

Overall, we found significantly lower autism rates among school districts with a predominance of Hispanic children than among districts with a predominance of non-Hispanic White children. It is curious that key socioeconomic community indicators explained the higher diagnosis rates among non-Hispanic Whites but failed to explain the lower rates in predominantly Hispanic school districts. Understanding how cultural and economic factors operate in the phenomena of lowered autism rates among Hispanics in south Texas could inform more useful ascertainment and intervention efforts. ■

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### Contributors

R.F. Palmer, T. Walker, and C.S. Miller originated the study. R.F. Palmer performed the analysis and supervised all aspects of its implementation. B. Bayles contributed to writing pertinent sections. All authors conceptualized ideas, interpreted findings, and reviewed drafts of the article.

### Acknowledgments

This research was supported by the Department of Family and Community Medicine, University of Texas Health Science Center, San Antonio.

### Human Participant Protection

No protocol approval was required because data were obtained from secondary sources.

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## LUCHAR: Using Computer Technology to Battle Heart Disease Among Latinos

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Many promising technology-based programs designed to promote healthy behaviors such as physical activity and healthy eating have not been adapted for use with diverse communities, including Latino communities. We designed a community-based health kiosk program for English- and Spanish-speaking Latinos. Users receive personalized feedback on nutrition, physical activity, and smoking behaviors from computerized role models that guide them in establishing goals in 1 or more of these 3 areas. We found significant improvements in nutrition and physical activity among 245 Latino program users; however, no changes were observed with respect to smoking behaviors. The program shows promise for extending the reach of chronic disease prevention and self-management programs. (*Am J Public Health*. 2010;100:272–275. doi:10.2105/AJPH.2009.162115)

Cardiovascular disease, although often preventable through nutrition and physical activity, remains the leading cause of death in the United States.<sup>1,2</sup> Latinos are less likely than members of other racial/ethnic groups to receive information on how to prevent cardiovascular disease,<sup>3–6</sup> in part because of their often limited access to health care services.<sup>7</sup>

Computer technology is rarely used as a means for health promotion among Latinos,<sup>8</sup> even though it may greatly extend the reach, fidelity, and sustainability of health promotion

Participants are guided through program with role models from a Latino family tailored to participant gender and age.



Participants receive personalized feedback on how well they meet surgeon general recommendations for nutrition, physical activity, and smoking.

LUCHAR

Physical Activity Recommendations: How You Compare



FIGURE 1—Features of the LUCHAR program.

TABLE 1—Outcomes for LUCHAR Pilot Community and Clinic Samples: Denver, CO, 2007–2008

	Community		Clinic	
	Baseline (n=200)	2-Month Follow-Up (n=161)	Baseline (n=99)	2-Month Follow-Up (n=84)
<b>Nutrition</b>				
≥5 fruit/vegetable servings per d, %	14	25*	14	30*
<2 fruit/vegetable servings per d, %	56	46*	68	35**
Mean overall nutrition score <sup>a</sup>	5.1	4.6**	6.0	4.1**
<b>Physical activity, %</b>				
Meets recommended guidelines <sup>b</sup>	33	49***	45	65**
Does not meet recommended guidelines <sup>b</sup>	52	40***	55	35**
Currently smokes, %	20	19	18	16

<sup>a</sup>Higher scores reflect poorer nutrition.

<sup>b</sup>30 minutes of physical activity per day most days of the week.

\*P<.05; \*\*P<.01; \*\*\*P<.001.

efforts.<sup>9</sup> We developed a computer program, LUCHAR (Latinos Using Cardio Health Action to Reduce Risk), with the goal of encouraging healthy diets and increased physical activity in the Latino population (*luchar* means “to battle” in Spanish). This interactive, computer-based program, designed to be self-administered via kiosks situated in community settings, is intended to help users increase physical activity, improve nutrition, and reduce or quit smoking.

LUCHAR, grounded in social science theory,<sup>10–13</sup> was developed through formative community work<sup>14–18</sup> (details on the development of the program are reported elsewhere<sup>19</sup>). Users can complete the program in English or Spanish and do so at their own pace. They begin by inputting their gender and age and are then matched to a computerized role model of the same gender and a similar age. With pictorial, audio, and musical accompaniment, the role model introduces the program

and invites users to answer questions about their heart disease risk.

After answering questions about their health status and nutrition, physical activity, and smoking behaviors, users receive graphical feedback (Figure 1) showing comparisons with the surgeon general's recommendations in terms of these behaviors. The role model encourages users to set 1 behavior change goal related to physical activity, nutrition, or smoking, and they identify anticipated barriers to and strategies for achieving their goal. Users receive a printout at the completion of the program that includes their personal program summary and referrals for local resources that can help support their goal.

## METHODS

Between March 2006 and October 2008, we partnered with trusted community-based organizations (2 social service agencies, a church, a school, and a coffee shop) and a primary care clinic serving Latinos in Denver, Colorado, to pilot test LUCHAR, giving them computers, kiosks, and printers to facilitate delivery of the program. A bilingual recruiter was regularly on site at the community and clinic facilities to enroll users, and agency representatives could refer interested users to this recruiter when she was not on site if they wanted to participate. The recruiter established rapport with users and helped them develop familiarity with the program's computers; she also completed all follow-up assessments, allowing for greater program continuity.

In the 5 community settings, we screened 285 Latinos to determine whether they were eligible for the program (participants were required to be English or Spanish speakers, residents of Denver, and aged 21 years or older); of the 230 who were eligible, 200 completed the program (36–51 at each community site). In the primary care clinic, we screened 134 persons, of whom 103 were eligible and 99 completed the program.

Two months after program completion, 81% of the community participants and 84% of the clinic participants were administered a telephone-based follow-up risk assessment (these retention rates are as high as or higher than those of many research

programs involving Latinos<sup>14–17</sup>). Remaining participants were considered lost to follow-up after 5 failed contact attempts; most of these failed follow-up attempts were attributed to disconnected telephones (42%) and nonavailability because of travel to Mexico (38%). We observed no baseline demographic or behavioral differences between those completing and not completing the follow-up assessment.

## RESULTS

LUCHAR program users were primarily aged between 31 and 50 years (64%), and all self-identified as Latino. Slightly under half (47%) were exclusive Spanish speakers, and the same percentage were men. A third (35%) had not completed high school. Many of the participants were classified as obese (56%), and 48% indicated that they had been diagnosed with at least 1 chronic condition.

Behavioral outcomes at the 2-month follow-up are shown in Table 1. Participants showed significant improvements in fruit and vegetable consumption at the follow-up assessment, along with significant increases in the overall quality of their diet and in their physical activity levels. The program had no impact on smoking behavior.

## DISCUSSION

We know of no other program that has demonstrated the feasibility of partnering with community-based organizations to deliver a computer-based health intervention to Latinos. Our easy-to-use, replicable program showed promising effects in this pilot study, with significant changes in nutrition and physical activity behaviors at 2 months. There were no effects on smoking, possibly because the program involved a 1-time, low-intensity intervention.

By providing evidence of the efficacy of technology-based health promotion efforts, LUCHAR and similar programs can improve the reach of health promotion in diverse communities. However, LUCHAR is not simply a computer-based program delivered on a kiosk; community partnerships and the availability of recruiters capable of establishing and sustaining rapport are essential to its success.

Our study involved limitations, including the use of self-reported data and the lack of a control group or randomization. To overcome these limitations, our next step will be to test LUCHAR in the context of a community-based, randomized controlled trial with the goal of documenting the program's effects on weight and body mass index. ■

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This brief was accepted June 2, 2009.

## Contributors

B. Leeman-Castillo led the writing of the article. B. Beaty conducted the study analyses. S. Raghunath collected the data for the study and assisted with the writing of the article. J. Steiner reviewed and edited drafts of the article. S. Bull originated the project, oversaw all related work, reviewed and edited the first draft of the article, and wrote the second draft of the article.

## Acknowledgments

This work was supported through funding provided by the National Heart, Lung, and Blood Institute (project 1U01 HL79208).

We acknowledge the following Denver community organizations that partnered with us in this work: Servicios de La Raza, San Cayetano, Centro Juan Diego, Remington School, and The Laughing Bean Café.

## Human Participant Protection

This study was approved by the Colorado Multiple Institutional Review Board. Participants provided written informed consent.

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