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Implementing a Pain Self-Management Protocol in Home Care: A Cluster Randomized Pragmatic Trial

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Abstract

Background/ Objective—Over half of all home care patients report pain of sufficient intensity to limit their activity on admission, and one third report the same or worse pain at discharge. We sought to determine the effectiveness of a cognitive-behavioral pain self-management (CBPSM) protocol delivered by physical therapists (PTs) for use by older adults receiving home care with activity-limiting pain.

Design—A randomized pragmatic trial comparing delivery of the intervention along with usual care versus usual care alone.

Setting—Community.

Participants—Adults ages 55 admitted with orders for physical therapy, endorsed activity-limiting pain and reported pain scores of 3 on a 0–10 scale.

Intervention—A CBPSM protocol delivered by physical therapists.

Measurements—Primary outcomes were assessed at 60 days using validated measures of pain-related disability, pain intensity, gait speed, and number of activity of daily living (ADL) deficits.

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Results—Of the 588 participants, 285 received care from a PT randomized to the intervention (and 303 from a PT in the usual care) group. Both groups evidenced significant reductions in pain-related disability, pain intensity, and ADL limitations, as well as improved gait speed. No significant treatment differences were identified. There were no consistent treatment differences when interactions and subgroups were examined.

Conclusion—This real-world pragmatic trial found no impact associated with implementation of a pain self-management intervention in a home care setting. Despite the lack of positive findings, future studies are indicated to determine how similar protocols found effective in efficacy studies can be successfully implemented in routine clinical care.

Keywords

Pain; home care; older adults; non-pharmacologic treatment; randomized trial

Persistent pain is a common, morbid and costly disorder in later life.^{1–4} Musculoskeletal causes are common, while other etiologies include painful neuropathies, traumatic injury, surgery, vertebral fractures, and cancer treatments.^{1, 2} Regardless of its etiology, pain is associated with substantial disability.^{1, 2} Its negative effects extend beyond the patient to disrupt both family and social relationships.⁵

While substantial research has documented the prevalence, impact and undertreatment of pain among older adults in acute, ambulatory, and long-term care settings,⁶ little attention has been paid to the problem of pain in home care. Over half of all home health care patients report pain of sufficient intensity to limit their physical activity on admission.⁷ Among Medicare and Medicaid home care patients with activity-limiting pain, one-third report the same or worse pain at discharge.⁸ In 2013, approximately 3.5 million patients in the U.S. received home care,⁹ highlighting the scope of the problem and need for efforts to address it.

Studies focused on nonpharmacologic interventions to reduce pain and improve function in older adults are needed for several reasons, including substantial harm associated with commonly employed pharmacotherapies.^{10,11} US providers are prescribing opioids to older adults in record numbers. In 2015, as many as 30% of Medicare Part D enrollees received an opioid prescription.¹² In an effort to address the opioid epidemic, the Centers for Disease Control and Prevention recently released a guideline for prescribing opioids for chronic pain, encouraging healthcare providers to recommend nonpharmacologic approaches.¹³

Cognitive behavioral therapy (CBT) constitutes an evidence-based nonpharmacologic approach for managing pain.^{14–17} CBT protocols instruct patients in the use of specific cognitive and behavioral techniques, teach them how certain thoughts, beliefs/attitudes, and emotions influence pain, and incorporate behavioural activation techniques. Little is known about which elements of standard CBT protocols are most effective. Preliminary evidence suggests that teaching patients coping skills (e.g., relaxation training) may be most efficacious relative to other techniques such as cognitive restructuring.¹⁸

A key barrier to the use of these protocols is a lack of providers who can deliver them.^{16, 17} In two prior studies we investigated alternative delivery models. First we developed a

cognitive-behavioral self-management program (CBPSM) that combines pain self-management and exercise approaches for use in senior centers. This pilot single-arm study demonstrated preliminary efficacy in reducing pain and pain-related disability among older adults with chronic low-back pain.¹⁹

In the health care sector, increasing interest has focused on physical therapists (PTs) who are well positioned to deliver CBT-based interventions for patients with pain.^{20–22} Accordingly, we adapted the CBSPM protocol described above for use in home care and trained 31 home care PTs to deliver it. Assessment of program fidelity using audio recordings demonstrated that PTs could deliver it with fidelity.^{23, 24}

In the current study, we conducted a randomized pragmatic trial in the home care setting to determine whether the intervention, when delivered along with usual care (UC), versus UC alone, would yield improved outcomes. Based on our prior work and related literature,^{14–16, 19, 25–27} we hypothesized that intervention versus UC patients would demonstrate clinically meaningful reductions in pain-related disability and pain intensity along with improved physical functioning. Our secondary hypotheses were that treatment benefits would also accrue in the form of reduced depressive symptoms and improved pain self-efficacy. Finally, little information is available regarding patient factors that moderate treatment outcomes. Preliminary evidence indicates that certain factors including female sex²⁸, higher education²⁹, and Hispanic status¹⁹ are associated with a more favorable treatment response to CBT-based therapies, while increasing number of pain sites³⁰ is associated with an unfavorable treatment response. We therefore assessed for treatment effects based on these and other relevant patient-level variables.

METHODS

Study Setting and Design

The study was conducted at a not-for-profit home health agency, the Visiting Nurse Service of New York (VNSNY) and involved all 17 VNSNY rehabilitation teams. The program was implemented on a team basis, with training given to all PTs on a team assigned to the intervention arm. At the time of the study, rehabilitation services were provided by 17 geographically distinct teams. These 17 teams were stratified by geographic location (Bronx, Brooklyn, Manhattan, Queens, Westchester, Staten Island, and Nassau). The teams were randomized into an intervention (9 teams) or UC (8 teams) group. Each team consisted of at least 15 therapists, assigned to a geographic area distinct from other teams. Randomization of sites (teams) took place before the start of the PT training, patient recruitment, and data collection.

Study Sample and Recruitment

Home care patients were eligible if they were ≥ 55 years of age, English speaking, admitted with orders for physical therapy, and reported activity-limiting pain. Interviewers asked: “Since you started home care, have you had any pain or discomfort that limits your mobility or other daily activities such as walking around the house, going shopping, getting dressed, going to the bathroom and cooking or preparing meals?” To be eligible patients had to report

a pain score of 3 on a 0-to-10 scale, and pass a cognitive screener.³¹ Initial screening occurred by phone. Patients were recruited into the study anywhere from 2 – 11 days after their home care admission.

We proposed to examine *a priori* the effects of the treatment across various pain types, specifically those with arthritis only, those who had arthritis and a recent surgery and an ‘other’ category that included individuals who did not report arthritis or surgery-related pain. For patients who reported activity-limiting pain since starting home care, we asked “Have you ever been told by a doctor, nurse, or other medical professional that you have arthritis?” Patients were classified as having surgery-related pain if they answered yes to the question: “Is your pain or discomfort caused by surgery that occurred in the past 60 days?”

Using both screening and administrative data, patients were enrolled balancing across 7 counties (Bronx, Manhattan, Queens, Kings, Richmond, Westchester, and Nassau), 3 race/ethnicity categories (Hispanic, non-Hispanic black, and non-Hispanic whites/others), 3 pain types (arthritis only, arthritis and surgery-related pain, other), and treatment group.

We recruited a sample sufficient in size to detect a mean difference in change scores between intervention and UC patients of 1.00 on the Roland Morris Disability Questionnaire (a score reduction of 2.00 or greater is considered a minimum clinically important change),³² as well as similar improvements on our other primary outcomes, with a Type I error (0.05), Type II error (0.20), 10 percent of the variance accounted for by other fixed terms in the model, a ratio of team variance to PT variance of 1.2 and PT variance to patient variance and error variance of 1.3, and 10% attrition at the follow-up assessment.

The local institutional review boards approved the study.

Intervention Training and Study Intervention

Intervention Training—PTs on the 9 intervention teams participated in 2 half-day training sessions scheduled 3 weeks apart to learn how to deliver the protocol. Details regarding the training and efforts made to facilitate continued implementation of the protocol appear in the online Appendix.

Cognitive Behavioral Pain Self-Management Protocol—Our preliminary home care study identified several PT concerns with program implementation, including the length of the program, program acceptability to patients, and time required to implement it.^{23, 24} In response to these concerns, the protocol was reduced from 6 sessions to 5, by eliminating one session designed to review and reinforce use of the techniques. To increase acceptability, the patient handout was revised with improved readability. Therapist training was also revised to include videos that demonstrated how to integrate the program into UC.

Intervention PTs were asked to implement the CBPSM protocol in sequential visits (Figure 1), along with UC. PTs randomized to the intervention arm were also asked to: (1) give patients with activity-limiting pain a booklet to reinforce the CBPSM content and ask them to review it between treatment sessions; and (2) remind patients to practice all newly and previously learned techniques between sessions.

We had a predetermined number of study patients based on power calculations that needed to be enrolled (550) and enrolled 588. Screening was done during the enrollment period to ensure that they met eligibility criteria to receive the protocol. Given that intervention PTs were informed that implementing the protocol was part of a quality improvement initiative, they were not informed that some of their patients were being enrolled into an effectiveness study. All intervention PTs were instructed to implement the protocol among patients who reported activity-limiting pain. Given the study design, some patients likely received the protocol but were not enrolled in the study. We did not determine the total number of patients treated by intervention PTs who received the protocol but were not enrolled in the study.

Usual Care—At an initial visit, VNSNY PTs complete a comprehensive assessment of patients' physical functioning, and evaluate their psychological functioning, home environment, and use of or need for assistive devices. The home health PT plan is finalized following contact with the treating physician and includes determining therapy goals, frequency and duration of treatment, identification of any equipment to be ordered, and a discharge plan. Individualized exercise programs are established for all patients and designed to accomplish one or more of the following: increase strength; improve range of motion; improve gait and/or transfer ability; improve balance or coordination; reduce fall risk; and improve ADL functioning.

Data Collection

Independent Variables—Demographic data collected at baseline included participants' age, gender, race, marital status, living status (lives alone or with others), educational level, and income. Information was ascertained on 17 chronic conditions, including hypertension, heart disease, and diabetes mellitus. We asked patients about pain chronicity, i.e., whether their pain had lasted at least 3 months and used the Margolis pain diagram to determine the number of pain sites.³³ The number of PT visits provided came from agency administrative data, while information on prior hospital use was collected during the baseline interview.

Study Outcomes—Each of the following measures was administered by research assistants blinded to participants' group status at baseline and 60-days from enrollment.

Primary Outcomes: Pain-related disability was measured with the Roland-Morris Disability Questionnaire,³⁴ which asks patients about the extent to which pain impacts their function on the day of the interview, scores range from 0 (none) to 24 (severe). Originally used as a measure to quantify degree of disability due to back pain, the measure is increasingly being employed to ascertain pain-related disability in general pain populations.^{26, 35–37} The scale's reliability and validity has been established in a general chronic pain population.³⁸ Participants rated their average pain in the past week on a 0-to-10 scale.³⁹

We ascertained participants' gait speed by asking them to walk 10 feet, with start and stop markers placed at the beginning and end of the course.⁴⁰ Participants were instructed to perform at their usual pace, and the time required to complete the task was recorded.

Participants' functional status was assessed by inquiring about their ability to perform 7 instrumental and 7 basic ADLs.⁴¹

Secondary Outcomes: We assessed participants' depressive symptomatology using the PHQ-8, which rates depressive symptoms on a 0 (not at all) to 3 (nearly every day) scale with overall scores ranging from 0 to 24.⁴² To assess participants' perceived ability to manage pain successfully, we administered the Pain Self-Efficacy Questionnaire, with scores ranging from 0 to 60.⁴³

Statistical Analyses

All models included a core set of variables: fixed classification factors for treatment (UC versus intervention), patient sex, and time of assessment (baseline versus follow-up); the interactions between treatment, sex, and time; patient age in years as a covariate; and teams (i.e., sites) as levels of a random factor, PTs as levels of a random factor, and patients as levels of a random factor. The key test for evaluation of the intervention is the test of the treatment-by-time interaction.

We also examined treatment effects conditioned by a set of additional variables about which we had *a priori* hypotheses. We included patient race/ethnicity (3 levels: Hispanic, non-Hispanic black; non-Hispanic whites and others), and pain type (3 levels: arthritis only; both arthritis and surgery-related pain; other pain types) as additional fixed classification factors singly and jointly in the primary model and included the interactions of these variables with treatment and time. In these models, the 2x2 treatment by time interaction is partitioned from the 3-way interactions with the additional fixed factors to examine treatment effects specific to males, females, each race/ethnicity group, and each pain type. Chronicity of pain was also examined in this way. Variables such as age and number of pain sites were examined as covariates (quantitative independent variables), testing for homogeneity of regressions by treatment and time groups.

Our focus in the study regarding race/ethnicity was on possible differences by Hispanic and non-Hispanic black groups, and the models kept these groups as precisely defined as possible, whereas the white/other group includes non-Hispanic whites plus 24 (10%) participants of other races. An alternative is to exclude the small number of patients of other races, leaving a third group solely comprised of non-Hispanic whites. We examined such a model, and our results were no different from the model using the white/other group; therefore the results are presented using the latter group.

Analysis in all models was by general linear mixed model methods with an unstructured error assumption and denominator degrees of freedom were also computed.⁴⁴

We also examined integrity of program implementation and its relation to treatment effects in several models: (1) teams (i.e., sites) included as a fixed classification factor instead of random, to examine differences by teams; (2) teams grouped by quality of implementation as a fixed factor; and (3) inclusion of measures of quality of program implementation such as number of PT visits (e.g., regression of outcomes on number of visits, with separate regressions for UC and treatment and the homogeneity of those regressions tested).

RESULTS

Of 3,243 patients screened from 10/12 through 5/14, 588 (18%) met eligibility criteria and provided written consent (Figure 2). A total of 285 participants received care from a PT randomized to the intervention group, while 303 received care from a PT in the UC group. A total of 439 participants completed 60-day follow-up assessments: 202 (71%) in the intervention and 237 (78%) in the UC arm. Eighty percent of participants (irrespective of treatment assignment) completed their home health episode within 60 days. Participants received an average of 8 PT visits, 8.2 for treatment arm and 7.1 for UC arm patients. [Home care patients with orders for PT typically receive at least 2 PT visits per week. These data indicate that the vast majority of patients (to include all intervention arm patients) would have completed home health PT by the 5th or 6th week after admission.]

Table 1 shows the sample's baseline characteristics. With the exception of race and marital status, there were no significant between group differences.

In adjusted models (Table 2), both groups evidenced statistically significant reductions in pain-related disability, pain intensity, and gait speed scores (which corresponds to improved gait function). Functional status scores improved significantly in both groups. There were no significant between group differences identified for any primary outcome. Among the secondary outcomes, depressive symptom scores decreased significantly, and pain self-efficacy scores improved, but no significant treatment differences emerged.

There were no consistent treatment differences when possible interactions involving sex, race/ethnicity, pain type, pain chronicity, number of pain sites, participant education level and baseline depressive symptom or pain self-efficacy score were examined.

DISCUSSION

We conducted a cluster randomized trial in a “real world” clinical setting, i.e., home care, to determine the effectiveness of a cognitive-behavioral pain self-management program among patients with activity-limiting pain. Both treatment and UC groups evidenced significant reductions in pain-related disability, pain intensity, and ADL limitations, as well as improved gait speed. No significant treatment differences were identified. Subgroup analyses failed to identify a group for which the intervention was consistently effective.

There are several possible explanations for these findings. One possibility is contamination bias. We do not think this is a major contributor because each team worked in geographically distinct areas, had its own supervisor and physically distinct office areas and mailboxes, thereby reducing interaction and sharing of project-specific materials between intervention and UC PTs.

A second possibility is that the target population may not have been able to participate sufficiently in the protocol given the acuity of illness. Two-thirds of the sample received home care services after a recent hospitalization. The many problems associated with care transitions and established risk of hospital readmission^{45,46} could have made it difficult for

intervention PTs to successfully implement the CBPSM protocol in the context of delivering customary care.

The most likely explanation is that intervention PTs did not deliver the protocol as instructed despite our providing a booster session to intervention PTs to minimize “drift” in provider skills, and encouraging continued protocol implementation with monthly email reminders to intervention PTs. As reported elsewhere,⁴⁷ we assessed treatment fidelity by examining the extent to which PTs documented elements of their treatment sessions in the electronic medical record pain problem fields. This allowed us to compare intervention and usual care group PTs documentation of the self-management techniques which was similar and relatively low for both groups.⁴⁷ We also surveyed and conducted individual interviews with intervention PTs after completing the follow-up assessments of study patients. We included questions regarding therapist use of the program, their perceived comfort delivering program elements, their perceptions of patient responses to the protocol, and challenges encountered implementing it. Although the response rate was low (roughly 16% completed an on-line survey), these data suggest that intervention therapists were comfortable delivering the protocol but did so infrequently.⁴⁷ The most common implementation barrier was insufficient time during the patient visit. Therapists indicated that the delivery of the protocol required an additional 15–20 minutes per visit and that time spent on the protocol limited their ability to address other patient problems.⁴⁷ Additional feedback from PTs included comments from their patients that some patients did not think the techniques would work and that the study materials required too much reading. Intervention PTs also shared that not all patients were compliant with the activity journals or practiced the techniques between sessions.⁴⁷

Power calculations performed at the time of the study design indicated adequate power to detect mean differences between usual care and intervention of 1.07 on Roland Morris, 0.51 on pain intensity, and similar magnitudes for other outcomes, differences that are clinically meaningful and shown in other work to be achievable. That the current study has not demonstrated significant treatment differences is not from a lack of statistical power but from small mean differences.

Our results contrast with the findings of other recent reports.^{21, 26} In a study targeting older adults with osteoarthritis of the knee, a combined cognitive and behavioral pain coping skills training and exercise protocol delivered by PTs over a 12-week period improved participants’ physical functioning at 12 weeks relative to those who received exercise only or coping skills only training.²¹ In another randomized controlled trial involving older adults with chronic non-cancer pain, participants who received a combined cognitive-behavioral therapy and exercise protocol (delivered by a psychologist and physical therapist) demonstrated significant gains post-treatment with respect to pain distress, disability, and mood relative to an exercise-only control group.²⁶

Our pragmatic trial was conducted in the real-world, decentralized home health delivery system. Although our prior work showed that the program was feasible and acceptable to home health therapists and patients, those therapists self-selected to participate and were not blinded to the study. These results have important implications for the implementation of

treatment protocols in home care. Monitoring and addressing (when appropriate) treatment fidelity are both critical, as is ongoing support of providers implementing any new program. In the home health setting this process is complex and requires careful planning and continued buy-in from supervisors and program staff. A further consideration for program design are the complex medical conditions of most older home care patients. Two-thirds of our sample had been recently hospitalized, likely making other aspects of patient care a higher priority than learning pain coping strategies. Finally, like many providers practicing under time limitations with complex patients, adding new care tasks on top of usual care may have overburdened intervention PTs. Future initiatives should consider the additional time required for staff to learn new techniques and the long-term implications of new tasks for clinical work load. Our study covered intervention PT time spent in group training but not reviewing the online materials or reading the monthly emails with pain management reminders. We also should have considered covering additional visit time at least during a “learning” phase. Whether long-term adjustments in workload/compensation would be needed to ensure adoption of the protocol would depend on the additional time required once staff has gained experience with the techniques.

Our study has several limitations. First, we enrolled only English-speaking patients. There is evidence that Hispanic patients who do not speak English may benefit most from similar types of treatments.^{11,14,30} In addition, while we designed the protocol to be implemented as part of routine care, our post-intervention surveys of intervention PTs indicated limited therapist adherence with protocol implementation because of the challenges described above.

This real-world pragmatic trial examined the impact of a cognitive-behavioral pain self-management protocol delivered by PTs for use by older patients with activity-limiting pain in the home care setting. We found no treatment effects for our primary or secondary outcomes. Despite the lack of positive findings, we believe future studies are indicated to determine how pain self-management protocols found effective in efficacy studies can be successfully implemented in routine clinical care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Session	Topics
1	<p>Pain Theory: Description of pain neural pathways, the biopsychosocial nature of pain, and the gate control theory</p> <p>Becoming More Active: The importance of physical activity to avoid functional decline, long-term and short-term goal setting</p>
2	<p>Relaxation: Discussion of the value of relaxation in reducing muscle tension, reducing general stress and improving function</p> <p>Deep Breathing: This technique was introduced as the first relaxation technique for energy conservation, reduced pain, general relaxation, and improved oxygen exchanged. Instruction incorporated practice with verbal and tactile cueing as needed.</p>
3	<p>Imagery: Described as the second relaxation technique, the PT began with cues for deep breathing, then talked the patient through an imagery experience in terms of what would be seen, felt, heard and smelled in a pleasant, imagined environment.</p> <p>Pleasant Activity Scheduling: Discussion of the importance of doing pleasurable activities, including options of activities that might be enjoyed given the patient's current status.</p>
4	<p>Activity Pacing: Time-based pacing was described as a means for gradually increasing activity level. The PT described setting up activity/rest times, and how to gradually build up activity time to increase endurance.</p> <p>Progressive Muscle Relaxation: The patient was talked through the process of sequentially tightening and relaxing groups of muscles beginning in the feet and progressing through legs, trunk, arms and face.</p>
5	<p>Sleep Tips: Discussion of the importance of sleep and suggestions for things to avoid and strategies to adopt, troubleshooting the patient's specific challenges.</p> <p>Managing Flare-ups: This included a review of all strategies and discussion of the patient's preference for specific techniques, including when/ how to use them to manage pain.</p>

Figure 1.
Elements of the Cognitive-Behavioral Self-Management Protocol

Figure 2.
Consort Diagram of Study Participation

Table 1**Baseline Characteristics by Group**

Characteristic	All Participants (N=588)	Usual Care (n=303)	Intervention (n=285)	Intervention vs. Usual Care p-value
Mean age in years (SD)	73.0 (9.9)	72.6 (10.1)	73.5 (9.7)	0.31
Female sex	410 (70%)	208 (69%)	202 (71%)	0.56
Race				0.056
Hispanic	162 (27%)	95 (31%)	67 (23%)	
Non-Hispanic black	187 (32%)	97 (32%)	90 (32%)	
Non-Hispanic white/other ^a	239 (41%)	111 (37%)	128 (45%)	
Marital status				0.055
Married/partner	176 (30%)	87 (29%)	89 (31%)	
Widowed	180 (31%)	84 (28%)	96 (34%)	
Divorced/separated	135 (23%)	71 (23%)	64 (23%)	
Never married	96 (16%)	61 (20%)	35 (12%)	
Lives alone	257 (44%)	132 (44%)	125 (44%)	0.94
Education				0.56
Less than high school	137 (23%)	65 (21%)	72 (25%)	
High school or GED ^b	162 (28%)	81 (27%)	81 (28%)	
Some college or 2 year degree	131 (22%)	69 (23%)	62 (22%)	
College graduate or more	157 (27%)	87 (29%)	70 (25%)	
Income				0.72
< \$10,000	115 (20%)	65 (21%)	50 (18%)	
\$10,000 – \$19,999	152 (26%)	78 (26%)	74 (26%)	
\$20,000 – \$49,999	118 (20%)	61 (20%)	57 (20%)	
\$50,000	84 (14%)	43 (14%)	41 (14%)	
Missing	119 (20%)	56 (19%)	63 (22%)	
Mean number of chronic conditions (SD)	2.6 (1.5)	2.6 (1.5)	2.6 (1.5)	0.79
Reports chronic pain	408 (69%)	212 (72%)	196 (70%)	0.53
Pain type:				0.85
Arthritis but no surgical-related pain	199 (34%)	100 (33%)	99 (35%)	
Arthritis and surgical-related pain	197 (33%)	106 (35%)	91 (32%)	
Other ^c	192 (33%)	97 (32%)	98 (33%)	
Health services utilization				
Mean number of PTs visits (SD)	8.12 (4.22)	7.67 (3.98)	8.59 (4.42)	<0.001
Discharged from hospital in past 7 days	381 (65%)	199 (66%)	182 (64%)	0.66

^aOf the non-Hispanic White/Other group, 215 (90%) participants endorsed being non-Hispanic white.

^bGED = general equivalency diploma.

^cOther pain types include pain due to recent surgery only, back pain, neuropathic pain. Seventy-eight participants in this group reported pain due to a surgery that was not arthritis-related, i.e., back or joint surgery.

Table 2

Adjusted Baseline, 60-Day, and Change Scores for Primary and Secondary Outcomes

Outcome	Baseline	60-Day Follow Up	Change Score	p-value	Trt x Time Interaction p-value
<i>Primary Outcomes</i>					
Pain intensity (0–10) ^a					
Intervention	4.94 (.194)	4.22 (.211)	–0.72 (.169)	<0.01	0.22
Usual care	5.04 (.195)	4.61 (.207)	–0.43 (.160)	<0.01	
Pain-related disability (0–24) ^a					
Intervention	15.09 (.542)	12.36 (.585)	–2.73 (.485)	<0.01	0.49
Usual care	16.46 (.543)	13.27 (.577)	–3.19 (.453)	<0.01	
Gait speed in seconds ^a					
Intervention	11.93 (.879)	10.70 (.921)	–1.22 (.574)	<0.03	0.19
Usual care	12.64 (.906)	10.39 (.930)	–2.25 (.542)	<0.01	
Functional status (0–14) ^{a,b}					
Intervention	6.02 (.394)	4.69 (.406)	–1.33 (.203)	<0.01	0.43
Usual care	6.34 (.406)	4.80 (.416)	–1.55 (.189)	<0.01	
<i>Secondary Outcomes</i>					
Depressive symptoms (0–24) ^a					
Intervention	7.90 (.467)	6.59 (.499)	–1.31 (.374)	<0.01	0.49
Usual care	7.82 (.466)	6.87 (.490)	–0.95 (.346)	<0.01	
Pain self-efficacy (0–60) ^c					
Intervention	29.92 (1.747)	34.26 (1.837)	4.34 (1.03)	<0.01	0.77
Usual care	29.33 (1.795)	34.08 (1.853)	4.75 (.954)	<0.01	

First 3 columns show adjusted means along with (standard errors). Means are estimated and tests carried out in a model with fixed classification factors for treatment (usual care versus intervention), sex of patient, and time of assessment (baseline versus follow-up); the interactions between treatment, sex, and time; patient age in years as a covariate; and teams, PTs, and patients as levels of random classification factors

^aHigher score is worse.

^bFunctional status was scored on a 0 (completely independent) to 14 (requires assistance with all ADLs) scale.

^cHigher score is better.