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Scientific/Clinical Article

Effects of client-centered multimodal treatment on impairment, function, and satisfaction of people with thumb carpometacarpal osteoarthritis

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ABSTRACT

Study Design: Prepost design.
Introduction: Previous research regarding the non-surgical treatment of thumb carpometacarpal joint osteoarthritis has been based on protocol driven research designs that primarily examined impairment level changes. Exploration is therefore needed to determine the benefits of individually prescribed orthoses, joint protection and assistive device education programs that are based on the activities the person needs to regularly perform.
Purpose of the Study: The primary objective of this study was to examine the effect of client-centered multimodal treatment on activity, participation, impairment, and satisfaction of people with thumb carpometacarpal joint osteoarthritis.
Methods: A total of 60 participants completed the study that used a prepost design. The Canadian Occupational Performance Measure (COPM) was used to identify the participants' performance and satisfaction concerning their self-identified occupational performance issues. Additional outcome measures that were used included the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire, total active range of motion (TAROM), lateral pinch strength, and the visual analog scale for pain. All participants completed a client-centered 6-week program that consisted of the use of an orthosis, joint protection, and assistive device education as well as exercises.
Results: At 6 weeks after initiation of treatment, pain, pinch strength, TAROM, the DASH questionnaire and the performance and satisfaction scales of the COPM had significantly improved. The changes in pain, TAROM, and the performance and satisfaction scales of the COPM were all greater than the minimal clinically important difference. The changes in pain and lateral pinch strength were significantly associated with changes in activity and participation.
Conclusion: This study demonstrated that a multimodal, client-centered treatment approach resulted in statistically and clinically significant improvement in pain, TAROM and performance and satisfaction as measured by the COPM. The improvement in pain was associated with the participants' improved ability to engage in activities assessed by the DASH.
Conclusions: Our results support the use of client-centered treatment strategies that are targeted to control pain during meaningful activity when working with patients with thumb carpometacarpal joint osteoarthritis therapists.
Level of Evidence: 4.

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Introduction

Osteoarthritis (OA) is a degenerative disease that frequently affects the carpometacarpal (CMC) joint of the thumb. Studies have estimated an incidence of 7% in males, 15% in premenopausal women, and 33% in postmenopausal women.[1] The American College of Rheumatology and the European League Against Rheumatism

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have developed conservative treatment guidelines for the care of patients with OA of the thumb CMC joint.[2,3] Their recommended nonpharmacologic conservative strategies included instruction in joint protection techniques, orthoses, the use of heat before exercises, and the assessment of the ability to perform activities of daily living using assistive devices.[2,3] Several systematic reviews of the literature that examined conservative management of hand OA[4-10] concurred with the American College of Rheumatology and European League Against Rheumatism recommendations and concluded that multimodal interventions were particularly effective in treating pain.[9] Many of the randomized controlled trials examined in the systematic reviews prescribed a specific type of orthosis when determining their efficacy.[4-12] Because a number of different orthotic designs have been shown to have positive benefits,[11] Aebischer et al[9] recommended that the orthosis should be individually prescribed based on the patient's desired activities; however, this client-centered approach to orthotic prescription has not been specifically investigated.

When providing treatment strategies for clients with thumb CMC joint OA, therapists have tended to focus on impairment-level outcomes.[13,14] Patients, however, have been found to focus on their ability to participate in meaningful activities rather than impairment-based limitations.[15] Thus, clinical trials should focus on outcomes at both an impairment and an activity and participation level. A systematic review and meta-analysis conducted by Bertozzi et al[12] concluded that there is a paucity of high-level evidence examining "the effects of activity and participation on individuals with CMC OA."[12(p2039)] They also recommended that further research should examine patient satisfaction associated with treatment interventions as this has not been adequately investigated.

Client-centered therapy has a strong focus on activity and participation. When using a client-centered approach, the therapist and client work together to identify difficulties in which the person, their occupations, and their environment are taken into consideration to determine optimal treatment approaches and goals.[16,17] In doing so, the orthosis selection, joint protection education, and recommended assistive devices are all individualized for each client, based on the activities that they want and need to perform. McKee and Rivard[18] reported a case study in which they used a client-centered approach in orthotic fabrication for OA of the thumb CMC joint. They concluded that the client's individual needs must be considered to optimize the benefit from the orthosis. Kjeken[19] performed a Delphi procedure with Norwegian occupational therapists (OTs) working in rheumatology. One of their conclusions was that therapists working in this specialty area should design client-centered exercise programs that encourage patients to remain active in their daily occupations; however, this study did not focus specifically on thumb CMC OA.

Although there is evidence to support a multimodal treatment approach, further exploration is needed to examine the benefits associated with the provision of individually prescribed orthoses and individually tailored joint protection and assistive device education programs that are based on the activities that the person needs to do regularly. In addition, it is necessary to examine the benefits of these approaches at an activity and participation level and to determine the person's satisfaction with the changes after the intervention.

Purpose of the study

The primary objective of this study was to examine the effect of a 6-week client-centered multimodal treatment program on the activity and participation, impairment, and satisfaction of people with thumb CMC joint OA.

Methods

Study design

A prepost study design was used with assessment points at study entry and 6 weeks after treatment initiation.

Participants

The inclusion criteria for the study were as follows: participants were adults with OA of the CMC joint of the thumb that had been diagnosed by a physician and participants had to be able to communicate in English or French. Participants were excluded if they were receiving concurrent rehabilitation for their thumb CMC OA, if they had a history of thumb CMC joint surgery, or if they had other inflammatory diseases such as rheumatoid arthritis, DeQuervain's tendonitis, carpal tunnel syndrome, or trigger thumb. A publicity letter for the study was sent to rheumatologists, plastic surgeons, and OTs who treat patients with thumb CMC OA in the Greater Montreal area. The study was also announced on the Web site of the Canadian Arthritis Society. Approval for the study was obtained from the McGill Institutional Review Board and the ethics committee of Maisonneuve Rosemont Hospital in Montreal.

Study procedure

Initial visit

Participants who met the inclusion criteria were approached by an assistant who explained the study objectives and determined whether they wished to participate. If they accepted, a consent form was signed. A total of 3 visits were required for each participant. The visits occurred at study entry, 3 weeks, and 6 weeks. No fees were charged for any of the services provided. All clinical assessments and treatments were carried out by the first author who is a member of the Ordre des ergothérapeutes du Québec. The orthoses were made by a qualified orthotist under the supervision of the OT (as this was the current practice due to financial reimbursement regulations).

An initial interview was conducted to obtain demographic data, a history of the condition, and information regarding the participant's home and work environment. Participants were asked to identify occupational performance issues related to their thumb CMC joint OA by using the Canadian Occupational Performance Measure (COPM).[20] The COPM was selected because it is a measure based on client-centered practice that is designed for use by occupational therapists to assess client outcomes in the areas of self-care, productivity and leisure.[20(p83)] The COPM measures changes in the participants' satisfaction and performance related to their self-identified occupational performance issues. A systematic review of the literature by Parker and Sykes[21] concluded that the COPM facilitates the development of client-centered goals and establishes a partnership between the therapist and the client. The COPM has been found to have good reliability, and its validity has been established with a hand OA population.[17,20] The COPM was administered as follows: (1) using a semistructured interview, participants identified occupational performance issues that were divided into self-care, leisure, and productivity, (2) each of the identified items was then weighed on a 1-10 scale based on the level of importance the activity had to the participant, (3) the 5 most heavily weighted items were then identified and rated on a 1-10 scale based on self-perceived performance and satisfaction when carrying out the activity.[20]

In addition to the COPM, the Disabilities of the Arm, Shoulder and Hand (DASH)[22] questionnaire was completed to measure the change in upper extremity activity and participation after the

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