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# Diabetes Training of Community Health Workers Serving Native Hawaiians and Pacific People

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## Purpose

Training of community health workers (CHWs) serving Native Hawaiian and Pacific People about diabetes prevention, control, and management was identified as a priority in a needs assessment of health agencies in Hawai'i.

## Methods

Principles from Community-Based Participatory Research provided a framework to develop and implement a 4-hour training curriculum. The curriculum developers incorporated teaching strategies shown to be effective with this population and included culturally relevant material. Nineteen health organizations participated in the training that reached 111 CHWs over a 3-year period.

## Results

Based on comparison of pre- and post-diabetes knowledge test results, the training participants showed significant gain in diabetes knowledge.

## Conclusions

A culturally tailored diabetes education gives CHWs the relevant knowledge and tools to participate in the delivery of diabetes education to a minority group experiencing disparate health outcomes. A community-based method facilitated development of seminar content and delivery strategies.

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**N**ative Hawaiians have among the highest rate of type 2 diabetes incidence in the United States.<sup>1</sup> Generally, Pacific Islanders and other Pacific People such as Filipinos are also overrepresented in this disease, particularly in Hawai'i.<sup>2</sup> Socioeconomic issues, cultural factors, and possibly genetic predisposition contributes to the overrepresentation of Native Hawaiians and other Pacific Peoples (NHPP) with diabetes.<sup>3</sup> Community health workers (CHWs) are increasingly being used by health agencies serving minority populations and have been shown to be effective in various settings including NHPP communities.<sup>4-13</sup> CHW skills are particularly suited for the follow-up and support that research indicates are important for chronic disease management such as diabetes mellitus.

Many health organizations hire CHW, and outreach workers, for skills other than clinical knowledge. A needs assessment conducted by the Center for Native and Pacific Health Disparities Research at the Department of Native Hawaiian Health in the University of Hawai'i's John A. Burns School of Medicine, of health agencies in Hawai'i, identified the need for specific training in diabetes education for CHW to increase capacity to serve NHPP. To address this need, the Center facilitated the development and implementation of a culturally relevant diabetes education program for CHW serving NHPP communities as part of an information dissemination initiative. Principles from Community-Based Participatory Research (CBPR) were used throughout this diabetes education effort.

## Community Health Workers and Health Disparities

The CHW is defined as a member of a particular community who works as a bridge between the healthcare system and community members.<sup>14,15</sup> Commonly, CHW do not have formal health training and serve in roles to provide cultural mediation, informal counseling and social support, culturally appropriate health education, advocating for individual and community needs, increasing access to care, and building individual and community capacity.<sup>15-17</sup> Studies have demonstrated that CHW are effective members of the healthcare team in health conditions including: diabetes, cancer, HIV/AIDS, and substance abuse.<sup>5,7,18</sup> While the utilization of CHWs has fluctuated over the past few decades, their use is becoming

more popular, especially as bridges between health disparate minority populations and the established medical system.<sup>6,8,11-13,19,20</sup> CHW also plays an important role in indigenous populations affected by health disparities such as Native Hawaiians, Alaska Natives, and American Indians.<sup>5,6,8-10,19,21,22</sup>

The use of CHWs in diabetes treatment and management is particularly appropriate because the condition requires a large self-care component that CHW skills can support such as outreach, education, skills training, assisting with goal setting, patient social support, and case management. Also, much of the standard diabetes education materials often do not have direct cultural relevance to recent immigrants or indigenous populations such as Native Hawaiians. CHW often act as linguistic and conceptual translators to help guide patients through the medical system and encourage proper self-management. There have been several studies that document the effectiveness of CHW in diabetes education programs as well as behavioral interventions.<sup>5-13,23</sup> In June 2007, this journal published a supplement on promising approaches to diabetes self-management, and more than half of the interventions had incorporated CHW into their programs.<sup>24</sup> Norris et al, in 2004, performed a review of 18 studies which used CHW as liaisons or educators in diabetes education management and control interventions.<sup>7</sup> In these studies, CHW performed a variety of different functions: peer mentors, educators, translators, navigators, and coordinators.<sup>7</sup> Many of the studies reviewed indicated that CHW involvement made a positive impact on program outcomes whether that was behavioral changes, physical activity levels, glucose monitoring, glycemic control, or diabetes knowledge.<sup>7</sup>

In Hawai'i, CHWs are used extensively by community health centers, federally established Native Hawaiian Health Care Systems, homeless shelters, and other health and social service agencies. Agencies often hire CHW without health training to function as outreach workers, case managers, and interpreters. These CHW become involved in health issues related to leading chronic diseases, specifically, type 2 diabetes, heart disease, and cancer. Yet, disease-specific training has not been formally available for CHW in Hawai'i.

## Methodology

A needs assessment of diabetes education and information conducted with 20 community health agencies across the state of Hawai'i, by the Center for Native and

Table 1

## Teaching Strategies and Cultural Components of Seminar

Teaching Strategies	Cultural Components
Small class size	NHPP language & definitions
Multidisciplinary instructors	Cultural practices as positive examples
Community-based instructors	History of NHPP
Rotation of instructors	Cultural food preferences
Group learning exercises	Photos of NHPP in lectures
Case Studies	Pacific graphics in lectures
Skits	Establish personal, geographic, familial connection between instructors and students
Role models	Provide in-language and culturally relevant diabetes education material
Role-playing exercises	

Pacific Health Disparities Research, identified diabetes-specific CHW training as a priority activity to improve diabetes prevention, control and management for NHPP. These agencies reported they had neither resources nor expertise to develop and conduct staff training and have been unable to find suitable CHW diabetes education training programs in their communities. Although not a research initiative, the Center used a Community Based Participatory Research (CBPR) framework as a guide to develop, implement, and evaluate a diabetes education seminar for CHW. CBPR is defined as a collaborative research approach in which researchers and community members share an equal amount of power in terms of project design, implementation and evaluation.<sup>25,26</sup> This framework integrates several perspectives and balances integrity of scientific evaluation method with community priorities. A common goal of CBPR is achieving social justice or community well-being. Unlike traditional research methodology CBPR is based upon 3 concepts: co-learning by researchers and community members, power sharing, and mutual ownership of both process and outcomes. Another notable difference is the community is involved with the identification of the problem as well as the design of the study to identify the solution. Community input and feedback is also incorporated throughout the evaluation and outcome dissemination. The increased time required to adhere to CBPR principles is often cited as a significant drawback to this

approach although community satisfaction with the process and product is frequently higher.<sup>26</sup>

Increasing CHW knowledge about diabetes was a primary objective of the seminar. The secondary objective was to increase capacity of community health organizations by developing staff as instructors for health education classes. Consistent with CBPR principles, the curriculum and teaching strategies were developed in collaboration with CHW and other staff from 3 different health organizations who serve NHPP. The curriculum developers prioritized materials and approaches that were (1) interactive, (2) facilitated the delivery and retention of information, and (3) culturally relevant to NHPP (Table 1).

The curriculum developers incorporated teaching strategies that balanced classroom lectures with case studies, role playing, and group learning. They also integrated NHPP history, language and cultural practices into the curriculum. Educational research with NHPP has shown that these approaches create “culturally authentic environments” that facilitate learning.<sup>27,28</sup> Instructors were mostly NHPP and were encouraged to incorporate cultural practices, such as establishing personal, familial, and geographic connections to students. For example, the instructors were asked to incorporate personal anecdotes relevant to diabetes as an initial basis for class discussion. A key strategy in the development of the course was to have a team of instructors for the course. The teaching

team was composed of a health educator, a clinician, and a senior CHW. When possible, the instructors were recruited from the community to further the capacity-building within agencies and community-based resources. The developers also believed it was important to broaden the CHW exposure to role models, resources, and multidisciplinary perspectives. They also anticipated that a rotation of instructors during the seminar would increase attention and information retention.

The 4-hour training, known as Diabetes 101, was comprised of 3 modules that were each 60 to 90 minutes in duration. The seminar provided an overview of the disease, prevention, treatment, and strategies for CHW and client interactions. Module 1 presented prevalence, types, symptoms, risk factors, and complications of diabetes. Module 2 covered prevention of type 2 diabetes, monitoring, treatment, and information resources. Module 3 taught overcoming barriers to change, stages of change, and patient education strategies. Diabetes 101 presentation material can be viewed at the Center's Web site.<sup>29</sup> A student workbook was provided to all attendees. The workbook contained lecture notes for each module, articles on diabetes mellitus, and a list of local and Internet diabetes resources. Culturally relevant materials on diabetes, physical activity, and nutrition, such as nutritional information about traditional Pacific Island and foods, were also included. The class size was restricted to facilitate an interactive learning environment, with an average of 15 students.

Over 3 years, the seminar was taught 7 times across the state, 3 times in the urban center and in 5 rural locations. The state of Hawai'i is composed of 5 major islands, the island of O'ahu, where the state capital and 80% of the population is located is considered urban. The remaining islands are considered rural areas and are only accessible by commercial airline flights and private boat access. A total of 111 people attended the training seminars. Of the 21 health agencies invited to send staff or volunteers to attend classes, 19 (90.5%) enrolled at least 1 member of their staff. Most class members were CHW from federally qualified community health centers (FQHC) and the federally established Native Hawaiian Health Care Systems. A majority of the seminar participants, 69%, were NHPP, in addition 20% were Asian, and 6% were white. Most of the attendees, 93%, were female, which is generally proportional to the gender ratio among CHW in Hawai'i. The experience level of the CHW ranged from new hires to CHW with more than 10 years of CHW job experience.

Following the CBPR framework, a partnership was formed with a community health agency to coordinate implementation. Various venues were used for maximum dissemination of the course, including in-services at health agencies, independent classes, and a community college course geared toward outreach workers. The seminar was conducted at least once on each of the 5 main islands in the state to promote participation of rural areas.

Immediately before and after the seminar, students were administered a pre- and posttest to determine the effectiveness of the course on improving diabetes knowledge and to assess the relevance of the curriculum to NHPP communities. The test was adapted from a diabetes attitude survey (DAS-3) and a diabetes knowledge test (DKT), both created and validated by the University of Michigan's Diabetes Research and Training Center.<sup>30,31</sup> The tests contained 11 straight-forward and nontechnical questions: 8 multiple choice and 3 True/False questions that also asked for a short explanation. Results from 5 of the 8 classes taught produced acceptable data which was analyzed by paired t tests using an SAS-FSP database.

Satisfaction surveys were administered at the completion of the course. The surveys asked 3 short answer questions and gave 9 statements. The short-answer questions inquired about areas of greatest and least satisfaction and areas needing improvement. For the statements, participants could respond on a 3-point Likert scale, of agreement or disagreement. The scaled statements inquired about instructors, materials, course length, and complexity. Completed satisfaction surveys were tallied and percentages developed based on total number of responses. The qualitative responses were categorized and tallied by frequency of response.

## Results

In total, 5 classes, 2 from urban settings and 3 from rural communities, yielded viable results for 63 attendees that completed the course. During the first 2 classes conducted, the knowledge test was still in the development process and those results were not included in the final data analysis. Table 2 shows the results from urban groups, rural groups, and both groups combined in the total. Means were calculated based on the difference between the mean posttest score and the pretest score. Significance was indicated by a *P* value of  $< .05$ . As Table 2 indicates, there was an overall statistically significant improvement in mean test scores of 1.92 ( $P < .0001$ ),

Table 2

## CHW Knowledge Test Scores for Urban, Rural and All Groups

	Urban	Rural	Total
n	33	30	63
Mean Pretest score (SD)	9.06 (1.98)	9.57 (2.10)	9.30 (2.04)
Mean Posttest score (SD)	11.42 (.75)	11.00 (1.17)	11.22 (.99)
Mean Postscore—Prescore (SD)	2.36 (2.044)	1.43 (1.91)	1.92 (2.02)
P value	< .0001	.0003	< .0001

or a 20.97% increase. Collectively, the urban classes had greater improvement, with a slightly lower mean pretest score and slightly higher posttest score than the rural classes. The improvement for the urban classes was 2.36 in mean score, an increase of 26.05%. The rural classes improved less with an increase of 1.43 mean score, a 14.94% increase.

The satisfaction survey results from these classes indicated a high rate of approval with the course. There was complete agreement from all participants that the course provided useful information about diabetes, its risk factors, and complications. There was 87.3% agreement that the course provided useful information about diabetes management and that the language used was easily understood. Qualitative analysis of the 3 short-answer evaluation questions indicated specific aspects of the seminar most appealing to the participants. Appreciation for the information provided was the most frequently identified as the “best” aspect of the course. Specifically mentioned was the clarity of the information and presentation of relevant examples. Approximately a quarter of the class members gave favorable mention to the interactive orientation of the course, with the role-playing exercises most frequently identified. There was also satisfaction with the speakers, even though there was a rotation of different speakers for the classes. The greatest dissatisfaction noted in both the scaled and open-ended questions was the short duration of the course, with many advocating for a longer length of training time for the material covered.

## Conclusions

As CHWs become increasingly used in the management and care of chronic diseases, it will become progressively

more important that training be available to increase their disease-specific knowledge. Diabetes 101 is a unique training for health information dissemination because the culturally tailored curriculum gives CHW the relevant knowledge and tools necessary to assist in the delivery of diabetes self-care and management information to Native Hawaiian and other Pacific Island community members. The use of instructors who have cultural knowledge of Native Hawaiian and Pacific communities, culturally appropriate curriculum and teaching methodology, and the dissemination of community relevant materials have all been important components of this program.

Limitations for this program evaluation did exist. The evaluation was not designed to identify what aspect of the course had the most impact in improving scores. Therefore, we are unable to determine which strategy or material had the most impact on the gain in knowledge. Also, the seminar accepted all individuals referred by health agencies resulting in a wide range of experience and educational background of attendees. Limited demographic information was gathered and information such as level of education and age were not collected. A final limitation is the lack of any longitudinal testing to evaluate long-term knowledge retention.

As shown in the analysis training's knowledge and attitude test score, we can determine that a culturally relevant course, such as Diabetes 101, is a good method for diabetes information dissemination to CHWs in Hawai'i. The success of the course can be measured by both the overall improvement of scores and the positive feedback received in student satisfaction surveys. The somewhat higher rate of improvement for the urban group compared with the rural group indicates, however, that

modified teaching strategies or materials may need to be considered for geographic locations.

Utilization of the CBPR framework in this initiative benefited both the quality of the course content, teaching strategies, and implementation efforts. It also served to create ownership and interest in the seminar which likely added to the level of participation by numerous health agencies. Keeping with CBPR principles, all of the Diabetes 101 curriculum and class material are available to the 20 health agencies involved with this initiative through password-protected Web site. While collaboration efforts mandated by the CBPR process increased the time required for development and implementation, the increased knowledge and high interest in the seminar make it worthwhile.

To continue the success of Diabetes 101, the Center has recently developed a second course, Kidney 101, which focuses on kidney health and managing the kidney-related consequences of diabetes. Kidney 101 is a 2-hour-long seminar and is taught as a partnership between the Center for Native and Pacific Health Disparities Research and the Hawai'i chapter of the National Kidney Foundation. This course also uses the approach of interactive multidisciplinary teaching methods, small class size, and culturally relevant curriculum. Sustainability efforts to permeate the course into the various communities in Hawai'i have been an integral strategy since the development of the course. Recently, 4 different organizations, 3 health agencies and 1 educational institution, have independently adopted the Diabetes 101 approach and materials to use for training of health professionals.

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