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Role of telehealth/videoconferencing in managing cancer pain in rural American Indian communities

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Abstract

Objectives—This project is aimed at determining the feasibility and effect of using videoconferencing to deliver cancer-related pain management education and case consultation to health care providers in rural AI/AN communities.

Methods—The project provided four educational sessions and nine case conferences to health care providers at tribal clinics in Washington State and Alaska using videoconferencing with pain experts at the University of Washington. A cross-sectional, descriptive study design was used to survey the participating providers. Measures included satisfaction with the telehealth system and self-perceived competence in pain management.

Results—Fifty-two providers from 11 sites attended the educational sessions. Ninety-three providers from 16 sites participated in the case conferences. Case conference participants scored significantly higher on perceived competence in treating pain compared with clinic providers who did not attend. Educational session participants and case conference participants both reported a high level of satisfaction with videoconferencing.

Conclusions—Telehealth is a feasible and effective way to deliver cancer-related pain management education and increase competence among rural health care providers.

Keywords

pain; American Indian; Alaska Native; videoconferencing; cancer; oncology

Minority populations, such as American Indians/Alaska Natives (AI/ANs), are predisposed to underreporting and being undertreated for their pain. AI/AN patients with chronic pain

have revealed that they underemphasize pain and disability by describing even severe symptoms with vague terms such as *ache* or *discomfort* [1]. AI/AN cancer patients may be resigned to experiencing pain because of beliefs that pain always accompanies cancer and cannot be relieved [2]. In addition, providers may react differently to pain reports from patients of varying racial–ethnic characteristics, thus increasing the risk of inadequate treatments [3,4].

To provide quality pain management, health care providers must not only have the knowledge of their patients' cultural characteristics but also understand the pathogenesis of cancer pain, pain assessment techniques, and effective treatment interventions. Additional problems in the area of cancer-related pain treatment include inadequate knowledge about pain mechanisms, pain assessment and treatment, and side effects related to analgesic medications [5]. Patients often must be seen by pain specialists for this level of care unless their health care provider has had specific education about cancer-related pain. However, many AI/AN patients find access to high-quality continuous specialist care is limited due to the rural geographical locations of most AI/AN communities.

Improving access to pain management via telehealth

Telehealth is a promising approach to improving access to health care specialists for patients and providers in rural areas. Videoconferencing, one mode of telehealth, is an efficient way to deliver education and consultation remotely. Videoconferencing has been widely used to provide continuing education to rural health care providers [6–8] and there is growing evidence that videoconferencing can have a useful role in providing consultation [9].

Interactive, multidisciplinary cancer rounds have been delivered successfully by videoconference [10]. In another study, videoconferencing was used to link a cancer center in South Australia with a hospital in the Northern Territory [11]. There are few studies; however, describing the use of video-conferencing in delivering provider-to-provider consultation on effective assessment and treatment of cancer-related pain. Although there is some mention in the literature about the use of telehealth for managing cancer pain [12], telehealth has yet to be tested as a feasible way to manage cancer pain in rural AI/AN communities.

The purpose of the present project was first to determine the feasibility of using videoconferencing to deliver cancer-related pain management education and case consultation to health care providers in rural AI/AN communities, and then to identify both (a) the health care providers' level of satisfaction with videoconference delivery of pain management education and case consultation, and (b) the providers' pain management competence after participating.

Methods

To determine feasibility, we facilitated a series of educational sessions and case conferences for rural health care providers caring for AI/AN cancer patients at rural tribal clinics and hospitals in Washington State and Alaska. The sessions were delivered via videoconference with experts at the University of Washington. We then used a cross-sectional, descriptive study design to survey participating and nonparticipating rural providers about their self-perceived competence in treating pain. The comparison group of nonparticipating rural providers was located at similar small rural clinics and hospitals. We also surveyed the participating rural providers about their satisfaction with telehealth. The human subjects committee of the participating university and tribes approved the project before its inception.

Determining feasibility

Educational series—The educational series consisted of monthly video-conferenced presentations that addressed a variety of cancer-related issues. Four of the educational sessions addressed cancer pain management: (a) Pain and Symptom Management in Adult and Pediatric Cancer, (b) Pharmacological Management of Cancer Pain, (c) Basics of Opioid Use in Pain Management, and (d) Neuropathic Pain. These pain topics were chosen based on provider suggestions regarding the content they wanted covered at the start of the educational series.

The monthly sessions were scheduled during lunch hour on a Thursday so the providers would be able to ‘lunch and learn’. Email reminders were sent to the sites the Monday preceding each session. In most cases, videoconferencing equipment was set up in a tribal clinic conference room, and information technology experts were available to help to set up the equipment. At some rural clinics, the providers were trained to use the equipment. A technical expert was present at the University of Washington site during each session to help with technological issues.

Case conferences—Nine case conferences were held by videoconference, allowing for real-time interaction between providers at the rural clinic sites and an UW consulting pain management expert. By request of the rural providers, all nine case conferences focused on pain management. Each began with a 15-min expert presentation on a pain management topic of interest. The expert presentation was followed by a brief question-and-answer session, after which the rural providers presented cases for review. Participating primary care providers selected cases based on need for consultative support and/or at the patient’s request. All patient ages were eligible. The consulting pain management expert requested that cases be submitted electronically at least 2 days in advance.

Transmitted patient information included diagnosis, history, current medical issues, and specific questions for the consulting pain management expert. Additional information from the patient medical record could be submitted if the rural provider felt it was important to the case discussion. Data were transmitted using secure electronic information systems that were protected from unauthorized access by strong password security protocols. Network security was in compliance with the UW Human Subjects Division, Health Insurance Portability & Accountability Act (HIPAA), and Family Educational Rights & Privacy Act (FERPA) standards. Electronic transmissions that contained patient health care information were encrypted.

The consulting pain management expert reviewed each patient’s clinical history, then discussed issues and requested further information in case conference format with the referring provider and other participating providers from rural clinics via real-time videoconference. The consulting pain management expert also rendered an opinion and management recommendations. The videoconference format allowed all of the participating rural health care providers to gain from the case discussion.

Measuring satisfaction and competence

Both the providers who attended the educational sessions on pain management and those who attended the pain management case conferences were asked to fill out the Telehealth Satisfaction Survey [13]. Additionally, providers who attended the telehealth case conferences were asked to complete the Perceived Competence Scale in treating pain [14]. A group of rural tribal clinic providers who did not attend the case conferences was also asked to complete the Perceived Competence Scale in treating pain and served as the comparison group. The providers who did not attend case conferences practiced in rural

tribal clinics but did not have access to videoconferencing at their clinic site. They were approached during clinic meetings and were asked to complete the Perceived Competence Scale.

The four items of the Perceived Competence Scale [14] are designed to be tailored to the specific domain being assessed. This project measured providers' feelings of competence in treating pain. Providers rated the questions on a 7-point Likert-like scale ranging from 1 = 'not at all true' to 7 = 'very true.'

Analysis

We used descriptive statistics, including counts and percentages for binary and categorically scored data, and means and standard deviations for continuously scored data. For comparison between provider groups, *t* tests were used. All analyses used IBM SPSS Statistics 18 (Chicago, IL, USA).

Results

Feasibility

Eleven nonduplicated sites participated in the four telehealth pain management educational sessions. These sites ranged in distance from 62 to 922 miles from the nearest pain management specialist. A mean of five sites (range: 3–7) joined each of the four sessions. The total number of providers attending each session ranged from 12 to 21, with a mean of 17 total providers, and a mean of three providers (range: 1–9) at each site, attending each session. Providers who participated in both the intervention, as well as in the comparison group, included MDs, PAs, NPs, RNs, pharmacists, and health assistants.

Nine pain management case conferences were held and 16 nonduplicated sites attended. These sites ranged in distance from 74 to 1127 miles from the nearest pain management specialist. A mean of four sites (range: 1–9) joined each case conference. The total number of providers at each case conference ranged from 3 to 23, with a mean of 10 total providers, and a mean of three providers (range: 1–7) at each site, participating in each case conference.

The number of cases discussed at each case conference ranged from 2 to 27 with a mean of five cases. All cases were new cases to the case conference series. On the date that 27 cases were discussed, the conference devoted more than 1 h to reviewing cases, and follow-up occurred by the consulting pain management expert to ensure that all providers felt that their cases had been adequately addressed.

Satisfaction

Of the 52 providers who attended the pain management educational sessions, 24 (46%) completed and returned the Telehealth Satisfaction Survey. Of the 93 providers who attended the case conference sessions, 32 (34%) completed and returned the Telehealth Satisfaction Survey. Both sets of respondents reported a high level of satisfaction with the delivery of the telehealth sessions; mean responses to the survey are shown in Table 1.

Competence

Of the 93 providers who attended the case conference sessions, 32 (34%) completed the Perceived Competence Scale (together with the Telehealth Satisfaction Survey). An additional 32 providers from tribal clinics not participating in the case conferences also completed the Perceived Competence Scale. Providers who attended a case conference session scored significantly higher ($p < 0.01$) on perceived competence regarding pain

(mean 25.75) compared with the comparison group of providers who did not attend the telehealth case conferences (mean 23).

Discussion

The literature suggests that the treatment of pain disparities among racial and ethnic minorities is complex and include both health care provider and patient access to expert pain management care [15]. There is a need for improved pain management training for health care providers and thereby increasing access for rural AI/AN cancer patients to expert pain management care. The present project demonstrates the feasibility of using telehealth to deliver cancer-related pain management education and case consultation to health care providers in AI/AN rural communities. This project demonstrates that telehealth applications focused on pain management in cancer patients is not only feasible but also highly acceptable. Telehealth allowed the extension of the tribal clinic health care beyond the original scope. With telehealth, it became possible to include the consultant pain management expert to be able to manage more complex cases in the tribal clinic. This is an example of improved functionality that was not attainable before the introduction of telehealth.

This project's results were similar to results found in Australia [11], where participating providers were highly satisfied with the videoconference format. Videoconferencing allowed the health care providers to interact with colleagues while remaining located in their rural clinics, thus saving providers the time and expense of traveling to meet with specialists for continued training. In this project, providers were able to learn from geographically distant experts about culturally relevant pain management strategies for their cancer patients. Providers who attended telehealth case conferences increased their perceived competence in managing more complex pain management issues when compared with providers who did not attend the case conferences.

There were several limitations to this project. Pretests and posttests were not implemented but would have better measured changes in provider perceived competence, and results would be valuable for future studies. This project also did not randomize providers into telehealth and comparison groups. Our decision not to randomize providers was made based on the available telehealth equipment in tribal clinic sites and the small number of providers located at each tribal clinic site; however, providing a more closely equivalent comparison group in future studies will more definitively measure the change resulting from the intervention. In addition, although satisfaction studies are important, they often show high satisfaction results for telehealth. In future studies, a qualitative approach, with focus groups or interviews of participants, may provide a deeper analysis of the program's impact on participants, as well as determining strengths and areas for improvement.

Although the success of the cancer-related pain management education and case consultation is difficult to completely quantify, there were many sessions in which many sites and providers participated. Additionally, this project provides a specific and feasible protocol for delivering cancer-related pain management case consultation to rural health care providers. This protocol can be employed in future telehealth implementation projects. This protocol for pain case management via telehealth was found to be a satisfactory way to communicate between tribal clinic locations challenged by distance, a number of mountain ranges, ferry travel, and surface travel by car that is sometimes dangerous. The attractiveness of telehealth for these rural tribal clinic providers was in part due to the increased access to a consulting pain management expert which increased their self perceived competence in pain management. Additionally, patients stand to benefit from local providers who can offer more in-depth pain management. Increased pain management expertise

among rural providers may also decrease patients' need to travel to specialist for assessment and intervention.

Advancing technology offers opportunities for innovative and effective ways to bridge geographic distance and reach out to rural and underserved populations. Future studies are needed to further measure and evaluate the impact of education and consultation videoconferences on professional practice in general and on cancer patients' pain management in particular.

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References

1. Kramer BJ, Harker JO, Wong AL. Descriptions of joint pain by American Indians: comparison of inflammatory and noninflammatory arthritis. *Arthritis Rheum.* 2002; 47(2):149–154. [PubMed: 11954008]
2. Haozous EA, Knobf MT, Brant JM. Understanding the cancer pain experience in American Indians of the Northern Plains. *Psycho-Oncology.* 2010 Epub ahead of print.
3. Huang B, Dawson DA, Stinson FS, et al. Prevalence, correlates, and comorbidity of nonmedical prescription drug use and drug use disorders in the United States: results of the National Epidemiologic Survey on alcohol and related conditions. *J Clin Psychiatry.* 2006; 67(7):1062–1073. [PubMed: 16889449]
4. Smith SM, Stinson FS, Dawson DA, Goldstein R, Huang B, Grant BF. Race/ethnic differences in the prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on alcohol and related conditions. *Psychol Med.* 2006; 36(7):987–998. [PubMed: 16650344]
5. Stephenson N, Dalton JA, Carlson J, Youngblood R, Bailey D. Racial and ethnic disparities in cancer pain management. *J Natl Black Nurses Assoc.* 2009; 20(1):11–18. [PubMed: 19691179]
6. Hackett J, Madden DL, Viney KA, Naylor CJ. Evaluation of three population health capacity building projects delivered by videoconferencing in NSW. *NSW Public Health Bull.* 2009; 20(11–12):182–186.
7. Rossaro L, Tran TP, Ransibrahmanakul K, et al. Hepatitis C videoconferencing: the impact on continuing medical education for rural healthcare providers. *Telemed J E Health.* 2007; 13(3):269–277. [PubMed: 17603829]
8. Klein D, Davis P, Hickey L. Videoconferences for rural physicians' continuing health education. *J Telemed Telecare.* 2005; 11(Suppl 99)(1)
9. Arora S, Geppert CM, Kalishman S, et al. Academic health center management of chronic diseases through knowledge networks: project ECHO. *Acad Med.* 2007; 82(2):154–160. [PubMed: 17264693]
10. Gagliardi AR, Wright FC, Anderson MA, Davis D. The role of collegial interaction in continuing professional development. *J Contin Educ Health Prof.* 2007; 27(4):214–219. [PubMed: 18085600]
11. Olver IN, Selva-Nayagam S. Evaluation of a telemedicine link between Darwin and Adelaide to facilitate cancer management. *Telemed J.* 2000; 6(2):213–218. [PubMed: 10957733]
12. Xavier K, Shepherd L, Goldstein D. Clinical supervision and education via videoconference: a feasibility project. *J Telemed Telecare.* 2007; 13(4):206–209. [PubMed: 17565778]
13. Canada, H. [Accessed February 2008] Health Canada. Telehealth Satisfaction Survey. First Nations, Inuit and Aboriginal Health. 2007. Available from: <http://www.hc-sc.gc.ca/fniahsnpia/index-eng.php>
14. Harter S. The Perceived Competence Scale for Children. *Child Dev.* 1982; 53(1):87–97.
15. Shavers VL, Bakos A, Sheppard VB. Race, ethnicity, and pain among the U.S. adult population. *J Health Care Poor Underserved.* 2010; 21(1):177–220. [PubMed: 20173263]

Table 1

Rural health care providers' reported satisfaction with telehealth delivery of pain management education ($N=56$)

Item	Mean ^a	SD
Sound quality	3.44	0.67
Picture quality	3.21	0.62
Comfort with asking questions via telehealth	2.75	1.48
Overall satisfaction with telehealth	3.35	0.95
Usefulness of the information presented	3.47	1.04
I would use telehealth again	3.03	1.25
I would recommend telehealth to others	3.32	0.75

^aScale ranged from 0 lowest to 4 highest.