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Brief interprofessional intervention for chronic pain management: a pilot study*

Intervenção interprofissional breve para manejo da dor crônica: estudo piloto

Breve intervención interprofesional para el manejo del dolor crónico: un estudio piloto

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ABSTRACT

Objective: To test the effects of a brief interprofessional intervention for chronic pain management. **Methods:** Before and after pilot study. The brief interprofessional intervention had a psychoeducational focus and was based on the Self-Efficacy Theory, using Cognitive-Behavioral Therapy strategies. The intervention aimed to improve the management of chronic pain. It was conducted in group, over six weeks, with a two-hour weekly meeting, including educational strategies on pain management, stretching, and relaxation techniques. Self-efficacy, pain intensity, disability, fatigue, and depressive symptoms were assessed. Data were analyzed using the paired t-test and Pearson's correlation. **Results:** Adults with moderate to severe pain took part in the study. Post-intervention analysis showed significant improvement in self-efficacy ($p = 0.004$) and significant reduction in pain intensity ($p = 0.024$), disability ($p = 0.012$), fatigue ($p = 0.001$), and depressive symptoms ($p = 0.042$). **Conclusion:** The effects of brief interprofessional intervention were positive for chronic pain management. We suggest the conduction of studies with more robust designs and a larger sample to confirm these findings.

DESCRIPTORS

Chronic Pain; Health Education; Cognitive Behavioral Therapy; Self Efficacy; Pain Management.

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INTRODUCTION

Chronic pain has a high prevalence in the general population and damages quality of life, affecting physical, emotional, cognitive, and social aspects, in addition to causing high costs to society[1–2]. Considering the multidimensional characteristic of pain, the interprofessional approach is recommended to achieve positive results for patients with chronic pain[3].

Regarding treatment options for chronic pain, the multimodal approach, with the association of pharmacological and non-pharmacological therapies, can contribute to the success of the treatment. Studies that tested chronic pain management programs with interprofessional teams used different components: flexibility and stretching exercises, educational strategies, and relaxation techniques, significantly reducing pain intensity, depressive symptoms, stress, and anxiety[4].

Educational and psychoeducational strategies are also widely used by nurses and other health professionals to assist in the management of chronic pain. Several studies used educational strategies and achieved positive results in reducing the intensity of pain, anxiety, fatigue, and depressive symptoms[4–5].

In the context of psychoeducational strategies, self-efficacy belief is an important variable for the management of chronic pain, defined as the personal perception of the ability to perform certain behaviors to achieve desired results[6], which can be understood as self-confidence to perform activities and is related to specific situations. People with higher self-efficacy tend to have fewer depressive symptoms, easier adherence to treatment, less physical disability, and better results in the management of chronic pain[7].

Cognitive-Behavioral Therapy (CBT) is considered the first line of psychosocial treatment for individuals with chronic pain, and aims to address the physical, psychological, and social aspects, with effects on pain and associated problems[8–9]. CBT encourages patients to recognize negative emotions and teaches them to identify automatic negative thoughts in the face of stressful situations in their daily lives. During the sessions, the patient learns to question automatic thoughts and seek evidence about their validity. They are then encouraged to think of alternative views on the situation and to reflect on the emotional response that follows. Based on these self-analysis and reflection exercises[9], CBT has stood out as an intervention that promotes the reduction of pain and disability related to chronic pain by modifying negative thoughts and providing new skills to deal with it[8].

Nursing interventions that used educational strategies and CBT techniques also showed positive results for patients with chronic pain, contributing to improve knowledge, expand integration, encourage self-care, reduce pain intensity and depressive symptoms, in addition to improving the patients' perception of self-efficacy[4,10–11]. Despite the promising results, the content of these interventions, the active elements, the number and duration of sessions to obtain the desired effect are not clear.

Thus, this study aimed to test the effects of a brief interprofessional intervention on self-efficacy belief, pain intensity, disability, fatigue, and depressive symptoms in people with chronic pain, in addition to verifying the possible correlation between disability and self-efficacy belief, pain intensity, fatigue, and depressive symptoms.

METHODS

Design of Study

This is a before and after pilot study.

Population

The study population consisted of people with chronic pain of varying etiologies.

Local

This study was carried out at the School of Nursing of University of São Paulo, with patients treated at the Pain Control Outpatient Clinic of the Anesthesia Division of the Central Institute of the Hospital das Clínicas, School of Medicine, University of São Paulo (ICHC-FMUSP).

Selection Criteria

Inclusion criteria were: age between 18 and 65 years old; moderate to severe pain complaint (pain intensity > 4) for more than six months, according to the Verbal Numerical Scale (VNS)[12]; and living in the Metropolitan Region of São Paulo. Exclusion criteria were: pain of oncological origin; communication and comprehension difficulties; motor deficits; and diagnosis of dementia.

Sample Definition

Non-probabilistic sample composed of 25 people with chronic pain.

Data Collection

Eligibility analysis was performed on medical records of patients who were waiting in the waiting room for medical consultations at the Pain Control Outpatient Clinic of the Anesthesia Division (ICHC-FMUSP). Those who met the inclusion criteria were invited to a nursing interview before the medical appointment. In the interview, the objectives of the brief interprofessional intervention called "Chronic Pain Control Program" were clarified and the patients were invited to take part in the study. With the patients' expression of interest, they were asked to sign the Informed Consent Form and the initial assessment was carried out.

Intervention

The intervention was operationalized from three theoretical frameworks: Self-Efficacy Theory[6], Cognitive-Behavioral Theory[9], and Nursing Interventions Classification (NIC)[13], applied by two nurses, a psychologist, and a physical therapist, over six weeks, with a two-hour weekly meeting, totaling 12 hours. In each session, patients participated in educational and collaborative strategies as recommended by NIC[13] (one hour in duration), followed by 45 minutes of supervised stretching and 15 minutes of relaxation (Chart 1).

The Self-Efficacy Theory was the main framework for the operationalization of the intervention elements[6]. Figure 1

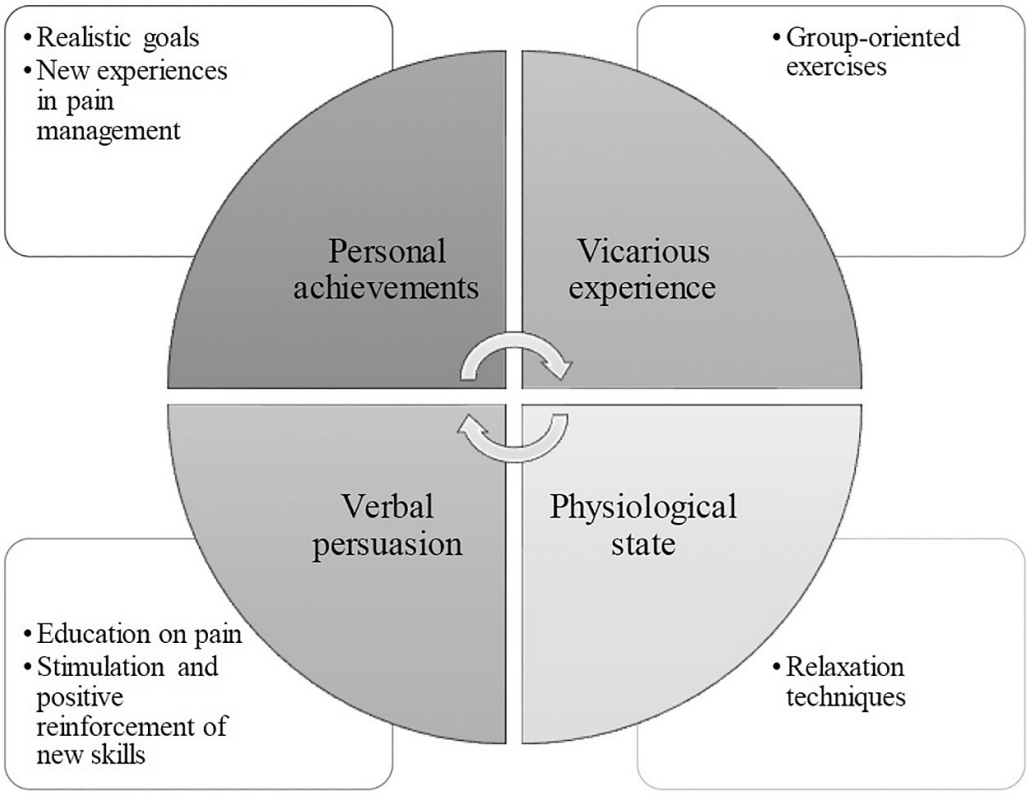

Figure 1 – Sources of information on self-efficacy belief operationalized in intervention elements.

shows how each source of information on self-efficacy belief was implemented in the intervention.

In the first meeting, the researchers introduced themselves and the participants and presented the goals. Participants received a kit with an educational booklet and folder on chronic pain management, a notebook, and a pen for notes.

Pain education strategies included background information about the physiology of pain, manifestations of chronic pain, importance of exercise in managing chronic pain, influence of emotions and stress on the painful experience, importance of restful sleep, and maintenance of a healthy rhythm in everyday activities.

During the sessions, the participants performed stretching exercises under the guidance of the physical therapist, breathing and relaxation techniques under the guidance of the nurses, and were instructed to practice these activities at home throughout the week. All these elements have the potential to strengthen the perception of self-efficacy.

On the other hand, cognitive-behavioral strategies included identification of negative thoughts and emotions related to everyday situations and their relationship with pain. Relaxation techniques are also considered behavioral strategies for pain management. Chart 1 shows the distribution of intervention activities over the weeks.

Outcome

To assess the effects of the intervention on self-efficacy belief, pain intensity, disability, fatigue, and depressive symptoms, research instruments were applied on the first day, before starting the intervention, and on the sixth day after the intervention was concluded. Data collection took place from May to October 2019.

Chart 1 – Activities programmed for brief interprofessional intervention for chronic pain management. São Paulo, SP, Brazil, 2019.

Activity	Session					
	1	2	3	4	5	6
Presentation and goal setting	■					
Education on chronic pain		■				
Physical exercise and pain management			■			
Stress coping and pain management				■		
Pace/energy conservation and sleep hygiene					■	
Review of learning and maintenance						■
Stretching and muscle strengthening		■	■	■	■	■
Relaxation technique	■	■	■	■	■	■

Data Collection Instruments

Sociodemographic and clinical data were collected using a questionnaire developed by the authors, containing information on sex, age, schooling, professional status, medical diagnosis, comorbidities, pain intensity, and treatments performed.

Self-efficacy belief was assessed by the Pain Self-Efficacy Questionnaire (PSEQ), validated in Brazil, consisting of 10 items ranging from 0 (no confidence) to 6 (completely confident), indicating the degree of confidence that the

individual has to perform activities despite the pain. The higher the score, the higher the self-efficacy[14].

Pain intensity was assessed using the Verbal Numerical Scale (VNS) of pain, which includes the following question: "please tell me what was the average pain intensity in the last week, considering 0 as no pain and 10 as the worst pain you can imagine". Pain intensity was categorized as mild (1–3), moderate (4–6), and severe (7–10), and this scale is considered to be of simple and quick application, being widely used in research on pain[12].

Disability was assessed using the Pain Disability Questionnaire (PDQ), which measures its relationship with pain and has 15 items divided into two domains: physical/functional aspects (9 items) and psychosocial aspects (6 items). The maximum score for physical/functional aspects is 90 points and for psychosocial aspects, 60 points, totaling 150 points for both domains. Disability scores are classified as mild/moderate (0–70), severe (71–100), and extreme (101–150). The questionnaire is considered to be quick to apply and easy to understand, with good psychometric properties[15].

Fatigue was assessed using the Fatigue Pictogram, an illustrated instrument that is easy and quick to apply for measuring the intensity and impact of fatigue on the patient's life, consisting of two questions with five captioned illustrations[16]. The instrument does not have cutoff points for diagnosis or classification, but the higher the score, the greater the intensity and impact of fatigue. Its psychometric properties were satisfactory in Brazil[16].

Depressive symptoms were assessed by the Beck Depression Inventory, validated for Portuguese language[17], which has 21 items with statements graded from 0 to 3, indicating the intensity of the symptom. The total score ranges from 0 to 63, and the higher the score, the higher the intensity of depressive symptoms. For patients without a previous diagnosis of depression, scores between 16 and 20 should be considered for dysphoria and 21 or more for depression. In this study, the categories for verifying the intensity of depression symptoms were mild (0–15), moderate (16–20), and severe (≥ 21)[17].

Data Analysis and Treatment

The data obtained were entered into Microsoft Excel® spreadsheets and analyzed using the Statistical Package for the Social Sciences (SPSS), by descriptive and inferential analyses. Continuous variables were expressed as mean and standard deviation, and categorical variables were described in absolute numbers and percentages. The scores of the measuring instruments were compared using the paired repeated measures Student's t-test before and after the PCDC. The analysis of the correlation between disability and the variables pain, self-efficacy, fatigue, and depressive symptoms was performed using Pearson's correlation coefficient. Values of $p < 0.05$ were considered significant.

Ethical Aspects

The research followed all the recommendations of Resolution no. 466/2012 of the National Health Council (CNS) and was approved by the Research Ethics Committee of EEUSP under opinion no. 2.831.470/2018, in addition to the co-participating institution HCFMUSP under opinion no. 3.339.401/2019. All participants, after understanding the objectives of the intervention and expressing interest, signed the Informed Consent.

RESULTS

Among 48 (100%) patients eligible for the study, 25 (52%) agreed to participate and 15 completed the intervention, assessed before and after the study. The analysis of the characteristics of the program participants (n = 25) showed that 88% were women with 55 years as the mean age and 11 years as mean schooling, 52% were single, and 60% were unemployed, on leave, or retired (Table 1).

Study participants had an average of 10 years of pain and the main etiologic diagnoses were: fibromyalgia, bursitis, arthrosis, herniated discs, and arthritis. The most frequent associated diseases were: hypertension, type II diabetes, hypercholesterolemia, and asthma. The most commonly used drugs: analgesics, anticonvulsants, weak opioids, muscle relaxants, and antidepressants. The mean sleep time was 5 hours a day and 80% of the participants were sedentary.

At the end of the program, there was a significant increase in the self-efficacy score ($p = 0.004$) and a significant reduction in pain intensity ($p = 0.024$), disability ($p = 0.012$), fatigue (intensity: $p = 0.016$ and impact: $p = 0.001$), and depressive symptoms ($p = 0.042$), showing positive results of the program in all variables analyzed (Table 2).

Pain intensity went from severe to moderate, disability went from severe to mild/moderate, and fatigue was reduced, both in intensity and impact for carrying out activities. The mean score of depressive symptoms, despite the reduction, remained in the same category, with mild symptoms.

Correlations between the disability score and the ones of the variables analyzed (self-efficacy, pain intensity, fatigue, and

Table 1 – Characterization of the Chronic Pain Control Program participants. São Paulo, SP, Brazil, 2019.

Variables	n*	%
Sex		
Female	22	88
Male	3	12
Marital status		
In a relationship	12	48
Single	13	52
Schooling		
Higher Education Degree	3	20
High School Degree	8	53
Elementary School Degree	2	13
Incomplete Elementary School	2	13
Professional status		
Employed/Self-employed	10	40
Unemployed/On leave	8	32
Retired/Sickness Allowance	7	28
Total	**25**	**100**

Table 2 – Comparison of the means of the outcome variables before and after the program. São Paulo, SP, Brazil, 2019.

Variables	Before Mean (SD)	After Mean (SD)	p-value*
Self-efficacy	39.8 (11.7)	47.3 (10.5)	0.004
Pain Intensity	7.1 (1.6)	5.8 (1.8)	0.024
Disability	80.3 (35.6)	62.9 (35.9)	0.012
Fatigue (Intensity)	3.3 (1.1)	2.6 (1.2)	0.016
Fatigue (Impact)	3.0 (1.0)	2.0 (0.8)	0.001
Depressive symptoms	15.8 (7.7)	11.3 (6.5)	0.042

*Paired t-test.

Table 3 – Correlation between disability and self-efficacy, pain intensity, fatigue, and depressive symptoms. São Paulo, SP, Brazil, 2019.

	Disability (Correlation coefficient)	p-value*
Self-efficacy	−0.601	<0.001
Pain intensity	0.283	0.081
Fatigue (Intensity)	0.585	<0.001
Fatigue (Impact)	0.603	<0.001
Depressive symptoms	0.545	<0.001

*Pearson's Correlation.

depressive symptoms) were also analyzed. A moderate negative correlation was found between disability and self-efficacy and moderate positive correlations were observed between disability, fatigue, and depressive symptoms. No significant correlation between disability and pain intensity was found (Table 3).

DISCUSSION

The effects of brief interprofessional intervention (PCDC) showed promising results, with significant improvement in self-efficacy and reduction in pain intensity, disability, fatigue, and depressive symptoms. The educational strategies were fundamental for the execution of the PCDC and the achievement of the results obtained.

The systematic review with meta-analysis investigated the effects of 14 randomized clinical trials that tested interventions composed of educational strategies and physical therapy for people with chronic pain[18]. The results showed that 13 of the 14 studies analyzed showed significant effects of these interventions on short- and long-term pain intensity and long-term disability[18]. Interventions that include educational strategies present more expressive results compared to interventions that only offer physical therapy[18–19].

Research has reinforced the importance of pain education for people with chronic pain[10,20]. Among the studies that tested educational interventions, many highlight the role of CBT as a resource that promotes behavior modification in the face of painful experiences, highlighting positive effects also regarding self-efficacy, disability, fatigue, and depressive symptoms[10,19–20].

This study allowed us to reinforce self-efficacy belief[6] as a potential variable mediating the positive effects of interventions aimed at chronic pain management.

The systematic review analyzed the impact of self-efficacy belief in people with rheumatoid arthritis and concluded that its increase was associated with a reduction in pain, depressive symptoms, and anxiety[21]. This same study highlighted that individuals with high self-efficacy are more positive, accept their health condition better, and are more willing to perform physical exercises[21].

In this study, the pillars of the self-efficacy belief were worked on throughout the intervention, by the appreciation of personal achievements, observation of colleagues in the program, verbal persuasion by researchers (positive reinforcement), and relaxation techniques. The welcoming environment promoted during the meetings may also have contributed to increase the self-efficacy scores after the program, favoring the achievement of the proposed objectives.

Research points to self-efficacy belief as a key element to be worked on in people with chronic pain, since its decrease is associated with greater pain intensity, depressive symptoms, fatigue, and disability, making adherence to the proposed treatments difficult[7,10,22].

Another characteristic that may explain the success of the intervention is the group context, which favors social support among members, people with similar problems, who may feel welcomed in the group context, inspired to seek to live better, despite the chronic pain[23]and; (ii. Intervention in sessions also reinforces the second pillar of self-efficacy, since it allows for vicarious experiences or observation of experiences, which contribute to the acquisition of new behaviors[6].

This study also sought to assess the effects of PCDC on pain intensity, disability, fatigue, and depression symptoms. Several studies confirm the importance of pain education strategies, with emphasis on knowledge about its neurophysiology, for people who suffer from chronic pain[19,24]. This approach promotes changes in beliefs and behaviors, resulting in significant improvement in mental health and functionality, with reduced pain intensity[19,24].

The comparison of the average pain intensity before and after the PCDC showed a significant reduction, going from "severe pain" to "moderate pain," similar to other interventions for chronic pain management performed in person or by telemonitoring[18,25].

Regarding disability, the mean score changed from "severe" (80.3) before the intervention to "mild/moderate" (62.9) after the intervention, showing a significant reduction. These findings confirm the positive effects of PCDC in improving the functionality of people with chronic pain, as observed in other similar interventions[7,26].

Functionality is essential for maintaining quality of life and ability to work. A study comparing people with and without chronic pain showed that individuals with severe pain are less likely to have a job compared to those with mild to moderate pain, highlighting the loss of productivity and worse performance [27].

A systematic review that analyzed 41 randomized controlled trials compared usual care associated with physical treatments to the intervention with multidisciplinary biopsychosocial rehabilitation for people with chronic low back pain. The authors concluded that patients who received multidisciplinary

biopsychosocial treatment had less pain intensity and less disability compared to those who received only usual care and physical treatment[28]. Therefore, the relevance of interventions with an educational, psychosocial, and interprofessional approach in the management of chronic pain is emphasized.

This study also analyzed the effects of PCDC on fatigue. The results indicated a significant decrease in fatigue intensity and impact. A study that compared people with chronic low back pain undergoing an interdisciplinary program or physical therapy sessions showed that the interdisciplinary program promoted a significant reduction in fatigue, which corroborates the findings of this study in this regard[19].

Depressive symptoms are also common in people with chronic pain. Hence the recommendation to use psychoeducational and behavioral approaches in programs for chronic pain, as tested in this study[4,27]. The analysis of the effects of PCDC showed a significant reduction in depressive symptoms, even in the brief format, lasting six weeks.

Pain-related disability can lead to reduced productivity, absenteeism, absence from work, social isolation, depression, among other losses[10,19,20]. Considering this negative impact of disability on the lives of people with chronic pain, this study tested the possible correlation between disability and the variables analyzed: self-efficacy, pain intensity, fatigue, and depressive symptoms.

A moderate negative correlation was identified between disability and self-efficacy, showing that the higher the self-efficacy score, the lower the disability score. On the other hand, there was no significant correlation between disability and pain intensity, which confirms findings from other studies, which indicate absence of a linear relationship between these two concepts[29–30].

A research conducted in Japan analyzed disability, self-efficacy, anxiety and depression, and pain intensity in people with chronic pain[29]. The results showed that changes in anxiety and depression were not associated with disability, while increased self-efficacy was related to decreased disability, but pain was not correlated with disability[29]. Other authors suggest that the treatment for chronic pain should focus on improving self-efficacy beliefs, which have the potential to contribute to reducing disability[22,29].

The analysis of the relationship between disability and fatigue showed a moderate positive correlation for both the intensity and the impact of fatigue, indicating that the worse the fatigue, the greater the disability. Similar findings were observed in a Portuguese study, which showed a significant relationship between pain and fatigue and also between fatigue and disability in people with chronic pain.

The assessment of the relationship between disability and depressive symptoms in this study showed a moderate positive correlation, indicating that the more depressive symptoms, the greater the degree of disability. One study suggests that working to reduce these symptoms can be considered a significant plan for reduction of disability[7].

This study has limitations that should be pointed out. The main one is the sample size, considered small, even for a pilot study. In the recruitment phase, some participants reported financial difficulties to pay for transportation to participate in the PCDC sessions, in addition to medical consultations and exams on these same dates, factors that could explain the loss of patients over the course of the intervention. Another limitation of the study is the final assessment, with data collection instruments applied by the interventionists themselves, which may have influenced the participants' responses.

CONCLUSIONS

The brief interprofessional intervention contributed to the improvement of self-efficacy perception and reduction of disability, pain intensity, fatigue, and depressive symptoms in people with chronic pain. This intervention can be applied in primary health care and in specialized outpatient services as a complementary strategy to pharmacological treatment. Considering that this study was a pilot study, it is suggested to test the effectiveness of this intervention proposal for chronic pain with more robust research designs and with larger samples.

RESUMO

Objetivo: Testar os efeitos de uma intervenção interprofissional breve para manejo da dor crônica. **Método:** Estudo piloto do tipo antes e depois. A intervenção interprofissional breve teve enfoque psicoeducativo e foi baseada na Teoria da Autoeficácia, com utilização de estratégias da Terapia Cognitivo-Comportamental. A finalidade da intervenção foi melhorar o manejo da dor crônica. Realizada em grupo, ao longo de seis semanas, com um encontro semanal de duas horas, incluindo estratégias educativas sobre manejo da dor, alongamento e técnicas de relaxamento. Autoeficácia, intensidade da dor, incapacidade, fadiga e sintomas depressivos foram avaliados. Os dados foram analisados por meio do teste t-pareado e correlação de Pearson. **Resultados:** Participaram do estudo adultos com dor moderada a intensa. A análise pós-intervenção mostrou melhora significativa da autoeficácia (p = 0,004) e redução significativa da intensidade da dor (p = 0,024), incapacidade (p = 0,012), fadiga (p = 0,001) e sintomas depressivos (p = 0,042). **Conclusão:** Os efeitos da intervenção interprofissional breve foram positivos para manejo da dor crônica. Sugere-se estudos com desenhos mais robustos e amostra ampliada para confirmar estes achados.

DESCRITORES

Dor Crônica; Educação em Saúde; Terapia Cognitivo-Comportamental; Autoeficácia; Manejo da Dor.

RESUMEN

Objetivo: Probar los efectos de una breve intervención interprofesional en el manejo del dolor crónico. **Método:** Estudio piloto, de tipo antes y después. La breve intervención interprofesional, de enfoque psicoeducativo, estuvo basada en la Teoría de la Autoeficacia, con el uso de estrategias de Terapia Cognitivo-Conductual. La intervención tuvo como propósito mejorar el manejo del dolor crónico. Se realizó en grupo durante seis semanas, con una reunión semanal de dos horas, incluidas estrategias educativas sobre el manejo del dolor, estiramiento y técnicas de relajación. Se evaluaron la autoeficacia, la intensidad del dolor, la discapacidad, la fatiga y los síntomas depresivos. Los datos se analizaron utilizando la prueba t pareada y la correlación de Pearson. **Resultados:** En el estudio participaron adultos con dolor de moderado a severo. El

análisis posintervención apuntó a una mejora significativa en la autoeficacia (p = 0,004) y una significativa reducción en la intensidad del dolor (p = 0,024), discapacidad (p = 0,012), fatiga (p = 0,001) y síntomas depresivos (p = 0,042). **Conclusión:** Los efectos de la breve intervención interprofesional fueron positivos en el manejo del dolor crónico. Se sugieren estudios con diseños más robustos y una muestra más grande para confirmar estos hallazgos.

DESCRIPTORES

Dolor Crónico; Educación en Salud; Terapia Cognitivo-Conductual; Autoeficacia; Manejo del Dolor.

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