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Patient-centered care and distal radius fracture outcomes: A prospective cohort study analysis

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ABSTRACT

Study design: Prospective cohort.
Introduction: Effects of patient-centered care on distal radius fracture recovery lacks evidence.
Purpose of the study: To understand from the perspective of a patient with a distal radius fracture: if the Patient Perception of Patient-Centeredness Questionnaire (PPPC) subscales apply to distal radius fracture populations; the strongest and weakest areas of patient-centered care; changes in patient perceptions of patient-centeredness during recovery; and, correlations between aspects of patient-centered care and patient reported pain and disability.
Methods: Patients with distal radius fractures ($n = 129$; mean age = 54.03, SD = 14.63) completed the Patient Rated Wrist Evaluation (PRWE) and PPPC, at baseline (less than 10 days post-fracture) and at three months post-injury. Outcome measure responses were factor analyzed and tested for correlations.
Results: Factors identified were titled Clinician-Patient Dialogue, representing communication components of patient-centered care, and Clinician-Patient Alliance, representing partnership components of patient-centered care. Small significant correlations ($r = 0.22$) between PRWE and PPPC responses were observed with Clinician-Patient Alliance more correlated at baseline and Clinician-Patient Dialogue at follow-up.
Discussion: Important aspects of the patient-clinician dynamic were identified.
Conclusions: Communication between clinician and patient was perceived most favorably at baseline; and partnership improved by three months.
Level of evidence: 1b.

Introduction

In recent years, patient advocates, researchers and clinicians have developed an appreciation for the importance of including patients as active participants in their health care. The biomedical approach to health care provision has evolved and has been enriched by developments such as the International Classification of Functioning, Disability, and Health, the consumer disability movement, the Patient-Centered Clinical Method, and behavior theories, such as Self-Determination Theory and Self-Regulation Theory.[1–4] Patient-centered clinical interaction involves clinicians taking into consideration patient's values, perspectives, and desires when mutually developing a health care plan.[2] This approach to health care provision involves clinicians employing their experience and expertise to develop a health care plan *with* the patient rather than *for* the patient.[2]

The Patient Perception of Patient-Centeredness Questionnaire (PPPC) was developed to measure patient perspectives on how patient-centered their care is. Patients complete the questionnaire by ranking how patient-centered their interaction with their clinician was on a scale from one to five, one representing the most positive experience and five representing the most negative experience. The PPPC is a valid self-report questionnaire developed for measurement in family practice,[5] and it is also hypothesized that validation of this measure in an acute orthopedic population could have potential in better understanding patient-centeredness in recovery from an acute fracture injury. However, since the tool was developed in a different context, it is possible that the items may not carry the same meaning in post-fracture care. An examination of the individual items on this scale provides a picture of how care is perceived by patients and can be used to measure how this changes over an episode of care.

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Involving patients in their own health care fosters feelings of autonomy and trust, which ultimately contribute to patient motivation to achieve their health care goals.[2,6] Research has showed that patient-centered clinical interaction can produce positive patient health care outcomes in primary care and rehabilitation settings.[7,8] However, it is hypothesized that patient-centered care is operationalized, or in other words, applied by clinicians, differently in different health care domains due to the unique nature of their associated clinical interactions. Since primary care and rehabilitation involves sustained interactions with patients over time; whereas patients may meet their orthopedic team for the first time after a fracture, the nature of the context and opportunity to develop relationships is different. It is therefore important to understand whether elements of patient-centered care are of importance in this context.

Purpose of the study

The preliminary objective of this study was to understand if the subscales of the Patient Perception of Patient-Centeredness Questionnaire (PPPC)[5] demonstrated structural validity in an orthopedic setting by conducting a factor analysis. Once the measurement performance was determined, the study proceeded with the primary research questions to describe patients' perceptions of patient-centered care following an acute orthopedic injury (distal radius fracture). Specific objectives included evaluating the following over the acute (three month) post fracture care episode:

1) What areas of patient-centered care are strongest (more positively perceived) and weakest (more negatively perceived) from the patients' perspectives?
2) Do patient perceptions of patient-centered care change during the acute care episode?
3) Do aspects of patient-centered care correlate with patient reported pain and disability?

Methods

Participants were enrolled in a prospective cohort study at The Hand and Upper Limb Centre at Western University in London, Ontario, Canada. The Hand and Upper Limb Centre is a specialized hand unit that provides 35,000 physician and surgeon care visits each year. Inclusion criteria included having a distal radius fracture and being able to participate in the study within 10 days of fracture. The majority of participants (78%) received surgery for correction of their fracture and were between the ages of 18–81. Exclusion criteria included patients who had comorbid physical or mental impairments that prevented participation, who were unable to return for follow-up, or who were unable to complete self-report measures for reasons of literacy. The study period included May 2004–September 2008. The cohort study received ethics approval from the Health Sciences Research Ethics Board of the University of Western Ontario and informed consent was obtained from all subjects. Data recorded for 129 patients post-distal radius fracture were analyzed in this study at baseline and at follow-up. Baseline was defined as less than 10 days post fracture. A follow-up time frame of three months was selected because it would allow for sufficient time for follow-up interactions between the patient and the clinician, as well as time for distal radius fracture recovery.[9] Patients completed paper questionnaires at the time of appointment prior to the scheduled visit with the clinician. Demographic and questionnaire responses were entered into an electronic database by a research assistant who was responsible for database completeness. Patients completed the follow-up questionnaires prior to a routine follow-up visit with their physician. The primary purpose of this visit was to complete participation in the study and to discuss any concerns with their clinicians.

Patients completed demographic information and two self-report questionnaires: The Patient Rated Wrist Evaluation (PRWE) and The Patient Perception of Patient-Centeredness Questionnaire (PPPC). The PRWE is a 15-item self-report questionnaire that asks patients to evaluate their wrist pain, function and disability in active days of living using two subscales: pain and function. The pain subscale included 5 items and the function subscale included 6 items related to specific activities and 4 items related to usual activities. Each item is rated on a 10 point ordinal scale, higher scores (10) indicating more pain or disability. The PRWE has been found to be a reliable and valid measurement tool for the evaluation of patient pain and functioning following distal radius fracture.[10]

The PPPC (Appendix 1) is a self-report questionnaire that asks patients to evaluate their perceptions of patient-centeredness. The PPPC consists of 14-items in total, 13 of which are categorized into two subscales. Subscale 1 (items 1–4) relates to how patient illness experiences have been explored.[5] Subscale 2 (items 5–13) relates to how well clinicians and patients were able to find common ground.[5] The final item of the PPPC, item 14, relates to patient perceptions of how the clinician attempted to understand him/her as a whole person.[5] Subscale and total scores are calculated by identifying the mean score from the items responded to. Subscales are not labeled by the outcome measure's authors, therefore, for the purposes of this study, Subscale 1 was titled *Communication* and Subscale 2 was titled *Partnership* based on the item content. The PPPC measures patient item responses on a four point ordinal scale, with a lower score indicating more positive perceptions of patient-centeredness. The PPPC has been tested for inter-item reliability and validated via correlations with other patient health outcomes in populations with one or more recurring health issue seeking care from family physicians.[5] Factor analyses of the PPPC have not been previously reported for orthopedic populations.

STATA 12.1 was employed for all analyses. Descriptive statistics were obtained for items and subscale scores of both outcome measures. Variables were explored for normality using the Shapiro–Wilk Test prior to testing, and imputation with the mean was employed to determine follow-up data for three participants.[11] The statistical process was as follows:

PPPC validation

Factor analyses were conducted for reported patient responses at baseline and at three months post injury using principal component analysis with varimax orthogonal rotation. This factor analysis was conducted to investigate if the extracted loading patterns of collected PPPC item responses were consistent with the factor categorizations proposed by the measure's authors: Factor 1 (items 1–4) and Factor 2 (items 5–13).

Patient perspectives on patient-centeredness

To determine which areas of patient-centered care patients perceived to be strongest and weakest, PPPC item responses were ranked according to mean scores at baseline and at three months post injury.

Changes in patient perspectives over time

Changes in perceptions of patient-centeredness from baseline were determined by a Wilcoxon Rank Sum test for ordinal responses to each PPPC item, and by a *t*-test when comparing total scores.