Evaluation of a multidisciplinary team in chronic pain treatment: interventional and prospective study

Avaliação de uma equipe multidisciplinar no tratamento da dor crônica: estudo intervencionista e prospectivo

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ABSTRACT

BACKGROUND AND OBJECTIVES: The multidisciplinary approach involves more than one specialist in the health field in order to obtain more effective treatment for patients with chronic pain. The aim of this study was to assess whether the multidisciplinary approach is effective in the treatment of patients with chronic pain, as well as to analyze the therapeutic response of these patients using scales for measuring neuropathic pain, pain intensity and quality of life.
METHODS: Twenty-seven patients were evaluated, with a mean age of 56.85±12.17 years. They remained in follow-up with a multidisciplinary team for 4 months and were evaluated at the beginning and end of treatment using the visual analog scale, Leeds Pain Scale for Neuropathic Signs and Symptoms and the Short Form-36 quality of life questionnaire.
RESULTS: Results showed a symptomatic improvement of the patients, with regard to the reduction of pain intensity, improvement of functional capacity, mental health and general health condition, with the values found before and after intervention from 30.10% to 58.80% (p=0.004), 33.7% to 57.78% (p<0.001), 43.41% to 67.56% (p=0.002), 40.19% to 65.07% (p=0.001), respectively, in addition to the reduction of the subjective pain sensation measured by the visual analog scale with a pre-treatment median of 8 and median at the end of 2 (p<0.001).
CONCLUSION: The study confirmed that the treatment performed by a multidisciplinary team improves not only the level of pain, but also directly affects the quality of life of patients.
Keywords: Chronic pain, Pain, Quality of life.

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RESUMO

JUSTIFICATIVA E OBJETIVOS: A abordagem multiprofissional envolve mais de um especialista da área da saúde para obter tratamento mais efetivo do paciente com dor crônica. O objetivo deste estudo foi avaliar se a abordagem multidisciplinar possui eficácia no tratamento de pacientes com dor crônica, assim como analisar a resposta terapêutica destes pacientes com a utilização de escalas para aferição de dor neuropática, intensidade da dor e qualidade de vida.
MÉTODOS: Foram avaliados 27 pacientes, com idade média de 56,85±12,17 anos. Permaneceram em acompanhamento com equipe multidisciplinar por 4 meses e foram avaliados no início e ao final do tratamento pela escala analógica visual, *Leeds Pain Scale for Neuropathic Signs and Symptoms* e o questionário de qualidade de vida *Short Form-36*.
RESULTADOS: Observou-se melhora sintomática dos pacientes, no que diz respeito à redução da intensidade da dor, aperfeiçoamento da capacidade funcional, saúde mental e estado geral de saúde, sendo os valores encontrados pré e pós-intervenção de 30,10% para 58,80% (p=0,004), 33,7% para 57,78% (p<0,001), 43,41% para 67,56% (p=0,002), 40,19% para 65,07% (p=0,001), respectivamente, além da redução da sensação subjetiva de dor aferida pela escala analógica visual com mediana pré-tratamento de 8 e ao final de 2 (p<0,001).
CONCLUSÃO: O estudo confirmou que o tratamento realizado por equipe multidisciplinar especializada em dor apresentou melhora e aumento da qualidade de vida dos pacientes.
Descritores: Dor, Dor crônica, Qualidade de vida.

INTRODUCTION

The prevalence of chronic pain (CP) in Brazil has varied between 29.3 and 73.3%, affecting more women than men and more frequently affecting the dorsal/lumbar region; however, more precise information is lacking[1,2]. A multiprofessional pain treatment involves more than one health specialist, among specialist physicians, nurses, physical therapists, occupational therapists, psychologists or physical educators, so that a broad approach can be taken to understand the biopsychosocial spheres involving the patient and control the pain[3].
The study on the impact of physical activity in patients with CP has grown exponentially in the last 25 years, and most studies evaluate the improvement of physical therapy associated with

cognitive-behavioral therapy (CBT), adapted to the patient's needs, including physical activity, pharmacological treatment, behavioral therapy, and psychoeducation, and may be a more effective way to treat CP and improve quality of life (QoL)[4,5].

The aim of this study was to evaluate whether the multidisciplinary approach is effective was treating patients with CP, as well as to analyze the response of these patients to the treatment.

METHODS

Interventional, longitudinal, prospective, non-randomized, analytical study conducted between February 2018 and December 2019, which included individuals with a diagnosis of CP treated at the outpatient clinic of a tertiary hospital.

The patients received care with physical therapy, hydrotherapy, psychology, physical educators, and physiatrist professionals for 4 months. The appointments were individual or in groups, depending on the type of therapy and the needs of each participant. Thus, during the week, each patient attended two individual physiotherapy sessions, when the following were applied: stretching, strengthening, and kinesiotherapy techniques; a psychoeducation session on pain held by the physiatrist; a collective psychotherapy session, with CBT and hypnotherapy; and a body awareness session. Two months after starting treatments, the patients also had a weekly hydrotherapy session in warm water with relaxation and floating techniques, and a physical activity session with a physical educator for stretching and strengthening.

The inclusion criteria were patients seen at the pain clinic with pain lasting more than 3 months, with intensity greater than or equal to 3 or values higher than 12 in the Leeds Pain Scale for Neuropathic Signs and Symptoms (LANSS).

The exclusion criteria were age under 17 years old, three consecutive absences from therapy without adequate justification, inability to perform physical activity due to cardiovascular risk, and those in need of other treatments.

After analysis and identification of patients with CP profile in the pain outpatient clinic, appointments for evaluation of inclusion and exclusion criteria were scheduled through the telephone for application of questionnaire and instruments.

The assessment of pain relies on numerous measuring tools, which can be used both quantitatively and qualitatively.

The patients were evaluated with the LANSS, visual analog scale (VAS), Short Form-36 adapted QoL questionnaire (SF-36) at the time of admission and at the end of the process. During treatment, members of the multidisciplinary team held monthly meetings to discuss the cases, with the objective of tailoring treatment to each participant.

The VAS consists of a horizontal or vertical line 10cm long, marked at one end with the classification "no pain" and at the other end "maximum pain". When descriptive terms such as "mild," "moderate," and "intense" or increasing numbers from zero to 10 are added, it's called a Graphic Rating Scale. The difference in pain intensity measured at two different times by the VAS represents the real difference in pain magnitude and is the biggest advantage of this tool compared to others. A reduction of 20% in CP and 12% for acute is considered clinically significant[6,7].

LANSS was used to distinguish the predominant type of pain, considering the coexistence of neuropathic and nociceptive pain in the same patient. Five descriptive items and two items based on the physical examination are evaluated, with scores from zero to 24 points, with one section exploring the qualitative aspects and the other the sensorial aspects of pain. When the values found are below 12, one can classify it as "predominantly nociceptive pain"; higher or equal to 12 points speaks in favor of "predominantly neuropathic pain"[8].

The SF-36 is made up of 36 questions, one that measures the health state transition in a one-year period and is not used in the scales calculation, and the rest, which are grouped into eight scales or domains. The higher scores indicate a better health condition (100 points)[9].

The eight scales of the SF-36 are: functional capacity (10 items), physical aspects (4 items), pain (2 items), general health condition (5 items), vitality (4 items), social aspects (2 items), emotional aspects (3 items), and mental health (5 items), and in two summary measures: physical and mental component[10].

The SF-36 provides a useful profile for understanding population differences in physical and mental health status, chronic diseases, and other medical conditions, and for evaluating the effect of treatments on the overall health condition, with levels of reliability and validity that are higher than the minimum recommended standards, making this tool ideal for use combined with other questionnaires in population surveys[9,11].

Patients were contacted by telephone for outpatient evaluation, and those who met all criteria for inclusion were invited to participate.

The sample size calculation was performed using the G Power 3.1 software based on the a posteriori sampling power calculation method. The mean difference in scores before and after the intervention was used to obtain the sample effect size. Considering a sampling error of 5% and confidence interval of 95%, the minimum meaningful sample for the study was 21 patients, thus achieving a sampling power of 99.2%.

Data were stored in the institution's electronic medical records, identified by the respective number, and in an Excel spreadsheet on the researcher's laptop. All participants started the therapies and underwent a new data collection and questionnaire application at the end of the 4 months of treatment. The data obtained before and at the end of the therapies were analyzed with the statistical package SPSS (26.0). The characterization of the sample was done by means of absolute frequency (n) and relative frequency (%). The histogram chart was made in order to demonstrate the distribution of the patients' age. Parametric and non-parametric statistical tests were performed on each continuous variable by means of the Shapiro-Wilk test. The comparison of LANSS, VAS, and QoL at the beginning and end of the study was performed by the paired *t*-test and Wilcoxon's test. Spearman correlation was performed from the deltas (final - initial) of each variable to identify the relationship between the variation observed in the data. The significance level adopted was 5% ($p<0.05$).

The Free and Informed Consent Term (FICT) and the Acceptance Term were applied and signed by all participants, clarifying the research procedures. The project was evaluated and approved by the Research Ethics Committee of the University Center of Brasília - CEP/UniCEUB, under opinion # 031083/2019 with CAAE 10491819.9.0000.0023.

Statistical analysis

The collected data were tabulated in Excel 2019 and analyzed descriptively in light of the existing literature on the subject.

RESULTS

Of 79 evaluated patients, 27 were excluded at the initial evaluation, 52 started the rehabilitation program, 25 abandoned treatment, and 27 completed the 4-month follow-up period with the multidisciplinary pain team.

The reasons for abandonment were: 22 patients had more than 3 consecutive absences in therapies, 2 required other treatment during the study and 1 patient was not allowed by the cardiologist to perform activities due to high cardiovascular risk.

Most patients were female (81.5%), 51.9% were between 35 and 59 years old, and 48.1% were between 60 and 79 years old. Most (66.7%) had only 1 diagnosis, 25.9% had 2 diagnoses, and 7.4% had 3 diagnoses, whose prevalence is shown in table 1, highlighting that a patient could present more than one syndrome or disease, which is why there are more diagnoses than patients.

Table 1. Prevalence of diagnosis in the sample

	n	%
Back pain	11	28.9
Fibromyalgia	6	15.8
Others	3	7.9
Peripheral polyneuropathy	11	28.9
Chronic myofascial pain syndrome	7	18.4
Total	38	100.0

n = cumulative frequency; % = relative frequency

The characteristic of pain evaluated by the LANSS instrument at the beginning and end of treatment is presented in figure 1 and the pain intensity assessed by the VAS at the beginning and end of treatment is presented in figure 2.

The quality of pain assessed by the SF-36 at the beginning and end of the process showed improvement in all evaluated subgroups, as evidenced in table 2.

There was a significant improvement in the patients' pain intensity as can be seen by comparing the degree of correlation between the variation in scores obtained by the LANSS and VAS scales, and significance between the improvement in QoL and reduction of the LANSS score in the domains of functional capacity, vitality, mental health, pain and general health condition. However, there was no improvement when comparing the intensity of pain by the VAS associated with the SF-36. (Table 3).

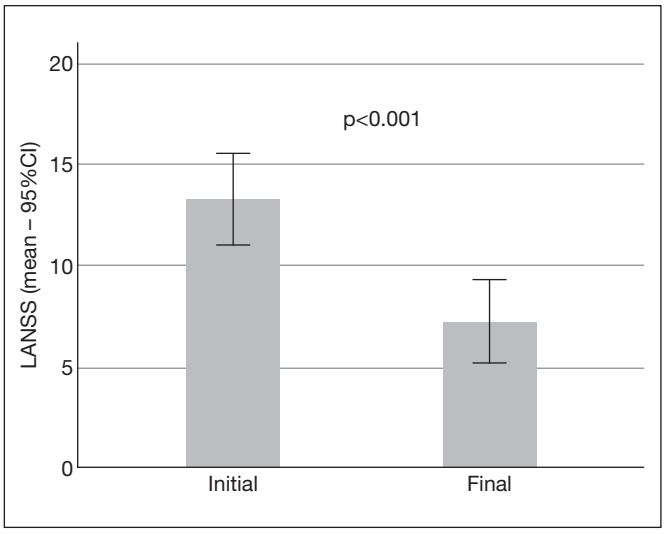

Figure 1. Characteristic of pain evaluated by the Leeds Pain Scale for Neuropathic Signs and Symptoms instrument at the beginning and end of treatment

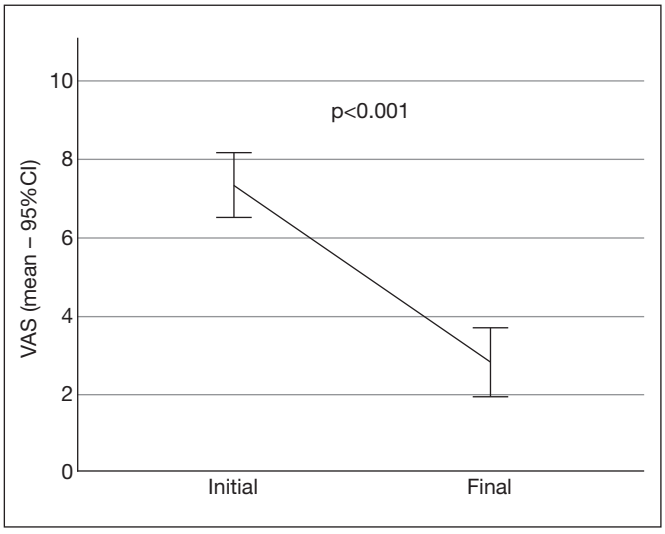

Figure 2. Intensity of pain assessed by the visual analog scale at the beginning and end of treatment

Table 2. Quality of life in the beginning and end of treatment

	Intervention		p-value
	Initial	Final	
Functional capacity	33.70 ± 18.53	57.78 ± 21.36	<0.001*
Limitation by physical aspects	11.11 ± 16.01	47.22 ± 44.58	0.002**
Limitation by emotional aspects	17.28 ± 31.18	44.44 ± 38.12	0.006**
Vitality	34.83 ± 17.55	57.41 ± 24.07	0.001*
Mental health	43.41 ± 22.94	67.56 ± 20.94	0.002*
Social aspects	46.30 ± 21.60	71.30 ± 25.43	<0.001**
Pain	30.10 ± 15.72	58.80 ± 21.48	0.004**
General health condition	40.19 ± 21.05	65.07 ± 18.18	0.001*

*Paired *t*-test; **Wilcoxon test

Table 3. Variation in scores obtained by LANSS and visual analog scales and SF-36 domains

	LANSS		VAS	
	r	p-value	R	p-value
Functional capacity	-0.37	0.04	-0.27	0.17
Limitation by physical aspects	-0.36	0.07	-0.33	0.09
Limitation by emotional aspects	-0.15	0.46	-0.18	0.38
Vitality	-0.47	0.01	-0.32	0.10
Mental health	-0.39	0.04	-0.29	0.15
Social aspects	-0.26	0.19	-0.02	0.91
Pain	-0.57	<0.001	-0.19	0.33
General health condition	-0.38	0.04	-0.35	0.08

DISCUSSION

The multidisciplinary approach for 4 months showed a positive effect in the treatment of patients with CP, possibly because they experience a complex and continuous process of acceptance of chronic suffering when submitted to rehabilitation with the specialized team, since after being instructed about the etiology and pathophysiology of pain they learn to deal with the triggering factors and the importance of the therapeutic process for the success of treatment.

In this study, the highest prevalence of CP was in females (81.5 vs 18.5%) and in the age group between 50 and 60 years old (52.85%), in agreement with the data of the epidemiological study[2], which also showed a higher prevalence in this gender (34.7 vs 20.6%) and age group between 45 and 64 years (33.9%), a pattern evidenced in another review[1].

Only 25% of reviewed studies reported any lesion resulting from therapy specifically for pain, showing that physical activity in general is acceptable and unlikely to cause harm to patients. Among possible risks, hypotension in aquatic therapies and the emergence of new pain when the therapy is not performed by a specialized professional are highlighted[12].

The data from this study showed symptomatic improvement in the patients regarding reduction in pain intensity, improvement in functional capacity, mental health, and general health condition, as shown by the values found before and after the intervention, from 30.10 to 58.80% (p=0.004), 33.7% to 57.78% (p<0.001), 43.41% to 67.56% (p=0.002), 40.19% to 65.07% (p=0.001), respectively. Results also showed a reduction in the subjective sensation of pain as measured by the VAS with a pre-treatment median of 8 and final median of 2 (p<0.001). Similar to the literature data, the multidisciplinary rehabilitation program used in this study worked on components such as psychotherapy for coping with the disease; CBT and hypnotherapy; physical therapy, with stretching and central desensitization techniques; hydrotherapy; breathing techniques; and physical activities such as strengthening and aerobic exercises. A considerable portion of the rehabilitation program was pain education, problem-solving counseling, and goals setting[13,14].

In the view of CBT, in pain catastrophizing, which can be defined by thoughts that are worse than the possible situations, the patient treats any negative experience or event during their daily life as intolerable, without taking other factors into consideration. This behavior was identified as a significant predictor for treatment withdrawal, that is, patients with this psycho-behavioral component were more likely to abandon the CP management program. This fact can be associated with the withdrawal of 25 patients included in the present study, approximately 48% of the total and a prevalence higher than 19% found in the study[15]. This high percentage of dropouts may also be related to the small number of participants[15].

The approach performed by the multiprofessional team provided a beneficial effect on the comorbidities associated with CP, including all domains of the SF-36, with a statistically significant increase of 71.45% in functional capacity (p<0.001), 325% in limitation by physical aspects (p=0.002), 157.17% in limitation by emotional aspects (p=0.006), 64.82% in vitality (p=0.001), 55.63% in mental health (p=0.002), 53.99% in social aspects (p<0.001), 95.34% in pain (p=0.004) and 61.90% in general health condition (p=0.001). As observed in the study[16], the comparison between multidisciplinary treatment and the biomedical model in patients with chronic low back pain, judging such items as interference with daily life, self-control, mood, social aspects, anxiety and depression, concluded that there is no association between the improvement in pain intensity by the VAS and the QoL assessed by the SF-36.

Patients treated multidisciplinary who did not have expressive pain relief showed improvement in other relevant biopsychosocial aspects of QoL. Such discrepancy was also found found in the comparison between pain severity measured by VAS and the Swedish Multidirectional Pain Inventory (MPI-S), when comparing the effects before and after the therapeutic approach, in which the 4-week intervention didn't affect pain assessed by the VAS, but affected severity assessed by the MPI-S[16-18].

The present study made evident that the treatment of CP patients by a multidisciplinary team can be positive, nevertheless, it presents some limitations. Generalizing results is largely not feasible, considering the number of patients in the sample, the number of CP patients with different etiologies, and the lack of a control group, which can also be considered a limiting factor, making it impossible to compare two groups exposed to different interventions. Further studies are needed to ascertain the effectiveness of continuity after the end of the rehabilitation program, to determine the duration of the rehabilitation program and which is the best treatment technique, as well as to evaluate the cost-benefit ratio.

CONCLUSION

The study confirmed that treatment performed by a multidisciplinary team specialized in pain shows improvement not only in pain intensity, but also in the patients' QoL.

AUTHORS' CONTRIBUTIONS

Leandro Monteiro Maemura

Conceptualization, Project Management, Research, Writing - Preparation of the original, Writing - Review and Editing, Validation

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