regression model they did not reduce the coefficient for food insecurity, a final criterion for being a mediating variable.

Obesity during early pregnancy was associated with increased risk of becoming food insecure. The cross-lagged panel analysis indicated that this causal direction was statistically significant when controlling for initial food insecurity and weight status, while the other was not. This result provides support for what can be described as "reverse causality." Thus, the previous findings from cross-sectional studies of an association between food insecurity and obesity may be due to the fact that obese women are at increased risk of becoming food insecure over time.

Overall, no variables emerged as obvious mediators of the relationship between initial food insecurity and major weight gain or change in food security status (particularly becoming food insecure) and major weight gain. The small sample sizes and the large variation of some of the variables may have contributed to the lack of significant findings related to the mediators.

There are several other potential explanations for the study findings. One is the possible timing of the measurement of the mediating variables. They were measured over a year after the initial food insecurity measurement was taken and this time period included a pregnancy. Additional data indicate that all women's diets were similar during pregnancy regardless of their initial food insecurity status. Seventy percent of food-insecure women participated in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) during pregnancy. The additional food from this program may have blunted any impact of food insecurity on eating during pregnancy and this effect may have carried over into the postpartum period, although the data clearly indicate that the initially food-insecure women ate differently at 1 year postpartum than did food-secure women. The dietary variables were measured a year before the weight measurement was taken and it may be that change in diet related to weight change took place closer to 2 years postpartum.

Women who were initially food insecure and were also obese formed a distinct subgroup especially vulnerable to weight gain. This is a group that may merit targeting for special intervention in food assistance programs. Development and implementation of approaches to secondary prevention, in the context of WIC, which is generally oriented toward primary prevention, would require careful consideration of the length of postpartum participation allowed, the composition of the WIC food package, and the focus and content of nutrition education.

Community Attitudes Toward Traditional Tohono O'odham Foods

Daniel Lopez, Tohono O'odham Community College, and Tristan Reader, and Mary Paganelli, Tohono O'odham Community Action

Contact:

Daniel Lopez, Instructor

Tohono O'odham Community College

P.O. Box 3129

Sells, AZ 85634

Phone: 520-383-8401

Grant awarded by the American Indian Studies Program, University of Arizona

The Tohono O'odham Nation resides in the heart of the Sonoran desert, 60 miles west of Tucson, AZ. Approximately 18,000 of the tribe's 28,000 members live on the main section of the Tohono O'odham reservation. The Tohono O'odham people have the highest rate of diabetes among Native American tribes. About 50 percent of the tribe's adults have adult-onset diabetes, compared with 4-6 percent of the overall U.S. population. A number of studies have shown that many traditional Tohono O'odham foods such as tepary beans, cholla cactus buds, and wild spinach, help regulate blood sugar and reduce the incidence and effects of diabetes. Previous work found that tribal members were interested in incorporating more traditional food into their diets and in learning how to grow, collect, and cook these foods.

In this study, the authors gathered information about the practical and cultural knowledge needed for educational programs to effectively encourage healthy eating habits, including the consumption of healthy, traditional Tohono O'odham foods. The authors collected ethnographic data from approximately 20 tribal elders. The ethnographic data include information about the production, processing, and preparation of traditional Tohono O'odham foods that help regulate blood sugar levels. The ethnographic data also contain cultural information, such as songs, legends, and ceremonial practices pertaining to Tohono O'odham foods. The authors also conducted a survey of the scientific and nutrition literature to gather information on the nutritional content of traditional Tohono O'odham foods.

The authors plan to use the practical, cultural, and nutritional information gathered in their study to develop a set of educational resources for use within the Tohono O'odham community. One example is an educational brochure that contains step-by-step descriptions of how the food is cultivated or harvested in the wild, processed or preserved, and prepared. The brochure and its recipes will provide descriptions of both traditional preparation techniques and modern preparation techniques that are often less time-consuming.

The authors propose that the brochure and other educational materials will strengthen cultural incentives to eat healthy Tohono O'dham foods, provide the practical information necessary for people to consume these foods, and improve health.

The Incidence of Overweight and Obesity in Southern Adolescents

Mellie L. Warner
Clemson University
Phone: 864-654-5080
mlwnr@yahoo.com

Grant awarded by the Southern Rural Development Center, Mississippi State University

Obesity has emerged as a critical health issue in the United States, particularly among children and adolescents. Previous research has noted that the percentage of overweight children has accelerated significantly among African Americans and Hispanics from 1986 to 1998, with over 20 percent of these children now classified as overweight. Furthermore, the largest proportion of overweight children has been found in the U.S. South. To explore overweight and obesity among adolescents in the South, this study used data from the National Longitudinal Survey of Adolescent Health (Add Health).

The Add Health data were collected in two waves between 1994 and 1996 to explore health-related behaviors of adolescents enrolled in grades 7 through 12. Data at the individual, family, school, and community levels were collected from a school-based cluster sample of over 20,000 students. The study focused on how the students' social context (such as families, friends, peers, schools, and communities) contributed to their health and risk behaviors.

In 2001 and 2002, Add Health respondents age 18-26 were re-interviewed in a third wave to investigate the influence that adolescence has on young adulthood. This study used the Wave I and III data to explore the relationships between a student's Body Mass Index (BMI) and other personal, family, school, and community characteristics. Age- and gender-specific BMI were calculated for individuals at Wave I and Wave III using a program developed by the Centers for Disease Control and Prevention (CDC), so each student was classified as very underweight, underweight, normal weight, overweight, or obese. The study focused on 7,600 students enrolled in schools in the Southern region of the United States. Whenever appropriate, the Southern cohort was compared with students from other regions of the United States.

Multiple linear regression and logit models delineated the most important factors contributing to the BMI percentile of students at Wave I. BMI percentiles were significantly higher among males, African Americans, and Hispanics (when compared with non-Hispanics). Students who rarely socialized tended to be heavier, and the number of hours spent in sedentary pursuits had a small, but significant, impact on their BMI percentile. Student exercise had a positive relationship with BMI, suggesting that exercise may have contributed to more muscle development.

Family factors were important in explaining students' BMIs, particularly parental obesity. Household income had a negative impact on BMI,

suggesting that students from more affluent households were less likely to be overweight or obese. BMI percentiles tended to be lower among students who were breastfed for 3 months or longer, who judged their health to be excellent or very good, who ate breakfast on a regular basis, who suffered no disabilities, and who had reached their physical (sexual) maturity.

Comparison of participants' BMIs at Wave III and Wave I showed that weight gains were far greater among Southerners than those living in others regions of the country. Fifty-three percent of African American females in the South were either obese or overweight at Wave III, versus 39 percent for African American females located in other regions of the United States. Multiple regression exploring changes between Wave I and Wave III participants' BMIs indicated that many of the factors that proved important in Wave I analysis remained significant at Wave III. Wave III included items to capture activities and habits of participants during their early adulthood. Persons who spent more hours playing sports in a week, or who walked to school or work, were less likely to be overweight or obese. Dieting and exercising to lose weight at Wave I was linked to larger weight gains in Wave III. Obesity tends to be multi-generational with obese parents, especially the mother, having overweight or obese adolescents. Moreover, these adolescents gained more weight than their peers as they moved into young adulthood.

These study findings suggest several program implications. Given the multi-generational nature of obesity indicated in this study, programs to prevent or reduce obesity should focus on the entire family. Wave I findings indicated that lack of knowledge by parents was a key factor among overweight/obese children, indicating a role for nutrition education. An emphasis on healthy food (including breakfast) and an active lifestyle may prevent weight gain among young people. In young adulthood, team and individual sports have a larger impact on moderating weight gain than other exercise, though both tend to reduce weight gain. Walking to work or school has a negative impact (4-6 pounds less gained) on weight gain and should be encouraged. Communities could help by including safe walking routes in their development plans.