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Relationships between pain misconceptions, disability, patients' goals and interpretation of information from hand therapists

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ABSTRACT

Introduction: Patient interpretation of advice from hand therapists may be related to nonadaptive pain thoughts (automatic, overprotective, unduly pessimistic statements triggered by nociception and exacerbated by psychological distress).
Purpose of the study: This study aimed to determine whether there were correlations between participants' hand therapy goals, interpretation of advice from hand therapists, nonadaptive pain thoughts, and upper extremity-specific disability.
Methods: One hundred and five participants completed questionnaires assessing nonadaptive pain thoughts, upper extremity-specific disability, lessons from hand therapists, and hand therapy goals.
Results: Nonadaptive pain thoughts correlated with disability and were bi-directionally related to participant goals and interpretation of advice from hand therapists.
Discussion: Patients' nonadapative pain thoughts and the words/concepts used by hand therapists are both important in recovery from upper extremity illness.
Conclusions: Hand therapists should be mindful that nonadaptive pain thoughts are an important determinant of disability and that such thoughts can affect and be affected by their recommendations.
Level of evidence: n/a

Introduction

Hand therapists help patients recover from hand injury and surgery. By teaching patients exercises and addressing performance and participation in daily activity, they help ensure timely recovery and reengagement in life activities.[1] Hand therapists and hand surgeons typically communicate primarily with formal documentation (e.g. prescriptions and reports), but the patient also transfers information between caregivers. We noticed substantial variation in patients' interpretation of the advice from hand therapists. We were curious if we could determine personal or circumstantial factors that account for variations in their perception of professional advice from hand therapists.

Medicine is finding it useful to move from a biomedical model (where all illness is reducible to a specific pathophysiology) to a biopsychosocial model (accounting for the dynamic and complex interactions among physiological, psychological and social factors that can perpetuate and exacerbate symptom intensity and magnitude of disability).[2,3] This is particularly important in the management of illnesses that are partly or completely subjective (e.g. nausea, pruritus, and pain).

When considering pain it is helpful to distinguish the physiology of actual or potential tissue damage (nociception) from the unpleasant thoughts and emotions that can result from nociception (pain). The amount of pain for a given degree of nociception varies according to mindset and circumstances.[4,5] A key element of the biopsychosocial model of pain is how nociception is appraised and evaluated.[6] Nociception may trigger automatic protective and pessimistic (prepare for the worst) thoughts that overstate the problem. If these nonadaptive thoughts are not identified and restructured, they can reinforce nonadaptive behaviors (e.g. avoidance, disability, hypervigilence) and psychological distress (depression and anxiety), which in turn magnify both symptom intensity and magnitude of disability.[7,8] These negative thoughts might also prime patients to interpret new information from caregivers in an excessively nonadaptive manner.

Nonadaptive pain thoughts — automatic, overprotective, unduly pessimistic thoughts triggered by nociception — account for a substantial proportion of the variation in symptom intensity and

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magnitude of disability.[9–11] Specifically, patients who are more protective and more pessimistic experience more intense pain and feel less capable. Our theory is that patients with greater negative thinking about pain might also misinterpret advice from hand therapists. It is also possible that hand therapists themselves might misinterpret reports of greater pain and disability as indicating greater pathophysiology, when in fact those may be a consequence of nonadaptive pain thoughts. The result is that hand therapists might either give unnecessarily cautious recommendations or patients might misinterpret hand therapy advice as urging caution (e.g. "work to pain, but not beyond," "don't overdo it or you will cause inflammation"), or a combination of both.

Patients' goals and expectations of hand therapy are also important, as they are associated with the outcome of therapy.[1,12,13] We have noticed that many patients have misconceptions and unrealistic expectations about hand therapy. When patients ask if they will need therapy, there is a sense that it is something passive and almost magical (i.e. "If I take my hand to the therapist, they will heal it"). Since the key aspect of hand therapy is active exercises done frequently at home by the patient, such beliefs can hinder recovery. Beliefs about therapy may be influenced by how patients react to nociception.[14] The relationship may be bidirectional such that the words and concepts used by therapists might also increase nonadaptive coping strategies and beliefs. This represents an opportunity to understand how patients' negative pain thoughts may influence their understanding of therapists' instructions, their behavior during recovery from hand injury, and the magnitude of their disability.

Purpose of the study

The purpose of this study was to determine whether there are correlations between 1) patients' hand therapy goals, 2) perceptions of lessons from hand therapists, 3) nonadaptive pain thoughts, and 4) upper extremity-specific disability. Our primary hypothesis was that the aforementioned relationships are bidirectional, such that the Negative Pain Thoughts Questionnaire (NPTQ) scores predicts patients' hand therapy goals and lessons from hand therapists after accounting for the role of demographic variables; in turn, these therapy-specific questions predict NPTQ scores, after accounting for demographic variables. Secondarily, we tested the hypothesis that perceived hand therapy recommendations and goals and NPTQ score are associated with upper extremity-specific disability after accounting for demographic variables.

Materials and methods

Sample

Under our Institutional Review Board approved protocol, adult, English-speaking patients presenting to the office with an upper extremity musculoskeletal complaint were assessed for eligibility. Inclusionary criteria included: 1) age 18 years or older; 2) English fluency; and 3) previous referral for hand therapy by their hand surgeon. Enrollment occurred prior to the first hand surgery appointment after having had one or multiple visits with a hand therapist. This was done in order to avoid bias associated with having learned additional information about their condition and appropriate coping strategies from the hand surgeon during their post hand therapy visit. Pregnant patients were not eligible for this study (mandated by the Institutional Review Board).

After undergoing informed consent, all participants completed a demographic profile. Information collected included age, years of education, sex, race, ethnicity, work status, marital status, surgery for the condition for which participants were seeking hand therapy, history of hand or physical therapy, history of hand or arm problems and/or surgeries, previous use of medication to manage pain, and current use of depression or anxiety medication (Table 1). Participants also completed the following questionnaires: 1) participants' perceptions of the suggestions and lessons learned from their hand therapist (9 questions); 2) participants' goals and expectations regarding the hand therapy program (8 questions); 3) the NPTQ (11 questions)[14]; and 4) the short version of the Disabilities of the Arm, Shoulder and Hand (Quick DASH)[15] to measure upper extremity-specific disability (11 questions). All measures were completed during a medical appointment but prior to the visit with the hand surgeon.

Measures

Participants completed two hand therapy-related questionnaires: 1) Lessons from hand therapists, and 2) Hand therapy goals (Table 2). These questions represent individual items that were developed by a hand surgeon and a clinical psychologist based on their clinical experience with patients with upper extremity illness. All hand therapy-related questions were rated on a 5-point Likert scale from "never" (0), "rarely," "sometimes," "most of the time," to "always."[4] The scales were created to evaluate such statements regardless of the total time or number of visits with a therapist. For example, if during one session a hand therapist states at least once that the participant should "work through pain" and never states otherwise, then a rating of "always" is warranted. If a hand therapist sometimes says to work through pain and other times says to "listen to the pain", then an in between rating is warranted. These items capture the patient's perception of what the therapist said, not what was actually said. The reliability and validity of these measures are untested.

Participants also completed the following validated measures:

The NPTQ[14] is an 11-item measure developed to assess pain-specific nonadaptive thoughts as well as misconceptions about medical treatments in patients with hand and arm pain. Questions are answered on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). A high score indicates high negative pain-related cognitions and misconceptions about treatment.[14] The measure is validated for both nontraumatic[14] and traumatic pain conditions.[16]

The Quick DASH[15] is a measure of upper extremity-specific disability. It has 11 items answered on a 5-point Likert scale such that lower scores indicate 'no difficulty' and higher 'unable'. The score is scaled from 0 to 100 points with higher scores indicating greater disability. Studies assessing patients with shoulder, wrist and hand disorders,[15] a variety of upper extremity disorders before and after surgery[17] and patients attending hand therapy[18] found the Quick DASH a reliable and valid measure of upper extremity-specific disability.

Statistical analysis

Descriptive and frequency analyses were used to describe both demographic and primary study variables. Several cases were missing from the demographic variables and were thus excluded from the main analyses: ethnicity (2 cases), history of hand, occupational, or physical therapy (5 cases), history of hand or arm problems (2 cases), prior hand or arm surgeries (1 case), previous use of medication to manage pain (1 case), and current use of depression or anxiety medication (2 cases).

Mean imputation was used to address unanswered questions including one unanswered question on the NPTQ in 3 subjects and for 86 total missing responses on 105 hand therapy-related questionnaires.

The data were not normally distributed according to the Kolomogorov–Smirnov test and therefore non-parametric tests were used. The Spearman correlation was used to assess the relationship between continuous variables, the Mann–Whitney *U* test was performed to test the relationship between dichotomous and