Evaluation of the training of Korean community health workers for chronic disease management

Hae-Ra Han¹*, K. B. Kim² and M. T. Kim¹

Abstract

The use of community health workers (CHWs) or lay health advisors has been increasingly popular as an effective means of secondary prevention for cardiovascular health in hard-to-reach, underserved populations. Yet, published evaluations of the CHW training programs are rare. The purpose of this article is to report the results of an evaluation of a CHW training program for hypertension and diabetes management for Korean–American seniors. Forty-eight hours of training was developed and delivered to 12 Korean CHWs. Evaluation of the training program involved CHW surveys, trainer observation and debriefing and CHW focus groups. Testing of CHW knowledge showed that all CHWs met the minimum required knowledge level of 70%. Independent ratings by two trainer observations revealed that the overall CHW performance was satisfactory. Both CHW ratings and focus group data indicated that the training program met their expectation (average 9.3 on a 10-point scale) and was successful in empowering them to assume their role as a ‘health initiator’, ‘health advertising agent’ or ‘health role model’. While this course is judged to be effective in general, future research is warranted to determine whether CHW provision of care and support will affect health outcomes in the target population.

Introduction

As the proportion of elderly individuals increases exponentially in the United States, finding effective ways to keep older adults with chronic illness in community settings is becoming an important public health objective [1]. Korean Americans, who are predominantly monolingual, first-generation immigrants, are one of the fastest growing Asian subpopulations in the United States [2, 3]. While adequate data describing Asian Americans’ health status and their health needs are very limited, recent studies of Korean Americans [3–6] have revealed a noticeably higher prevalence of two chronic diseases, hypertension and diabetes, in Korean Americans, and particularly among seniors (≥60 years), when compared with other Americans of the same age.

Despite the lack of prevalence data for a nationally representative sample, the results of previous studies of Korean Americans [3–6] seem to suggest the trend toward an increasing prevalence of hypertension and diabetes upon immigration to the United States. As a recent immigrant group, Korean Americans often undergo drastic lifestyle changes once they arrive in the United States. It is believed that westernization and acculturation lead to changes in the dietary patterns of these immigrants, producing a diet that combines Western eating habits (e.g. consuming more animal protein, fats and refined sugar) with traditional Korean foods, which are high in salt (e.g. pickled vegetables, soy and other

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high-sodium sauces). In addition, these new immigrants tend to consume a lower level of dietary fiber than in their country of origin; they also tend to decrease their activity levels and experience increased stress, all of which result in an increased risk for hypertension [7–9] and diabetes [10–14].

The adoption of community health workers (CHWs) or lay health advisors as frontline outreach paraprofessionals has emerged in response to the need for effective risk reduction interventions that are more accessible to underserved populations at elevated risk when traditional outreach efforts have failed [15–18]. CHWs are lay people to whom others naturally turn to for help, advice and emotional and tangible support related to health [19]. The value of CHW programs as community resources has been increasingly recognized. The 2002 Institute of Medicine report [1] on racial and ethnic disparities in health care recommends the use of CHWs as an intervention to eliminate these disparities, as well as the implementation of collaborative intervention and preventive care programs. With their unique ability to provide ‘bridges’ between the community and health care services, CHWs serve as a conduit to convey health care information and resources in diverse settings [16, 20, 21]. The use of CHWs in health intervention programs has been associated with improved health care access, prenatal care, pregnancy and birth outcomes and cancer screening behaviors, as well as reduced health care costs in hard-to-reach ethnic minority communities, including black and Hispanic communities [22–25]. In addition, a growing body of literature has documented the effectiveness of CHWs in providing hypertension and diabetes care and education to members of hard-to-reach and disproportionately affected communities [1, 16, 20, 26, 27]. However, this type of approach has only rarely been applied to Asian communities.

Despite their increasing popularity, published evaluations of CHW training programs for chronic disease management are rare. A number of evaluations of CHW programs have focused on the recruitment of CHWs, CHW activities in the field or the training of CHWs. These analyses have included brief summaries of the recruitment process [28, 29], reports of the number of helping activities [29, 30] or qualitative investigations of CHW activities in the field [31–34] and assessments of knowledge and skills [35–37]. Although a need for comprehensive evaluations of CHW training programs has been clearly identified [35], the published evaluations of CHW training programs have measured CHW competence scores with regard to knowledge and skills before and after training [35–37], but none of these published studies has evaluated CHW training programs using both qualitative and quantitative approaches. In addition, none of these evaluation studies has included Asian Americans as a sample, nor have they focused on chronic disease management.

In accordance with the results of studies of Korean Americans [3–6] that have shown an increased prevalence of hypertension and diabetes in this population, particularly among seniors, we were charged to train CHWs as a means of facilitating the management of hypertension and diabetes in community-dwelling Korean–American seniors. The primary aim of this study was to examine the effects of the training program on CHWs’ knowledge, counseling skills and attitudes regarding community volunteerism, using both quantitative and qualitative approaches. To our knowledge, this is the first CHW training program for chronic disease management in the Asian–American community.

**Methods**

**Design**

Multiple sources of data were used to provide a comprehensive view of the training program, including CHW surveys, trainer observation and debriefing and CHW focus groups. Specifically, CHWs’ knowledge and counseling skills in pre-determined core competency areas were assessed by self-reported knowledge tests and an observational scale, respectively. In addition, the trainers were debriefed after each training session. CHW satisfaction with the training was evaluated by a survey with both open-ended questions and Likert-type scales. Focus group
interviews, lasting between 60 and 90 min, were conducted with CHWs 2–3 weeks after the training. The qualitative data analyzed for the evaluation consisted of trainer observation notes, text from trainer debriefing sessions, CHW response text and verbatim transcripts from the focus group interviews.

Sample
The training program was advertised through an ethnic newspaper. From >30 applications and as many phone calls and e-mail inquiries received over a 2-week period, we recruited 12 Korean adults after a brief telephone interview assessing their interest, time flexibility and communication skills. Participants were mostly female (male = 3, female = 9) and middle aged (mean = 50.4 years, range = 43–65 years) and had at least a college level of education (except for one who had a high school education). None of them had a formal health education background. Informed consent was obtained from each participant before the study.

Training
Forty-eight hours of training was delivered in a community center by trained nurses using materials developed in the Korean language, because the target group is predominantly a first-generation, non-English-speaking population [3]. The linguistic and cultural equivalence of our training materials was assessed through a series of joint meetings with members of the research team and community advisory committee, who had several group meetings as well as numerous small group meetings. The final version of the curriculum included a facilitator manual; teaching tools, such as slides incorporating information specific to Korean immigrants (e.g. health statistics about Korean Americans) and Korean food pictures; Korean language handouts; role-play scenarios using characters from Korean soap operas and ethnic food recipes (see Table I for topical examples). The series of eight 6-hour sessions was aimed at strengthening communication skills, teaching skills related to screening for hypertension and diabetes (e.g. how to perform blood pressure and blood sugar measurements), providing information on hypertension and diabetes management (e.g. cardiovascular system, risk factors for cardiovascular disease, stroke prevention), empowering CHWs to mobilize Korean–American seniors to promote adequate control of hypertension and diabetes (e.g. behavior change, managing stress) and introducing available community resources (e.g. free medication program for the underinsured). Following the tenets of self-efficacy theory [38], the training used a variety of learning modalities, including demonstration, role-plays and field-testing. All 12 participants attended all of the whole sessions and completed the training.

Table I. Examples of session topics for 48-hour curriculum to train CHWs

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
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| 1       | Community health workers: Who are we and what do we do?  
|         | Social networks and opportunities  
|         | Client intake and interviewing  
|         | Introduction to hypertension |
| 2       | Principles of hypertension management  
|         | Self-help principles  
|         | Overview of cardiovascular risk factors |
| 3       | Stroke prevention and recognizing early symptoms of stroke  
|         | Helping people to make a behavioral change  
|         | Barriers to hypertension care |
| 4       | Healthy eating and medication for hypertension control  
|         | Evaluating non-traditional treatments  
|         | Understanding depression in Korean Americans |
| 5       | Introduction to diabetes  
|         | Diabetes management principles  
|         | Glucose monitoring |
| 6       | Medication for diabetes control  
|         | Choice of foods  
|         | Shopping foods and cooking |
| 7       | Managing glucose levels for short- and long-term health  
|         | Exercise in diabetes patients  
|         | Hypoglycemia  
|         | Foot screening and care |
| 8       | Stress and stress management  
|         | Sharing community resources  
|         | Strategies for community education programs  
|         | Training program evaluation survey |
Measures
CHW knowledge was measured by the National Heart, Lung, and Blood Institute Hypertension Knowledge Test [20] and the Michigan Diabetes Knowledge Test [39]. The CHW satisfaction survey, which was developed for the study, included both open-ended questions and several Likert-type scales. We incorporated part of the core competency areas identified by the Department of Health Education of the State of California (1999–2000) [40] in our nine-item, four-point (1 = performance fails to meet standards, 4 = performance exceeds standards) trainer observation scales to evaluate CHW counseling skills. These areas included client intake (e.g. practicing communication skills, identifying and prioritizing needs) and one-on-one health advising. Finally, trainer debriefing and CHW focus group interview guides included open-ended questions about the success of training activities and the need for revision. The CHW focus group interview guide also included questions about expectations concerning the program and the meaning of being a CHW.

Analyses
Means and frequencies were used to describe quantitative data, such as knowledge and satisfaction scores and ratings of CHW counseling skills. We calculated Spearman’s rank-order correlation coefficient (Spearman’s rho) to examine the inter-rater reliability of the observational scale between two judges [41]. Qualitative data were analyzed using content analysis to identify themes. Two researchers analyzed the data independently, and a consensus regarding categorization of qualitative data was reached through discussion with two other study team members.

Results

CHW competency
Measures of training outcomes are presented in Table II. Descriptive statistics showed that all CHWs met the minimum required level of 70% for both knowledge tests; the mean knowledge scores (based on 100 as a perfect score) were 88 and 81 for hypertension and diabetes, respectively. Independent observational ratings of CHW counseling skills by two trainer judges revealed that overall CHW performance was at a satisfactory level, with a total item mean of 2.7 (68% on a 100-point scale). However, areas needing improvement, particularly in one-on-one health advising, were noted. These included handling of questions, comments from participants and scanning of participant’s understanding. Inter-rater reliability between the two judges was reasonably high (Spearman’s rho = 0.79, \( P = 0.002 \)), indicating good inter-rater reliability.

CHW satisfaction
Participant satisfaction surveys were completed at the end of training session. The results indicated a high level of satisfaction among CHWs with the overall program (average 9.3 on a 10-point scale) and with specific aspects of the program, including the topics chosen; allocated times for questions, discussion and activities; the materials provided; the presentations by trainers and the facilities (range of item means = 4.6–4.8 on a 1–5 scale).

Qualitative data supported this finding; CHWs felt that the games and role-plays were particularly interesting and satisfactory, in that these activities often used characters from Korean soap operas and culturally tailored scenarios to which they could...
easily relate and which allowed them to assess whether they had indeed digested the knowledge and skills taught. CHWs reported increased self-confidence as a result of these activities, which also helped them to maintain their focus during the class. Likewise, trainers reported that these activities made the training more real and responsive to the needs of CHWs, in that they offered opportunities to revisit the areas in which CHWs had demonstrated less than satisfactory performance.

Focus group meetings and evaluations

All CHWs attended a follow-up focus group meeting 2–3 weeks after the training. Before this meeting, they were asked to field-test their counseling skills by recruiting Koreans with hypertension and/or diabetes in their neighborhood and conducting disease management counseling using a provided field guide and patient education brochure. Each CHW recruited four to six patients from their social networks of family, friends, churches and workplaces. A total of 53 patients aged 50–84 years were recruited (See Table III). More than half were women (57%) and had hypertension (53%). They had been diagnosed as being hypertensive and/or diabetic for 9 years (mean = 8.8 ± 6.6 years). Most patients (79%) were taking medication to control their hypertension and/or diabetes. The majority had health insurance (68%) and a primary care physician (73%). When asked about self-monitoring of blood pressure or blood sugar levels, less than half reported measuring their blood pressure or sugar level at least once a week. CHWs spent 20–90 min with each patient (mean = 44.9 ± 17.8 min), measuring their blood pressure, explaining the disease (or correcting wrong information), identifying the patients’ problems in managing their disease and brainstorming potential strategies to solve the problems identified. CHWs tended to spend more time (>45 min) with the patients who were not on medication \( (P = 0.041) \). A variety of settings were utilized by CHWs to deliver health education and counseling, including the patient’s home, public places, churches, offices and sometimes the CHW’s home.

Focus group data revealed that the training program was successful in promoting community volunteerism among the CHWs. One CHW explained how he responded when one of his patient friends asked him why anyone would care about community health:

So I replied, ‘Say, you have a meeting with your friends and nobody shows up because they all

| Table III. Patient characteristics (n = 53) |
|---|---|---|
| Variable | Mean (SD) | % |
| Age (year) | 64.4 (8.5) | |
| Sex | | |
| Male | 43 | |
| Female | 57 | |
| Patient education place | | |
| Patient home | 60 | |
| Public places (e.g. store, restaurant, golf club) | 16 | |
| Church | 10 | |
| Working place | 8 | |
| CHW home | 6 | |
| Diagnosis | | |
| Hypertension | 53 | |
| Diabetes | 17 | |
| Both | 30 | |
| Time since diagnosis (year) | 8.8 (6.6) | |
| Insurance | | |
| Medicare/Medicaid | 34 | |
| Private | 34 | |
| None | 32 | |
| Being on medication\(^a\) | | |
| Yes | 79 | |
| No | 21 | |
| Self-monitoring of blood pressure and/or glucose | | |
| Daily | 18 | |
| 1–3 times week\(^{-1}\) | 30 | |
| 1–3 times month\(^{-1}\) | 26 | |
| 1–3 times year\(^{-1}\) | 18 | |
| No self-screening | 4 | |
| Blood pressure (mm Hg)\(^b\) | | |
| Systolic | 134.3 (21.5) | |
| Diastolic | 83.0 (11.2) | |
| Self-reported blood glucose level (mg/dl) | 133.6 (45.9) | |
| Having primary care physician | | |
| Yes | 73 | |
| No | 2 | |
| Missing | 25 | |

\(^a\)Included antihypertensive medication, oral diabetes pills and insulin. \(^b\)Measured by CHWs using automatic blood pressure devices.
get sick. How would you feel? Yes, you would feel bad and disappointed ... If we expand this little further, what if their kids get sick and so on? We want our community to be healthy because we want our families and friends to be healthy. That way, we all could feel better and happier. It’s like common wealth.’ [Participant K]

When asked, CHWs defined their role as ‘health initiator’, ‘health advertising agent’ or ‘health role model’ and added that the field-testing was critical to their ability to self-identify as CHWs and become empowered to begin to assume this newly identified role:

I told one of my patients whose BP was 230/110 mm Hg to visit his doctor immediately. These people don’t manage their disease well ... As a CHW, I can help them initiate their disease management by identifying their issues as to why their disease has not been managed adequately, and then specifying where to start. [Participant J]

We Korean people ... think seeing a doctor is enough [to take care of their disease]. I think one of the most important roles of CHWs is to become a health advertising agent to these people and let them know there are much more than seeing a doctor to take good care of their illness. [Participant S]

One CHW shared how she used her new knowledge to transform her daily life routine and how her transformation made a difference not only to herself but also to her friends:

This [being a CHW] is really about being a health role model. When I met my gang—I hadn’t seen them for almost two months for this and that—they all got surprised at my slim figure, you know. I tried to lose weight because I found out about my high waist-hip ratio during the training. I lost about 5 pounds during the past month by eating healthy ... People looked at me with amaze and complimented that I look at least 10 years younger than my age. When I was explaining about health, they were like, ‘Would you be my personal health manager?’ I think I [community health worker] can help these people by showing them what I do to keep myself healthy. [Participant A]

Discussion

This project has demonstrated that volunteers from the Korean–American community can be recruited and trained to serve as health educators in the target community. We were able to provide them with information and support, so that they felt prepared to assume leadership roles in conducting health education and disease management activities within their social network. Participants were satisfied with the training they received and felt empowered to assume a role as ‘health initiator’, ‘health advertising agent’ or ‘health role model’. There were further indications of the training program’s success. After the training sessions ended, the majority of our participants expressed interest in initiating efforts to provide education and counseling to Korean seniors in their neighborhoods. Three female CHWs who expressed interest in even expanding their roles to cover other illnesses participated in a series of training sessions for cancer screening among Korean women.

Some of the cultural aspect of the Korean sample in their approach to responsibility for community health needs to be discussed. The quote from participant K points to a question from one of his patients who wondered why anyone would care about community health. The result might reflect the propensity of subgroups of Asian Americans who often address health problems within an extended family structure rather than at a community level [42, 43]. Previous studies have identified ethnicity and social class as salient factors affecting community involvement. For example, Hispanics have been less involved in community health programs than their White counterparts because many of them are poor or working class and have limited English skills as recent immigrants [44, 45]. Low level of acculturation has also been noted as a deterrent to participation among Hispanics [46]. Korean H.-R. Han et al.
Americans are predominantly first-generation immigrants who share similar language and cultural issues [43]. As Ramirez-Valles and Brown [45] pointed out, these factors might have them utilize informal channels such as social networks to address their health issues.

While the scope of the project was limited to developing a community infrastructure (trained CHWs) to implement better hypertension and diabetes care for Korean–American seniors, one direct outcome of this study is that we now have a readily available network of CHWs who can provide a community-based system of care and support that complement the formal health care system. The development of a network of trained CHWs to serve as community-based health resources offers numerous advantages for health providers as well as community members. In particular, CHWs have the potential to help health care systems overcome some of the cultural and linguistic obstacles that are faced by many recent immigrant groups, such as Korean Americans, and that can limit their medical treatment. CHWs who know their community and its members can assist their clients in the language they understand and in a setting in which they feel comfortable, thereby reducing some of these barriers to effective treatment [16, 20, 21]. In addition, CHWs can be utilized to address the costly problem of non-compliance with treatment recommendations, which often results in complications of illnesses and hospitalizations [29].

While there is no published evaluation available to which we can compare the relative success of our training program, interviews with CHWs and discussions among study team members indicate that at least three important factors contributed to the success of our program. First, the training sessions and education materials, designed to be context- and population-specific, were easily understood and well received by the participants. This was evident in participants’ ratings of their satisfaction with the training content, organization, materials and trainers. Second, the strong support and involvement of a major academic institution gave CHWs confidence in the quality of the training program. Finally, CHWs perceived the team and the training as holding true to the value of empowering underserved Korean–American seniors through information and support. Participants might have related to this value rather easily, since they were aware of the importance of empowerment in promoting health in a group of immigrants who often have only limited sources of care and support that are linguistically and culturally adequate.

Although we were successful in meeting our objective of recruiting and training CHWs in the Korean–American community, certain limitations should be noted. First, this analysis was limited to the training of CHWs and the relatively short-term evaluation of our CHW program. Future studies involving long-term follow-up of CHWs should provide insight into the efficacy of the training program in engaging CHWs in coordinating educational programs, as well as providing necessary referral services for Korean–American seniors with hypertension and/or diabetes. Also, all but one of our study participants had at least a college level of education; thus, some of the training effects shown in this study might have been a result of the high level of education of the trainees. In addition, most CHW field-testing was limited to the CHWs’ social networks (e.g. family, friends, coworkers or community members at church). Hence, CHW field experiences may have been biased, and the training outcomes might have been different if they had used different settings. However, many successful CHW intervention trials have often recruited study participants through the CHWs’ own social networks [24, 33, 47–49]. As this CHW program has been incorporated into various health promotion projects in the Korean–American community, more comprehensive evaluation outcomes will emerge from these initiatives, which will include adequate follow-up training to improve and maintain the skill sets of our CHWs.

Our findings have implications for the training of CHWs who have been recruited to provide health education and counseling and foster a supportive community for culturally and linguistically isolated recent immigrant groups. Future research is warranted to determine whether such provision of care will affect health outcomes such as hospitalization.
rates, quality of life or mortality in the target population.

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Conflict of interest statement

None declared.

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