

Review Paper

Chronic Pain and Psychological Interventions: A Systematic Review



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ABSTRACT

Background and Aim: Chronic pain is an emotional experience with unpleasant psychological consequences for individuals and society. This research aims to systematically review the psychological interventions implemented in people suffering from chronic pain.

Methods and Materials/Patients: In this systematic review, the following keywords were searched in PubMed, Scopus, and Google Scholar databases: Chronic pain, psychological interventions, psychotherapy, psychology, clinical trials, and randomized clinical trials. The time span for the search was from January 2018 to December 2022. From a total of 2785 articles, 20 articles by 2078 contributors were selected for this review.

Results: Cognitive behavioral therapy ranks first among psychological interventions for people with chronic pain. Also, to improve the quality of life and psychological health of these individuals from other psychological interventions, such as acceptance and commitment therapy, the mindfulness method has been used. This treatment has been effective in relieving pain, controlling pain, reducing stress and depression, and improving the quality of life. Using a randomized controlled trial design and follow-up were the strengths of these studies.

Conclusion: The findings suggest that psychological interventions had the greatest impact on pain relief, quality of life, depression, and stress, respectively. Accordingly, it is proposed to use psychological interventions in addition to medical treatment.

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Highlights

- Chronic pain adversely affects psychological health and quality of life.
- Psychological interventions have an effective role in reducing pain and improving the quality of life along with the psychological health of people with chronic pain.
- It is recommended to implement psychological interventions along with medical interventions for people with chronic pain.

Plain Language Summary

Chronic pain has unpleasant psychological consequences for people. The literature indicates that the quality of life of these individuals decreases and they experience more psychological symptoms, such as anxiety and depression than the general population. Psychological interventions are suggested to improve the quality of life of these people. Considering previous research, it was shown that interventions such as cognitive behavior therapy had an effective role in reducing the symptoms of chronic pain and the psychological health of these patients. Accordingly, it is suggested to implement psychological interventions along with other medical interventions.

1. Introduction

The recognition of pain as a pathologic entity remains controversial [1]. Chronic pain is an emotional experience and is defined as pain that lasts longer than 6 months. Understanding the neurophysiology of pain is necessary to treat it as it is a common, complex, and distressing problem with profound implications for individuals and societies [2, 3]. Pain is associated with reduced mobility, activity avoidance, falls, depression and anxiety, sleep disturbances, and significant disability from isolation. The negative effects extend beyond the patient, disrupting both family and social relationships [4].

Chronic pain can have a significant impact on the quality of life. Many patients develop depression, anxiety, or sleep disturbances, or develop stress, pain-related anxiety, devastating situations, significant pain intensity, general loss of enthusiasm for life, poor emotional health, fatigue, weakness, and sleep-related problems [5-7]. Chronic pain often causes significant difficulties in personal and social life and negatively impacts the ability to work and participate in the labor market along with negative individual consequences, such as low quality of life and mental health [8].

Psychotherapy focuses on skillful coping responses and cognitive-behavioral techniques. Some treatments such as cognitive behavioral therapy (CBT) are relatively focused on acceptance- and experience (ACT)-based treatment methods, committed behavior, and patient

values. Other treatments, such as ACT, aim to help individuals in coping and suffering openly without futile resistance or struggle, which is also known as acceptance [8]. Psychological interventions can directly improve self-management knowledge and stress management skills, enhance coping skills and emotional regulation, and help people adapt to chronic illness [9].

Numerous studies show that interventions such as CBT, ACT, mindfulness, restricted environmental stimulation therapy (REST), improving pain during addiction treatment (IMPAT), and so on can increase patients' functioning and coping skills, emotional management, interpersonal functioning, and improve communications with peers and family members [10]. Also, the self-efficacy scale, quality of life, self-esteem, emotional state, pain, pain intensity, pain control, pain destruction, pain interference, life satisfaction, positive emotions, and symptom control for depression and pain management were significantly improved [11, 12].

Extensive research exists on chronic pain, and by selecting and reviewing them, the nature of pain and the importance of psychological interventions in the field of pain control, improving quality of life, and increasing positive emotions can be comprehended. This review aims to examine patients with chronic pain and the psychological interventions or psychotherapies that are done for the recovery of these patients.



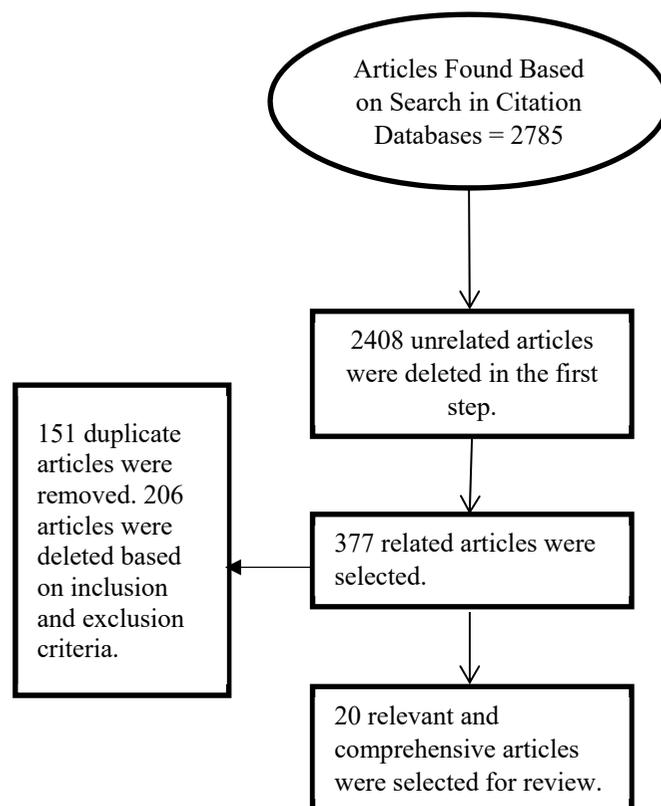


Figure 1. Steps for selecting articles



2. Methods and Materials/Patients

This was a systematic review of published studies from January 2018 to November 2022. The search was conducted on Scopus, PubMed, and Google Scholar databases. To search for articles, the following keywords were used for the online search: Chronic pain, psychological interventions, psychotherapy, psychology, clinical trials, and randomized clinical trials. To carefully select the keywords, all keywords related to chronic pain were searched. A total of 2785 articles with the keyword in the title or article content were found. Article titles and abstracts were reviewed by two investigators and a large number of articles were excluded from the review because of being repetitive, unrelated, or failing to meet the inclusion criteria. Finally, 20 articles were selected and reviewed. Figure 1 demonstrates the steps for checking the sources. Publication of articles in a certain period, publication in English, and studies implemented on patients with chronic pain were among the criteria for the inclusion of articles. Qualitative and single-case articles, case reports, and articles based on pharmaceutical and medical interventions were considered the exclusion criteria. The framework of the standard review of health articles [13], the Sidant and Braden approach,

was used to review and evaluate behavioral interventions [14]. To analyze the articles, authors' names, the year of publication, the type of intervention or theoretical framework, the country in which the study was conducted, the number of study participants, the intervention implementation method, and the results of the study were considered.

3. Results

Based on inclusion criteria, 20 articles were selected for this section and analyzed in the following aspects (Table 1): Type of intervention, participants, country, study design, follow-up, and results. A total of 2078 people participated in these studies. From the review of previous studies, it was found that psychological interventions such as CBT [17, 20-22, 32], ACT [15, 18], and then the treatment models derived from mindfulness [17, 34] were the most used methods in improving the psychological performance of people with chronic pain. The results of a review of various therapeutic interventions indicate that these treatments have the greatest effect on pain reduction [17-24, 26, 28], quality of life [15, 16], depression [18, 20, 21] and stress [16-19, 23].

Table 1. Characteristics of the included studies

Authors and Years	Interventions	Country	Target Group	Participants	Design	Follow-ups	Consequences
Kanzler et al. 2022 [15]	(ACT: 5 sessions)	USA	Hybrid	Intervention (n=13) Control (n=13)	Pilot RCT	2 and 6 month	Self-reported physical disability, engagement in valued activities, and acquiring skills for learning to live with pain significantly improved
Muñoz et al. 2022 [16]	(Mobile app-based multimodal Treatment: 6 sessions)	Spain	Hybrid	Intervention (n=105) Control (n=104)	RCT	3 months	Catastrophizing, quality of life, and psychological flexibility immediately improved.
Zarceo et al. 2021 [17]	(MSC, CBT: 8 sessions)	Spain	Hybrid	Intervention (MSC=62) Control (CBT=61)	RCT	None	MSC improves the levels of self-compassion, anxiety symptoms, pain interference, and pain acceptance more than CBT.
Rickardsson et al. 2021 [18]	(ACT: 8 sessions)	Sweden	Hybrid	Intervention (n=57) Control (n=56)	RCT	1 Year	Pain interference, depression, anxiety, pain intensity, and insomnia, as well as process variables, psychological inflexibility, and values, were significantly improved.
Loose et al. 2021 [19]	(REST: 5 sessions)	Germany	Chronic pain with indistinguishable placebo	Intervention (n=32) Control (n=30) Placebo (n=37)	RCT	1, 12, and 24 week	In the intervention group in the short term, patients showed significant improvements in pain intensity, relaxation, anxiety, pain area, and wide spreads.
Andraee et al. 2021 [20]	(CBT: 8 sessions)	USA	Diabetes	Intervention (n=122) Control (n=108)	RCT	3 months and 1 year	This program improved the symptom of depression and stress in persons with diabetes and chronic pain.
Matero et al. 2021 [21]	(CBT, mindfulness, ACT): 5 sessions)	USA	Hybrid	Intervention (n=30) Control (n=30)	Pilot RCT	None	The intervention group showed decreases in pain severity, pain catastrophizing, and depression.

Authors and Years	Interventions	Country	Target Group	Participants	Design	Follow-ups	Consequences
Taguchi et al. 2021 [22]	(CBT: 16 sessions)	Japan	Hybrid	Intervention (n=16)	The prospective, open-labeled, single-arm trial	None	There was no reduction in pain intensity. Depression, anxiety, and disability showed statistically significant improvements with small to moderate effect sizes.
Ziadni et al. 2021 [23]	(Empowered relief" zoom-delivered: single session)	USA	Hybrid	Intervention (n=50) Control (n=51)	RCT	2-week, 1-3 months	ER led to improvements in pain intensity, sleep disturbance, and clinical improvements in pain bothersomeness.
Zanca et al. 2021 [24]	(CMI:4 sessions)	USA	Chronic pain after spinal cord injury	Intervention (n=12) Control (n=12)	Pilot RCT	4 week	Pain interference and stress in the control group improved.
Eaton et al. 2021 [25]	(An audio-recorded hypnosis intervention:8 session)	USA	Cancer survivors	Intervention (n=21) Control (n=19)	Pilot RCT	None	The most common diagnosis was hematologic cancer followed by breast cancer. No statistically significant differences in demographic or clinical characteristics were found between the groups.
Palermo et al. 2020 [26]	(WebMAP: 8 sessions)	USA	Hybrid	Intervention (n=73) Control (n=70)	RCT	3 months	The pain-related disability and pain intensity improved in both treatment situations.
Vowles et al. 2020 [27]	(Integrated behavioral treatment: 12 sessions)	USA	Chronic pain veterans and hazardous opioid use	Intervention (n=17) Control (n=18)	Pilot RCT	6 months	Pain interference and usual pain intensity, pain behavior in the integrated intervention group reduced.
Ilgem et al. 2020 [28]	(ImPAT:8 sessions)	USA	Substance use disorders and chronic pain	Intervention (n=255) Control (n=255)	RCT	3, 6, 12 months	ImPAT intervention was associated with higher tolerance of pain among men and women receiving the ImPAT intervention had decreased pain intensity, whereas women receiving the SPC condition showed increased pain intensity.



Authors and Years	Interventions	Country	Target Group	Participants	Design	Follow-ups	Consequences
Low et al. 2020 [29]	(VMT: 12 sessions)	USA	Hybrid	Intervention (n=22) Control (n=21)	RCT	None	Participants generally felt better after completing the VMT program, and the program improved pain self-management, and psychological well-being, and strengthened social and spiritual connections.
Schmid et al. 2019 [30]	(Yoga intervention: 8 sessions)	USA	Hybrid	Intervention (n=44) Control (n=39)	Pilot RCT	None	There were significant improvements in COPM performance and COPM satisfaction scores. FAI scores improved.
Boersma et al. 2019 [31]	Transdiagnostic emotion-focused exposure: 16 sessions)	Sweden	Chronic pain patients with comorbid anxiety and depression	Intervention (n=57) Control (n=58)	RCT	9 months	We found that the hybrid emotion-focused treatment may be acceptable, credible, and efficacious for chronic pain patients with comorbid emotional problems.
Barry et al. 2019 [32]	(CBT: 12 sessions)	USA	Opioid use disorder and chronic pain	Intervention (n=21) Control (n=19)	RCT	None	They were not significant in time and interaction effects between treatment condition and time for patients assigned to CBT or MDC. Clinically, there was no significant difference.
Hoffman et al. 2019 [33]	(T-CBT: 8 sessions)	USA	Chronic pain following traumatic brain injury	Intervention (n=34) Control (n=33)	RCT	6 months	The two treatment groups were significantly different on only one baseline measure for the T-CBT group than for the T-EDU group.
Jong et al. 2018 [34]	(MBCT: 8 sessions)	USA	Unipolar depression in patients with chronic pain	Intervention (n=19) Control (n=14)	Pilot RCT	None	No significant adverse events were reported, and scores did not differ significantly between groups.

Abbreviations: ACT: Acceptance and commitment therapy; Pilot RCT: Pilot randomized control trial; MSC: Mindful self-compassion; REST: Restricted environmental stimulation therapy; CBT: Cognitive behavioral therapy; WebMAP: Web-based management of adolescent pain; ImpPAT: Improving pain during addiction treatment; VMT: Vocal music therapy; MBCT: Mindfulness-based cognitive therapy; COPM: Canadian occupational performance measure; FAI: Frenchay activities index.

4. Discussion

This study aimed to show the nature of chronic pain, examine patients with this problem, and the interventions that were used to improve the process of their disorder. In this study, 20 articles were reviewed and all of them were from different countries. According to the results, the most used treatment in the studies was CBT [20-22, 32], ACT [15, 18], and mindfulness [17, 34], respectively, in patients with chronic pain. These treatments lead to cognitive restructuring and increasing access and engagement in behavioral pain management services. Patients exhibited improved pain outcomes [20, 21, 32].

Chronic pain can be the result of a complex health condition that has negative multi-dimensional effects on performance [27]. If there are factors such as improved pain management, improved psychological well-being, and the development of meaningful connections, these individuals can build resilience in the face of life's challenges [29]. Also, some studies showed non-pharmacological treatments, such as physical therapy and psychoeducational therapy to promote active participation that works well in combination with pharmacological strategies, and that such interventions are effective for patients with chronic pain. It has also been shown to improve independence and help manage pain effectively [16].

Psychological interventions were most effective in pain control and management, quality of life, pain intensity, pain destruction, depression, anxiety, and social and emotional connection. Among all these interventions, the role of CBT was more important. Given its role in improving depressive symptoms and stress in individuals with chronic pain, this method was also effective in reducing pain severity and disability [20-22]. CBT can be used in multidisciplinary pain management programs. It can directly intervene in the excessive thoughts, worries, feelings, and behaviors associated with physical symptoms and are the most common psychotherapy for chronic pain [22].

We suggest that for the effectiveness and better quality of the treatment frameworks considered for chronic pain, more combined treatments, such as the combination of CBT, ACT, and mindfulness should be used, and the existence of long-term follow-ups will help in this process. It is also possible to use meta-diagnostic approaches.

5. Conclusion

Considering that the etiology of chronic pain can be explained based on biological and psychological factors, medical and psychological interventions are suggested to be provided in an integrated manner by the medical team in treatment centers to improve the psychological health of these people.

Ethical Considerations

Compliance with ethical guidelines

There was no animal or human research reported in this study so there was no need for obtaining the approval of any Ethics Committee.

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Authors' contributions

The authors declared no conflict of interest.

Conflict of interest

Conceptualization and study design: Fatemeh Karimian and Sajjad Saadat; Critically revising: Sajjad Saadat and Mozaffar Hosseini-zhad; Data collection, data analysis and interpretation, drafting and final approving: All authors

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