An Innovative Data Collection Method for Investigating Unresolved Pain After ED Discharge: A Pilot Study

Authors: Stephen J. Stapleton, PhD, RN, CEN, and R. Joseph Degitz, MSN, RN, Normal, IL

Introduction: Research focused on improving the outcome of patients with pain is an important aspect of emergency care, yet little information has been published to quantify pain severity, patient improvement, and return to independent function after ED discharge. Because of the paucity of available clinical data, this pilot study was designed to determine the acceptability and feasibility of using electronic data collection procedures. Specifically, we examined the willingness of discharged ED patients to use portable touch-screen computers as an alternative to traditional "paper and pencil" or telephone data collection methods to report postdischarge pain.

Methods: Participants in this prospective pilot study all reported acute pain that was unresolved at the time of ED discharge. Descriptive data were self-entered on touch-screen computers at ED discharge and 7 days later in subjects' homes. Participants completed 4 Patient-Reported Outcomes Measurement Information System (PROMIS Network, Silver Spring, MD), questionnaires and the computer acceptability scale (CAS), using the Assessment Center platform program (National Institute of Health, Bethesda, MD) for instrument administration, data storage, and information retrieval. Determinants of study success were willingness of the participants to use touch-screen computers, questionnaire completion time, and completeness of the data.

Results: Participants (N = 25) used touch-screen computers to complete 18 questions at the time of ED discharge. The mean completion time was 3.54 (± 1.13) minutes. Participants averaged 5.83 (± 2.00) minutes to complete the follow-up questionnaires. Ninety-two percent of subjects reported that the touch-screen computer was easy to use. We encountered no issues with data management using the Assessment Center platform.

Discussion: Touch-screen computers are a feasible and acceptable approach to collecting information about how patients self-manage unresolved pain after discharge from an emergency department. This methodology offers an alternative to traditional data collection methods. These data can inform researchers as they design future studies and assist emergency nurses who are responsible for planning quality improvement initiatives.

Key words: Pain; Pain management; Computer technology; PROMIS; Data collection

Research focused on improving the outcome of patients with pain is an important aspect of emergency care,[1,2] yet little information has been published to quantify pain severity, patient improvement, and return to independent function after ED discharge.[3,4] Measuring quality outcomes in the ED population, including pain and its resolution, is difficult because of the episodic nature of emergency visits[5] and lack of evaluation after discharge.[6] Preventable readmissions to the emergency department can denote poor quality of care[7] and may also result in financial penalties with decreased reimbursement to care providers.[5,7] Quality measures used in the emergency department often fail because they are not based on strong evidence.[5] Although integral to emergency care quality, pain management after ED discharge remains ill defined because of the paucity of available clinical evidence.[3,4] Understanding how patients self-manage their unresolved pain upon ED discharge may provide the evidence needed to define this quality indicator and inform future pain management and quality improvement interventions.

A number of researchers have conducted studies in which patients participated in telephone surveys 2 days,[8] 3 days,[9]

Stephen J. Stapleton, *Member, Illinois State Council,* is Assistant Professor, Mennonite College of Nursing, Illinois State University, Normal, IL.

R. Joseph Degitz is Doctoral Student, Mennonite College of Nursing, Illinois State University, Normal, IL.

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For correspondence, write: Stephen J. Stapleton, PhD, RN, CEN, 210 Edwards Hall, Campus Box 5810, Mennonite College of Nursing, Illinois State University, Normal, IL 61790; E-mail: sstaple@ilstu.edu.

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7 days,[10] or 7 to 14 days[11] after ED discharge. These descriptive, cross-sectional studies investigated participants' ED pain management and satisfaction, current pain intensity scores, current medication use, and compliance with discharge instructions. To obtain this information, researchers used self-designed questionnaires and/or incorporated pain assessment tools such as numeric rating scales during follow-up phone surveys. Chapman and colleagues[12] enrolled 513 participants who self-documented pain intensity scores using a numeric rating scale (0–10) and maintained a pain journal for 6 days after ED discharge. These data were then used to create an acute pain trajectory model. To date, we know of no studies in which discharged ED patients have self-reported their pain experiences by using a touch-screen computer data collection process. However, symptom research in the hospice population demonstrates that participants are capable of using computerized, touch-screen data collection tools. Wilkie and colleagues[13] reported that outpatients with cancer pain, inpatients with cancer pain, and the general public were all able to self-report their symptoms via an interactive touch-screen computer. In another study of terminally ill patients with cancer who were admitted to hospice, Wilkie and colleagues[14] demonstrated that patients were willing and able to self-report their pain and other symptoms using the same technology. No studies demonstrating the use of touch-screen computerized data collection tools by patients discharged from emergency departments have been published, but based on pain research in these other populations, we hypothesized that ED patients would be capable of using this tool.

Although computer technology has been used to document patient pain, validated electronic instruments to measure pain in the discharged ED patient population are lacking.[3] Therefore the purpose of this pilot study was to establish the feasibility and acceptability of electronic data collection procedures and the willingness of discharged ED patients to use touch-screen computers for data collection. Specifically, our aims were first to determine the feasibility of using the Assessment Center (a Web-based platform sponsored by the National Institutes of Health [NIH, Bethesda, MD]) for computer access to researcher-designed instruments (ie, demographic variables, chart review, and pain variables) and the Patient-Reported Outcomes Measurement Information System (PROMIS) instruments[15] (PROMIS Network, Silver Spring, MD). The instruments accessed were (1) the PROMIS Global Health, Pain Behavior, Pain Interference, and Sleep Disturbance questionnaires and (2) a computer acceptability scale (CAS).[13,14] The second study aim was to investigate patient acceptability of touch-screen computers for data collection after discharge from the emergency department. Determinants of study success were the willingness of participants to use touch-screen computers for data collection, the amount of time required to complete the questionnaires, and completeness of the data.

Methods

DESIGN

This descriptive, prospective pilot study investigated whether patients discharged from the emergency department were able to use touch-screen computers to self-enter demographic information and complete study questionnaires. Institutional Review Board approval was granted by the study hospital and Illinois State University.

SETTING AND SUBJECTS

Subjects were recruited from the emergency department of a level II trauma center located in central Illinois. The daily ED census is 100 to 130 patients, for a total of approximately 42,000 visits per year. Members of the research team staffed the emergency department from 11:00 AM to 7:00 PM, Monday through Friday, for 8 weeks. Participants, who were recruited upon ED discharge, met the following criteria: (1) they had presented to the emergency department with an acute pain complaint (pain <3 months); (2) they were discharged with moderate (4–6) or severe (7–10) pain intensity scores; (3) they were able to speak and understand English; (4) they were physically able to use a touch-screen computer; and (5) they were 18 years of age or older. Excluded were patients who had no pain, pain lasting more than 3 months, an acute life-threatening condition (eg, myocardial infarction or stroke), an altered mental status, or language barriers. Also excluded were patients admitted to the hospital or transferred to another facility and those who enrolled in the study but returned to the emergency department for further treatment before study completion.

PROCEDURES

At the time of ED discharge, nurses informed their patients that a member of a research team would like to speak with them regarding a pain management investigation. Once the patient gave verbal approval, members of the research team approached the patient to introduce the study. After study procedures were explained and informed consent was obtained, participants were asked to use a touch-screen computer to input demographic information and report their current pain duration, intensity level, and satisfaction with their ED pain management. Participants were shown how to complete a 7-day pen and paper diary to document their pain intensity, satisfaction scores, and daily analgesic