

Evaluation of Distance Learning for Health Education

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Abstract

The Hawai'i Unified Telehealth program is a distance learning health education program for rural communities, created with federal grant funding from the U.S. Department of Commerce and the National Institutes of Health. These grant funds helped develop a network of rural community learning centers that employ distance learning technologies to provide community-driven peer education to isolated areas across Hawai'i and Majuro, Republic of the Marshall Islands. In this article, the authors briefly describe the development of the ongoing health education program and the results of outcome evaluation completed at the end of the funding period. (PHD 2007 Vol 14 No 1 Pages 57 - 65)

Introduction

Significant geographic and cultural barriers to healthcare exist in the Pacific, resulting in poor health in many underserved communities. For example, Hawai'i has the highest incidence of tuberculosis in the U.S.^a Native Hawaiians have rates of type 2 diabetes four times higher than the U.S. standard population^b and mortality rates from diabetes eight times that of non-Hawaiians.^c Samoans in Hawai'i have extremely high rates of obesity^d In addition, in its "Pacific Partnerships for Health" report, the Institute of Medicine (IOM) documented that life expectancies in the U.S. Affiliated Pacific Islands (USAPI) are 9 to 12 years shorter than that in the U.S. mainland.^e

Factors that contribute to health disparities in the region are many and include a lack of healthcare providers in rural areas, a lack of trust in western medicine and a general lack of understanding of health issues. In addition, since people with the least resources often live in remote areas and are unable to travel to urban medical centers, it is even more difficult for them to obtain healthcare due to isolation. Distance learning provides an option of decreased isolation, but this

option is expensive and requires significant equipment, training and coordination, making it of limited use in rural communities.

The Hawai'i Unified Telehealth (HUT) program was designed to use distance learning to increase communication and understanding of health by having rural communities share health education information with other rural communities. The HUT activities were funded by a Technology Opportunity Program grant from the U.S. Department of Commerce (DOC), and from the National Institutes of Health (NIH) National Library of Medicine (NLM) between 2001 and 2005. The program was designed to increase connectivity between existing networks by bridging the existing video technology communication (VTC) systems to improve access to these networks from community sites in order to share culturally sensitive and community driven educational experiences relating to health. The University of Hawai'i (UH) John A. Burns School of Medicine (JABSOM) Hawai'i Pacific Basin Area Health Education Center (AHEC) partnered with many rural, state and regional organizations to develop a network of VTC sites spanning rural Hawai'i and also including Majuro Hospital in the Republic of the Marshall Islands (RMI). A weekly health education seminar was developed; the outcome evaluation is described below.

Methods

Participating sites were identified based on the criteria of rural location or service area, accessibility of the

community site or center to the public during session times, and community interest. Twenty-eight rural communities expressed interest in participating. Each site was assessed for distance learning connectivity resources, and all received assistance in connecting to the developed network. U.S. DOC HUT grant funds were used to install VTC units and connectivity at 15 sites in Hawai'i. Connection of 10 sites via computer through the internet were paid for by NIH NLM grant funds, and three additional sites had existing equipment and connectivity. The appropriate technological solution was selected based on each site, and included use of

Once connectivity was established at 10 sites, health education sessions were introduced. Each new site was included in the network as connectivity was established. All 28 sites expressing interest in the network were included (see Table 1).

Initial educational sessions, based on topics assumed to be of importance, such as diabetes treatment, skin cancer prevention, kidney disease and nutrition, were broadcast live from the UH JABSOM to VTC sites. Participation was very low and community members expressed significant distrust in the equipment. At sites

Table 1: Hawai'i Unified Telehealth (HUT) Program Distance Learning Health Education Sites.

Hawai'i Sites		USAPI Site
Ke Ānuenue AHEC, Hilo	Ka'u Rural Health Community Center, Pahala	Majuro Hospital, Majuro, Republic of the Marshall Islands
Bay Clinic - Hilo	Bay Clinic - Ka'u	
Bay Clinic – Pahoa	Community Clinic of Maui-Wailuku	
Hale Halawai 'Ohana 'O Hanalei, Hanalei	Hale Hulu Mamo, Hana	
Hamakua Health Center, Honoka'a	Hawai'i Primary Care Association, Honolulu	
Ho'ola Lahui - Lihue	Ho'ola Lahui – Waimea	
Hui Malama Ola Na 'Oiwi, Hilo	Kalihi-Palama Health Center, Honolulu	
Kaua'i Community College, Lihue	Kokua Kalihi Valley Family Health Center, Honolulu	
Legal Services for Children, Wai'anae	Maui Community College, Kahului	
Na Pu'uwai', Kaunakakai	Na Pu'uwai' – Lanai	
Queen Emma Clinic, The Queen's Medical Center, Honolulu	University of Hawai'i School of Nursing, Manoa	
Tutu's House, Friends of the Future, Waimea	University of Hawai'i at Hilo	
Wai'anae Coast Comprehensive Health Center, Wai'anae	Waikiki Health Center, Honolulu	
Waimanalo Community Health Center, Waimanalo		

VTC units over the UH ethernet system, microwave bandwidth, cable modems, high speed internet, such as digital subscriber line (DSL), or integrated services digital network (ISDN) lines, as available in each location. At every site where VTC equipment was installed, two community members were trained on equipment set-up, connecting to other sites, type of connectivity used at the site, and general troubleshooting of problems. Each site was required to have a safe location for equipment and program oversight while equipment was in use.

where an individual invested in the success of distance learning or a program champion existed, interest began to grow in the second year of program funding. Participants expressed the desire for experts from rural areas to teach the sessions twice monthly, and distance learning sessions began originating from the Ke Anuenue AHEC in Hilo, Hawai'i. Participants were polled about topics of interest, and speakers, including pharmacists, nutritionists and healthcare workers and health professions students, were recruited.

The location of all 28 HUT sites are listed in Table 1. Of the sites connected to the network, seven sites demonstrated regular attendance: Hilo, Pahoa, Waimea, Ka'u, Pahala, and Kuanakakai in Hawai'i, and Majuro Hospital, RMI. Educational sessions are now held weekly from Hilo, and have been renamed "E Ninau Aku I Ke Kauka", which means "Ask a Healer." Examples of program topics in the ongoing distance learning curricula include diabetes care, identifying nutrition in Hawaiian and Filipino dishes, planting gardens for health, saying no to drugs, healthy cooking food demonstrations, smoking cessation and early prevention and screening for cancer.

Evaluation of program effectiveness was measured via participant surveys during the final year of grant funding. Qualitative and quantitative data was collected from program attendees who voluntarily completed a form approved for exemption by the UH Committee on Human Subjects. Survey questions pertained to date, topic, participant ethnicity, whether the technology was useful, whether the session improved the participant's comfort with the technology, whether the learning center was a useful location for the educational session, suggestions for improvements, and suggested future topics, and included the Likert scale rating (1-7) of educational experience. Only two network sites – Hilo and Ka'u – completed and submitted the requested survey forms. The results of this voluntary survey for the E Ninau Aku I Ke Kauka health education program were compiled, responses tabulated and qualitative questions analyzed for common themes by the three-person research team.

Results

The authors were successful in connecting 28 sites via VTC, 15 of which had no prior VTC connectivity. Initial interest in distance learning opportunities in the 28 rural communities connected was limited. However, late in the second year of funding, all sites connected at least once. At least 12 of the sites have continued their connectivity after the end of grant funding, and seven of the sites still participate regularly in program activities. Average weekly participation is 10-15 individuals at five sites. Most participants are healthcare consumers interested in the topics, the notable exception being nursing staff at Majuro Hospital.

Survey Results

A total of 149 participants at either the Ke Ānuenue AHEC in Hilo or the Ka'u Rural Health Community Center in Pahala completed the written survey. Ninety-four

individuals self-identified on ethnicity: Hawaiian 34%, Caucasian 27%, Japanese 18%, Filipino 8%, Chinese 6%, Vietnamese 2%, and other Pacific Islander 3%, and Hispanic 2%. Of the participants responding to specific questions, 99% of 129 respondents reported that the technology was useful, and 94% of 116 respondents responded affirmatively to the question regarding whether the session improved comfort with technology. All 142 people who responded to the question regarding whether the learning center was a useful location for the educational experience, answered, "Yes." On a 7-point scale, with 1 representing "excellent," the educational experience had an average rating of 1.5 for the 149 participant respondents.

The most common qualitative feedback terms were; "great," "helpful," and "informative." Specific comments included; "Fascinating," "Impressive technology," "Presentation and video teleconferencing both are good," "Lots of good and pertinent information," "Good information and resource," "Modern technology is an advancement in presenting information. Literatures are very interesting," and "We will incorporate much of this info in our diabetes education programs." However, there were many frustrations reported with the technology; "Good presentation, some areas were difficult to understand," "Unable to understand speaker clearly, probably video problem," "Hard time to see and hear," "Video connection was not good and distracting."

Suggestions for the future included increasing publicity, and advertising in communities by using bulk mail, using a human model for demonstration of point pressure, and using slides with a multi-media projector. In addition to collection of survey data, program activities also resulted in 50 individuals receiving technical training and at least four participants were hired to program-topic employment by the conclusion of grant funding.

Discussion

Health education using distance learning has been successfully employed in more than 28 communities in the Pacific region. Community response indicates that although not free of challenges, the technology was felt to be useful by over 99% of respondents, and, in fact, 94% of respondents indicated an increased general comfort with technology. Community learning centers as venues for video teleconferencing were universally reported as helpful by survey respondents from the two sites returning evaluation forms.

Study limitations include the fact that only seven sites continue to make use of the distance learning sessions,

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and only two sites completed the evaluations. In addition, responses were open ended, so the opinions of more responsive participants are likely to be over represented. It is likely that participants who chose to respond were those most impacted by the activity, and, therefore, it is unlikely that we received a representative sample. Nonetheless, the responses indicate a positive outlook to technologies that were foreign to many of the participating community members prior to program implementation.

Lessons learned through this experience include the fact that, once accepted, distance learning using VTC can be an excellent source of health information. However, the initial introduction to a rural community must be supported by a local champion who has the skills to understand the technology and assess interest in topics. Only in communities with such a champion did this program take hold. Session timing changed over the course of the program, with the preferred time for meetings being in the evening. Because of the time difference between Hawai'i and RMI, sessions in RMI were conducted at mid-day. Since nursing staff comprised the interested group in RMI, this time was satisfactory when participation was approved by the hospital administration.

An initial challenge encountered was that many communities were so isolated, they lacked the technical infrastructure required to have functional VTC connectivity. While broadband connectivity was finally obtained at most of the sites, for one site, adequate connectivity speed for satisfactory participant interaction was never achieved. Challenges to the continuity of this and similar projects include obtaining funds for connectivity charges and bridging fees, aiding participating sites in troubleshooting with technological expertise, and stability of organizations accessed by end point users of the technology, as community sites sometimes changed location or leadership.

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Despite these challenges, the effectiveness of distance learning between community sites certainly deserves further investigation of effectiveness and efforts toward expansion. To measure the impact of the program, future research could be conducted to track changes in physical measurements of health, such as body mass index and blood pressure in regular session participants, with comparison of these numbers to a control group receiving standard nutrition counseling.

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