Research Article

Promotores de Salud: Educating Hispanic Communities on Heart-Healthy Living

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Abstract

Background: *Age-adjusted cardiovascular disease (CVD) mortality rates for Hispanics are lower than for non-Hispanics. However, CVD is the leading cause of death among Hispanics, and there is an increasing heart health problem among this population. One strategy for preventing CVD is the use of community health workers (CHWs). A CHW is a member of the community who disseminates information, attempts to foster healthy behavior, and provides education, advice, social support, and assistance to the community. Although the efficacy of CHWs has been tested, few studies have examined their effectiveness in educating communities and facilitating behavior change.* ***Purpose:*** *This study explored whether trained CHWs can effectively deliver education on heart-healthy behaviors among Hispanics.* ***Methods:*** *Two group of participants received education programs delivered by CHWs, popularly known in the Hispanic community as promotores de salud. A pretest/post-test design was implemented to assess intervention effect. Analyses included sample t-test, chi-square (χ^2), and Mann-Whitney U Test.* ***Results:*** *The two groups differed in demographics and pre-existing risk factors ($p<.05$). Participants in both groups significantly improved their healthy behaviors ($p<.01$).* ***Discussion:*** *Observed improvement in healthy behaviors in both participant groups strengthens the argument that the community health outreach promotores model may be effective and can be adapted to a variety of settings.* ***Translation to Health Education Practice:*** *The results of this study support the utilization of CHWs.*

BACKGROUND

Although statistics indicate that Hispanics have slightly lower cardiovascular disease (CVD) mortality rates than other U.S. population groups,[1] they present higher prevalence of some risk factors and have an increased risk of certain cardiovascular conditions. In fact, CVD is the leading cause of death among Hispanics, with those between the ages of 35 and 64 being 1.3 times more likely to have a stroke than their U.S. non-Hispanic White counterparts.[2]

Certain modifiable risk factors, includ-

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ing high blood pressure, high cholesterol, diabetes, tobacco use, obesity, and lack of exercise, are the main targets for primary and secondary prevention of heart disease and stroke. A substantial proportion of the Hispanic population has multiple risk factors, increasing their likelihood of CVD. For instance, 80% of Mexican American adults (Mexican Americans constitute the largest subgroup of the Hispanic population) with hypertension have uncontrolled high blood pressure[3] and are 1.7 times as likely to have diabetes as non-Hispanic Whites.[4] Similarly, obesity continues to increase among Mexican American children and adults.[5,6]

All of this represents a formidable public health challenge given the rapid growth of the Hispanic population, including the elderly. In 2004, more than 40 million Hispanics were living in the United States, representing 13.8% of the total population. More than 10% of Hispanics are 55 years of age and older.[7] As this segment of the population continues to grow, heart failure and other cardiovascular diseases will continue to increase in importance as a public health concern requiring greater focus on culturally competent prevention strategies.

Factors that contribute to increased risk for CVD and poor health outcomes among Hispanics include (a) language and cultural barriers, and (b) lack of health insurance and access to preventive care.[8] According to the U.S. Census Bureau, more than 28.1 million people in the U.S. speak Spanish at home.[9] The development and dissemination of health information and education in Spanish is a crucial step in providing all Americans with accurate information, so that informed decisions can be made regarding health maintenance, disease prevention and treatment for themselves and/or family members.[10] Similarly, a recent U.S. Census Bureau study found that 32.7% of Hispanics are uninsured, and lack access to appropriate health care.[11]

Community Health Workers

One of the *Healthy People 2010* goals is to eliminate health disparities. Racial/ethnic minority groups, including Hispanics, are disproportionately affected by several of the leading causes of mortality and morbidity.[12] Using community health workers (CHWs) to deliver health education interventions is a promising strategy to improve the health care and health status of underserved minority populations.[13]

A CHW is someone who (a) is a member of the community, (b) spreads new information, (c) attempts to influence healthy behavior, and (d) provides education, advice, social support, and aid to his/her community. CHWs also provide community-based services such as assessment of health and risk status, delivery of educational interventions, and tracking and monitoring of fellow community members.[13-15] However, the CHW profile varies across programs. For instance, CHWs may receive no formal training or several months of training; they may be employed by a single agency or many agencies; they may or may not be paid for the time they spend in training and performing their various roles.[13-16]

CHW programs have been widely used to reach a variety of populations and to address a variety of health issues.[17-21] Similarly, the efficacy of CHWs has been tested in randomized controlled intervention trials.[22-24] However, few studies have looked at CHWs' effectiveness or lack of effectiveness in educating communities. This is important, as translation of research into community interventions continues to be an issue with regard to behavior-related risk factors for chronic diseases, including CVD.

Since the 1990 Texas census, the state's Hispanic population has almost doubled, representing the fastest growing minority group in the North Texas region.[25] This region includes Dallas, Fort Worth, and Arlington, three metropolitan areas that have experienced sustained economic growth and have attracted many Hispanics among their 5 million total residents. Despite this rapid growth, few comprehensive programs exist to meet the health needs of this Hispanic population. This constitutes an opportunity for culturally and linguistically appropriate educational strategies using community initiatives such as the CHW model.

One particular health education program, *Salud Para Su Corazón of North Texas* (SPSCNT), understood the relevance of CHWs—popularly known in the Hispanic community as *promotores de salud*—for the Hispanic populations residing in the area. Its main goal was to promote heart-healthy lifestyle behavior education among Hispanics. The National Heart, Lung, and Blood Institute (NHLBI) initiated this heart health community-based intervention program by funding SPSCNT as one of the initial six of today's twelve National Enhanced Dissemination and Utilization Centers. Empirical evidence has accumulated regarding the impact of SPSCNT as a culturally comprehensive Hispanic CVD prevention program.[26-28] The program is part of an ongoing national initiative to build community-based *promotores* models for CVD prevention using different intervention strategies. SPSCNT has built an infrastructure in Forth Worth and surrounding communities that includes a community-based participatory approach.

SPSCNT distinguishes itself from other CHW programs in several ways. First, it was developed using a participatory perspective in which the community was invited to contribute. In this context, a Network of Partner Organizations consisting of community agencies/organizations working with Hispanics was established to inform implementation strategies. In addition, SPSCNT established a train-the-trainer model in which NHLBI-trained *promotores*, under the supervision and support of the investigators, trained the local *promotores*, who then took the lead in the recruitment/training process. *Promotores* were also actively involved in the development of the program. Second, SPSCNT collaborated with the Network of Partner Organizations, which represented many constituencies in the community, thus providing an ideal environment in which to build culturally enriched strategies, train *promotores*, disseminate information, and recruit community members.

PURPOSE

The purpose of this study was to explore

whether trained CHWs, or *promotores de salud*, can effectively deliver a community-oriented, environmentally uncontrolled educational intervention and facilitate behavior change among Hispanics residing in North Texas.

METHODS

Study Design and Participants

To assess the changes in reported health behaviors, the study followed a two-group, pre- and post-test design. All participants completed a heart-healthy behavior questionnaire immediately before the intervention and six months after the initiation of the intervention. The Institutional Review Board approved the study, and the participants gave written informed consent in English or Spanish. The intervention consisted of two groups of participants who received a six-month education program through one of two different approaches: (1) structured intervention in a classroom setting (Classroom Group), or (2) distribution of heath education materials mailed or delivered to the participants' homes in a more informal setting (Home Group). The two groups differed in demographics and CVD-related risk factors, which allowed for an assessment of the effectiveness of two education approaches under different circumstances. The two-group design facilitated the implementation and evaluation of two different education approaches. Although trained *promotores de salud* recruited participants and delivered the intervention to both groups, the Classroom Group intervention was more traditional, controlled, and structured, and used a previously tested education curriculum. In contrast, the Home Group intervention was less controlled and structured, as materials were delivered to participants' home environment, giving them the opportunity to review and learn from the materials on their own.

A total of 213 male and female Hispanic adults from a metropolitan area, primarily monolingual Spanish speaking, were initially recruited to participate in the program and met the study's eligibility criteria, which included (a) being of Hispanic descent, (b) being 18 years of age or older, and (c) not currently being treated for any cardiovascular, hypertensive, or diabetes condition. Recruitment took place in a number of different contexts, including citywide Hispanic events, such as health fairs, and ongoing programs, such as General Education Diploma (GED) classes and toddler/pre-kindergarten classes for parents. *Promotores* also recruited participants in their own neighborhoods.

Where setting allowed, qualified individuals were told about the nature of the program, provided with informed consent materials, and asked to complete pretest questionnaires and select their intervention group. In those settings that did not allow for confidential interaction, prospective participants were briefed on the nature of the program and asked to provide contact information. *Promotores* then contacted these individuals within a few days by telephone and invited them to attend a group orientation meeting, where they completed informed consent forms and questionnaires and self-selected the group they preferred to join. Most of the Home Group participants came from the *promotores*' neighborhoods, and in some cases they were recruited in their own households, where they also completed program requirements such as consent forms and questionnaires. (More details about the recruitment, training, questionnaires, and procedures can be found on the CD-ROM *The Promotores de Salud Community Health Outreach Model, The North Texas Salud Para Su Corazón NHLBI CVD EDUC Initiative, 2004,* which is available upon request [HB].)

Promotores de Salud

Consistent with the CHW model, all SPSCNT *promotores de salud* were Hispanic/Latino, spoke the Spanish language, lived in the same community as the participants, and demonstrated a strong desire to work with the Hispanic community. One male and 18 female *promotores* were recruited (this difference may be due to the fact that men in this community may work long hours while more women have part-time jobs that make their schedule more flexible). Their mean age was 45 years old (range 23-68), 75% were married, and 74% were born in Mexico and had resided in the United States for an average of 26 years. Their mean education level was equivalent to middle school, and 58% preferred speaking both English and Spanish.

Initially, *promotores* were recruited at network partner organizations, at public events, and through the local media. The program also partnered with local agencies involved in the training of CHWs, some of which are recognized by the Texas Department of State Health Services as certified training sites. These approaches were successful in identifying and recruiting *promotores*, who were then trained by the NHLBI-trained *promotores*. Local *promotores* recruited additional *promotores* in their own neighborhoods. Approximately half of the *promotores* were paid, and the rest were volunteers who generally did not hold a work permit but wanted to contribute to their community and had the experience of participating in a health-related program.

The NHLBI's *Su Corazón Su Vida* (*Your Heart, Your Life*),[29] a user-friendly, bilingual, evidence-based curriculum, was used to train *promotores de salud* (for further details on the curriculum, please see the NHLBI website). The training was facilitated by the investigators and consisted of approximately 50 hours of didactic or on-the-job instruction, practicum education (32 hours), and ongoing in-service sessions (16 hours). Additionally, *promotores* were provided with ongoing skills development based on project demand and personal skills, thus addressing the needs of each person individually while facilitating group integration. These training sessions were facilitated by the investigators and by master's-level public health students.

Measures

Promotores collected demographic data and helped participants complete a self-reported risk factor questionnaire (available in English and Spanish) for cardiovascular disease in a yes/no format. Questions included

family history of CVD, current smoking status, exposure to secondhand smoke, and personal assessment of body weight and physical activity level. The questionnaire also asked whether the participant had ever received a doctor's diagnosis of high blood pressure, high cholesterol, and/or diabetes. These data were used for comparing both groups of participants.

The main outcome measure was a pencil and paper, 35-item, 4-point Likert-type scale (1 = never, 4 = always) questionnaire that assessed participants' heart-healthy behaviors before and six months after baseline assessment. The scale included five subscales assessing the following factors: salt and sodium consumption (ten items), cholesterol and fat consumption (ten items), weight-control practices (five items), physical activity level (ten items) and overall risk level (mean of all subscale scores). The questionnaire was available in English and Spanish, and questions were simply worded for easy comprehension (e.g., "Do you drink fat-free or 1% milk?"). As in the risk factor questionnaire, *promotores* helped all participants complete the questionnaire.

Given the high positive correlations among the pretest and post-test scores, a composite overall mean pre–health behavior score (computed from the four pretest health scores) and mean overall post–health behavior score (computed from four post-test health scores) were computed. Specifically, pre-salt scores were highly correlated with pre-fat, pre-weight, and pre–physical activity scores ($p<.01$); pre-fat scores were highly correlated with pre-nonsmoking, pre-weight, and pre–physical activity scores ($p<.05$); and pre-weight scores were highly correlated with pre–physical activity scores ($p<.01$). Among the post-test health behavior scores, post-salt scores were correlated with post-fat, post-weight, and post–physical activity scores ($p<.05$); post-fat scores with post-weight and post–physical activity scores ($p<.05$); and post-weight scores with post–physical activity scores ($p<.01$). Thus, the four pretest health behavior scores and the four post-test health behavior scores were significantly correlated among each other: salt and sodium (10 items, $\alpha=.73$); fat and cholesterol behaviors (10 items, $\alpha=.82$); weight-control behaviors (5 items, $\alpha=.75$); physical activity behaviors (10 items, $\alpha=.83$); and smoking behaviors (3 items, $\alpha=.71$).

To obtain content and face validity on each scale, SPSCNT investigators first developed the items from the NHLBI SPSC *An Ounce of Prevention* workbook and from a *fotonovela* based on heart-healthy living among Hispanics. Second, a panel of cardiovascular and public health experts provided feedback on the relevance of each item. Third, the questionnaire was tested with a group of *promotores*. Internal consistency was computed for each subscale using pre- and post-test data. The results showed that the subscales had acceptable reliability (Cronbach alpha coefficients>.70).[30]

Study Procedures

Under the supervision of the investigators, the *promotores de salud* met weekly in a classroom setting with the Classroom Group and delivered six structured, educational sessions using the *Su Corazón Su Vida* curriculum and materials. The curriculum consisted of the following lessons: (1) "Are you at risk of heart disease?"; (2) "Be more physically active"; (3) "All you need to know about blood pressure, salt, and sodium"; (4) "Eat less fat, saturated fat, and cholesterol"; (5) "Maintain a healthy weight"; and (6) "Make heart-healthy eating a family affair." Culturally and linguistically relevant heart-health materials from NHLBI and other instructional documents were also distributed during the sessions. To ensure consistency across facilitators, the content of the sessions was clearly defined, and the *promotores* were specifically trained to deliver all aspects of all sessions. Each class lasted from one-and-a-half to two hours. Additionally, *promotores* conducted periodic phone calls to participants to encourage retention and healthy behaviors. Education learning objectives were reviewed in sessions 1-4, and sessions 5-6 were dedicated to review. Therefore, to graduate from the SPSCNT program, participants were required to attend more than 50% of the training, or a minimum of four complete sessions.

The Home Group did not receive classroom-setting education sessions. Instead, they received NHLBI educational material that was mailed or delivered periodically to their homes (the same material received by the Classroom Group); monthly phone calls from the *promotores* to confirm they had received the material and to encourage them to read it; and personalized postcards every two to three months to encourage retention. Six months after the intervention, the *promotores* visited all participants in their homes to collect post-intervention data through the same questionnaires used in the pretest.

Data Management

Preliminary analysis strategy. Before conducting main analyses, an attempt was made to find any significant ($p<0.05$) demographic and risk factor differences between the participants who completed and did not complete the post-test assessment. Furthermore, because participants self-selected their group membership, another attempt was made to examine any significant demographic and risk factor differences between the Classroom and Home Group participants. To examine categorical variable differences (e.g., gender, language preference, country of origin, and health risk factors) between completion status (completed vs. not completed) and completed participant groups (Classroom Group vs. Home Group), chi-square (χ^2) tests and a Mann-Whitney *U* Test were conducted. To examine continuous variable differences (e.g., age, number of children, years residing in the United States), two one-way Analysis of Variance (ANOVA) measures were used to compare the same two-group factors.

Statistical analysis strategy assessing impact of intervention. To examine any positive changes between the healthy behaviors pretest to post-test scores, paired sample t-tests (with a conservative p-value of .01) were conducted on (a) all participant, (b) Classroom Group participants, and (c) Home Group participants. Because the participant groups differed in educational procedures,

Table 1. Comparison of SPSCNT Participants Who Entered and Completed the Program

Demographic Variable	Total (n=113)		Classroom Group (n=67)		Home Group (n=46)	
Age[a]	37.27	10.89	35.71	8.92	39.40	12.92
Gender[b]						
Females	94	83%	59	88%	35	76%
Number of children[a,c]	1.84	1.39	2.45	1.31	1	1.07
Preferred language[c,d]						
Spanish	109	96%	67	100%	42	91%
English	4	4%	0	0%	4	9%
Country of origin[d]						
United States	21	19%	5	7%	16	35%
Mexico	64	57%	55	82%	19	41%
Other	11	10%	1	1%	10	22%
Years residing in United States[a,c]	16.56	15%	13.03	10%	21.39	47%
Smoking[c,d]	8	7%	2	3%	6	13%
Secondhand smoke	21	19%	10	15%	11	24%
High blood pressure[c,d]	19	17%	15	22%	4	9%
High cholesterol	15	13%	12	18%	3	7%
Diabetes	9	8%	6	9%	3	7%
Overweight	50	44%	33	49%	17	37%
Lack of exercise	42	37%	23	34%	19	41%
History of heart disease[d]	24	21%	17	25%	7	15%

[a] Numbers displayed as means and SD or percents.
[b] Indicates statistically significant differences between total complete and total incomplete groups ($p<0.05$). The only statistically significant difference between groups was gender.
[c] Indicates statistically significant differences between completed Classroom and completed Home Groups ($p<0.05$).
[d] Indicates statistically significant differences between incomplete Classroom and incomplete Home Groups ($p<0.05$).

statistically comparing their test scores would have produced invalid results.

RESULTS

Among Classroom Group participants, 152 agreed to participate, and 67 (44%) completed at least four classes and a 6-month post-test assessment. Among Home Group participants, 61 agreed to participate (no class attendance required), and 46 (75.4%) completed the same 6-month post-test assessment. Table 1 represents demographic and risk factor information by total and participant group.

Of the 213 participants recruited to complete pre-intervention questions (see "Measures" section above), 113 (53%) completed the program. The percentages of participants who did not complete the post-test healthy behavior questionnaire were different in the Classroom and Home Groups—56% and 25%, respectively. Compared to the Home Group, more Classroom Group participants dropped out of the program. Tables 1 and 2 include the demographic and risk factor information for individuals who completed and did not complete the program, respectively. These tables also reflect the demographic and risk factor scores for each participant group (Classroom and Home) by completion status.

There was a significant difference between those who completed and did not complete the program with regard to gender ($p<.05$): more males completed the program. Among the participants who completed the program, there were statistically significant differences between the Classroom Group and the Home Group with respect to demographic and risk factor variables. Classroom Group participants had more children (2-3 children vs. 1 child), preferred speaking Spanish in a greater proportion (100% vs. 91%), and had resided in the United States for a shorter period of time (mean of 13 years vs. 21.4 years) than Home Group participants, respectively. In addition, the Classroom Group had a lower proportion of participants who smoked (4% vs. 13%) and a higher proportion of participants with high blood pressure (22% vs. 9%) than the Home Group (Table 1).

Among the participants who did not complete the program, there were statistically significant differences between the Classroom Group and the Home Group with respect to language preference and country of origin. More Classroom Group participants preferred speaking Spanish than Home Group participants (100% vs. 80%), and a greater percentage of Classroom Group participants were from a country other than the United States (83% vs. 54%) (Table 2).

Table 2. Comparison of SPSCNT Participants Who Entered and Did Not Complete the Program

Demographic Variable	Total (n=100)		Classroom Group (n=85)		Home Group (n=15)	
Age[a]	37.01	9.62	36.31	8.03	42.2	17.24
Gender[b]						
Females	93	93%	78	92%	15	100%
Number of children[a,c]	1.88	1.32	1.97	1.32	1.2	1.03
Preferred language[c,d]						
Spanish	97	97%	85	100%	12	80%
English	3	3%	0	0%	3	20%
Country of origin[d]						
United States	15	15%	9	11%	6	40%
Mexico	76	76%	69	81%	7	47%
Other	3	3%	2	2%	1	7%
Years residing in United States[a,c]	14.39	11.83	13.93	12.02	17.8	10.28
Smoking[b,c]	6	6%	3	4%	3	20%
Secondhand smoke	19	19%	14	16%	5	33%
High blood pressure[b,c]	18	18%	11	13%	7	47%
High cholesterol	16	16%	14	16%	2	13%
Diabetes	4	4%	3	4%	1	7%
Overweight	51	51%	40	47%	11	73%
Lack of exercise	43	43%	33	39%	10	67%
History of heart disease[c]	29	29%	21	25%	8	53%

[a] Numbers displayed as means and SD or percents.
[b] Indicates statistically significant differences between total complete and total incomplete groups ($p<0.05$). The only statistically significant difference between groups was gender.
[c] Indicates statistically significant differences between completed Classroom and completed Home Groups ($p<0.05$).
[d] Indicates statistically significant differences between incomplete Classroom and incomplete Home Groups ($p<0.05$).

Impact of Intervention

To determine whether the intervention had an impact on the participants' heart-healthy test scores, this study investigated whether individual participants who completed the intervention, as well as each participant group, showed increased healthy behaviors after the SPSCNT program. The means, standard deviations, and t-test values of the dependent measures are presented in Table 3.

After performing paired sample t-tests using the pretest and 6-month post-test behavior scores, there were statistically significant differences between all pretest and post-test behavior scores (all $p<.01$). Specifically, all participants reported improved overall health; healthier dietary practices, including salt, sodium, fat and cholesterol consumption; enhanced weight control practices; and increased physical activity level. In addition, the same analysis was conducted on each participant group. Between both groups, the results were the same; there were increased healthy behaviors among both Classroom and Home Groups. These results show that the SPSCNT intervention program increased healthy behavior scores among all participants, regardless of group (Table 3).

DISCUSSION

This study showed that all participants, in both groups, improved with respect to healthy behaviors. The study also showed positive changes from pretest to post-test healthy lifestyle behavior scores among all participants, demonstrating that program components could produce positive healthy behaviors in both classroom and home settings. The results of this study are consistent with the literature.[20-24] Observed improvement in healthy behaviors in both participant groups strengthens the argument that the community health outreach *promotores* model may be effective and can be adapted to a variety of settings. Previous research has indicated the efficacy of CHWs in delivering interventions under randomized, controlled circumstances.[22-24] The present study contributes to the literature in translating research into practice, and by indicating that CHWs can also effectively facilitate behavior change under uncontrolled circumstances.

There were many notable unique features that emerged during the implementation of SPSCNT that should be explored further. Although acculturation was not measured in this study, it was observed that those who were recent immigrants and experienced more English language barriers selected the classroom group. Previous research shows that learning styles are related to acculturation levels among Mexican Americans.[31,32] Future studies should

Table 3. Health Behavior Changes by Total Participants and Group

Group	Measures	N	Mean	SD	Pair	t-value
Total	Prehealth	113	2.36	0.44	Prehealth-Posthealth	12.34*
	Posthealth	113	3.07	0.54		
Classroom Group	Prehealth	67	2.43	0.42	Prehealth-Posthealth	7.98*
	Posthealth	67	2.88	0.52		
Home Group	Prehealth	46	2.27	0.45	Prehealth-Posthealth	12.01*
	Posthealth	46	3.34	0.44		
Total	Presalt	113	2.6	0.43	Presalt-Postsalt	12.16*
	Postsalt	113	3.24	0.44		
Classroom Group	Presalt	67	2.63	0.42	Presalt-Postsalt	9.48*
	Postsalt	67	3.15	0.43		
Home Group	Presalt	46	2.56	0.45	Presalt-Postsalt	8.30*
	Postsalt	46	3.35	0.44		
Total	Prefat	113	2.46	0.64	Prefat-Postfat	11.06*
	Postfat	113	3.19	0.56		
Classroom Group	Prefat	67	2.5	0.61	Prefat-Postfat	9.29*
	Postfat	67	3.08	0.54		
Home Group	Prefat	46	2.41	0.69	Prefat-Postfat	7.23*
	Postfat	46	3.33	0.55		
Total	Preweight	113	2.47	0.6	Preweight-Postweight	10.96*
	Postweight	113	3.22	0.56		
Classroom Group	Preweight	67	2.52	0.56	Preweight-Postweight	8.01*
	Postweight	67	3.14	0.58		
Home Group	Preweight	46	2.4	0.66	Preweight-Postweight	7.81*
	Postweight	46	3.34	0.51		
Total	Prephysical	98	1.89	0.56	Prephysical-Postphysical	5.31*
	Postphysical	98	2.27	0.67		
Classroom Group	Prephysical	62	2.06	0.52	Prephysical-Postphysical	3.33*
	Postphysical	62	2.34	0.65		
Home Group	Prephysical	36	1.6	0.52	Prephysical-Postphysical	4.35*
	Postphysical	36	2.15	0.69		

*p-value is significant at <0.01

expand their evaluation designs to explore differences between groups and participants related to retention/dropout, attendance in education sessions, response to phone calls, and so on.

Another advantage of the SPSCNT is the *promotores*' personalized approaches to health education. The *promotores* used affective- and cognitive-based approaches to educate their fellow Hispanic community members. For example, as an affective-based teaching technique, the *promotores* told familial stories, distributed family recipes, and provided incentives through activities that involved the entire family, not only the participant. (More information on the education strategy can be found on the CD-ROM *The Promotores de Salud Community Health Outreach Model, The North Texas Salud Para Su Corazón NHLBI CVD EDUC Initiative, 2004,* which is available upon request.) The participants were treated like friends and family and were very responsive to this type of approach, which was evident in their positive evaluations of the *promotores*. The *promotores* also used cognitive-based teaching techniques that incorporated valid curricula, print materials, and evaluation tools that enabled participants to easily process and learn the materials. The effectiveness of these educational and teaching approaches was not specifically assessed in this study, and it would be worthwhile to conduct future investigations to determine their impact.

Other issues observed in this study

warrant further investigation, including differences in the number of male and female *promotores*, differences in dropout rates between the Classroom and Home groups, and differences in the number of participants who completed the program in each intervention group. Similarly, strategies for increasing retention need to be formally explored, including providing incentives, facilitating social support, and shortening the duration of the intervention.

In summary, community health outreach models and the use of CHWs constitute powerful tools to provide the community with much needed health education and services. This study illustrates how different educational approaches delivered by CHWs improve awareness and knowledge about heart-healthy living among Hispanic communities. The value and contributions of *promotores* should be respected, honored, and appreciated.

TRANSLATION TO HEALTH EDUCATION PRACTICE

The results of this study suggest that CHWs can contribute to significant improvement in health education and healthy behaviors among minority groups, as they overcome documented barriers, such as familial responsibilities, language, culture, socioeconomic status, and immigration status. Health education interventions with Hispanic communities may particularly benefit from CHW involvement when:

1. CHWs are recruited from the same community in which the intervention will take place; are properly trained on the topics/behaviors of interest; and are involved throughout the entire process of the intervention, including planning, development of materials, implementation, and evaluation. For example, it is essential to seek the input of CHWs in the intervention design, content, and administration of the education curriculum, data collection methods, and follow-up approaches. This will not only facilitate the completion of the intervention, but will also translate into capacity building for future community activities.

2. A certain degree of flexibility is embedded into the design and delivery of the intervention. For example, planners should include more than one method of data collection (e.g., self-administered and facilitated completion); provide an alternative location for educational activities (e.g., community center; participants' homes); and implement an extended timeline to accommodate those participants who hold temporary jobs and are only in the study area periodically. CHWs may be instrumental in informing researchers as they design appropriate studies, and in informing practitioners as they carry out interventions.

3. Education approaches include not only cognitive-based methods, but also affective-based approaches that enhance participants' involvement in the education process. For example, an affective-based approach might include the integration of traditional stories, family recipes, and cultural expressions such as dance, music, and community-based activities. This can be achieved more easily through the involvement of CHWs, given that they share the same cultural and language background of the participants and understand their learning preferences.

4. The entire family is involved. For example, one should provide participation incentives that are attractive to the household, not only to the participant; extend any pledge to the entire family; and address certificates of recognition to both participant and spouse. CHWs understand the family dynamics of their neighbors and can work with practitioners in implementing family-oriented initiatives.

Limitations

There are a number of limitations to this study that should be pointed out. First, the present study design cannot examine which group showed the most improvement because the groups were very different from each other, and there were no control groups to compare them to. Second, mono-method bias, mono-operation bias, and acquiescence responses are additional threats to the study's measures. It is possible that not measuring lifestyle behaviors with multiple biological and observational methods (mono-method bias) and not assessing other measures that relate to healthy lifestyles (mono-operation bias) affected the findings, not to mention the risk that participants faked their answers in order to make the results more impressive (acquiescence). These threats to the study's construct validity could be eliminated by having more than one method and measure for assessing healthy lifestyles. In addition, it should be noted that, because the study lacked multiple follow-up assessments, the SPSCNT program might lose its effectiveness over time.

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