Sustainability of a Culturally Informed Community-Based Diabetes Prevention Program for Obese Latino Youth

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This work is dedicated to my colleges at St. Vincent de Paul. Their vision, hard work and limitless passion for creating a better community is truly an inspiration and I am honored that they chose to include me in their life’s work.
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Abstract

Latino youth are disproportionately impacted by obesity and type 2 diabetes; however, few lifestyle interventions have targeted this population. Therefore, the purpose of this study was to assess the impact of a culturally informed lifestyle education pilot program on nutrition and physical activity behaviors among obese Latino youth. A retrospective chart review of 67 youths was conducted with self-reported nutrition and physical activity assessed both immediately following the program and after long-term follow-up. Body mass index (BMI) was evaluated to determine the impact of behavior changes on adiposity. Healthy nutrition and physical activity changes were reported by 20%-59% of youths immediately following the program. However, most of these changes were attenuated over the 261 ± 49 day follow-up with reported walking (25.4%) and sports participation (34.3%) sustained to a greater extent than dietary changes (3.4–14.9%). Nonetheless, children who continued walking at follow-up exhibited significantly larger reductions in BMI compared with those who did not (-1.63 ± 0.56 vs. 0.44 ± 0.30 kg/m², \( P < .05 \)). Based on our pilot study, we conclude that community-based lifestyle education programs can support behavior modification and weight management.
in obese Latino youth. Ongoing support may be necessary to encourage sustained behavior change to facilitate greater weight loss.
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Introduction

Pediatric obesity has reached epidemic levels in the United States, and Latino youth are disproportionately affected.¹ The prevalence of obesity among Latino youth, defined as a body mass index (BMI) ≥ 95th percentile for age and gender, is approximately 21%.² Moreover, nearly 30% of overweight Latino youths have impaired glucose tolerance or prediabetes and 30% have metabolic syndrome.³,⁴ Collectively, these statistics place obese Latino youth at high risk for developing premature cardiovascular disease and type 2 diabetes.

Compounding and potentially contributing to obesity-related health conditions in Latino youth is a combination of factors, including decreased access to health care, lower rates of insurance coverage, and cultural/linguistic barriers that may limit lifestyle education related to obesity.⁵,⁶ Latino youth represent the fastest growing segment of the pediatric population in the United States,⁷ and the high incidence of obesity-related comorbidities in this group warrants special consideration.

There remains a lack of information regarding the impact and sustainability of lifestyle interventions for obese Latino youth.
delivered in community-based settings. However, evidence suggests that community-based strategies may be most effective for supporting obesity-related behavior change among minority populations. Many pediatric obesity interventions reported in the literature describe either school-based interventions or clinical research trials with limited follow-up and only moderate success in terms of weight loss. Given the substantial burden of health disparities among Latino youth, the translation of research into the community is a critical step toward improving the health in this population.

Therefore, we developed a community-centered intervention, rooted within the culture and run by community leaders, with the goal of promoting sustained improvements in obesity-related health and behaviors among obese Latino youth. This report 1) describes the short- and long-term behavior changes of youths enrolled in the St. Vincent de Paul - Every Little Step Counts (ELSC) lifestyle education program as well as 2) examines how specific behaviors are related to changes in adiposity.
Methods and Materials

A retrospective chart review of 67 obese Latino youths was conducted. ELSC was developed and delivered by bilingual bicultural Registered Dietitians with expertise in the areas of pediatric obesity, type 2 diabetes, and vulnerable populations. Specific details about the program’s development and implementation can be found elsewhere.12

Briefly, the program was housed in a community-based medical clinic that predominantly serves the working poor. ELSC consisted of an enrollment and orientation session to assess baseline age, gender, height, weight, and BMI. After enrollment, 4 structured educational and motivational classes were delivered in a group setting with curriculum addressing physical activity, nutrition education, examples of healthy and culturally appropriate meal planning, parent-child responsibilities, self-esteem, and family involvement.

Height, weight, and BMI were assessed at 6-month follow-up appointments. Self-reported behavior change was assessed at each of the four lifestyle education classes, and at follow-up appointments. Behavioral modifications included both dietary (fruit and vegetable consumption, fat consumption, and sugary food consumption) and physical activity (walking, running, sports participation) changes, and
are presented as the percentage of children reporting each behavior change.

We examined both short-term changes reported within 1-week of completion of the classes and long-term changes reported at the most recent follow-up appointment. In addition to the percentage of youths reporting each specific behavior change, we examined whether changes were associated with decreases in adiposity as measured by BMI. Independent sample t tests were used to compare BMI change between children who did and did not report each behavior change at follow-up.

Data are presented as means ± standard deviations as well as percentages. Statistical significance was determined as $P < .05$. The retrospective chart review was approved by the Institutional Review Board at Arizona State University.
Results

Baseline characteristics of the 67 children are presented in Table 1. Within 1 week of completion of the lifestyle education classes, 55.2% of youths reported decreased dietary sugar intake, 20.9% reported decreased dietary fat intake, and 35.8% reported increased fruit and vegetable consumption. In terms of physical activity, 59.7% reported participation in sports, 44.8% reported walking for exercise, and 26.9% reported running for exercise. (Table 1).
Table 1. Descriptive Characteristics of Youth

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>11.6 ± 2.4</td>
</tr>
<tr>
<td>Female (%)</td>
<td>34.4</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>30.4 ± 4.4</td>
</tr>
</tbody>
</table>

Data presented are means ± SD and percentages. BMI, body mass index.
The sustainability of these behavior changes was assessed 261 ± 49 days after documentation of the short-term changes. Of the youths who initially reported short-term changes, 14.9% maintained decreases in dietary sugar, 6% maintained increases in fruit and vegetable intake, and 3.4% maintained decreases in fat intake. For physical activities, 34.3% were engaged in ongoing sports participation, 25.4% continued walking for exercise, while only 1.5% of youths maintained running.

To examine whether specific lifestyle modifications corresponded to improvements in metabolic health, we compared BMI change in youths who reported sustained (long-term) behavior change to those who did not. The 25.4% of children who reported sustained walking exhibited a significantly greater decrease in BMI compared with children who did not report walking (Figure 1). No other behavior change differentiated youths whose BMI decreased from those whose BMI did not decrease (data not shown).
Figure 1. Change in BMI in children who did (Yes) and did not (No) report sustained walking
Discussion

The growing prevalence of obesity and related conditions among Latino youth has led researchers to examine both biological and sociobehavioral issues in the population.\textsuperscript{13,14} Despite recent calls for culturally tailored interventions to improve the health of obese Latino youth, very few such programs have been described in the literature.\textsuperscript{15} Toward that end, we have shown that a culturally informed lifestyle intervention program for high-risk Latino youth delivered in a community setting can improve obesity-related behaviors. These improvements included decreased sugar intake, increased fruit and vegetable consumption, and increased physical activity levels. Although the behavioral effects were attenuated over time, many youths reported sustaining healthy behaviors long after the formal education program was completed. Perhaps more encouraging than the behavioral outcomes was our finding that sustained walking corresponded to a significant decrease in BMI. This finding is promising from a public health perspective as walking is a relatively readily available intervention strategy for most youths.

Increased energy expenditure through physical activity has been shown to be an effective strategy to support weight management in
Data from the National Weight Control Registry indicate that walking is the most popular mode of physical activity among adults who are able to maintain significant weight loss. Less is known about the effect of walking on long-term weight management among youths. A recent systematic review identified only 15 studies in the pediatric population describing successful obesity interventions that increased physical activity. Of these 15, only 5 were delivered in the community setting. Our results suggest that encouraging overweight and obese youths to walk may indeed support weight-management efforts and potentially reduce long-term disease risk in this population.

Previous reports of pediatric obesity interventions have found positive relationships between physical activity and weight loss. The FitKid project found that after-school exercise programs resulted in decreased body adiposity while the children were enrolled in the program. Of interest, during the summer months when the program was out of session, the children returned to higher percentages of body fat. This supports the need for sustainable programs that do not rely on the school structure or school environment to be effective. While some school-based obesity interventions have shown success, it has been suggested that extra-curricular approaches may better foster
sustainable outcomes. In a recent review of noncurricular pediatric obesity programs, Jago and Baranowski\(^{22}\) concluded that school-based interventions struggle with low attendance rates, which could be ameliorated by delivering programs through community organizations.

The ELSC program is not a randomized controlled trial that is typical of interventions implemented in the academic setting. In contrast, this program was developed to meet the needs of the community and was designed to be feasible in a real-world environment. As such, our physical activity and nutrition outcomes were based upon self-reported behavior changes. While we acknowledge the limitations of self-reported data, this type of evaluation may be more reflective of real-world settings. Many pediatric obesity interventions described in the literature are randomized controlled trials with limited follow-up.\(^{23,24}\) Obstacles such as financial disincentives, provider shortages, cultural barriers, and inefficient organization of care all prevent the translation of findings from a controlled research environment to a more accessible community environment.\(^{25}\) Findings from adult diabetes and obesity prevention programs suggest that intensive lifestyle intervention programs are difficult to implement and sustain outside of a research
Our results propose that youth may respond more favorably to a program with community ties that can provide contextual structure to support sustainable behavior change. However, failing to integrate culturally informed components may limit the implementation and sustainability of such intervention programs in minority communities. Limited research has examined the sustainability of behavior change among vulnerable populations of obese youth such as Latinos. The obesity programs that are available typically do not address specific cultural or environmental factors that may contribute to unhealthy nutrition and sedentary behaviors. Taking a community approach to address obesity-related health disparities among Latino youth is a critical strategy that has not be investigated widely. Our findings provide evidence that community-based efforts developed by local community leaders working in a grassroots capacity can improve the health of the most vulnerable community members.

The origins of the program can be traced directly to a need within the community. The dietitians who developed the program initially ran a family diabetes program that focused on education and self-management for newly diagnosed adults and their spouses. However,
as the number of children who attended the education sessions with their parents increased, the need for a diabetes prevention component specifically targeting Latino youth became evident. The clinic leveraged existing partnerships with school-based nurses to identify and refer high-risk obese Latino youth to the child-centered program. Over time, the program has evolved through new collaborations, resources, outcomes, and staff, including the incorporation of promotoras (lay health workers) to deliver the education curriculum.

Although school-based interventions have been widely promoted to address pediatric obesity on a broad scale, these interventions may successfully increase knowledge of healthy behaviors but show limited effect on weight status.²⁹-³² Community-based approaches may foster behavior change to a greater extent than schools and may prove to be more beneficial in reversing obesity trends in youth.³³ Some recent studies support favorable obesity outcomes in the short-term through community-based interventions.³⁴ Our findings add to the available literature and extend the science in the field by suggesting that a culturally informed, community oriented intervention can produce sustainable improvements in obesity-related outcomes in minority youth.
Conclusions and Future Work

We propose the ELSC program as an effective model for a community-based lifestyle education program to support sustained behavior change in low-income, high-risk Latino youth. Costs to the families (primarily travel) were minimized by delivering the program through a community clinic with an established diabetes education program and leveraging existing partnerships with health care providers and funding agencies. Future work is necessary to evaluate whether the ELSC program can improve other markers of metabolic health and can be applied to diverse populations of youth from other communities.
References


