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Original Research

Client-Centered Therapy vs Exercise Therapy for Chronic Low Back Pain: A Pilot Randomized Controlled Trial in Brazil

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ABSTRACT

Background. Psychological interventions targeting maladaptive pain behaviors and depressive symptoms are commonly used in the management of chronic pain.

Objective. To compare the effectiveness of psychotherapy, based on client-centered therapy, and exercise for patients with chronic nonspecific low back pain (LBP).

Setting. Outpatient physiotherapy and psychotherapy departments within a Brazilian academic institution.

Design. Thirty-three patients with chronic nonspecific LBP were recruited and randomized to receive client-centered therapy (N = 16) or exercise (N = 17) for 9 weeks.

Outcome Measures and Data Analysis. Pain and disability were measured at baseline, 9 weeks, and 6 months by a 10-cm visual analog scale and by the Brazilian Roland-Morris Questionnaire, respectively. Depression was measured at baseline and 9 weeks by the Beck Depression Inventory. Multiple regression analyses with baseline scores as covariates were used to determine the effects of treatment on outcomes.

Results. For all outcomes at each time point, the exercise group showed greater improvements than psychotherapy. The difference between groups was statistically and clinically significant for disability at 9 weeks (–4.9 points, 95% CI –9.08 to –0.72).

Conclusions. This was the first study to investigate the effects of client-centered therapy and exercise for patients with chronic LBP. Our results showed that client-centered therapy is less effective than exercise in reducing disability at short term.

Key Words. Low Back Pain; Randomized Controlled Trial; Client-Centered Therapy; Nondirective Counseling; Exercise

Introduction

Low back pain (LBP) is one of the most common and challenging problems in primary care [1]. With annual prevalence rates ranging from 22% to 65% [2,3], this condition has been associated with high costs to national economies

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[4,5]. Most of these costs are attributed to patients with persistent complaints [6].

The role of psychosocial factors in the development and maintenance of LBP is well documented in the literature [2,6–9]. The incorporation of principles of cognitive–behavioral therapy (CBT) into treatment protocols has been shown to be effective in reducing pain [10], catastrophising [11] and disability [11,12] as well as in facilitating return to work [13] in patients with subacute/chronic LBP. This approach has been recommended because of its potential effect in modifying pain behaviors in patients with persistent LBP [9].

Maladaptive pain behaviors are associated with the development of long-term disability in patients with chronic LBP [9,14]. Although CBT is the most popular approach to manage these behaviors in this population, a similar target is also shared by other types of psychotherapy such as client-centered therapy [15]. Also known as nondirective counseling, client-centered therapy is one of the most prominent and familiar theories of psychotherapy [16] and is commonly used in Brazil to manage a range of psychological problems. It was first described by Carl Rogers in 1940 and has its roots in the work of Otto Rank [15,17]. The Rogerian approach to counseling and psychotherapy focus on creating a comfortable atmosphere in which the clients independently reorganize their thoughts and achieve insight, with the counselor acting as a facilitator to the process [17]. This process allows clients to reformulate the way in which they perceive themselves and their worlds, ultimately leading to changes in maladaptive behaviors [18].

Client-centered therapy has been shown to be an effective intervention in clinically depressed populations [19–21]. Additionally, there is some evidence that it may also be effective for managing patients with chronic musculoskeletal pain [22]. However, it is unclear whether client-centered therapy should be considered a treatment option for patients with chronic LBP.

We conducted the first pilot randomized trial to test whether client-centered therapy was as effective as exercise for patients with chronic nonspecific LBP. Disability, pain, and depressive symptoms were used as outcome measures to evaluate treatment effects.

Methods

Study Sample

Participants with LBP were recruited from a triage center responsible for patients' referral to health care specialists. All eligible subjects were invited to participate. To be eligible, subjects had to be younger than 65 years old and have had a history of chronic nonspecific LBP; that is, pain between the 12th rib and the gluteal folds for at least 3 months. The exclusion criteria included suspected or confirmed serious spinal pathology (fracture, tumor, infection, cauda equina syndrome), previous spinal surgery, spondylolisthesis, pregnancy, and other associated pathologies requiring current intervention. Subjects exhibiting radicular syndrome (defined as leg pain following dermatomal pattern and neurological signs) were also excluded. An informed consent was signed by all participants.

Randomization and Interventions

A randomization sequence was generated using a random numbers table. Concealment of allocation was ensured by the use of sequentially numbered sealed opaque envelopes.

Client-Centered Therapy

Patients in this group received psychotherapy based on the principles of nondirective counseling [15]. Groups of up to 10 patients attended 80-minute treatment sessions twice a week for 9 weeks. The role of the therapists was to provide unconditional support as the patients discussed their life stressors, including chronic pain. No particular subject was restricted in the discussion group. Two psychologists with 12 years of clinical experience facilitated the groups.

Exercise Therapy (Control Group)

Exercise therapy was used as a control because of the evidence for its effectiveness in the management of chronic LBP [23]. Patients in this group received a general exercise program consisting of 20-minute walking, general stretching, and strengthening in the bridge position (lying supine with knees flexed, patients had to raise their hips and hold for 5 second, repeating this procedure 15 times). Groups of up to 10 patients performed 40-minute sessions twice a week for 9 weeks. A physiotherapist with 5 years of clinical experience and a graduate physiotherapy student supervised the groups.

Outcome Measures

The patients were assessed by blinded examiners at baseline, 9 weeks, and 6 months. Sociodemographic data were collected at baseline. The scores on the following questionnaires were also recorded.

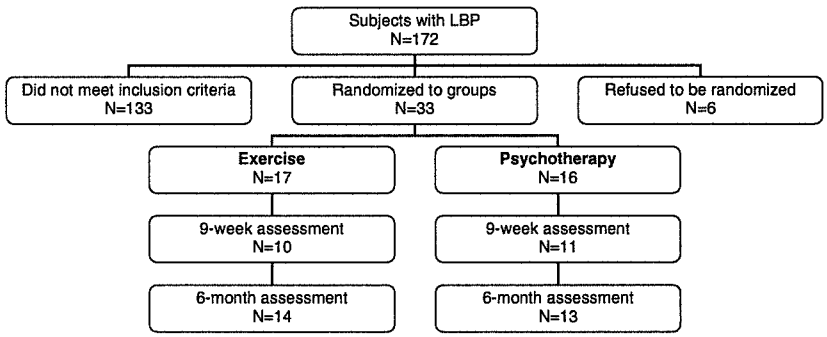

Figure 1 Flow of participants through the study. LBP = low back pain.

Brazil Roland-Morris Questionnaire (BRM)

Disability was measured by the BRM [24], which is the validated Brazilian-Portuguese version of the Roland-Morris Questionnaire [25]. The scores on the BRM are based on the answers to 24 yes–no questions, ranging from 0 to 24 (higher scores represent increased disability). The BRM was administered face to face at baseline and at 9 weeks. At 6 months, the questionnaire was administered by telephone.

Visual Analogue Scale (VAS)

The patients graded their LBP on a 10-cm scale, anchored with the descriptors "no pain" at one end and "pain as bad as it could possibly be" at the other end. The examination followed the same procedure listed above.

Beck Depression Inventory (BDI)

Depressive symptoms were measured at baseline and at 9 weeks by validated Brazilian-Portuguese version of the BDI [26]. The BDI consists of a 21-item self-rated questionnaire in which each item is scored from 0 to 3 (higher scores represent most severe symptoms). Because of the complexity of the questionnaire and the long time required for its completion, it was decided *a priori* not to include the BDI at the 6-month follow-up conducted by telephone.

Treatment Qualification Scale

A treatment qualification scale was developed to be completed at the end of the intervention period. Patients qualified the treatment received by choosing one of the following terms: excellent, satisfactory, unsatisfactory, poor.

Statistical Analysis

Descriptive statistics were conducted to summarize socio-demographic data from baseline. We conducted multiple regression analyses to determine the effects of treatment on outcomes. An intention-to-treat analysis was used. Baselines scores of disability, pain, and depressive symptoms were used as independent variables in order to provide a more precise estimate of the effects of treatment. The analysis was conducted using the SPSS for Windows program, version 8.0.

Results

Study Sample

The flow of participants through the study is described in Figure 1. Of 172 patients with LBP screened during the recruitment period, only 39 (22.7%) met the inclusion criteria. The most frequent reasons for exclusion were the presence of radicular symptoms (34.9%), neck pain (29.1%), impingement syndrome (7.7%), and knee osteoarthritis (7.7%). Thirty-three patients consented to be randomized to the intervention groups.

Table 1 summarizes the socio-demographic and clinical characteristics of the participants in the exercise and psychotherapy groups at baseline. The groups were similar with regard to age, duration of symptoms, sex, proportion of patients not currently working, medication profile, disability,

Table 1 Socio-demographic and clinical characteristics of study participants at baseline

Characteristic	Exercise (N = 17)	Psychotherapy (N = 16)
Age (years)	42.4 (13.2)	44.6 (12.1)
Duration of symptoms (months)	50.3 (84.5)	87.5 (107.9)
Female sex (%)	58.8	81.3
Patients not currently working due to LBP (%)	23.5	56.3
Patients using pain killers (%)	47.1	31.3
Disability (BRM)	14.3 (5.5)	14.4 (6.6)
Pain (VAS)	7.0 (2.6)	6.0 (2.6)
Depression score (BDI)	24.8 (16.1)	18.6 (10.2)
Depressed patients (%)*	82	69

* Patients with BDI scores > 14.
Values shown are means (SD) unless otherwise stated.
BRM = Brazil Roland-Morris Questionnaire: range from 0 to 24 points with higher scores representing higher disability; VAS = visual analogue scale: range from 0 to 10 cm with higher scores representing higher pain; BDI = Beck Depression Inventory: range from 0 to 63 points with higher scores representing higher depression; LBP = low back pain.

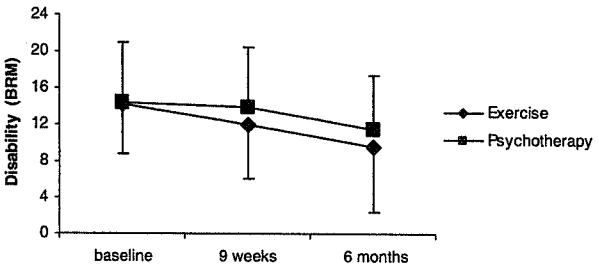

Figure 2 Nonadjusted mean disability scores (and standard deviations) in the study groups at baseline, 9 weeks, and 6 months. BRM = Brazil Roland-Morris Questionnaire.

pain intensity, and depression. A score of 14 in the BDI was used as a cut-off point between depressed and nondepressed participants [27,28].

Interventions

Figures 2–4 show the nonadjusted mean scores and standard deviations for disability, pain, and depressive symptoms in the two treatment groups at each time point.

Disability

After adjusting for baseline scores of disability, pain, and depressive symptoms, the exercise group showed lower disability at 9 weeks when compared with the psychotherapy group (–4.9 points difference on the BRM, 95% CI –9.08 to –0.72, $P = 0.02$). At 6 months, disability was also lower in the group performing exercises; however, the difference between groups was no longer statistically significant (4 points difference on the BRM, 95% CI –9.28 to 1.22, $P = 0.13$).

Pain

After adjusting for baselines scores of disability, pain, and depressive symptoms, pain scores were lower in the exercise group at 9 weeks, but the difference between groups was not significant

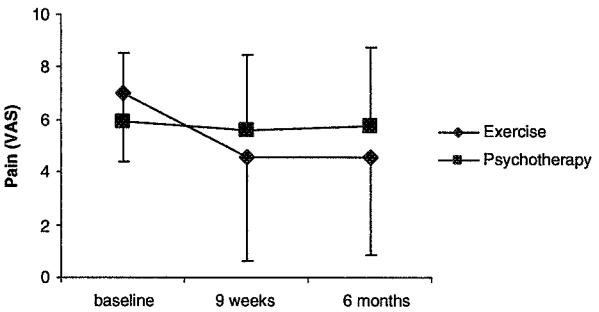

Figure 3 Nonadjusted mean pain scores (and standard deviations) in the study groups at baseline, 9 weeks, and 6 months. VAS = visual analogue scale.

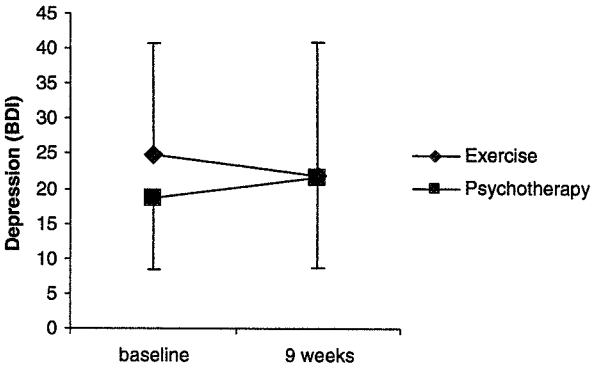

Figure 4 Nonadjusted mean depression scores (and standard deviations) in the study groups at baseline and 9 weeks. BDI = Beck Depression Inventory.

(–1.8 cm difference on a 10-cm VAS, 95% CI –5.16 to 1.55, $P = 0.27$). At 6 months, the exercise group also scored lower than the psychotherapy group in the pain scale and this difference was again not significant (–1.3 cm difference on a 10-cm VAS, 95% CI –4.4 to 1.8, $P = 0.38$).

Depression

After adjusting for baselines scores of disability, pain, and depressive symptoms, the exercise group showed less symptoms of depression than the psychotherapy group at 9 weeks, but this difference did not reach significance (–6.3 points difference on the BDI, 95% CI –18.7 to 6.02, $P = 0.29$). The proportion of patients with clinical depression (BDI > 14) was slightly decreased after exercise therapy (80% at 9 weeks compared with 82% at baseline), whereas the prevalence of clinical depression was higher after psychotherapy (73% at 9 weeks compared with 69% at baseline). Depressive symptoms were not assessed at 6 months because of the practical issues in applying the BDI by telephone, as outlined in the Methods section of this manuscript.

Loss to Follow-Up and Missing Data

Twelve patients were not able to return to the triage center for the 9-week assessment, and six patients could not be contacted for the phone interview at the 6-month follow-up. Twenty-eight patients (85%) were included in the intention-to-treat analysis. A post hoc analysis comparing the baseline characteristics of those subjects included in the intention-to-treat analysis and the subjects lost to follow-up showed no significant differences ($P > 0.05$). Additionally, no differences were observed in the between-group comparisons after a sensitivity analysis was performed using the last

value carried forward method (LVCF). Also known as endpoint analysis, LVCF is a very conservative method to handle missing data, which assumes that the individual's score remains constant over time [29]. Disability scores were still significantly lower in the exercise group at 9 weeks (−3.1 points difference on the BRM, 95% CI −5.81 to −0.34, $P = 0.02$). For all other comparisons, the between-group differences did not reach significance.

Quality of Treatment and Adherence

According to the treatment qualification scale, the median value was "excellent" for the exercise group and "satisfactory" for the psychotherapy group. The adherence to treatment was similar in both groups. The exercise group attended a mean of eight sessions (44%) while the psychotherapy group attended a mean of six sessions (33%) over the study period.

Discussion

This pilot study compared the effectiveness of client-centered therapy and exercise for the management of chronic nonspecific LBP. A significant difference in disability scores favored the exercise group at 9 weeks but the difference between groups was not maintained at 6 months. No statistically significant difference was found between groups with regard to pain and depression scores.

Several clinical guidelines recommend exercise therapy for the management of patients with chronic LBP because of its potential to improve pain and function [23,30]. The benefit of exercises for this chronic population was recently demonstrated by Hayden et al. [31]. In a meta-analysis comparing exercise to no treatment and to other conservative treatments, the authors concluded that exercise was more effective for improving pain and functional outcomes than the other comparisons (between-group differences of 7.3 points for pain outcomes and 2.5 points for functional outcomes on a 100-point scale) [31]. A further analysis revealed that specific implementation strategies (such as individually tailored programs and supervision) seem to contribute to better outcomes during exercise programs [32]. In this pilot study, exercise sessions were conducted under the supervision of a physiotherapist. However, because the exercise program was not individually tailored (that is, patients had to perform a fixed sequence of procedures), one can argue that better outcomes would have been observed if the exercises had been individually designed.

In addition to its effects on pain and functional outcomes, exercise therapy is also considered to play an important role in the management of depressive symptoms. Results from a meta-analysis conducted by Lawlor and Hopker showed that exercises were significantly more effective than no-treatment controls for the management of depression in the general population [33]. This also seems to be the case for a chronic LBP population. In a randomized trial investigating the effects of three nonpsychological interventions for chronic LBP (active physiotherapy, muscle reconditioning, and low-impact aerobics), positive changes were reported in various psychological variables [34]. Although there were no statistically significant differences in depression scores between exercise and client-centered therapy in this pilot study, a trend favoring exercises could be observed at 9 weeks. Additionally, the proportion of clinically depressed patients was reduced by 2% after exercise therapy. It is believed that active therapy programs can change maladaptive pain behaviors and depressive symptoms by mechanisms similar to those attributed to psychological interventions (i.e., positive feedback from social contact and change in cognitions by learning a new skill) [33,34].

The increase in the number of clinically depressed patients following client-centered therapy was a surprising result. Previous studies have shown this particular therapy to be effective for the management of depression [19–21]. Greenberg and Watson reported significant reductions in depression following a client-centered approach and considered this intervention to be as effective as other psychological interventions for adults with major depression [20]. Ward et al. found the client-centered approach and CBT to be equally effective for patients with depression and mixed depression and anxiety; additionally, both therapies were more effective at short term than general practitioner care [21]. Barkham and Hardy reviewed the literature examining the efficacy of counseling on depression (including nondirective counseling) and pointed out that it is as effective as antidepressant medication [19]. The poor depression outcomes observed after psychotherapy in our study could have been influenced by inappropriate patient–therapist interactions; i.e., patients in the psychotherapy group perceived treatment less favorably than those in the exercise group. Torstensen et al. attribute unexpected negative effects to the failure of the treatment to meet patients' expectations [35]. The authors believe

that a similar phenomenon could have delayed the establishment of a trusting relation between patients and therapists in our study, having a negative impact on treatment effectiveness.

Recently, psychological and cognitive behavioral interventions have become a common therapeutic approach not only to manage maladaptive pain behaviors and depressive symptoms, but also to improve disability in patients with musculoskeletal pain [36]. In the first randomized trial comparing a cognitive intervention with exercises for subacute LBP, Storheim et al. reported significant changes in disability favoring the cognitive group [37]. Conversely to Storheim's results, in this pilot study, the sole use of client-centered therapy was less effective for disability associated with LBP than an exercise program at 9 weeks. Additionally, while similarities between the groups at the 6-month follow-up would provide evidence for equivalent effectiveness, it is also possible that important differences had been overlooked (i.e., the small sample size means that this pilot study was probably underpowered). The contrast in results between this pilot study and Storheim's study may be explained by a number of reasons. First, the population included in the two studies was distinct: Storheim's sample consisted of subacute LBP patients (pain of less than 3 months), whereas our sample consisted of patients with chronic complaints (pain greater than 3 months with mean pain duration of 68 months [SD = 96.8]). Second, it is possible that the effects on disability observed after a cognitive intervention are accounted for specific treatment components not present in the client-centered therapy (such as the discussion about pain mechanisms). In the later, therapists act as facilitators and therefore it is possible that some important topics for discussion were not brought up by patients during sessions. Finally, it is also possible that the duration of psychotherapy treatment in our study was insufficient to allow therapists to establish a therapeutic relationship with patients (this delay may have been intensified by the group format used during psychotherapy sessions).

Although adherence to treatment was similar between the groups, the mean number of treatment hours was considerably lower than planned (8 hours from the planned 24 hours in the psychotherapy group; 5.3 hours from the planned 12 hours in the exercise group). The lack of adherence is a common problem in LBP research. Evidence shows that more than 20% of patients with LBP do not adhere to exercise programs and 40% only partially adhere to such programs [38]. The problem of poor adherence to exercises has been mostly attributed to lack of time [38]. It is likely that the pressure on time was also the reason for the reduced number of treatment hours in our study. Additionally, the inferior perceived quality of care in the psychotherapy group may have contributed to the low adherence to client-centered therapy. Nevertheless, although the majority of patients in the exercise group rated their care as "excellent," adherence was similarly low in both groups.

Our study has a number of strengths. First, no other randomized trial has investigated the effectiveness of the sole use of client-centered therapy for patients with chronic nonspecific LBP. Second, the trial is of high methodological quality including concealed allocation, blinded assessment, and intention-to-treat analysis. Finally, in addition to assessing symptoms of depression by a continuous outcome, we also included a dichotomous outcome measure to determine clinical depression. The use of a dichotomous measure for depression is considered to be more understandable and more important in clinical terms; however, it is not commonly used in randomized controlled trials [33]. This pilot study had some limitations, which also need to be acknowledged. The most significant weakness was the small sample size. Additionally, the loss to follow-up, particularly at 6 months, may have made difficult the observation of statistically significant differences between treatments due to lack of power. Another limitation was the use of a particular outcome measure, which may have inflated the depression levels in our sample. The BDI contains somatic items that could overestimate depressive symptoms in patients with LBP [39]. For this reason, it would be preferable to use a questionnaire in which the items do not relate to somatic symptoms associated with LBP, such as the Depression Anxiety Stress Scales (DASS) [40]. However, a validated Brazilian-Portuguese version of the DASS is not yet available.

The results from this pilot study suggest that at short term, client-centered therapy is less effective than exercises for the management of disability in patients with chronic nonspecific LBP. Although no differences between client-centered therapy and exercises were observed for disability at long term and for pain and depression outcomes at all time points, these similarities need to be interpreted with caution.

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