



*Students took photos of their home, school and neighborhood environments as part of the data collection for a Collaborative Health Sciences project investigating obesity among middle school children at the Bruce-Guadalupe Community School in a predominantly Hispanic area of Milwaukee.*

## KEY INFORMATION

**Grantee:** Aaron Carrel, MD, UW School of Medicine and Public Health, Department of Pediatrics

**Grant Title:** Effects of Environmental Opportunities and Barriers to Physical Activity, Fitness and Health in Hispanic Children in Wisconsin

**Dates:** July 1, 2010 – June 30, 2013

**Amount:** \$291,882

**Program:** Collaborative Health Sciences

**Project ID:** 1692

## Examining environmental factors that affect Hispanic students' fitness and health

**Description:** The project Effects of Environmental Opportunities and Barriers to Physical Activity, Fitness and Health in Hispanic Children in Wisconsin brought together UW-Madison researchers from a broad range of disciplines to examine the effects of environmental and social factors on middle school students in a predominantly Hispanic area of Milwaukee. Researchers measured and documented precise assessments of the community, school and home environments and the causal relationships of these environments on children's physical health, community health or other factors (such as attitudes, perceptions and behaviors).

**Relevance:** Childhood obesity is especially prevalent in the Hispanic community, where nearly one-third of children are overweight. The epidemic has numerous causes, including physical environments that discourage walking, facilitate sedentary lifestyles and promote access to unhealthy food. Obesity, poor cardiovascular fitness and low amounts of physical activity are associated with the development of insulin resistance and subsequent risk for type 2 diabetes mellitus in children and adolescents. Hispanic youths appear to be particularly susceptible to this morbidity.

**Results:** The project provided evidence-based data on how the built environment affects children's physical activity. Students used global positioning system (GPS) receivers and heart monitors to collect data about their physical activity and energy expenditure within the home, school and neighborhood environments. The GPS devices documented extremely low levels of moderate to vigorous activity, most of which occurred during or was closely associated to school time.

Students also documented their use of the food and recreation environments, and researchers evaluated the students' cardiovascular fitness and body mass index (BMI). With 30 percent identified as obese, the middle school students demonstrated higher obesity rates for their age when compared to national rates for Hispanic children.

In addition, the researchers began development of a quantitative model to measure children's time-use patterns and examine the relationships between time use and children's risk for diabetes. The self-report instrument is particularly useful for assessing children's time-use patterns for specific sedentary activities, which typically are difficult to assess using GPS loggers and accelerometers.

Several of the researchers involved in this pilot project are using the data to design an intervention funded in 2012 by the Wisconsin Partnership Program that targets physical activity and healthy eating among students enrolled in the Bruce-Guadalupe Community School in Milwaukee.

**Presentations:** LaGro, J. Jr. "Why the Medical Professions Should Care About the Design of the Built Environment." UW Health Integrative Medicine Grand Rounds, Madison, WI. October 2012. Invited lecture.

Santiago, M., LaRowe, T., Sledge, J., Delgado, A., Gonzalez, M., Carrel, A., Allen, D., Schoeller, D., Adams, A. "Insulin resistance, fitness level and diet are associated with high obesity rates in Hispanic children living in an urban environment." NIH Summit on the Science of Eliminating Health Disparities. National Harbor, MD. December 2012.