

APPLICABILITY AND EFFECTIVENESS OF COGNITIVE- BEHAVIORAL THERAPY IN PATIENTS WITH CHRONIC PAIN

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Abstract: In recent decades, chronic pain has been the object of study by health researchers around the world, in an attempt to understand the origins and treatments of this symptom, which affects, on average, 30% of the world's population. **Goal:** in this sense, the objective was to understand the treatment processes for chronic pain from the Cognitive-Behavioral Therapy approach and its effectiveness in these patients. **Method:** the method used was the integrative literature review, in which procedures were used to collect articles from research with an empirical method, published in the *Scielo*, *Pepsic*, *Bvspsi* and *Pubmed* databases. **Results:** the results found were significantly relevant, considering that the interventions adopted with Cognitive-Behavioral Therapy helped patients to reduce the main manifestations related to chronic pain, such as: beliefs of incapacity and physical and emotional limitation; depressive and anxiety symptoms; social and work withdrawals; improved sleep and quality of life; reduction in the perception of chronic pain intensity and decrease in recurrent pain. The effectiveness of such interventions has been demonstrated in the literature through experimental studies. **Conclusion:** it was concluded that Psychology has a fundamental role in the treatment of patients with chronic pain, and the interventions adopted by Cognitive-Behavioral Therapy are effective in most cases, however, more studies need to be adopted for a greater proof of the effectiveness of such interventions.

Keywords: Chronic Pain. Psychology. Cognitive behavioral therapy. Treatments. Efficiency.

INTRODUCTION

In recent decades, chronic pain has been the object of study by health researchers around the world, in an attempt to understand the origins and treatments of this symptom,

which affects, on average, 30% of the world's population, according to the *International Association for the Study of Pain* (IASP, 2019). The Sociedade Brasileira de Estudos da Dor (SBED, 2018), indicates that the prevalence of chronic pain in the Brazilian population is on average 37%, thus being considered a public health problem, as it causes absenteeism, temporary or permanent incapacity for activities labor and social problems and an increase in other diseases and comorbidities, thus providing high costs to the health system.

The *International Association for the Study of Pain* (IASP, 2019) and the World Health Organization (WHO, 2020) define pain as “*an unpleasant sensory and emotional experience associated with or similar to that associated with actual or potential tissue damage, or described in terms of such an injury*”. In this sense, pain cannot be considered just a physical sensation; subjectivity and emotional, social and cultural aspects pervade the individual's pain, thus revealing pain as a multifactorial and multidimensional phenomenon, which encompasses cognitive, sensory, emotional, behavioral, interpersonal, cultural and social aspects of the individual (DIAS, 2007).

Pain, in general, has a primordial function in the life of a human being, since it serves as an alert for something that is not working well in the body, to warn of some danger or threat in sight and even to protect and preserve life. When the pain, however, is persistent and exceeds the limits of this primordial function, it starts to cause harm that goes far beyond physical discomfort. Therefore, acute pain is distinguished from chronic pain. (CARVALHO, 1999)

Acute pain is related to a causal agent and has a short duration, with the objective of avoiding danger or imminent threat. Its etiological diagnosis is simple to detect, due to physical causal agents and biological markers, disappearing soon after the elimination of

such threat or causal agent. Chronic pain, on the contrary, lasts a long time and remains constant, even after the elimination of the causative agent; in most cases, even, it is complex to identify what caused or what started the chronic pain. Chronic pain is also characterized by persistence and regularity, lasting more than three months or more than six months (CARVALHO, 1999)

When not treated, chronic pain can cause several damages and consequences in the patient's psychosocial life, such as difficulties in interpersonal relationships, social isolation, work leave, feelings of hopelessness and incapacity, withdrawal behaviors, conflicts with friends and family, low self-esteem, anxiety and depressive symptoms, pharmacological dependence, sleep problems, fatigue, frustration, psychiatric disorders, among others. (DAYS, 2007)

Chronic pain, therefore, more than a symptom, becomes a disease, and cannot be limited to medical treatment restricted to physical and organic causes; it is more than necessary to understand in which dimensional aspects - which go beyond the physical - this pain bothers and causes damage, in addition to the search for means that can mitigate this endless cycle of suffering, which interferes in all spheres of the individual's life. (LOPES; FERRARI; JORGE, 2019)

It is common, in health professionals' offices, to verify the association of chronic pain with symptoms of stress, depression, anxiety and disability, however, there is no psychological cause for pain; what exists is the interaction between the physical, psychic and social aspects that generate the experience of pain. Pain is sensation (physical), emotion (psychic) and social (thought and culture), therefore, the idea that anxiety causes pain can be mistaken, since it is the three factors (physical, psychic and social) that interact to the pain experience. (SIQUEIRA, 2014)

It is in this sense that many physicians currently recognize the need to treat these patients in an interdisciplinary way within the health area, involving different professionals, such as physiotherapists, nurses, nutritionists, and, mainly, psychologists, considering the fact that chronic pain crosses an individual's biopsychosocial dimensions, and that this reality needs to be validated for better treatment efficacy. (SIQUEIRA, 2014)

It is from that moment that Psychology, with its theories, interventions and techniques, becomes more than an ally as a resource to enter this agenda, in the sense of trying to understand the origins and causes of these chronic pains and what to do to intervene and treat this pain in a more efficient, thus providing more relief, well-being and quality of life to patients. (SIQUEIRA, 2014)

According to Cognitive-Behavioral Therapy (CBT), psychic suffering and disorders in general are closely linked to the vision that the patient has about himself, the world and the future, the so-called Cognitive Triad (BECK, 2008).

In the specific case of chronic pain, the view that the patient has about himself is of low self-efficacy, feeling incompetent and incapable of dealing with this pain and the consequences that arise from it; about the world, a feeling of fear and threat of not knowing how to deal with it, since external events and stimuli can cause or increase your pain; and, about the future, catastrophic thoughts that this chronic pain will possess him and make him incapable of a healthy and quality life. (CAMACHO; AARTE, 2011)

In chronic pain therapy, the main strategy is to make the patient identify what are the uncomfortable emotions and stressful events that provoke or intensify chronic pain, or their fears about it, and learn to manage or seek alternatives to the pain. situation. By identifying the patient's beliefs and distorted

thoughts about pain, it is possible to work on thinking changes and cognitive restructuring, whose objective is to make the patient feel better, have a better quality of life, with social and work activities healthier, and who have better control over pain, realizing their self-efficacy and eliminating fears and catastrophic thoughts. (CAMACHO; AARTE, 2011)

In CBT theory and practice, the main psychological strategies and interventions for chronic pain are: Dysfunctional Thought Recording (DPR), Cognitive Restructuring, Psychoeducation, Relaxation Training, Stress Management Training (SCT), Behavioral Skills Training, *Mindfulness*, Cognitive Distraction, Problem Solving and Cognitive Visualization. (BORGES; LUIZ; DOMINGOS, 2009).

The international literature brings some studies and randomized clinical trials showing the effectiveness of CBT in groups of studies that underwent the standard treatment for chronic pain (use of medication and physiotherapy) and with groups that included CBT in their treatment. After ten weeks of study, the second group showed significant improvements in the reduction of depressive symptoms, thoughts of physical limitation and limitation of emotional aspects, when compared to the first group. (CASTRO et al., 2012)

Some studies also bring randomized clinical trials that evaluate the effectiveness of treatments for patients with fibromyalgia, with a group that used drugs and a group that, in addition to drugs, underwent ten weekly sessions of CBT, resulting in a reduction of symptoms anxiety and catastrophic thoughts about chronic pain and its limitations (CAMPAYO et al, 2009)

Articles in the national literature were also found, with empirical studies not exactly resulting in a decrease in painful pain, but in the acquisition of functional behaviors for managing and coping with pain (SANTANA;

TAVARES, 2015)

The present study is justified due to its complexity and academic and social relevance; socially, research of this nature is relevant for bringing a better understanding of this phenomenon, informing and helping society about characteristics, treatments and studies, thus favoring the understanding and acceptance of treatments by the population. Academically, the relevance of the topic is due to the fact that the numbers and forms in which chronic pain is present in the population are increasing, which makes research instruments such as this guide to health professionals, including psychologists, who work or will work in these areas. processes with your patients.

From the search for the deepening of these issues, a fundamental question arises in the area of psychology, related to the theme of chronic pain: what are the contributions of Psychology, specifically the CBT approach in the process of the main treatment strategies adopted and their effectiveness, for patients who suffer from chronic pain? Therefore, the general objective of this study was to understand the treatment processes for chronic pain from the CBT approach and its effectiveness in these patients. By specific objectives, it was defined: 1) Identify the main CBT treatment strategies for chronic pain; and 2) To verify the effectiveness of CBT treatment for patients with chronic pain.

METHOD

This is a descriptive and exploratory study, of a qualitative nature. For the To reach the proposed objectives, it was decided to carry out an integrative literature review, inspired by the procedures of the systematic literature review. The main objective of the integrative literature review is to gather knowledge on a subject - identifying similarities and differences in the articles found - and, thus, to

support this significant study for the field of Psychology. (SOUZA; SILVA; CARVALHO, 2010)

According to Souza, Silva and Carvalho (2010), the integrative review is a research method from which it becomes possible to carry out syntheses of knowledge and the integration of the practical applicability of the results obtained from the analysis of significant studies.

DATA COLLECTION PROCEDURES

The search for empirical articles, available electronically, was performed on the scientific database platforms of the *Scientific Electronic Library Online (Scielo)*; Electronic Journals in Psychology (Pepsic); Virtual Health Library - Psychology (*BVS-Psi*); and *National Library of Medicine (Pubmed)*. The following descriptors were used with Boolean operators: “pain AND chronic AND psychology”; “psychological intervention AND pain”; “psychology AND pain”; “chronic AND psychology”; “cognitive-behavioral AND pain”; “chronic pain”; “psychological interventions”; “cognitive-behavioral therapy AND pain AND efficacy”.

The screening of the articles followed the previously established inclusion criteria: chronic pain, treatments and psychological interventions from the cognitive-behavioral therapy approach, evaluation for the investigation of chronic pain, types of chronic pain and articles in Portuguese and English that were within the time frame of the last ten years. By expanding the searches also for international productions, the focus is on identifying these productions and expanding scientific knowledge in psychology - in the proposed field of study - coming from other countries.

The following previously established exclusion criteria were used: articles that did not come from research with empirical

methods, such as review articles, essays and reviews; articles that did not address the use of CBT and/or articles that did not meet the objectives of this project. This way, a total of 65 articles were found, selected as follows:

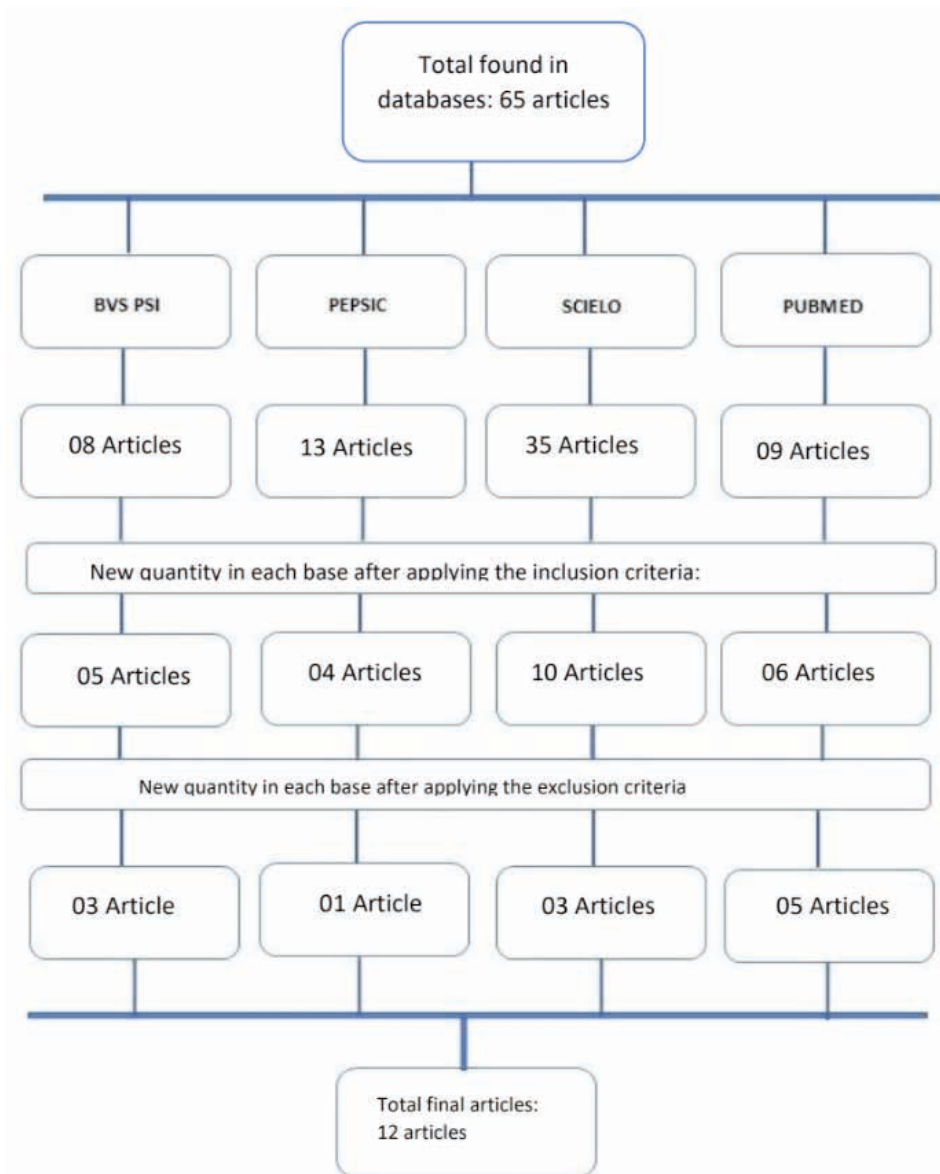
In the BVS-PSI, 08 articles were found and, after applying the inclusion criteria, 05 articles were selected. In the next step, after applying the exclusion criteria, only 03 articles were selected.

In PEPsic, 13 articles were found. Of these, after applying the inclusion criteria, there were 04 articles. In the other step, with the application of the exclusion criteria, 03 articles were excluded for not being published in Portuguese and English - thus not meeting the criteria, and for not meeting the objectives. Thus, only 01 article was selected.

On the SCIELO platform, 35 articles were found. After applying the inclusion criteria, 10 articles were selected. Among those who were not selected, a good part did not bring CBT as an intervention approach, or they were not within the expected time frame, therefore not meeting the proposed objective. In the next step, after applying the exclusion criteria, only 03 articles remained.

At PUBMED, 09 publications were initially selected. Of these, after applying the inclusion criteria, 06 were selected, and, in the stage of applying the exclusion criteria, 05 works remained. In the end, therefore, a total of 12 articles were compiled, which covered the theme and proposed objectives of the study, as shown in Figure 1.

1. Article Selection Process



DATA ANALYSIS PROCEDURES

Data analysis procedures were performed after compilation, with selected articles listed in Chart 1 (see Appendix). These articles were analyzed in full and in depth, verifying the crucial elements for the analysis, organization and elaboration of the results and discussion regarding applicability and effectiveness.

Respective analysis category or thematic axes are highlighted. From this analysis, according to their themes, it was possible to

extract the data and results found and elaborate the following thematic axes : Thematic Axis 01: Applicability of CBT in the Treatment of Patients with Chronic Pain: when medication, scalpels and needles are not enough; and Thematic Axis 02: Evidence of the Efficacy of CBT for the Treatment of Chronic Pain: advances and some challenges.

Thematic Axis 01: Applicability of CBT in the Treatment of Patients with Chronic Pain: when medication, scalpels and needles are not enough.		
Article Number	AUTHOR / Year	Article Title
1.	SANTANA; TAVARES (2015)	Helplessness schema in a patient with chronic pain and depressive symptoms.
2.	AZEVEDO; SANTOS (2011)	Psychological Intervention in Hospital Monitoring of a Burned Child.
3.	GARIOLI; PAULA; ENUMO (2017)	Evaluation of Pain <i>Coping</i> in Children with Sickle Cell Anemia.
4.	SILVA; ENUMO (2016)	Pain Diary in Psychological Assessment and Intervention with Adolescent Dancers.
5.	GAVI; SEW; MACEDO; OLIVEIRA; SILVA (2018)	The Use of the Mini Mental State Examination Collaborates in the Treatment of Fibromyalgia.
6.	SALVETTI; COBELO; VIANA; CANAREZI; CALEGAREL (2012)	Effects of a Psychoeducational Program on Chronic Pain Control.
Thematic Axis 02: Evidence of the Efficacy of CBT for the Treatment of Chronic Pain: advances and some challenges.		
Article No.	AUTHOR / Year	Article Title
7.	CASTRO; DALTRO; KTAYCHETE; LOPES (2012)	Cognitive-Behavioral Therapy improves Quality of Life in Patients with Chronic Musculoskeletal Pain.
8.	OAK; ARAUJO; HAVE; SAY (2020)	Effects of Meditation Associated with Education in the Neurosciences of Pain in Adults with Fibromyalgia: A Controlled and Randomized Clinical Trial.
9.	MARTINS ; _ GRITTI ; J UNIOR ; THE RAÚJO ; DAYS ; _ FOSS; ANDRADE; ROCK (2009)	Randomized and Controlled Study of a Group Therapeutic Intervention in Patients with Fibromyalgia Syndrome.
10.	SINDEL ; ESMAEILZADEH ; SERTEL-BERK ; ORAL (2016)	The Effects of Short- and Long-Term Interdisciplinary Treatment Approaches in Women with Fibromyalgia: A Randomized Clinical Trial.
11.	CAMPAYO ; WHITE ; RODERO ; MAGALLON ; ALDA ; ANDRÉS ; LUCIANO ; HOYO (2017)	Efficacy of Psychological and Pharmacological Treatment of Catastrophizing in Patients with Fibromyalgia: a Randomized Clinical Trial.
12.	MAGNUS OLASON ; RÚNAR HANDRASON ; INGA H JÓNSDÓTTIR ; HLÍN KRISTBERGSDÓTTIR ; MARK P JENSEN ; (2017)	therapy for depression and anxiety in an interdisciplinary rehabilitation program for chronic pain: a randomized clinical trial with three-year follow-up.

Table 2 – Selection of Articles with their Thematic Axes

Source: Own elaboration, 2021.

RESULTS AND DISCUSSION

From the selected articles, regarding gender, there was a prevalence of women among patients affected by chronic pain and/or submitted to study programs. Of the 12 articles analyzed, 12 (100%) indicated the female gender, with varying ages (between 08 and 67 years old) as prevalent in the studies. Of these studies, when carried out with the adult public, the average age group was 50 years,

and, in children, the age ranged between 08 and 10 years.

As for the origin of the studies, the research took place in different Brazilian regions. In the Southeast region, São Paulo was the most relevant state among the selected publications, with 03 publications; still in this region, the state of Espírito Santo brought 02 publications. In the Northeast region, the states of Bahia and Sergipe brought 01

publication each, presenting relevant studies in the worked area. The other publications were from international studies, such as the United States, Spain and Iceland.

The largest number of publications comes from the area of Psychology (08), followed by the area of Medicine (Rheumatology), with 02 studies. There were also studies in the areas of Science and Cognition (01), and 01 of the studies – psychoeducational program – came from the field of Nursing, being developed by a nurse, with collaboration and involvement – regarding the application – of a multidisciplinary team.

As for the time frame worked, it was noticed that the years 2012, 2016 and 2017 were the years with the highest number of studies carried out and published – 02, 02 and 03 studies for each year, respectively; 01 study for the years 2009, 2011, 2014, 2015, 2018 and 2020; and the years 2010 and 2013 did not appear in the list of selected articles. Although the 2009 study is out of the time frame of the last 10 years, the importance and relevance of that study was understood to achieve the proposed objectives of this project, being considered, therefore, a highly relevant article.

From the analyzed studies, two thematic axes were elaborated that structured and objectified the analyzes for stratifying the results and discussion, which bring both the applicability of interventions and psychological techniques of CBT, as well as the evidence of the effectiveness of CBT for the treatment of chronic pain.

APPLICABILITY OF CBT IN THE TREATMENT OF PATIENTS WITH CHRONIC PAIN: WHEN MEDICATION, SCALPELS AND NEEDLES ARE NOT ENOUGH

CBT brings as a theoretical basis the interaction between automatic thoughts, emotions/feelings and behaviors. Thoughts

influence feelings, which in turn influence behavior. But this thinking is not always rational thinking; most of the time, it is the automatic thought that arises from an event or stimulus, which will direct an individual's emotions and behavior. Thus, the clinical practice of CBT is to identify these dysfunctional automatic thoughts and make the patient use other alternative and more functional thoughts. (VANDENBERGHE, 2005)

In this sense, in theory and practice of CBT, the main applicability, that is, the main psychological strategies and interventions used for the treatment of chronic pain are: Recording Dysfunctional Thoughts (RPD), Cognitive Restructuring, Training of Behavioral Skills, Resolution Training, Relaxation Training, *Stress Management Training* (SCT), *Mindfulness*, Cognitive Distraction, Psychoeducation and Cognitive Visualization. (BORGES; 2009)

About the existing instruments and scales for identifying, evaluating and monitoring chronic pain, the most found in studies and researches are: Psychological Interview/ Anamnesis ; *Likert* Scale for Pain; Visual Analog Scale (VAS); Visual Numerical Scale (VNS); Lipp-ISSL Stress Symptom Inventory; SF-36 Quality of Life Questionnaire; Anxiety and Depression Scales and the Brief Pain Inventory. (BORGES; 2009)

In analysis of the studies, according to the results of the research developed by Santana and Tavares (2015), in a case study of a patient with fibromyalgia, where thirteen sessions of psychotherapy with a CBT approach were performed, they indicated that there was no reduction of their pain with CBT interventions, but the levels of depressive symptoms were reduced, a condition that contributed to the development of functional behaviors that helped to reduce chronic pain.

These results are similar to those found

in the study brought by Azevedo and Santos (2011) where it was found that, during the 24 psychological consultations performed with a hospitalized and burned child brought in the study, there were positive changes in the child's mood and that he developed adaptive cognitive and behavioral strategies that contributed to the hospital experience. This same result is also presented in the study by Garioli, Paula and Enumo (2017) in which the 12 children who composed the sample developed, through problem solving and cognitive restructuring, more functional behaviors to adapt to hospitalization and chronic pain.

The study by Salvetti et al. (2012) is similar to the results presented here, regarding the reduction of disability and depressive symptoms from chronic pain, and also points to the continuity of these effects of interventions, which were maintained and could be verified in a new evaluation with the 79 patients, performed after six months of implementation of the Psychoeducational program.

Of the divergences between researches, the study by Azevedo and Santos (2011), contrary to Santana and Tavares (2015) points to the effective reduction of chronic pain through the applicability of CBT techniques, considering that, in the numerical scale, there was a reduction in the child's levels of pain. The applicability of CBT instruments was also brought up in the studies by Silva and Enumo (2016), where it was intended to describe and analyze the application of the pain diary in adolescent dancers, and in the study by Davi and Costa (2016), where by Through the Mini Mental State Examination, we sought to assess the cognition of patients with fibromyalgia. The results of both studies demonstrated the effectiveness of the instruments regarding the identification of the main sites of pain and its intensity, and regarding the screening of

cognitive deficits, respectively; these studies all resemble, therefore, also the others in this axis in terms of their functionalities, contributions and applications of the aforementioned instruments and techniques for clinical practice. All studies, with the exception of the study by Azevedo and Santos (2011) - which did not bring difficulties - point to research limitations, especially related to restrictions and sample sizes.

Data from the studies also demonstrate the large number of CBT techniques and interventions and their importance in adherence to the treatment of chronic pain. In research with drugs for chronic pain, significant positive results were also demonstrated when including the applicability of CBT in treatments beyond the use of medication, which gives patients better control and coping with pain, better adherence to treatment and improvement in quality of life.

THE EVIDENCE OF CBT EFFICACY FOR THE TREATMENT OF CHRONIC PAIN: ADVANCES AND SOME CHALLENGES

One of the main objectives of CBT clinical practice is to identify the patient's dysfunctional automatic thoughts and make the patient use other alternative and more functional thoughts. One of the most used and most effective techniques is the Dysfunctional Thought Record (DPR). With this technique, it is possible to identify which was the automatic thought that arose in the patient when he felt a certain uncomfortable emotion and when he behaved in a dysfunctional way. (KNAPP; BECK, 2008)

With the automatic thought identified, therapist and patient, collaboratively, will deal with this thought, looking for evidence to confirm or not this hypothesis, in addition to seeking alternative thoughts, closer to reality.

This strategy is called Cognitive Restructuring, used to challenge a patient's ways of thinking. (KNAPP; BECK, 2008)

Social and problem-solving skills training are also other very effective interventions used by CBT, among others, both for cognitive restructuring and for changing dysfunctional behaviors. (BECK, 2013).

In the case of chronic pain, CBT will help the patient to reassess the impact of pain on his life, helping him to restructure his beliefs, to seek more effective alternatives for pain management and to use thoughts and behaviors to learn to cope with it, thus promoting greater well-being and quality of life for this patient (CASTRO et al, 2012)

According to the randomized clinical trial carried out by Castro et al (2012), 54% of the participants in the Test Group (which received CBT techniques in the treatment of chronic pain) had a reduction in the perception of chronic pain, a reduction in their depressive symptoms and increase in quality of life (which includes improvement in physical limitations and functional capacity), while only 28% of the Standard Group (which did not receive CBT) showed a reduction in the perception of chronic pain, and none of the participants in this group showed improvement in quality of life and depressive symptoms. These results are very similar to studies by Carvalho et al (2020), who also proved, in a randomized clinical trial, that patients who were treated with Mindfulness *had* a reduction in chronic pain and depressive symptoms, compared to the group that did not receive this technique. This study also demonstrates a reduction in anxiety symptoms and an improvement in the quality of sleep of patients in the first group.

Contrary to the two cited studies, the randomized and controlled trial by Martins et al (2009) does not demonstrate a significant reduction in the perception of chronic pain in patients in the Test Group, who received CBT

techniques in an interdisciplinary program, but converges with the other studies in the results of reduction of symptoms of anxiety and depression, and in the improvement of the functional capacity of the patients.

Studies by Sindel et al (2016) prove that long-term CBT treatments for chronic pain are more effective than short-term CBT treatments. In the randomized clinical trial, a significant difference was found for the long-term group in terms of fatigue reduction, pain reduction and improved health and quality of life. No effective results were found, however, for the reduction of depression symptoms, which differs from the other studies cited so far.

The controlled and randomized clinical trial carried out by Magnus Ólason et al (2017) has as its main result the effects of the effectiveness of CBT in reducing chronic pain in the long term, in addition to improving the quality of life (which includes reducing fatigue and improvement of functional capacity) and the reduction of symptoms of depression and anxiety. These results were statistically proven, demonstrating that the beneficial effects of CBT continued to have long-term repercussions on patients, even after the end of treatment, for up to three years. In this case, unlike the studies by Sindel et al (2016), which bring long-term treatment as a greater probability of result, the studies by Magnus Ólason et al (2017) bring the effects of this treatment in the long term on the lives of patients, regardless of the duration of treatment.

The only study that failed to prove the effectiveness of CBT was the randomized clinical trial by Campayo et al (2017), however, it is necessary to consider that the referred study only tried to prove the reduction of catastrophizing of patients about chronic pain, comparing three groups : the first group called the Control Group,

which consisted of the standard treatment for chronic pain at the primary care level; the second group, called the CBT Group, which consisted of Cognitive-Behavioral Therapy sessions for treatment; and the third group, called the Pharmacological Group, which consisted of drug recommendations for fibromyalgia. The results showed that there was no significant difference between the three groups and no differences in patients' catastrophizing about chronic pain before and after treatments. This scale was measured by the PCS, a questionnaire composed of 13 self-assessed questions about catastrophizing, which comprises the dimensions: a) pain rumination; b) amplification of pain; and c) impotence over pain.

The other cited studies used as main instruments to validate, prove and monitor the effectiveness of CBT the Visual Analog Scale (VAS); the Brief Pain Questionnaire; the SF-36 Quality of Life Questionnaire; the Fibromyalgia Impact Questionnaire (FIQ); Post-Sleep Protocol; the SF-12 Quality of Life Program; the Numerical Pain Intensity Scale; the Mini Mental State Examination; the Hospital Anxiety and Depression Rating Scale; and the Beck Depression and Anxiety Inventories (the BDI and the BAI).

The results of the studies demonstrate that Cognitive-Behavioral Therapy (CBT) is effective for the treatment of chronic pain, resulting in a decrease in the perception of pain, a decrease in symptoms of depression and anxiety, an increase in the quality of sleep and an improvement in the quality of life and functional capacity of patients. Although some studies have shown disagreements regarding the ineffectiveness of reducing anxiety symptoms, pain perception and catastrophic thoughts, it is important to highlight the limitations that some studies have shown, such as, for example, the lack of control of the variables and the reduction of samples. On the

other hand, most of the randomized clinical trials presented carried out studies with clear and well-defined methods, using important instruments and assessment scales before and after treatments, in addition to statistical comparison between test groups and control groups.

FINAL CONSIDERATIONS

The present study aimed to evaluate the applicability of Cognitive-Behavioral Therapy for the treatment of chronic pain and the probabilities of its effectiveness in reducing pain symptoms and improving the quality of life of these patients. Regarding applicability, CBT proved to be a theory that has, in its approach and clinical practice, a range of techniques and interventions for the treatment of chronic pain, thus demonstrating that it is possible to insert this approach in multidisciplinary programs for the treatment of chronic pain. Regarding its effectiveness, CBT proved to be effective in reducing chronic pain, improving the patient's functional capacity, such as reducing fatigue, improving sleep quality and motivation for functional activities, and reducing symptoms of depression and anxiety, proving that the results for the treatment of chronic pain are much greater when CBT is included in interdisciplinary programs and in treatments considered the gold standard for chronic pain.

However, we cannot generalize the results of this study given its limitations, such as being a brief integrative literature review, which, although it was carried out in depth, it would be necessary to increase the number of articles for a more extensive analysis. Therefore, it is necessary that more studies be carried out in this area in order to have a greater proof of its applicability and effectiveness in the treatment of chronic pain. It is suggested for future studies an expansion of this study associated with a survey with an empirical

method consisting of a sample of patients with chronic pain being treated with CBT.

The contributions of this study to our training were extremely relevant, considering the complexity of the subject and the wide possibilities that Psychology has to identify, understand, evaluate and treat chronic pain through theoretical bases and practical interventions from CBT.

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ANNEXES

APPENDIX

QUANTITY	AUTHOR/YEAR	TITLE	GOAL	METHOD	RESULT	CONCLUSION
1	SANTANA.F.Elisângela; TAVARES S.C. Jeane / 2015	Helplessness schema in a patient with chronic pain and depressive symptoms.	To analyze the chronic pain management process through the identification of disability beliefs, mood swings and the strategies and techniques used in CBT in a patient with chronic pain and depressive symptoms.	Empirical clinical case study with a patient with chronic pain	Although the patient did not present significant changes in pain perception, the depressive symptoms had an important remission, which contributed to the acquisition of more functional behaviors for pain management, such as asking for help and avoiding physical exertion.	The remission of depressive symptoms could influence the relationship that the patient had with her painful experience, since she started to acquire more functional behaviors for pain management, such as asking for help and avoiding physical exertion. It is important to develop further investigations regarding the patient's sense of self-efficacy, since this belief exerts influence on the perception of pain and on depression. Likewise, the continuity of the cognitive restructuring process, through the modification of the helplessness schema, can promote better results both in terms of depressive symptoms and pain perception.
2	SALVETTI G. Marina; COBELO Andrea; VERNALHA M. Patrícia; VIANA A. I. Carmen; CANAREZI C.C.C.C Luciana; CALEGAR EL.G Renata / 2012.	Effects of a psychoeducational program on chronic pain control.	To evaluate the impact of an eight-week psychoeducational program on pain intensity, disability and depressive symptoms in patients with chronic pain.	Seventy-nine patients with chronic pain of different etiologies were evaluated, using cognitive-behavioral strategies. Participants were assessed before and at the end of the program and six months later.	There was a significant reduction in pain intensity ($p < 0.001$), disability ($p < 0.001$) and depressive symptoms ($p < 0.001$)	The psychoeducational program was effective in controlling pain, reducing disability and controlling depressive symptoms in the studied sample.

3	HETE M. C. Martha; DALTRO Carla; KTAYCHETE C. Durval; LOPES Josiane/2012.	Cognitive-behavioral therapy improves quality of life in patients with chronic musculoskeletal pain	To study the effectiveness of cognitive-behavioral therapy (CBT) in a group of patients with chronic pain.	A randomized clinical trial with two parallel groups of 93 patients was performed. Of these, 48 underwent CBT and 45 continued standard care. Visual analogue pain, hospital anxiety and depression and quality of life SF-36 scales were applied before and after ten weeks of treatment.	When comparing the Control Group and CBT, the latter showed a reduction in depressive symptoms (p=0.031), improvement in the domains 'physical limitations' (p=0.012), 'general health status' (p=0.045) and 'limitations due to emotional aspects' (p=0.025).	CBT was effective and caused more improvement in the quality of life domains when compared to the Control Group after ten weeks of treatment.
4	CARVALHO, N. P. Lucas; ARAÚJO S. Llian; AVELAR L.S.P. Maria; SAY G. Karina/2020	Effects of meditation associated with pain neuroscience education in adults with fibromyalgia: a randomized controlled clinical trial.	To analyze the effects of mindfulness associated with pain neuroscience education on pain perception, sleep and functional capacity of adults with fibromyalgia.	This is a controlled and randomized experimental study whose participants were divided into two groups: mindfulness group and mindfulness and pain neuroscience education group.	Improvements were observed in some variables related to pain, functional capacity, anxiety, depression, sleep quality and catastrophizing. There was no difference in the intergroup comparison, but there were differences in the intragroup comparison.	Interventions based on the practice of mindfulness and education in the neurosciences of pain were effective in improving the condition of patients with fibromyalgia.
5	SILVA. B. M. Andressa; ENUMO F.R. Sônia/2016.	Pain diary in psychological evaluation and intervention with adolescent dancers.	Conduct an assessment of adaptive coping strategies for pain management and control with dancers.	Empirical study carried out with 14 Jazz dancers aged between 12 and 17 years, applying a program called Diary of Pain, divided into seven steps for pain management and control.	During the study, pain intensity and frequency decreased, increasing adaptive coping strategies such as distraction and problem solving.	The Pain Diary proved to be useful as an evaluative and psychoeducational resource, contributing to pain management in dancers.

6	AZEVEDO S.V. Adriano; SANTOS T. Ana Flávia / 2011.	Psychological intervention in the hospital follow-up of a burnt child.	To analyze a model of psychological intervention in cognitive-behavioral practice in the hospital follow-up of a burnt child.	Case study using the following techniques: motivational interview, face map of feelings, flower garden of thoughts, Numerical Verbal Report Scale for Pain Assessment, relaxation training and psychoeducational information.	Data analysis indicated that the intervention was effective and that the child developed adaptive skills that contributed to adherence to treatment at the hospital and to pain management.	It is believed that cognitive-behavioral interventions can be used in the hospital environment due to their contributions to the integral health recovery of hospitalized children.
7	GARIOLI S. Daniele; PAULA P. Kely Maria; ENUMO F.R. Sônia /2017	Assessment of pain coping in children with sickle cell anemia.	Discuss the proposed assessment of pain coping in this population based on the Motivational Coping Theory and its contributions to interventions in the area.	Sickle Cell Anemia coping was analyzed in 12 children aged between eight and ten years old, who attended a University Hospital in Vitória, Espírito Santo, using the Computerized Instrument for the Assessment of Coping with Hospitalization and Pain.	The results demonstrate that the most frequent coping strategies were rumination, problem solving and cognitive restructuring.	There was an active search for strategies to solve problems, trying to redirect thoughts towards more positive aspects of the stressful situation; however, the higher frequency of rumination indicates that children are controlled by the negative aspects of the disease, a risk condition for the development of internalizing behavior disorders.
8	GAVI O.R.B. Maria; COSER P. H. Pedro; MACEDO F. C. Danielle; OLIVEIRA T.C. Christyne; SILVA L. C. Liliane / 2018.	The use of the Mini Mental State Exam collaborates in the treatment of fibromyalgia.	Contribute, through the Mini-Mental State Examination, to the improvement of the treatment of fibromyalgia.	Cross-sectional study with a qualitative approach with 61 patients, using the Mini-Mental State Examinations, the Unidimensional Numerical Verbal Scale and a questionnaire to collect socio-demographic data.	The results showed a high percentage of positive screening for cognitive impairment associated with fibromyalgia, with the main symptoms associated with memory and concentration difficulties and non-restorative sleep.	The study showed that the application of the Mini-Mental State Examination as a screening test of cognitive functions in patients with fibromyalgia can better subsidize the treatment condition. By providing information on exploring the patient's complaint, the Mini-Mental State Examination expands the reach of interventions with this population.

9	<p>Marizela R Ismael Martins Cristiane Carnaval Gritti: Randolfo dos Santos Junior Maria carolina luizetto de Araújo Lilian Chessa Dias; Marcos Henrique D'all Aglio Foss Larissa Batista de Andrade Carlos Eduardo D'all Aglio Rocha. / 2014</p>	<p>Randomized controlled trial of a therapeutic intervention group in patients with fibromyalgia syndrome.</p>	<p>Evaluate the effectiveness of a weekly interdisciplinary program (WIP) composed of educational activities, physical therapy, ergonomic stretching, postural guidance combined with cognitive-behavioral strategies and approaches to psychosocial and occupational factors to determine whether this intervention would be effective in short and medium term improvement of symptoms in these patients.</p>	<p>This was a single-center study, blinded, randomized, simple and controlled clinical trial with a sample test group (T), diagnosed with FMS (n=12), and a control group (C) submitted to referral to Clínica de Pain(n=15). The instruments used in two different moments were the Fibromyalgia Impact Questionnaire (FIQ), Visual Analogue Scale (VAS) and Post-Sleep Protocol (PSI). To assess quality of life, the SF-12 was used.</p>	<p>In the sample, both groups were predominantly female, mean age 42.5 ± 9.8 years, 43% married, mean schooling 8.3 ± 4.5 years. A mean of 4.2 years of two years for the diagnosis of FMS was reported for the T group. There was a statistical difference between the groups in terms of efficacy post-WIP intervention, on almost all outcome measures.</p>	<p>It was found that the weekly interdisciplinary program (WIP) has contributed to improving the quality of life of patients with fibromyalgia.</p>
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10	Ilknur Saral: Disad Sindel Sina Esmailzadeh Hanife Ozlem Sertel-Berk Aydan Oral/2009	The effects of short- and long-term interdisciplinary treatment approaches in women with fibromyalgia: a randomized controlled trial.	Investigation of the effects of long-term and short-term interdisciplinary treatment approaches to reduce symptoms and improve health-related quality of life (HRQoL) and physical functions of patients with fibromyalgia and comparison of the effects of two different interdisciplinary treatment approaches.	A prospective, randomized, controlled study was conducted involving 66 women with fibromyalgia eligible for the study at a university hospital. Patients were randomized into three groups (1:1:1 allocation ratio) using computer-generated random numbers: a long-term interdisciplinary treatment group (LG, N=22) who attended sessions (3 hours once a week) cognitive-behavioral therapy (CBT) along with physical training and other fibromyalgia-related educational programs (two full days); a short-term interdisciplinary treatment group (SG, n = 22) that received two full days of educational, exercise, and CBT programs; and a control group (GC, n =22)	Pain intensity, fatigue severity, number of tender points) and pressure pain threshold significantly decreased in both GL and SG groups compared to controls. Furthermore, physical functions and physical components of HRQoL improved significantly in intervention groups compared to controls. However, there was no significant difference between the intervention groups and the control group at the end of the study in terms of sleep quality, severity of depressive symptoms and metal components of HRQoL. Finally, with the exception of fatigue severity and HRQoL physical components, there was no obvious significant difference between the efficacies of the two treatment approaches when compared with controls; long-term treatment was found to be more effective in reducing pain than short-term treatment.	The short-term program well meets the needs of women with fibromyalgia, particularly with regard to pain and health status as measured using FIQ; however, a long-term program can be beneficial to reduce fatigue and further improve physical function.
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11	Javier García-Campayo ; Antoni Serrano-Blanco ; Baltasar Rodero ; Rosa Magallón ; Marta Alda ; Eva Andrés ; Luciano ; Yolanda López del Hoyo . / 2017	Efficacy of psychological and pharmacological treatment of catastrophizing in patients with fibromyalgia: a randomized clinical trial.	The general objective of this study is to evaluate the effectiveness of cognitive-behavioral therapy and the pharmacological treatment recommended for fibromyalgia (pregabalin, with the addition of duloxetine when there is comorbid depression), in comparison with the usual treatment at the primary care level.	A multicenter, randomized, controlled trial involving three groups: the control group, consisting of usual care at the primary care level, and two intervention groups, one consisting of cognitive-behavioral therapy and the other consisting of the recommended pharmacological treatment for fibromyalgia.	It is necessary to evaluate the effectiveness of pharmacological and psychological treatments for the catastrophizing of pain in fibromyalgia. This randomized clinical trial will determine whether both treatments are effective for this important prognostic variable in patients with fibromyalgia.	Results indicate that providing CBT for depression and anxiety as part of a rehabilitation pain treatment program can enhance the long-term benefits of treatment. This finding, replicated in additional studies, has important clinical and economic implications.
12	Magnús Olason ; Rúinar H Andrason ; Inga H Jónsdóttir ; Mark P Jensen / 2016	Cognitive-behavioral therapy for depression and anxiety in an interdisciplinary rehabilitation program for chronic pain: a randomized controlled trial with a 3-year follow-up.	Cognitive behavioral therapy (CBT) is known to be effective in treating depression and anxiety in patients with chronic pain, but there is little research studying the long-term benefits of CBT in this population. The present study evaluated the effects of CBT provided in the context of an interdisciplinary pain management program with a 3-year follow-up.	115 patients with chronic musculoskeletal pain participated in an interdisciplinary pain management program. 80 of the patients who met criteria for CBT treatment were randomized to receive or not receive CBT for depression and anxiety in addition to rehabilitation management. The remaining 35 patients constituted a second comparison group.	All three groups showed improvement in depression after treatment. The pre- and post-treatment effect sizes for depression in the CBT treatment group were large. The CBT treatment group maintained improvements on all measures at a 3-year follow-up, whereas the comparison groups did not. This was especially evident with regard to depression.	The results indicate that providing CBT for depression and anxiety as part of a rehabilitation pain management program may enhance the long-term benefits of treatment. This finding, if replicated in additional studies, has important clinical and economic implications.

Chart 1. Table with Selected Articles