



The Impact of Lay Health Advisors on Cardiovascular Health Promotion Using a Community-based Participatory Approach

Sue Kim, PhD, RN, NP
Deborah Koniak-Griffin, EdD, RNC, FAAN
Jacquelyn H. Flaskerud, PhD, RN, FAAN
Peter A. Guarnero, MSc, PhD, RN

Overweight and obesity, lack of exercise, and exposure to tobacco smoke are clearly identified behavioral risk factors for cardiovascular disease. These problems disproportionately affect some communities. To address these problems within one community of underserved Latinos, participatory research methods were used to design an outreach program through a collaborative partnership between UCLA School of Nursing, Los Angeles County Department of Health Services, and members of the target community. Latina lay health advisors (LHAs) ($n = 12$) from the community were recruited and trained to teach 3 classes on healthy nutrition, physical activity, and maintaining smoke-free environments. Classes were offered in Spanish to adult Latinos recruited through the LHAs' social networks. A questionnaire on lifestyle behaviors was completed at baseline and 1 month following the last class. Exploratory open-ended questions on successes and challenges of applying new knowledge were also asked at follow-up. Results of paired t -tests on 256 participants showed significant increases in scores from baseline to follow-up in overall lifestyle behaviors and all 3 behavioral subsets (nutrition, physical activity, smoke-free behavior). Qualitative findings are also presented. Findings support utilizing LHAs as a feasible and effective healthcare delivery strategy for cardiovascular community health promotion, especially among immigrant populations.

KEY WORDS: cardiovascular health promotion, community, community-based participatory research, Latino health, lay health advisors, peer support, *promotoras*, underserved populations

Sue Kim, PhD, RN, NP

Assistant Professor, College of Nursing, Yonsei University, Seoul, South Korea.

Deborah Koniak-Griffin, EdD, RNC, FAAN

Professor, School of Nursing, University of California at Los Angeles, Los Angeles, Calif.

Jacquelyn H. Flaskerud, PhD, RN, FAAN

Professor, School of Nursing, University of California at Los Angeles, Los Angeles, Calif.

Peter A. Guarnero, MSc, PhD, RN

Assistant Professor, School of Nursing, University of New Mexico, Albuquerque, NM.

The authors thank Antronette Yancey, Eloisa Gonzalez, Margaret Avila-Monge, and Joan Gustavson at the Los Angeles County Department of Health Services, as well as Pacoima Beautiful and Los Angeles Educational Partnership, for their collaboration and commitment that made this study possible.

Corresponding author

Sue Kim, PhD, RN, NP, College of Nursing, Yonsei University, Seoul, South Korea (e-mail: suekim@dreamwiz.com).

Overweight and obesity, unhealthy diet, lack of exercise, and exposure to tobacco smoke contribute to chronic disease and decreased life expectancy and are clearly identified behavioral risk factors for cardiovascular disease (CVD). These problems are on the rise in Southern California and appear to affect some communities more than others.¹⁻⁴ Despite a steady decrease over the past decade, with advances in medical and surgical treatments, coronary heart disease continues to be the leading cause of death and disability-adjusted life years for both men and women in Los Angeles County (LAC).⁵ The impact of CVD is seen among Latinos as well, as CVD is the primary cause for Latino mortality in California and nationwide.^{6,7}

The Latino community is challenged with multiple risk factors for CVD. Latino adults have one of the highest rates of overweight (54%) and obesity (24.6%) compared to other ethnic groups in LAC.⁷ This situation is related to multiple factors such as eating habits, lack of physical activity, and smoking. Latinos consume fewer fruits and vegetables on a daily basis in comparison to other ethnic groups and 62% of Latinos reported choosing fast food when eating out of the home.⁷ Latinos also have the highest rates of being sedentary (46%) compared to any other ethnic group in LAC, even after controlling for the influence of education, income, age, and gender.⁸ Among Latinos aged 18 and older, 24.1% of men and 12.3% of women are smokers; and for Mexican Americans, 35.1% of nonsmoking adults are exposed to environmental tobacco smoke at home or at work.⁹ In addition, other CVD risk factors such as high blood pressure, high blood cholesterol, and diabetes are prevalent among Latinos.^{9,10}

Collaborative or participatory research efforts have been identified as a key strategy in effectively reducing health disparities in underserved communities.^{11,12} One approach to community-based participatory research is working with lay health advisors (LHAs), also known as *lay health educators*, *lay health advocates*, *peer advisors*, or *promotoras*. LHAs have an intimate understanding of their community's sociocultural background, experiences, challenges, and strengths, and are in a unique position to provide peer support for community members. Studies using LHAs for Latino communities have focused on areas such as HIV/AIDS prevention,^{13,14} prenatal care,^{15,16} migrant farm workers,¹⁷ general health advocacy,¹⁸ nutrition,^{19,20} environmental health,²¹ oral health,²² and recruiting research trial participants.²³ Some of these LHA studies partially covered content areas relevant to cardiovascular health. However, there has been a lack of programs with a focus on CVD, specifically for the Latino community.

In recognition of this need, in 1994, the National Heart, Lung, and Blood Institute (NHLBI) initiated an outreach program to increase awareness of CVD and improve heart-healthy lifestyle behaviors in the Latino community.²⁴ The program actively sought collaboration with the Latino community, drew on LHAs in reaching residents, and provided content tailored to be linguistically and culturally relevant to Latinos. This study expands upon the NHLBI program by adding data-based evaluations of community outreach efforts.

Community-based participatory research has the potential to impact community health promotion by involving community members, using their knowledge, skills, and resources, and creating culturally and linguistically competent programs.¹¹ With this goal in mind participatory research methods were used to facilitate a collaborative partnership between UCLA School of Nursing, Los Angeles County Department of Health Services (LAC DHS), and a local community identified as having increased risk factors and lack of resources. This feasibility study focused on Latina LHAs trained in a cardiovascular risk-reduction curriculum and the impact of their health-promotion education in their community.

The purpose of this study was to explore the feasibility and effectiveness of using LHAs for community health promotion in a low-income Latino community through examining the outcome of the LHAs' CVD risk-reduction intervention in their community. Specific aims of the study were

- to examine the feasibility of recruiting and training LHAs to provide a CVD risk-reduction intervention and to collect research data, and to obtain LHA feedback on the study.
- to evaluate changes in health behavior scores for physical activity, healthy nutrition, and smoke-free environment among outreach participants before and after LHA intervention.
- to identify outreach participants' successes and challenges of implementing intervention content.

Methods

The study consisted of 3 phases: a community needs assessment (phase 1); recruitment and training of LHAs (phase 2); and educational outreach activities by the LHAs within their own communities (phase 3).

Los Angeles County is divided into 8 Service Planning Areas for the purposes of delivering public health and clinical services according to the needs of local communities. The first phase of the study employed a community needs assessment to identify

a local community with the most risk factors and lack of resources. Upon collaboration and discussion with LAC DHS, our attention focused on Service Planning Area 2 (San Fernando Valley area). Following telephone interviews with 33 key informants from this region, the city of Pacoima was identified as having limited health and social resources, residents with poor nutritional status, limited exercise participation, and high prevalence of smoking. Pacoima largely consists of a Latino population. This information was supplemented by public health reports and statistical data.²⁵⁻²⁶

For phase 2, we sought the expertise of 2 community-based organizations in Pacoima and formed a community advisory board consisting of its members and directors, and residents of Pacoima. The advisory board was instrumental in tailoring the study to the target community. For example, they suggested that LHAs be referred to as *health promoters*, or *Promotoras de Salud*, a more meaningful term. The advisory board also reviewed training program material, and offered insight into the recruitment of LHAs. Twelve LHAs, 1 man and 11 women, were recruited and trained in principles of physical activity, maintaining a smoke-free environment, and healthy nutrition. Training sessions were twice a week for 3 hours each, for a total of 13 sessions. Training on these topics was provided by the LAC DHS team consisting of nutritionists, professional health educators, and a physical trainer, using "Your Heart, Your Life (*Su Corazon, Su Vida*)."²⁷ This training manual is a CVD risk-reduction curriculum, available in English and Spanish, and was developed by the NHLBI to increase knowledge and awareness of cardiovascular health in the Latino community as part of their outreach initiative.²⁷ All sessions were provided in Spanish. The last 2 training sessions included opportunities for practice and individual teaching demonstrations with feedback and critique. As the LHAs were to be involved in obtaining informed consent and data collection and lacked experience in working on a research project, 2 additional sessions were provided by research team members. These sessions focused on principles of human subject protection in research and strategies for recruitment, code number assignment, class management, data collection techniques, and safety issues.

The participatory nature of the study allowed for flexibility in how it evolved and was modified according to input from our collaborative partners from LAC DHS, the community advisory board, and the LHAs.

Phase 3 consisted of community outreach sessions, and was conducted from February to June 2002. Of the 12 LHAs who completed the training, 3 could not continue to phase 3 because of personal circumstances. The remaining 9 LHAs offered 3 health edu-

cation classes in the community, one each on physical activity, maintaining a smoke-free environment, and healthy nutrition. Inclusion criteria were Latino residents of Pacoima who were 18 years of age or older, and most participants were recruited through the LHAs' social network of family members, friends, neighbors, and contacts through their workplace or local schools. The LHAs used various teaching aids provided by the research team in the outreach classes they taught. These included a video on physical activity, audio-taped activity instructions with music, picture cards, plastic food models, a food pyramid poster, measuring spoons and cups, and shortening.

Participants and Setting

A total of 272 residents enrolled in classes at baseline, of which 256 completed follow-up questionnaires (attrition rate 5.8%). The sociodemographic characteristics of the participants who completed baseline and follow-up questionnaires are presented in Table 1. Participants were predominantly women (98%), married (76%), did not work outside of the

TABLE 1 Sociodemographic Characteristics of Participants (N = 256)

	Mean ± SD
Age, y*	38 ± 10 (range 18–76)
Education, y†	9 ± 3 (range 6–19)
Years in the United States*	15 ± 9 (range 10 mo to 51 y)
Number of children	2.8 ± 1.7 (range 0–9)
	n (%)
Gender	
Male	6 (2.3)
Female	250 (97.7)
Marital status*	
Married	195 (76.5)
Divorced	4 (1.6)
Separated	15 (5.9)
Widowed	13 (5.1)
Never married	28 (10.9)
Work status†	
Working full-time	29 (11.4)
Working part-time	454 (17.7)
Unemployed	171 (67.3)
Retired	1 (0.4)
Other	8 (3.2)
Religion*	
Protestant	23 (9.0)
Catholic	225 (88.2)
Buddhist	3 (1.2)
No religion/agnostic	3 (1.2)
Other	1 (0.4)
Healthcare coverage*	
No	131 (51.4)
Yes	124 (48.6)

*n = 255.

†n = 254.

house (71%), lacked health insurance (51%), and were Catholics (88%). Seventy-one percent of the study participants had no health insurance because of inaffordability. More than half had lived in the United States less than 14 years (56%) and had less than 9 years of education (60%). As this area was known to have a large immigrant population, information on visa/immigration status was not asked because of its sensitivity. It is likely that many of the participants were eligible for Medi-Cal but did not register because of fear related to immigration status.

Classes were in Spanish, and were offered in the community. Sites included school-based parent centers (12 groups), community centers at local parks and neighborhoods (7 groups), homes of the LHAs or participants (6 groups), as well as a church (1 group) and workplace site (1 group). Class size ranged from 3 to 26 participants, depending on where the classes were offered and how they were marketed. Classes offered in a home setting were smaller (ranging from 3 to 11 participants each) and school-based sites tended to be larger (ranging from 11 to 26 participants each). Because school-based sites offered other educational services, community members attending those services would often seek new classes. Additionally, at school-based sites, systematic advertisement was readily available to recruit a larger number of potential participants.

Procedures

Participants attended 3 classes that provided content aimed at promoting healthy lifestyles in the areas of physical activity, smoke-free environments, and nutrition. Each class was 2 hours long with at least a 1-week interval between classes. The study was explained to participants at the first class, code numbers were assigned, and informed consent was obtained prior to implementation of the teaching. Participants also completed a background questionnaire on sociodemographic information and a questionnaire on personal health behaviors. In anticipation of participants who might be illiterate, have vision problems, or be unfamiliar with the format of the questionnaire, and as a means to pace participants in completing the paperwork, LHAs were encouraged to read the questionnaires out loud. These baseline questionnaires took about 30 to 60 minutes to complete. Participants who missed attending 1 or more classes were contacted by the LHAs and offered separate make-up classes, often on an individual basis. A total of 241 participants (94.1%) attended all 3 classes.

Follow-up data collection occurred on an individual or group basis, 1 month following the last class. The questionnaire on health behaviors was re-

administered at this time and participants were also asked exploratory, open-ended questions on successes and challenges of applying new knowledge to their lives. The open-ended questions took about 15 minutes.

The LHAs were given a salary during the training session and were paid by the number of participants attending the outreach classes and for each completed questionnaire. Reimbursement was also provided for transportation to and from training sessions, as well as for each outreach class and follow-up contact. As compensation for their time, outreach participants received \$5 for completing the baseline and then \$10 for the follow-up questionnaire in appreciation for their time. Each outreach participant was also given bilingual educational materials on physical activity, smoke-free environment, and healthy nutrition.

The participants responded favorably to the outreach classes and actively engaged in discussions and group activities. They particularly liked the relevance of class content and vignettes to the Latino community and lifestyle and enjoyed the audiovisual teaching aids in Spanish. Several LHAs were approached after classes by community members, parent center coordinators, and a church-based education program liaison person, and were asked to come to their separate groups to teach the class.

Instruments

The research team developed a lifestyle behaviors questionnaire to identify current health practices in the areas of healthy nutrition, physical activity, and smoke-free living environments. The 23-item questionnaire consisted of 11 nutrition items, 7 physical activity items, and 5 smoke-free items. Some items were modified from the Health Promoting Lifestyle Profile (HPLP)²⁸ and the remaining were developed in the same format. Scores (possible range: 23–92) were given as 4 response options (1 = never, 2 = sometimes, 3 = often, 4 = regularly), with greater scores indicating healthier lifestyle behaviors. Example items of the questionnaire are presented in Table 2.

Four questions were asked about whether a doctor or nurse had ever talked to participants about exercise, weight, nutrition, and smoking, with a response option of yes or no.

The questionnaire was initially developed in English prior to identifying the target community. As more than one third of the behavioral items were developed for this study, questionnaire was translated rather than taking items from the Spanish version of the HPLP. Translation into Spanish was done by a bilingual and bicultural translator with a master's degree in public health and prior experience in research with the Latino population. The translated

TABLE 2 Example Items of the Lifestyle Behaviors Questionnaire (*n* = 23)

Behavior Subsets		Response Format
Stem: This questionnaire contains statements about your present way of life or personal habits. Please answer each item as accurately as possible. Circle how often you do each behavior.		N (Never) S (Sometimes) O (Often) R (Regularly)
Nutritional behaviors (<i>n</i> = 11)	■ Eat 3 meals a day (breakfast, lunch, dinner)	N S O R
	■ Read labels to see what is in the foods (such as sugar, added substances, preservatives) before buying	N S O R
Physical activity behaviors (<i>n</i> = 7)	■ Cook foods in oil, lard, or butter	N S O R
	■ Walk for 20–30 min at least 3 times per week	N S O R
Smoke-free behaviors (<i>n</i> = 5)	■ Exercise for 20–30 min at home at least 3 times per week	N S O R
	■ Smoke at least 1 cigarette each day	N S O R
	■ Allow family to smoke in my home	N S O R
	■ Allow family or friends to smoke in my car	N S O R

version was proofread by 1 or more bilingual staff members and administered to the LHAs for feedback before use in the outreach classes.

Reliability testing with Cronbach's alpha for the lifestyle behaviors questionnaire was acceptable overall ($\alpha = .77$), with standardized alpha values of .68 for activity behaviors, .77 for smoke-free behaviors, and .71 for nutrition.

Missing Data and Data Analyses

Questionnaires were reviewed by the LHAs and research team members for thoroughness and accuracy. Participants were contacted individually, primarily over the telephone, by the LHAs or research team members in the case of incomplete, missing, or incongruent data. For unsuccessful contact attempts, data were left blank and not substituted with other values.

Descriptive statistics were produced to identify trends and characteristics of the sample. Paired *t*-tests were produced for comparison of baseline and follow-up questionnaire data. Written responses to the open-ended questions on successes and challenges of applying newly gained knowledge to their lives were analyzed in Spanish line by line by a bilingual researcher with a background in qualitative research. Trends and response categories were identified, and response clusters were then grouped to identify underlying themes.

Findings

A substantial proportion of participants reported at baseline that they could not recall a doctor or nurse ever talking to them about exercising (37.5%), their weight (42.19%), what they eat (35.94%), or smoking (50%).

Analyses with paired *t*-tests (*n* = 256) showed significant increases in scores from baseline to follow-up in participants' health behaviors. Overall lifestyle

behaviors ($t = -13.40$, $P < .001$), and the 3 subsets of nutrition behavior ($t = -10.97$, $P < .001$), physical activity behavior ($t = -12.46$, $P < .001$), and smoke-free behavior ($t = -2.61$, $P < .05$) improved from baseline to follow-up. These findings suggest a positive health-promoting influence of the LHAs.

Themes emerging from the qualitative data on successes and challenges relate to awareness and motivation issues, incorporating and maintaining specific practices into daily life, and cooperation or resistance from family members. In the area of nutrition, participants reported eliminating unhealthy foods from the family diet and incorporating healthier ways of food preparation as main successes. Example statements included the following: "we no longer purchase canned soup as I learned it is not very healthy and we are trying to eat 2 fruits and 3 vegetables each day," "I've stopped using sugar, eating sweet bread, and I cook using less grease and use more fruits and vegetables," and "eating less grease, less red meat, substituting with chicken." However, the challenges were maintaining family interest in eating healthier foods, eliciting cooperation of family members, especially the husband who was not particularly happy about some diet changes, and adolescent children's continued interest in fast foods. Example statements included the following: "it has been very difficult getting used to cooking with less grease," "on occasions my husband and children ask for larger portions (of food)," and "A challenge for me has been to convince my husband to use less oil and convince my children to eat less fried foods and sweets."

For physical activity, successes were expressed as feeling a sense of well-being and weight loss, incorporating family members into an exercise routine, and integrating a daily routine into an exercise routine. Participants gave examples such as "having children join me in daily walks," "walking to pick up children from school," "I started going to the park and walking twice a week," and "leaving the car a

distance from the market.” Challenges included facing family resistance to exercise and time limitations, expressed in statements such as “my husband does not want to get up and do exercise or make our children do it,” “I had to work a lot with my daughter so that she would exercise,” and “it is difficult for me to do exercise because I have three jobs and I don’t have time.”

Successes reported for a smoke-free environment related to discussing and setting up a smoke-free home. Example statements indicating success were as follows: “I talk to my children not to smoke because it is not good (for them),” “no one in my family smokes and I put up the ‘no smoking’ sign in my home and when people see it they know not to smoke,” and “my husband now smokes outside of the house away from our children.” Setting limits consistently in families with more than one smoker, as presented in the statement “it is difficult to do (maintain smoke-free environment) as many in the extended family smoke,” appeared to be a great challenge.

Discussion

This study adds to earlier findings and expands upon the curriculum developed by the NHLBI for use among Latino communities by including a data-based follow-up of CVD outcomes. The study demonstrates that LHAs can be successfully trained to deliver an educational program designed to reduce CVD risk through promotion of healthy nutrition, physical activity, and decreased exposure to tobacco. Furthermore, these LHAs were able to effectively recruit members of their community through the use of their social networks, to conduct the health-promotion program, and to collect data to evaluate the effects of their outreach intervention. The LHAs expressed great enthusiasm with their outreach classes as well as satisfaction with the progress in adapting changes that they witnessed in their outreach groups. The majority of LHAs reported success and gratification in being able to adapt healthy changes within their own lives and families and expressed a desire to continue sharing what they learned in other groups even after the study concluded.

Participants attending the educational program expressed their interest in the content and seemed to enjoy participating in group activities. The majority of participants (94%) attended all 3 classes.

This study addressed national priority of reducing health disparities through community-based research^{29,30} and focused on 3 of the 10 leading health indicators identified as priority public health issues for *Healthy People 2010*.³¹ It also demonstrated that community health promotion through

the use of LHAs can be done at a grassroots level without being attached to sites that have been traditionally used to disseminate health information and benefits for minority communities, such as health centers or churches.^{32,33} This study also offers clinical implications specific to the target population that appear promising, such as mobilizing Latino LHAs working in CVD risk reduction to work in therapeutic alliance with health professionals, and expanding the use of LHAs for general health promotion in Latino communities on a trial basis.

The need for this study was underscored by the limited resources of this population. The proportion of study participants who had no source of health-care coverage (51.37%) was much higher than the uninsured rates for the state of California (22%), LAC (31%), as well as for Service Planning Area 2 (28%).³⁴ The proportion of participants in this study who never had a discussion with a health professional on healthy lifestyle issues was alarming and accentuates how this study filled a need in the community for health-promotion information. This lack of discussion may be related to concerns about legal status as an issue of partial importance for participants in this largely immigrant community. However, it starkly contrasts health data on Latinos. Although 1 in 2 Latinos in LAC is overweight,⁷ 42% of this sample had never discussed healthy weight, and while nearly half of Latinos in LAC are sedentary,⁷ 38% of this sample had never discussed exercising with a health professional. More than one third of this sample had never had a doctor or nurse talk to them about healthy eating, despite reports of Mexican Americans consuming high levels of daily cholesterol (316.2 mg) and low levels of dietary fiber (18.5 g) compared to the recommended daily intake (less than 300 mg for cholesterol, 25 g or more for fiber).¹⁰ Additionally, these findings may reflect the number of participants who lack a regular source of medical care, and if so, may suggest higher rates among study participants in comparison to the proportion of residents in Service Planning Area 2 (17.1%) or LAC (18.4%) lacking a regular source of medical care.³⁴

Sustainability is an important issue for community-based health-promotion interventions to make a difference over time. Some studies have suggested correlates of sustainability in terms of intervention characteristics, such as interventions that use no paid staff, that are flexible to accommodate modifications during implementation, that ensure a good fit between the local provider and the intervention, and have a program champion to advocate for the program.^{18,35} This study features many of these characteristics of sustainability as the community-participatory methods have allowed for modification of the program throughout

its conception, development, and implementation. The community advisory board and LHAs were formed from local community members and served as the providers of the outreach as an integral part of the program. The LHAs acted as enthusiastic advocates for the program and noted personal satisfaction as well as a sense of purpose of continuing outreach in their community even after completion of the study. Although having no paid staff is presented as an indicator of sustainability, the LHAs were paid a salary during their training sessions and for their subsequent work efforts in conducting the outreach. Remuneration was to demonstrate respect for the LHAs' commitment to their community as well as sustaining interest and work efforts. Payment has been noted in the literature as a way to circumvent attrition and inactivity among LHAs.³⁶

In summary, the current findings support the use of LHAs as a feasible and effective healthcare delivery strategy for community health promotion at a grassroots level, and as having promising indicators of sustainability over time. This study also highlights the need for larger scale investigations examining using LHAs as an alternative healthcare delivery strategy within communities, particularly those with large immigrant populations.

This study drew largely from active collaboration with partnering agencies, community-based organizations, and community members. Findings may not apply to situations or communities where such collaboration is insufficient. Generalizability of the study findings to the larger Latino population is limited by the sample demographics. The target community was located in Southern California and largely composed of Latinos of Mexican heritage. Findings may differ for Latino communities in other regions or by country of origin. Also, as the majority of the LHAs and outreach participants were female, it is possible that findings may differ with more male participant involvement.

Future research efforts may be enriched by including a controlled comparison group to further empirically test the effectiveness of LHAs as well as by considering additional components to the study. Future research may add biological measures such as blood pressure, body mass index, waist circumference, aerobic capacity, cholesterol, or cholesterol/HDL ratio, as an objective way of evaluating cardiovascular status to be compared over time. These measures would supplement the behavioral and attitudinal changes of community participants. Conducting evaluations of community-level indicators may also supplement individual-level measures in evaluating the program as well as measuring environmental change in the process of program implementation.³⁷ Examples may include surveillance data on tobacco sales to minors, number

of physical activity facilities per capita in the community, proportion of low-fat food items in groceries, sales data on fast foods, etc. Initiating preventive community-related behavioral activities developed by community members has also been advocated as an effective way to sustain and enrich the program and ensure community ownership of the program.³⁸ The aim is to motivate community members to create a climate in their community that is conducive to better health, with examples including a variety of measures, such as convincing bakers to use less salt in their breads and organizing smoking cessation and physical activity as a community contest.³⁸ These preventive activities can be initiated by inviting LHAs as well as community members to develop creative ways to elicit motivation and organizational or structural types of change for a healthier community.

REFERENCES

1. County of Los Angeles, Department of Health Services, Office of Health Assessment and Epidemiology. Prevalence of overweight among adults in Los Angeles County. *LA Health*. 1998;1:1-8.
2. County of Los Angeles, Department of Health Services, Office of Health Assessment and Epidemiology. Smoking and tobacco use among adults in Los Angeles County. *LA Health*. 1999;2:1-8.
3. County of Los Angeles, Department of Health Services Public Health. The health of Angelenos 2000 [Online]. Available at: <http://lapublichealth.org/ha/reports/angelenos/hofa.pdf>. Accessed March 27, 2003.
4. County of Los Angeles, Department of Health Services Public Health. Results of the 1999 Los Angeles County health survey for residents of the San Fernando Valley service planning area (SPA2)—Part one: main adult survey [Online]. July 2001. Available at: <http://lapublichealth.org/wwwfiles/ph/chs/spa2/report.pdf>. Accessed March 27, 2003.
5. County of Los Angeles, Department of Health Services Public Health. Recent health trends in Los Angeles County [Online]. June 2002. Available at: [http://lapublichealth.org/wwwfiles/ph/hae/ha/bfd\[1\].pdf](http://lapublichealth.org/wwwfiles/ph/hae/ha/bfd[1].pdf). Accessed April 1, 2003.
6. County of Los Angeles, Department of Health Services Public Health. Number of deaths by cause, race/ethnicity and zip code, 1999, Los Angeles County (residents) [Online]. 1999. Available at: <http://lapublichealth.org/dca/reports/zip99/reports/draceco99.htm>. Accessed March 27, 2003.
7. County of Los Angeles, Department of Health Services Public Health. Latino health issues. Fact Sheet, 2003 [Online]. 2003. Available at: <http://www.lapublichealth.org/spa8/docs/LatinoFactSheet.pdf>. Accessed March 27, 2003.
8. County of Los Angeles, Department of Health Services Public Health. Physical activity among adults in Los Angeles County [Online]. November 2000. Available at: http://lapublichealth.org/ha/reports/habriefs/v3i2_phys/physact.pdf. Accessed March 20, 2003.
9. Liao Y, Cooper RS, Cao G, Kaufman JS, Long AE, McGee DL. Mortality from coronary heart disease and cardiovascular disease among adult U.S. Hispanics: findings from

- the National Health Interview Survey (1986 to 1994). *J Am Coll Cardiol.* 1997;30(5):1200–1205.
10. American Heart Association. Statistical fact sheet—populations: Hispanics and cardiovascular diseases [Online]. Available at: <http://www.americanheart.org/downloadable/heart/1046243096100FS05HIS3.pdf>. Accessed April 1, 2003.
 11. Baker EL, White LE, Lichtveld MY. Reducing health disparities through community-based research. *Public Health Rep.* 2001;116:517–519.
 12. Flaskerud JH. Keynote: building excellence and scholarship with vulnerable populations. In: The 35th Communicating Nursing Research Conference Proceedings, Western Institute of Nursing; Palm Springs, Calif; 2002.
 13. Flaskerud JH, Nyamathi AM. Collaborative inquiry with low-income Latina women. *J Health Care Poor Undersew.* 2000;11:326–342.
 14. McQuiston C, Choi-Hevel S, Clawson M. Protegiendo Nuestra Comunidad: empowerment participatory education for HIV prevention. *J Transcult Nurs.* 2001;12:275–283.
 15. Carrillo JM, Pust RE, Borbon J. Dar a Luz: a perinatal care program for Hispanic women on the U.S.–Mexico border. *Am J Prev Med.* 1986;2(1):26–29.
 16. Warrick LH, Wood AH, Meister JS, de Zapien JG. Evaluation of a peer health worker prenatal outreach and education program for Hispanic farmworker families. *J Community Health.* February 1992;17:13–26.
 17. Watkins EL, Harlan C, Eng E, Gansky SA, Gehan D, Larson K. Assessing the effectiveness of lay health advisors with migrant farmworkers. *Fam Community Health.* 1994;16(4):72–87.
 18. Baker EA, Bouldin N, Durham M, et al. The Latino Health Advocacy Program: a collaborative lay health advisor approach. *Health Educ Behav.* August 1997;24:495–509.
 19. Elder JP, Campbell NR, Candelaria JL, et al. Project salsa: development and institutionalization of a nutritional health promotion project in a Latino community. *Am J Health Promot.* 1998;12(6):391–401.
 20. Navarro AM, Rock CL, McNicholas LJ, Senn KL, Moreno C. Community-based education in nutrition and cancer: The Por La Vida Cuidandome curriculum. *J Cancer Educ.* 2000;15:168–172.
 21. Ramos IN, May M, Ramos KS. Environmental health training of promotoras in colonies along the Texas–Mexico border. *Am J Public Health.* 2001;91:568–570.
 22. Watson MR, Horowitz AM, Garcia I, Canto MT. A community participatory oral health promotion program in an inner-city Latino community. *J Public Health Dent.* 2001;61:34–41.
 23. Larkey LK, Staten LK, Ritenbaugh C, et al. Recruitment of Hispanic women to the Women’s Health Initiative. The case of Embajadoras in Arizona. *Control Clin Trials.* 2002;23(3):289–298.
 24. Alcalay R, Alvarado M, Balcazar H, Newman E, Huerta E. Salud para su Corazon: a community-based Latino cardiovascular disease prevention and outreach model. *J Community Health.* 1999;24(5):359–378.
 25. Los Angeles County, Department of Health Services. *The Health of the Residents in the San Fernando Service Planning Area of Los Angeles County.* 1999. Available from LAC DHS Public Health Programs and Services, 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010.
 26. United Way of Greater Los Angeles. *Los Angeles County Service Planning Area: SPA2 Databook: San Fernando Valley.* 1999. Available from United Way of Greater Los Angeles, 523 W 6th St, Los Angeles, CA 90014.
 27. National Heart, Lung, and Blood Institute. *Your Heart, Your Life: A Lay Educator’s Manual.* Rockville, Md: US Dept of Health and Human Services, Public Health Services, National Institutes of Health. 1999. NIH publication 99-3674. Available at: http://www.nhlbi.nih.gov/health/prof/heart/latino/lat_mnl.htm. Accessed April 1, 2003.
 28. Walker SN, Sechrist K, Pender N. *Health Promotion Lifestyle Profile II.* 1995. Available from S. N. Walker, College of Nursing, University of Nebraska Medical Center, Omaha, NE 68198-5330.
 29. Phillips J, Grady PA. Reducing health disparities in the twenty-first century: opportunities for nursing research. *Nurs Outlook.* May–June 2002;50:117–120.
 30. Grady PA. A NINR initiative to address health disparities. *Nurs Outlook.* January–February 2003;51:5.
 31. US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2010 Leading health indicators: priorities for action [Online]. Available at: <http://www.healthypeople.gov/LHI/Priorities.htm>. Accessed April 1, 2003.
 32. Oexmann MJ, Ascanio R, Egan BM. Efficacy of a church-based intervention on cardiovascular risk reduction. *Ethn Dis.* 2001;11(4):817–822.
 33. Yanek LR, Becker DM, Moy TF, Gittelsohn J, Koffman DM. Project Joy: faith-based cardiovascular health promotion for African American women. *Public Health Rep.* 2001;116(suppl 1):68–81.
 34. County of Los Angeles, Department of Health Services Public Health. Key indicators of public health by service planning area 1999/2000 [Online]. April 2002. Available at: [http://lapublichealth.org/wwwfiles/ph/hae/ha/Website\[2\].pdf](http://lapublichealth.org/wwwfiles/ph/hae/ha/Website[2].pdf). Accessed April 1, 2003.
 35. O’Loughlin J, Renaud L, Richard L, Gomez LS, Paradis G. Correlates of the sustainability of community-based heart health promotion interventions. *Prev Med.* September–October 1998;27(Pt 1):702–712.
 36. Earp JA, Viadro CI, Vincus AA, et al. Lay health advisors: a strategy for getting the word out about breast cancer. *Health Educ Behav.* 1997;24:432–451.
 37. Cheadle A, Sterling TD, Schmid TL, Fawcett SB. Promising community-level indicators for evaluating cardiovascular health-promotion programs. *Health Educ Res.* February 2000;15:109–116.
 38. Scheuermann W, Razum O, Scheidt R, et al. Effectiveness of a decentralized, community-related approach to reduce cardiovascular disease risk factor levels in Germany. *Eur Heart J.* October 2000;21:1591–1597.