

# A Community-Based Family Intervention Program to Improve Obesity in Hispanic Families

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## ABSTRACT

**Introduction:** The Waukesha County Division of Public Health and Waukesha Memorial Hospital developed a social-ecological approach to diminish the incidence of overweight and obesity in Hispanic families in Waukesha County.

**Program Description:** A sample of Waukesha County children and their families participated in an 8-week program that promoted awareness of healthy food choices and the importance of physical activity. The program was selected, translated, and adapted for the Hispanic community. Weekly sessions included nutrition classes, physical activity, and a healthy meal for participating families. Biometric data were collected pre- and post-program, including blood pressure, cholesterol, glucose, weight, height, and waist measurement. A pre- and post-program knowledge test regarding nutrition, food labels, and physical activity was administered.

**Results:** A total of 47 Hispanic families participated throughout the course of the program. Biometric measures and tests of nutrition knowledge and attitudes of participants consistently showed improvements. In addition, changes occurred in the community system structure, which positively affected the built environment by improving access to parks, YMCA, and schools for family physical activity.

**Conclusion:** The translated curriculum was successful in reducing cardiac and diabetes risk factors in Hispanic adults by increasing knowledge and positive attitudes about healthy behaviors.

## INTRODUCTION

Obesity is common among many ethnic groups, but is even more so among the Hispanic population.<sup>1-3</sup> There are few healthy lifestyle programs available in Spanish that incorporate valued cultural characteristics. In 2008, the Women, Infant, and Children Program (WIC) in Wisconsin reported that 24% of black participants aged 2 to 4 years were overweight or obese.<sup>4</sup>

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For white and Asian participants in the same age group, the percentages were 27% and 31%, respectively.<sup>4</sup> The rate of overweight or obesity in Hispanic children aged 2 to 4 years was 37%.<sup>4</sup> Since children's diet and activity levels are typically dictated by the adult members of the household, the need for a program involving the entire family was evident.

Two of the overarching goals of Healthy People 2020 are to be free of preventive diseases related to weight and diet and to eliminate health disparities.<sup>5-7</sup> In Waukesha County, Wisconsin, located 25 miles west of Milwaukee, the Hispanic community continues to grow and is in the top 10 counties for Hispanic population growth in Wisconsin.<sup>8</sup> Social service agencies have estimated there are 15,000 Hispanic residents in Waukesha County. The county includes several densely populated clusters and census tract areas

where nearly 30% of the residents are of Hispanic origin.<sup>8</sup> It is estimated that over 75% of Waukesha Hispanic residents are of Mexican descent. Mexican Americans have the lowest completed education level, lowest family income, and the largest family size of all the Hispanic subgroups.<sup>9</sup> "Familismo" is central to Hispanic culture, meaning that family is the center of daily life.<sup>9</sup> It was essential to develop a healthy lifestyle program that incorporated this important cultural characteristic.

The Waukesha County Division of Public Health invited the Hispanic Community Health Resource Center (HCHRC), a community benefit initiative of Waukesha Memorial Hospital, to partner to decrease the incidence of overweight and obesity in Hispanic families in Waukesha County. A culturally acceptable, family-based diet and exercise program was key. The Ways to Enhance Children's Activity and Nutrition (We Can!) curriculum, an outreach program of the US Department of Health and Human Services,<sup>10</sup> was selected, translated, and supplemented to address the needs of entire Hispanic fami-

**Table 1.** Nutrition Session Themes

Week 1	Program Overview
Week 2	Energy Balance
Week 3	Body Mass Index and Portion Control
Week 4	Energy In* and Reading Nutrition Labels <i>*Energy In is the amount of calories consumed through dietary intake.</i>
Week 5	Energy In and Healthy Substitutions
Week 6	Energy Out* and the Importance of Physical Activity in Energy Balance <i>*Energy Out is the amount of calories burned through physical activities and normal daily functions.</i>
Week 7	Decreasing Screen Time
Week 8	Program wrap-up with post-test, evaluation and program surveys

lies in order to diminish health disparities such as those seen between the Hispanics and non-Hispanic whites in the areas of obesity. This article describes the study and specific individual and community outcomes.

## METHODS

Where there are many lifestyle programs for children, few involve the full family unit and take the Hispanic culture into consideration. For example, the Fit Kids Program<sup>11</sup> was structured with primarily the English-speaking child in mind and had a program fee. Given the high percentage of low-income Hispanic families in Waukesha, any program fee or language barrier could economically or socially exclude participation. The We Can! curriculum promotes awareness of healthy food choices and discusses the importance of physical activity with a particular focus on energy balance and family.<sup>10,12</sup> It is available online at no cost, and the first 2 weeks of materials were already translated into Spanish. The curriculum is endorsed by the National Heart, Lung, and Blood Institute<sup>10,12</sup> and strives to further the Healthiest Wisconsin 2020 focus areas and objectives regarding nutrition, healthy foods, and physical activity.<sup>13</sup> It also addresses important overarching goals of Healthy People 2020 to reduce obesity and disparities.<sup>6,7</sup>

The Waukesha County Public Health Division collaborated with the Hispanic Community Health Resource Center to facilitate the We Can! curriculum in a series of nutrition and exercise classes. After translating the remaining curriculum into Spanish and including other culturally appropriate supplemental handouts, a family exercise component was added to each class. Community partnerships were sought to host activities, promote participation, and provide support for sustainability. Partners included White Rock Public Elementary School, La Casa de Esperanza (community center) and the local YMCA.

Participants were recruited through convenience sampling using community outreach methods at local churches, medical clinics, schools, self-service laundries, and community

programs. Publicity was primarily in the form of posters, announcements, and word of mouth. Families with school-age children were encouraged to enroll. Families with children younger than school age were offered on-site childcare.

The 8-week program included a 40-minute classroom component followed by a 40-minute physical activity session that concluded with a healthy family dinner to promote good eating habits. The classroom program was based upon the 3 crucial components used in the We Can! curriculum and became program objectives. Program objectives helped families: (1) improve food choices; (2) increase physical activity; and (3) reduce screen time. Screen time is the amount of time a person spends in front of a television, computer, or video game screen. Because many of the household decisions regarding television viewing, food preparation, and recreational activities are made by adults, the program was designed to present parallel messages to both the adults and children. The overall goal of the program was to encourage additional communication between parents and their children, leading to cooperative decision-making involving nutrition and physical activities for all family members.

The educational component was divided into 2 groups, one consisting of adults and the other of school-age children. Adult educational programming was presented in Spanish by a bilingual health educator and a bilingual registered nurse. All written materials were made available in Spanish and English, with literacy level considerations. Children's classes were presented in English. Bilingual staff included a registered nurse and exercise instructor from the HCHRC and a health educator from the Waukesha Public Health Division. Although the adults and children attended separate nutrition lessons, both discussed the importance of making healthy food choices and being active. A variety of activities and games were incorporated into the curriculum to strengthen the understanding of the lesson objectives (Table 1).

All family members participated in the same exercise/physical activity session. The sessions were taught by the bilingual health promoter, a certified, bilingual exercise instructor. Physical activities proved to be a very popular component for all family members and strengthened the concept of being active together and enjoying physical activity. Participants had different levels of mobility and the exercises were selected with that in mind.

The exercise sessions had 3 distinct dimensions: warm-up, exercise, and cool down. Physical activity included aerobic/cardiovascular (endurance), anaerobic (speed/strength), flexibility, and coordination exercises. The physical exercise equipment consisted of fun and inexpensive materials that many families already have at home, such as balls, jump ropes, hula hoops,

**Table 2.** Biometric Results for Adults

	Program Year	Unit of Measure	Sample Size	Pre-program Average	Post-program Average	Change	P-value <sup>a</sup>
Systolic blood pressure	2006-2010	mm Hg	50	108.34	104.84	decrease 3.5	0.0132 <sup>a</sup>
Diastolic blood pressure	2006-2010	mm Hg	50	67.84	65.48	decrease 2.36	0.0357 <sup>a</sup>
Cholesterol	2006-2010	mg/dL	52	174.96	170.79	decrease 4.17	0.3616 <sup>a</sup>
HDL	2006-2010	mg/dL	52	44.94	46.52	increase 1.58	0.2663 <sup>a</sup>
LDL	2006-2010	mg/dL	48	104.71	97.44	decrease 7.27	0.1157 <sup>a</sup>
Triglycerides	2006-2010	mg/dL	50	145.92	154.36	increase 8.44	0.4678 <sup>a</sup>
Glucose	2006-2010	mg/dL	52	96.62	93.54	decrease 3.08	0.0253 <sup>a</sup>
Waist	2006-2010	inches	52	37.33	36.79	decrease 0.54	0.0345 <sup>a</sup>
Weight	2006-2009	pounds	37	156.97	154.95	decrease 2.03	0.0024 <sup>a</sup>
Body mass index	2006-2009		37	27.97	27.62	decrease 0.35	0.0103 <sup>a</sup>
Knowledge test	2006-2010	percent correct	57	38%	88%	increase of 50 percentage points	0.0001 <sup>b</sup>

<sup>a</sup>Statistical significance tested using paired *t* test

<sup>b</sup>Statistical significance tested using unpaired *t* test

balloons, spoons and eggs, and foam pool toys. The participants were able to take home elastic bands to continue exercises taught.

A family dinner encouraged participants to implement some of the strategies and decision-making skills covered in each week's lesson. Demonstration and participation in snack and meal preparation encouraged participants to use healthy ingredients and substitutions. The participants practiced portion control and had many opportunities to experience new healthy foods.

A closing ceremony anchored the last class, at which each participant's accomplishments were recognized with a certificate of completion. Program incentives were awarded upon successful program completion and included YMCA memberships at a discounted rate. As an incentive for children, \$50 was given toward the purchase of a bicycle to further promote physical activity. The program educators secured and fitted bicycle helmets for each child participant. Participants were encouraged to suggest any changes or to share any thoughts. Participants who completed the program were encouraged to register for other exercise classes and community health programs available at the HCHRC.

For this study, data was collected before and at the conclusion of the 8-week program. Progress toward program objectives was measured through knowledge testing, lifestyle surveys, and biometric testing. Pre- and post-program lifestyle surveys, and knowledge and biometric testing for adults were facilitated. Testing and surveys were available in Spanish and English. In addition, adult test questions and response choices were read aloud at both pre- and post-assessments to ensure understanding.

Children were given pre- and post-program survey questions that reflected the lifestyle behaviors of children partici-

pants. These were administered by a public health educator, with the intent of measuring behaviors about healthy choices in nutrition and activity. Children also were asked true and false knowledge questions in a group setting, which included knowledge about nutrition labels, portions, physical activity, and general health. No biometric blood testing was done with children. Child participants were measured for height, weight, and body mass index (BMI) percentile pre-program and post-program.

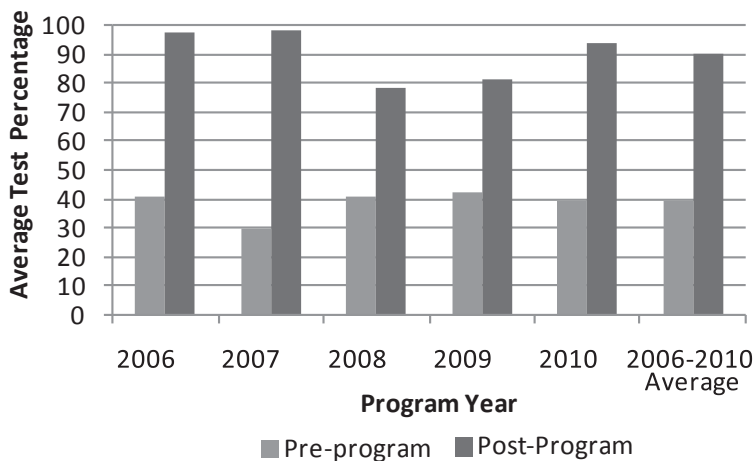
## RESULTS

The program served 47 families: 57 adults and 54 children. The average age for adults was 32 years. Of the adults, 89% were women and 11% men. One 16-year-old participant was given a choice to participate in the adult or the children's educational component. He chose to attend the adult class; however, a decision was made not to participate in biometric testing.

The survey included assessment of families' habits related to food choices, sweetened beverage consumption, physical activity, and screen time. Adult health risk assessments (HRAs) were performed approximately 1 week prior to the start of each program and 1 week following. HRA assessments included biometrics: total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, fasting glucose, height, weight, BMI percentile, waist circumference and blood pressure. The HCHRC hosted all screenings and offered a post-screening healthy breakfast.

The biometric testing in the adults' post-program intervention showed some improvements in reducing cardiac and diabetes risk factors (Table 2). This included improvements in systolic and diastolic blood pressure, glucose, weight, BMI, and waist circumference. Blood pressure data collection averaged a 3.5 mm Hg decrease systolically ( $P=.0132$ ) and decreased

**Figure 1.** Knowledge Testing Results for Adults by Program Year



**Table 3.** Participant Comments

Participant 1	"I loved the program because it gave me the opportunity to be with my children. Also I learned that exercising as a family is fun."
Participant 2	"I am very pleased that there are programs like this because, aside from learning about good nutrition and health, we spent time as a family discussing what we want to do in the future."
Participant 3	"It seemed to be a great program, very complete for health. I loved that there are people concerned about the health of others. Thank you with all my heart. It also served to unite our family on what we should eat and how to exercise as a family."

2.36 mm Hg diastolically ( $P=.0357$ ). Blood glucose decreased by 3.08 points ( $P=.0253$ ) comparing pre-program and post-program collections. Weight decreased by 2.03 pounds overall ( $P=.0024$ ) and BMI decreased by 0.35 ( $P=.0103$ ). Waist circumference decreases over the 4-year period averaged .54 inches ( $P=.0345$ ).

Each of the core evaluation measurements was linked to one of the program objectives in order to measure the program's effectiveness. The first objective to improve food choices was measured through didactic testing of both adults and children. Comparisons of pre-program to post-program knowledge testing for adults revealed an average of a 50 percentage point increase over the span of the program. In 2008, there was a 50% decrease in soda consumption among adults. In 2009 and 2010, there was a 20% decrease of soda consumption among adults post program (Figure 1).

For children, pre-program nutrition knowledge scores for children averaged 20%, while post-program knowledge scores averaged 80%. There was a 33% decrease in soda consumption among children in year 2008. In 2009 and 2010, there was a 40% decrease in soda consumption among children.

The second program objective was to increase physical activity. In an analysis of pre-program and post-program data, there was an average 60% drop in adult participants reporting lack of motivation as a barrier to physical activity.

For the third program objective, decreased screen time, lifestyle surveys for adults in 2008 showed that prior to program participation, 100% of participants reported watching more than 2 hours of television per day. Post-program, that number dropped to 47%. In 2009, participants viewing more than 2 hours of television per day dropped by 34% by the program completion. Reportedly, in 2010, the number of participants watching more than 2 hours of television dropped by 65% at the end of the program. The children's scores yielded similar findings.

An overall goal of the study was to increase communication between parents and their children to facilitate cooperative decision-making involving nutrition and physical activities. Anecdotal evidence obtained through parent's comments suggests that increased family communication of nutrition and physical activities had occurred. (Table 3)

The HCHRC created a monthly support exercise group post program in response to participants' comments. It reinforced nutrition and exercise concepts previously learned in the program and encouraged families to continue exercising together. Program participants led this exercise support group, which evolved into a monthly "Family Exercise Night" that is held during the winter months. In addition, a total of 16 walking sessions are offered as a counterpart during the summer months. Participants of all ages continue to walk together and numbers have surpassed 100 walkers.

Other programmatic outcomes included a culturally appropriate We Can! curriculum translated into Spanish and available for use as well as pre-screening and post-screening HRA forms, Release of Information for HRA's form, Release of Liability form, and a Photo Consent form, all translated into Spanish.

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## COMMUNITY OUTCOMES

The We Can! program served not only to improve the knowledge and individual behaviors of the participants, but it also

facilitated a variety of systems changes in the community due to its collaborative nature. For example, the local YMCA provided gym memberships at a discounted rate, which were awarded upon successful program completion. This encouraged families to maintain an active lifestyle post-program. Bilingual program staff interpreted and oriented one family to the gym equipment and activities at the YMCA. That family in turn oriented and interpreted for the remaining participants. Through this, the YMCA was made aware of the need for bilingual signage and staff. They have since hired 3 bilingual individuals to improve access for Spanish speakers.

Meals were served by a local Hispanic café, which agreed to create some dishes especially for the program. The meals were so popular with program participants that the café added a healthy-options section to its menu, featuring many of the program entrées.

System changes occurred in the built environment (community structures). After a report to the Waukesha Collaborative Hispanic Network, a community stakeholder group comprising 23 organizations, a call was made to city leaders to ask for improvements to a neighborhood intersection. The 5-way intersection was perceived by local residents as unsafe and created a barrier to a local park. Pedestrian-friendly lights were installed with audible cues.

A partnership with a local elementary school and a well-known water systems company resulted in the promotion and increased consumption of drinking water in schools. The Waukesha Public Health Department staff assisted the School District of Waukesha in their development of a school wellness policy. The HCHRC staff worked with County Parks and Recreation Department to assist with Spanish translation of their children's program brochure.

## DISCUSSION

The adapted We Can! curriculum, when combined with a physical activity and meal preparation component, showed some evidence in decreasing cardiac and diabetes risk factors in Hispanic families. Some biometric improvements were achieved, such as lowering BMI. Surveys pre- and post-program showed increased knowledge relating to energy balance and nutrition and revealed positive attitude changes regarding healthy behaviors.

Limitations included the lack of a control group with which to compare the program's effects, and the inability to control variables such as other sources of education from media or reading nutrition education materials that may have affected learning. There were no follow-up biometric measures planned beyond those of post-program. Collecting biometric measures at 6 months and 12 months post-program could yield addi-

tional evidence of long-term clinical impact.

The community was involved in every step of the program, including program development, system changes and sustainability. A community approach was necessary to change both individual eating and exercise habits as well as to diminish environmental barriers to achieve a healthy and active lifestyle. Time for community conversations, strategic partnerships and grant writing became the first steps in developing community programs that address health disparities of minority populations. Collaboration between key community organizations and health institutions was essential in improving health in a social ecological approach. A strong collaboration between leadership at the Waukesha Public Health Division and management at Waukesha Memorial Hospital provided the framework to explore new ways to improve Hispanic health in Waukesha County. With hospital restructuring, health care reform, and state budget reductions, finding future funding for multiple year prevention programming may be challenging.

The intent of this initiative was to provide a community-based program to diminish the incidence of overweight and obesity in Hispanic families by promoting awareness of healthy food choices and the importance of physical activity in a culturally acceptable fashion with a particular focus on energy balance. Using the We Can! curriculum and intervening at an individual, family, and community level, program goals were achievable. The ability to replicate the program year after year has resulted in additional programmatic and system changes. Changes occurred in community systems, which positively affected the built environment with increased availability of and improved access to safe places for family physical activity. The results of this program evaluation are encouraging. This program has had a meaningful impact on the participating community members and the community at large.

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**Additional Information:** Ms. Ziebarth currently is a PhD student at the University of Wisconsin-Milwaukee. She was involved in the development of this program in her previous position as Manager of Community Benefit Outreach at ProHealth Care, Inc, Waukesha Memorial Hospital, Waukesha, Wis.

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