

Diabetes Se Puede Controlar: Effectiveness of a Brief Diabetes Education Program among Hispanic Adults

Jennifer B Unger^{1*}, Gladys Mendoza² and Adolph Falcon²¹Department of Preventive Medicine, University of Southern California Keck School of Medicine, USA²National Alliance for Hispanic Health, USA

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*Corresponding author

Jennifer B Unger, Department of Preventive Medicine, University of Southern California Keck School of Medicine, USA, Tel: (323) 442-8234; Email: unger@usc.edu

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Abstract

Diabetes is a leading cause of morbidity and mortality among Hispanics in the US. We conducted a randomized controlled trial of a diabetes education program for Hispanics, delivered by community health workers. Participants were randomly assigned to the intervention or a wait-list control. Participants in the intervention group showed significant decreases in Body Mass Index (BMI) at 1-, 3-, and 6-month follow-ups. BMI increased in the control group. Body Shape Index (ABSI) decreased more in the intervention group than the control group. A brief four-session diabetes education program delivered by community health workers can reduce diabetes-related health disparities among Hispanics.

Diabetes is a major contributor to morbidity and mortality among Hispanics in the United States (US) [1]. Hispanic adults are 1.7 times more likely than non-Hispanic White adults to be diagnosed with diabetes and 1.5 times more likely than Non-Hispanic Whites to die from diabetes [2]. Diabetes is especially prevalent in low-income neighborhoods where availability of healthy foods, recreation spaces, and healthcare services is limited [3]. Overweight/obesity is a major contributor to diabetes and is also more prevalent among Hispanics than among non-Hispanic Whites [2].

Culturally relevant and accessible health promotion programs are needed to help Hispanics prevent and/or control diabetes. To reach the diverse Hispanic population, these programs need to be culturally and linguistically appropriate for Hispanics. In medically underserved Hispanic communities, one promising strategy for preventing and controlling diabetes is to engage at-risk community members in health promotion programs before they present for medical treatment. This strategy offers an opportunity to establish healthier dietary and exercise habits, detect diabetes earlier, and connect individuals with health services if necessary. Community health workers members of the community who provide services to help connect the health care system with the residents living within the area can be an important part of this strategy. Recent reviews [2,4] have shown that diabetes management interventions led by community health workers in Hispanic communities produce better clinical outcomes than standard care and are cost-effective in preventing more costly diabetes complications [5,6]. These programs are especially needed among Hispanics who lack health insurance, documentation status, or a regular source of healthcare [7,8,9].

Although most studies of diabetes education programs facilitated by community health workers in diabetes have focused on management of diabetes after diagnosis, this strategy could be equally applicable for Hispanic community members who are at risk for diabetes but have not been diagnosed. This article presents a longitudinal evaluation of the Diabetes Se Puede Controlar: Community Health Champions (DCHC) Program. Hispanic adults at risk for diabetes were recruited from community-based organizations in Los Angeles, California and randomly assigned to either the diabetes education program or a weight-list control. We hypothesized that the intervention participants would show larger decreases in Body Mass Index (BMI) and Body Shape Index (ABSI) at 1-, 3-, and 6-month follow-ups.

Methods

Overall study design

This article describes a randomized controlled trial of a community-based diabetes education program for Hispanics. Participants were randomized to receive either the Diabetes Se Puede Controlar program or a wait-list control. Participants completed anthropometric measurements before the start of the program and at 1-, 3-, and 6-month follow-ups. The study was approved by the Institutional Review Board at the authors' institution.

Participants and recruitment

Participants were recruited at a community-based organization that provides health and social services to low-income Hispanic residents in Los Angeles, California. Flyers describing the program were posted at the agency and distributed through affiliated childcare programs and health clinics. Interested clients were invited to a presentation about the study and about the diabetes education program. Participants were eligible to participate if they were at least 18 years of age, fluent in either English or Spanish, competent to provide informed consent, and had no other physical conditions that would preclude participation in moderate physical activity. Interested and eligible clients were invited to provide written consent and enroll in the program; 300 clients expressed interest and 240 (80%) were eligible and enrolled in the program. Only 2 of the 240 participants were men, making gender comparisons impossible. Therefore, this analysis focuses on the 238 women who participated.

Measures

Measures included height, weight, and waist circumference, measured before the intervention (baseline) and at 1-, 3 and 6-month follow-up visits. Body Mass Index (BMI) and Body Shape Index (ABSI) were calculated. ABSI is based on waist circumference, weight, and height, where a higher ABSI indicates that waist circumference is higher than expected for a given height and weight, corresponding to a more central concentration of body volume. Higher levels of ABSI have been linked with higher risk of mortality in the NHANES study [10].

Intervention

The goal of the Diabetes Se Puede Controlar: Community Health Champions (DCHC) Program was to mobilize and strengthen the capacity of communities to improve access to effective diabetes control and management services among Hispanic adults. The DCHC education curriculum consisted of four one-hour sessions, delivered by trained community health workers. The first session described diabetes biology, risk factors, symptoms, diagnosis, and treatment. The second session focused on healthy eating, including necessary nutrients, limiting sugar and carbohydrates, mindful eating, portion sizes, reading food labels, healthier cooking habits, and making healthier choices when eating at restaurants. The third session focused on exercise, including the importance of exercise, physical activity guidelines, types of physical activity, goal-setting, and self-monitoring. The fourth session reviewed the information from the previous sessions and discussed ways to help a family member or friend manage their diabetes.

Statistical analysis

T-tests were used to examine differences in age, BMI, and ABSI between the intervention group and the control group at baseline.

Table 1: Baseline characteristics of participants (N=238).

	Intervention	Control	Overall
Mean age (SD)	63.9 (13.3)	56.9 (13.5)	60.4* (13.8)
BMI at baseline	30.3 (6.3)	31.1 (5.5)	30.8 (5.9)
ABSI at baseline	.1295 (.0017)	.1286 (.0014)	.1290 (.0011)

*Significant difference between intervention group and control group, p<.05

Multiple linear regression analyses were conducted to evaluate the effect of the intervention on change in BMI and ABSI at 1 month, 3 months, and 6 months, controlling for age.

Results

Recruitment and retention

Of the 238 women who enrolled, 232 completed the program and all follow-up assessments. Reasons for attrition included illness or hospitalization, moving out of the area, or inability to get on the scale for weighing. The participants who were lost to attrition did not differ from those who completed the program on any demographic or anthropometric variables.

Baseline characteristics of participants

Table 1 shows the demographic characteristics and baseline anthropometric measurements of the intervention and control groups in each city. The average age was 60 years, average BMI was 30.8 (classified as “obese” by CDC), and average ABSI was .1290 (above the mean found in NHANES).

Baseline differences between intervention and control groups

At baseline, participants randomized to the intervention group were significantly older than those in the control group (mean age=63.9 years in intervention group vs. 56.9 in control group, t=4.08, p<.05). Respondents in the intervention and control group did not differ significantly in BMI or ABSI. Because the two groups differed in age, all subsequent analyses were controlled for age.

Change in BMI from baseline to 1-, 3-, and 6-month follow-ups

Figure 1 shows the trends in BMI in the intervention and control groups in each city. There was a significant decrease in BMI at each time point in the intervention group (decrease of 0.28 BMI points at 1 month, .46 BMI points at 3 months, and .55 BMI points at 6 months, all p<.05). In contrast, in the control group, BMI increased significantly at each time point (increase of .09 BMI points at 1 month, .30 BMI points at 3 months, and .52 BMI points at 6 months, all p<.05). This led to a statistically significant difference in BMI change from baseline between the intervention and control groups at each time point; the intervention group showed a larger decrease in

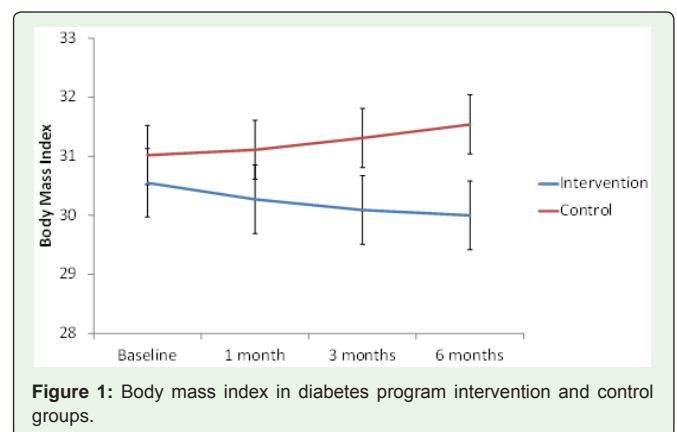


Figure 1: Body mass index in diabetes program intervention and control groups.

Table 2: Effects of intervention on change in BMI and ABSI (N=232).

	BMI			ABSI		
	1-month	3-month	6-month	1-month	3-month	6-month
Age	0.018	0.096	0.072	-0.022	0.084	0.077
Intervention (vs. control)	-0.219*	-0.357*	-0.320*	-0.204*	-0.181*	-0.214

Numbers in the table are standardized Beta coefficients, *p<.05

BMI than the control group at 1 month (F=10.77, p<.005), 3 months (F=31.46, p<.0005), and 6 months (F=25.84, p<.0005). The effect of the intervention on BMI at each time point, controlling for age, gender, and baseline BMI, is shown in Table 2. Experimental group was a significant predictor of BMI change at every time point. Figure 2 shows the non significant findings for ABSI.

Discussion

Effective community-based interventions are needed to educate Hispanics about diabetes and encourage them to improve their diet and exercise habits to prevent diabetes. Community-based educational interventions are especially needed for underserved Hispanic groups such as Hispanics with low income, limited access to healthcare, language barriers to accessing health education programs, and other risk factors.

The present study implemented an innovative community-based diabetes education program for Hispanics. Participants in the intervention group decreased their BMI at every time point, whereas the participants randomized to the control group showed increases in BMI. The program also achieved excellent participant retention over 6 months (97.5%). These promising results indicate that a brief four-session diabetes education program implemented at a community-based agency can be effective in decreasing BMI among Hispanic adults, who have a disproportionately high risk for diabetes and its complications. Widespread dissemination of these programs could help reduce health disparities among Hispanics.

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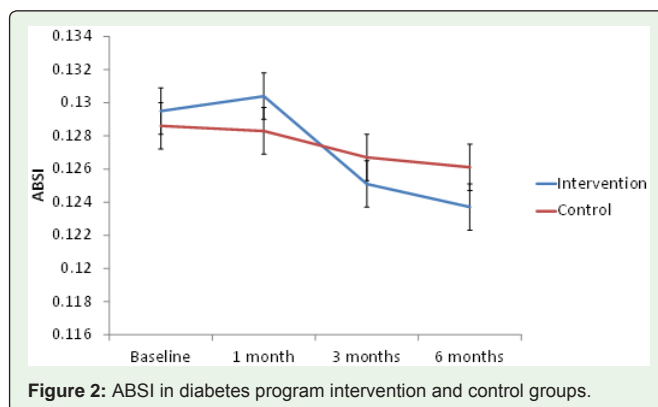


Figure 2: ABSI in diabetes program intervention and control groups.

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