Brief Report

A Pilot Study of a Mobile Health Pain Coping Skills Training Protocol for Patients With Persistent Cancer Pain

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Abstract

Context. Pain coping skills training (PCST) interventions have shown efficacy for reducing pain and providing other benefits in patients with cancer. However, their reach is often limited because of a variety of barriers (e.g., travel, physical burden, cost, time).

Objectives. This study examined the feasibility and acceptability of a brief PCST intervention delivered to patients in their homes using mobile health (mHealth) technology. Pre-to-post intervention changes in pain, physical functioning, physical symptoms, psychological distress, self-efficacy for pain management, and pain catastrophizing also were examined.

Methods. Patients with a diagnosis of breast, lung, prostate, or colorectal cancer who reported persistent pain ($N = 25$) participated in a four-session intervention delivered using mHealth technology (videoconferencing on a tablet computer). Participants completed measures of pain, physical functioning, physical symptoms, psychological distress, self-efficacy for pain management, and pain catastrophizing. We also assessed patient satisfaction.

Results. Participants completed an average of 3.36 (SD = 1.11) of the four intervention sessions for an overall session completion rate of 84%. Participants reported that the program was of excellent quality and met their needs. Significant preintervention to postintervention differences were found in pain, physical symptoms, psychological distress, and pain catastrophizing.

Conclusion. The use of mHealth technology is a feasible and acceptable option for delivery of PCST for patients with cancer. This delivery mode is likely to dramatically increase intervention access for cancer patients with pain compared to traditional in-person delivery. Preliminary data also suggest that the program is likely to produce pretreatment to post-treatment decreases in pain and other important outcomes. J Pain Symptom Manage 2015;50:553–558.

Key Words

mHealth technology, pain coping skills, cancer pain, videoconferencing

Introduction

Patients with cancer report pain to be one of their most distressing symptoms.[1] A meta-analysis ($n = 52$) reported that cancer pain prevalence is greater than 50%.[2] A multicountry study found that 50% or more of cancer patients ($n = 5084$) reported moderate-to-severe pain.[3] Pain in cancer patients is related to higher levels of physical disability and psychological distress.[4,5] Higher levels of cancer pain have been shown to be related to decreased survival time across cancers,[5] and pain interference can be a predictor of overall survival time.[6]

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Analgesics are the primary therapy for treating cancer-related pain;[7] behavioral cancer pain interventions can be an efficacious adjuvant therapy.[8,9] These intervention protocols teach behavioral and cognitive strategies for pain management.[10] Behavioral cancer pain interventions have led to significant reductions in pain in 65%–85% of trials.[8,11] The National Institutes of Health guidelines recommend that behavioral pain interventions be integrated into cancer treatment.

Intervention barriers limit the use of behavioral cancer pain interventions.[10] To date, most behavioral cancer pain interventions are conducted through in-person sessions at a medical center. Barriers to in-person interventions include time constraints, transportation difficulties, and distance.[12] Cost factors also pose barriers to in-person interventions.[13] Cancer patients who reported higher levels of time, effort, and cost barriers to treatments reported lower levels of functional and psychological well-being.[14]

Advances in mobile health (mHealth) technologies can decrease barriers that limit access to behavioral pain interventions. Studies examining mHealth strategies to manage chronic medical illnesses (i.e., diabetes) and psychiatric disorders have found that mHealth delivery is feasible, acceptable, and efficacious.[15–17] Before widespread implementation of novel mHealth behavioral cancer pain interventions, they need to be tested for feasibility, acceptability, and efficacy.

We piloted an mHealth behavioral cancer pain intervention that capitalizes on the advantages of technologies by increasing the reach of the intervention and potentially enhancing intervention efficacy. Our work builds on and extends work done by Keefe et al.[18,19] that has developed and tested pain coping skills training (PCST) protocols for patients with chronic disease. PCST was designed to help patients with persistent pain acquire mastery of skills that can enhance their pain management.[20]

The novel study intervention (mobile PCST [mPCST]) was delivered in patients' homes through live videoconferencing (i.e., Skype) with a therapist using a tablet computer. mPCST focuses on enhancing the efficacy of PCST by using technologies to address social cognitive factors that may influence patients' confidence to manage their pain (i.e., mastery, vicarious learning, verbal encouragement, negative responses to skills). mPCST allows the patient to acquire, practice, and master pain coping skills in their natural environment. The therapist models skills and explains skills use by others (i.e., vicarious learning). As the patient practices skills in their home, the therapist provides real-time feedback and problem solving (i.e., verbal encouragement, addressing negative responses).

The primary study aim was to examine whether mPCST would be feasible and acceptable. The secondary study aim was to examine the initial efficacy of mPCST by examining intervention-related changes in pain, physical functioning, physical symptoms, psychological distress, self-efficacy for pain management, and pain catastrophizing.

Methods

Participants ($N = 25$) had a diagnosis of breast, lung, colorectal, or prostate cancer. Participants were 18 years of age or older and had two clinical pain ratings of ≥3 (on a 0–10 scale). Participants were excluded if they were cognitively impaired or were unable to speak English. Recruitment took place between May 29, 2012 and August 9, 2013.

A study team member explained study procedures and administered the baseline assessment. Participants were given an iPad to take home to complete the intervention. All tablet computers had data plans for Internet access. Two therapists conducted the intervention—a licensed clinical psychologist and an advanced clinical psychology doctoral student supervised closely by the psychologist. The post-treatment assessment was completed approximately one week after intervention completion.

Duke University Medical Center's Institutional Review Board approved study procedures; participants provided informed consent. As part of the informed consent process, participants were informed in writing of the risk of confidentiality associated with using videoconferencing via the Internet. They were encouraged to read the security information associated with the videoconferencing program used (i.e., Skype) and provided with the Internet address that detailed security for the program.

Measures

Demographic and medical data were collected through electronic medical records. Patient self-report measures were collected with a secure Web-based assessment Web site.

Patient Demographic and Medical Variables. Age, race, gender, cancer diagnosis and date, and comorbid medical disorders were collected through electronic medical records and/or self-report. Participants' home zip codes were used to calculate mileage to the medical center.

Pain Severity. Pain severity was assessed with the Brief Pain Inventory.[14] The Brief Pain Inventory assesses pain at its "worst," "least," "average," and "now" (0 = no pain to 10 = pain as bad as you can imagine).