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Do patients in neurosurgical wards benefit from psychotherapy? A brief discussion on the application of cognitive-behavioural therapy in patients treated for spinal conditions

Czy pacjenci leczeni w oddziale neurochirurgii mogą odnieść korzyści z psychoterapii? Kilka słów o zastosowaniu terapii poznawczo-behawioralnej u pacjentów leczonych z powodu chorób kręgosłupa

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Abstract

The present article reviews the existing literature on the application and effectiveness of cognitive-behavioural therapy in a group of patients with spine problems. It encompasses publications describing the use of cognitive-behavioural therapy in the treatment of patients with back pain and spinal cord injuries of various aetiologies, as well as those experiencing disabilities and difficulties in social and emotional functioning. The findings confirm that cognitive-behavioural interventions are effective in reducing the intensity of pain, improving mobility, reducing the duration of professional inactivity, facilitating adaptation to disability, and enhancing overall life satisfaction. They also support the effectiveness of therapeutic interventions in addressing depressive and anxiety disorders among these patients. It appears that both the traditional and newer approaches of cognitive-behavioural therapy offer potential in patients with spine issues and their families and caregivers. However, due to the insufficient number of randomised and controlled studies, high heterogeneity among study groups, and diversity of research protocols, it is not possible to definitive formulate final conclusions or recommendations at this stage. Nevertheless, the literature findings herein support further exploration of cognitive-behavioural therapy among patients experiencing spine problems.

Keywords: back pain, cognitive-behavioural therapy, psychotherapy, spinal cord injury, spine disease

Streszczenie

W licznych badaniach wykazano skuteczność terapii poznawczo-behawioralnej w leczeniu różnych zaburzeń psychicznych. Autorzy omawiają dostępne piśmiennictwo na temat jej zastosowania i skuteczności w grupie pacjentów z dolegliwościami ze strony kręgosłupa. Prezentują publikacje poświęcone wykorzystaniu terapii poznawczo-behawioralnej w leczeniu chorych z dolegliwościami bólowymi kręgosłupa i uszkodzeniami rdzenia kręgowego o różnej etiologii, doświadczających niepełnosprawności oraz trudności w funkcjonowaniu społecznym i emocjonalnym. Wyniki badań potwierdzają skuteczność interwencji poznawczo-behawioralnych w zmniejszaniu nasilenia bólu, poprawianiu sprawności ruchowej, skracaniu czasu nieaktywności zawodowej oraz przystosowaniu do niepełnosprawności i zwiększaniu zadowolenia z życia. Wskazują także na obiecującą skuteczność oddziaływań terapeutycznych w leczeniu zaburzeń depresyjnych i lękowych w analizowanej grupie chorych. Dostępne prace sugerują możliwość efektywnego stosowania technik terapii poznawczo-behawioralnej – w klasycznej formie i w nowszych podejściach – zarówno u osób z dolegliwościami ze strony kręgosłupa, jak i u rodzin i opiekunów. Ze względu na niewystarczającą liczbę badań randomizowanych i kontrolowanych, dużą heterogeniczność i niską liczebność grup oraz różnorodność protokołów badawczych nie można jeszcze sformułować ostatecznych wniosków i rekomendacji. Wyniki niniejszej pracy zachęcają jednak do podejmowania prób stosowania terapii poznawczo-behawioralnej u chorych z dolegliwościami ze strony kręgosłupa – w leczeniu bólu, a także problemów emocjonalnych i behawioralnych.

Słowa kluczowe: bóle kręgosłupa, terapia poznawczo-behawioralna, psychoterapia, uszkodzenia rdzenia, choroby kręgosłupa

INTRODUCTION

A significant portion of patients treated in neurosurgical wards have experienced a broad and diverse spectrum of spinal diseases. These can impact different components of the spinal anatomy, including the spinal cord, spinal nerves, vertebral bodies, intervertebral discs, joints, ligaments, tendons, and muscles. Although they can exhibit diverse aetiologies, durations, and clinical presentations, the vast majority of patients report pain, as well as neurological impairments and various psychological dysfunctions, such as anxiety, depression, anxiety, and distorted self-assessment of health status (Boos and Aebi, 2016). Furthermore, while many patients are incapable of engaging in professional work, which can pose a major challenge, only a minority experience chronic disability. This group typically receive various combinations of physiotherapy, pharmacotherapy, and surgical interventions, with occasional inclusion of psychotherapy. The latter, however, is not currently regarded as a standard treatment approach.

One recognised method for treating individuals with mental disorders, as well as addressing emotional issues associated with various somatic complaints, involves the use of psychotherapeutic interventions. These have been incorporated into the National Institute for Health and Care Excellence (NICE) guidelines, and the number of studies into the efficacy of psychotherapy continues to increase. One commonly-employed method is cognitive-behavioural therapy (CBT), traditionally characterised by efforts to achieve emotional change through cognitive restructuring and behavioural modifications (Beck, 2012). Its third-wave variants, such as acceptance and commitment therapy (ACT), compassion-focused therapy (CFT), mindfulness-based cognitive therapy (MBCT), dialectic behaviour therapy (DBT), and schema therapy (ST), place an additional focus on the specific nature of the therapeutic relationship, emotional connections, spirituality, values, and mindfulness (Beck, 2012; Leahy, 2018; Popiel and Pragłowska, 2022; Thoma et al., 2015).

Multiple studies have demonstrated the efficacy of CBT in the therapy of psychiatric conditions (Borza, 2017; Lepping et al., 2017; Sarin et al., 2011) and personality disorders (Beck et al., 2015; Beck, 2005; Davidson, 2008; Thoma et al., 2015). Recent years have also seen a growing focus on the application of cognitive-behavioural interventions in managing patients undergoing surgical procedures, for example in the treatment of spinal injuries, degenerative diseases, or proliferative processes in the central nervous system (CNS) (Anson and Ponsford, 2006; Burke et al., 2019; Ponsford et al., 2020; Szepietowska-Illach, 2018; Zelencich et al., 2020). Studies have examined the correlation between CBT and the time to return to full professional activity, as well as its role in coping with pain and disability (Mariano et al., 2018; Rolving et al., 2016, 2015, 2014), and its application as a means to improve the management of anxiety, depression, postoperative pain, sleep disturbances, and difficulty in resuming social functioning after procedures (Bédard et al., 2012; Fann et al., 2015; Hawley and Newman, 2010; Minen et al., 2019; Nguyen et al., 2017).

This article reviews the outcomes of studies investigating the use of CBT in patients undergoing surgical treatment or in those referred for neurosurgical procedures for spinal disorders. It then focuses on discussing interventions related to pain management, the emotional challenges faced by patients, their disability and psychosocial functioning.

SPINAL PAIN SYNDROME

The term "spine pain" (or "back pain") is used to refer to all pain that manifests in the dorsal region, along the vertical axis of the body. Although pain can occur in any segment of the spine, it is mostly located in the lumbosacral area. Studies indicate that lumbosacral pain affects 10% of the global population (619 million people), including adults (The Lancet Rheumatology, 2023), adolescents and children (Lamb and Brenner, 2020). Cervical pain is reported to affect 203 million individuals worldwide (Wu et al., 2023). While spinal pain is generally not life-threatening, it does represent a significant health concern for a significant proportion of individuals.

Spinal pain can be attributed to a number of pathologies, with the prevailing belief that the most widespread underlying cause is static and dynamic overloading of the joints and ligaments (Milanov, 2014). Other causes include spinal disc herniation, i.e. an injury to the intervertebral disc between two spinal vertebrae, also referred to as a *slipped disc*; this can place pressure on the spinal cord or spinal nerves, or damage the spinal cord itself. Risk factors for spinal pain include heavy physical labour, sedentary work, obesity, pregnancy, smoking, and genetic predisposition (Adams, 2004; Hanus-Atras and Iłżecka, 2010).

According to evidence-based medicine (EBM), the treatment of spinal pain is contingent upon the underlying cause, and encompasses a range of modalities such as pharmacotherapy, physiotherapeutic interventions, minimally-invasive analgesic procedures, blocks, RF-thermolesion, cryodestruction, epidural steroid injections, and, in some cases, surgical interventions (Liu et al., 2023; Wewege et al., 2023; Zaina et al., 2016). Although psychotherapy is not a routine part of standard therapeutic management, guidelines recommend a comprehensive approach that combines various therapeutic modalities, such as exercises provided by physiotherapists and psychological interventions.

Studies indicate that psychological factors contribute significantly to the subjective experience of back pain, thus affecting the daily functioning of patients and their perceived quality of life. Patients with spinal pain have been reported to experience depression, anxiety, catastrophic thinking, as well as family and social stress (Hartvigsen et al., 2018). These symptoms may elevate the risk of disability by impairing daily functioning, which leads to patients giving

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up social interactions and leisure activities, and contributing to increased absenteeism from work (O'Keeffe et al., 2019; Pinheiro et al., 2016; Wertli et al., 2014a). The desire to avoid pain serves as a mediating factor between the experience of pain and disability, significantly influencing the quality of life for patients and impacting the use of health services (Keeley et al., 2008; Lee et al., 2015; Shaygan et al., 2019; Wertli et al., 2014b). Hence, it appears relevant to consider psychological factors in the treatment of spinal pain and incorporate psychotherapeutic interventions into a comprehensive plan for managing these complaints (The Lancet, 2021).

Psychotherapeutic interventions employed in the treatment of chronic pain are focused primarily on relieving associated tension and reducing the level of disability. This objective is attained through the modification of negative beliefs, behaviours, and coping strategies using tools specific to the therapeutic approach. Multiple studies have suggested that psychotherapy, particularly cognitive-behavioural therapy, may offer potential benefits in mitigating pain. For example, Turner and Jensen (1993) demonstrated that cognitive therapy, relaxation training, and a combination of both reduced the perceived level of pain after psychological intervention. Vlaeyen and Linton (2000) found that CBT can markedly decrease the severity of back pain and enhance the quality of life for patients. A meta-analysis of randomised trials found that psychological interventions achieved positive outcomes in non-cancer back pain, including pain relief and various beneficial effects on health-related quality of life. Self-regulation techniques and CBT were found to be particularly effective in reducing pain severity (Hoffman et al., 2007).

A multidisciplinary approach incorporating psychological interventions was shown to have a positive impact on pain experience in a short-term follow-up. Also, a meta-analysis by van Tulder et al. (2000) found behavioural therapies to have a moderately positive impact on the perception of pain compared to no treatment or waiting for treatment; however, the incorporation of psychological interventions into standard therapy did not bring about any changes in pain levels. Although behavioural therapy was found to have a positive impact, it was not possible to identify the specific profiles of patients in whom it is most effective.

Another meta-analysis, published in Cochrane, comprising 30 studies evaluated the effects of three types of interventions (cognitive therapy, operant conditioning, progressive muscle relaxation/biofeedback) on the severity of back pain (Henschke et al., 2010). The meta-analysis provided evidence of moderate quality, indicating the following: a) therapies proved more effective in reducing pain compared to waiting for treatment ("waiting list controls"), b) no significant differences in short- to intermediate-term pain relief were observed between the therapeutic interventions, c) behavioural interventions were found to be more effective compared to traditional care. Over the long term, no differences in pain reduction were found between therapeutic interventions and physical exercise. In a multicentre randomised trial comparing the efficacy of individualised cognitive functional therapy with group exercise and pain education, no reduction in pain intensity was observed in two groups at six and 12 months (O'Keeffe et al., 2020).

Another important consideration in the treatment of spine complaints is the improvement in the perceived effects of surgical interventions. A randomised study by Archer et al. (2016) found CBT in conjunction with physiotherapy rehabilitation following laminectomy (operation to remove the lamina) resulted in reduced pain severity compared to pain education alone. In turn, a Cochrane meta-analysis (35 studies) (Williams et al., 2020), compared a group receiving CBT and behavioural therapy with a control group; although CBT had no impact on pain intensity when compared to the active control group, it exhibited a small to moderate effect in reducing pain compared to traditional therapy or waiting for treatment. Behavioural therapy failed to demonstrate any greater efficacy compared to the control groups.

In contrast, a recent systematic review with meta-analysis (Ho et al., 2022) examining the effects of CBT, behavioural therapy, and pain education on spinal pain, concluded that in patients with chronic and non-specific lumbar pain, psychological therapies are most effective when combined with physiotherapeutic interventions. All studied psychotherapeutic interactions were found to be effective in reducing pain levels shortly after the conclusion of treatment, i.e. at two to six months, when used in conjunction with physiotherapy; only a combination of physiotherapy and behavioural psychotherapy was shown to be effective in sustaining a long-term reduction in pain severity lasting from six to 12 months. However, the data included in the analysis did not provide a clear picture of impact of the interventions over a period exceeding 12 months. Even so, the analyses provided consistent evidence for the safety of psychological interventions in the studied patient group, with no reported side effects. Similar outcomes were obtained in another meta-analysis with a systematic review: individualised physiotherapeutic interventions were shown to have a modest yet significant effect on pain reduction, with pain relief being more effective when combined with CBT (Fleckenstein et al., 2022).

Some studies have analysed the effects of third-wave therapies on reducing the severity of chronic pain (Barrett et al., 2021; Ma et al., 2023; Malpus et al., 2023; Norman-Nott et al., 2023). The results indicate pain relief, improved acceptance of the experience of pain and its associated limitations, and greater flexibility in managing discomfort. To our knowledge, no studies have evaluated the effectiveness of third-wave CBT techniques in the treatment of patients with spinal complaints; however, evidence suggests that these techniques can benefit patients with chronic pain in various origins. Additional research, particularly involving a homogeneous group of subjects with back pain, is needed to further investigate and validate the efficacy of these methods.

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In summary, a growing body of evidence suggests that classical CBT, cognitive functional therapy and behavioural therapy can reduce the intensity of spinal pain. Despite this, for the above interventions to be incorporated into recommended therapeutic approaches outlined in guidelines for the treatment of spinal pain syndromes, further randomised trials are needed. Such studies should encompass diverse yet homogeneous patient populations, including children and adults, as well as individuals both waiting for and recovering from surgery. Furthermore, future research should evaluate therapeutic goals, the efficacy of specific interventions, psychotherapeutic protocols, as well as the intensity and duration of interventions. It would also be beneficial to compare the achieved improvements based on subjectively-assessed pain intensity, somatic causes of pain, and demographic factors such as age, sex, or professional status. Prospective studies are needed to evaluate the efficacy of psychotherapy over long-term periods.

DISABILITY AND PSYCHOSOCIAL FUNCTIONING

In addition to being associated with the experience of pain, spinal disorders also typically contribute to impaired psychosocial functioning. They impede the capacity to engage actively in work and sustain social relationships, and can lead to temporary or permanent work incapacity. Chronic spinal pain frequently results in changes in the way patients are able to perform their daily activities, subsequently contributing to temporary or long-term disability. According to the current recommendations on prevention and therapy, physical activity should be adjusted to the capabilities of the patient, and complemented by education and physiotherapy (Kassolik et al., 2017; Moreira-Silva et al., 2016; Qaseem et al., 2017).

The goals and objectives of neurosurgical treatment for spinal disorders revolve primarily around managing neurological deficits and reducing pain intensity. The key aim is related to long-term effects of surgery on the patient's level of physical performance. One study on patients undergoing lumbar spine surgery found pain relief performed over a three-month postoperative follow-up period to correlate with improved physical performance and reduced disability within one year postoperatively (Bae et al., 2013). However, a meta-analysis of 69 publications discussing pain intensity and disability in patients following lumbar spinal stenosis surgery showed that, despite a significant decrease in pain within three months after surgery, mild pain and disability persisted for up to 60 months (Fritsch et al., 2017). Although neurosurgical interventions for spinal conditions may be associated with a moderate level of success in improving the quality of life of patients (Djurasovic et al., 2011), they frequently carry the risk of exacerbating the condition. Therefore, it is important to examine the long-term implications of disability and employ strategies and tools that enhance the efficacy of surgical procedures.

Research on other disorders and conditions suggests that incorporating CBT into the treatment process might enhance the functioning of patients in social situations. Such improvements could encompass better coping mechanisms for pain, recognising and reframing negative thoughts and beliefs that contribute to social isolation, and facilitating the development of strategies to promote interpersonal connections, increase mobility, and lead to a faster return to occupational engagement (Beck, 2005, 2012; Klonoff, 2010). A randomised study by Archer et al. (2016) showed that physiotherapy combined with CBT led to a marked reduction in disability among patients recovering from laminectomy, as measured by the Oswestry Disability Index, and improved the overall well-being and motor skills. Coronado et al. (2020) found that, six months after surgery, the outcomes of surgical treatment for spinal conditions were dependent not only on the surgical procedure itself and CBT-based interventions, but also on other factors, including fear of pain and diminished self-efficacy. Specifically, the fear of pain contributed to the level of disability by indirectly impacting the outcomes of the cognitive-behavioural program; in addition, the efficacy of coping with pain was found to affect the somatic health of patients through the efficacy of CBT techniques.

Another randomised study, involving 90 patients following lumbar interbody fusion surgery, evaluated the impact of preoperative rehabilitation with CBT on patient functioning (Rolving et al., 2015). It was found that the patients who had received CBT reported a more rapid improvement of disability at three months following surgery. The difference was sustained for one year after surgery, but was not linked to a quicker return to work. No differences were noted in the severity of catastrophic thinking or the persistence of anxiety-avoidance beliefs.

A meta-analysis on psychological interventions in patients with spinal pain showed that a multidisciplinary treatment approach, i.e. one incorporating psychotherapeutic interventions, had a favourable long-term effect on the patients' ability to return to work (Hoffman et al., 2007). In contrast, another meta-analysis found behavioural therapies to have no beneficial effects on the level of patient functioning (van Tulder et al., 2000). These findings were corroborated in a subsequent meta-analysis of 30 randomised trials, indicating that behavioural interventions appeared to have no significant impact on functional capacity in either a mid-term or long-term follow-up (Henschke et al., 2010). In contrast, O'Keeffe et al. (2020) demonstrated that cognitive functional therapy reduced the severity of disability at both six and 12 months compared to a group intervention. Similar findings, demonstrating the efficacy of psychological therapies, were observed in a meta-analysis of seven studies involving a total of 531 patients who underwent lumbar interbody fusion surgery. Preoperative CBT was found to be effective in enhancing of quality of life, psychological functioning and reducing disability. Patient outcomes were indirectly influenced by the frequency of CBT sessions and the length of

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postoperative follow-up (Parrish et al., 2021). A recent meta-analysis revealed that CBT combined with physiotherapy had a favourable effect on the patient functioning immediately after treatment. The most long-lasting outcomes were achieved when pain education was integrated with physiotherapy (Ho et al., 2022).

While the studies outlined above do not permit definitive conclusions, the results of the meta-analyses appear promising. They suggest that incorporating behavioural or cognitive-behavioural interventions into the treatment of patients with spinal disorders may improve their mobility or decrease the duration of inactivity. However, further research should investigate more homogeneous patient groups, evaluate therapeutic goals, assess the efficacy of different interventions and psychotherapeutic protocols, and review the impact of the intensity and duration of treatment interventions. Furthermore, it would be useful to compare the improvement achieved by patients according to their degree of mobility limitations, family and work situation, age, and sex.

SPINAL CORD INJURY

Spinal cord injury (SCI) invariably results in restricted mobility, albeit to varying extents, leading to challenges in both occupational activities and interpersonal interactions. SCI can occur at any level of the spinal cord. It is recognised as a factor that significantly contributes to population morbidity and mortality, and a major causative agent of disability, thereby having a significant impact on the number of years lived with disability (Middleton et al., 2012). Over the past decade, the incidence rate of SCI with the most common aetiology (traumatic) was 26.5 per 1,000,000 population, with men accounting for the majority of cases (Barbiellini Amidei et al., 2022).

Being an essential component of the CNS, the spinal cord plays a crucial role in various activities that are crucial for the normal functioning of the human body. The spinal cord is vital for mobility and sensation, as it accommodates the structures responsible for the delivery of sensory messages to higher centres in the brain. The spinal cord also regulates autonomic (vegetative) activities such as micturition, defecation and sexual function (Diaz and Morales, 2016).

SCI can be traumatic or non-traumatic. The former primarily results from traffic accidents, falls, gunshots, and sports injuries (Eli et al., 2021). Non-traumatic causes encompass cancer metastases to the spine, inflammatory changes in the spinal cord, degenerative processes (e.g. associated with spinal disc herniation), ischaemic pathologies in the spinal cord, and iatrogenic causes (linked to medical interventions) (Müller-Jensen et al., 2021). The extent of injury depends on the level of the spinal cord at which injury occurs, with higher level injuries resulting in greater impairment. When an injury occurs at the upper cervical vertebrae, from C1 to C4, it frequently results in tetraplegia (quadriplegia); this also carries a high mortality rate due to respiratory muscle paralysis. Injury to the lower cervical vertebrae typically leads to upper limb paresis with concurrent paralysis. SCI in the thoracic region leads to paralysis of motor function in the lower extremities. The severity of the impairment varies based on the specific level of injury. Injury to the cauda equina nerve roots at the lumbar level is associated with gait disorders (Figueiredo, 2017), sphincter dysfunctions (urinary and faecal incontinence) and sexual dysfunctions (Henke et al., 2022). Sensory disturbances below the level of spinal cord injury are also worth a note (Kirshblum et al., 2011).

SCI often occurs suddenly and severely disrupts normal functioning in every aspect of life. It is linked to disability and may contribute to the onset of difficult emotions such as sadness, anxiety, and anger. SCI is also associated with depression, increased pain perception, and a sense of dependence, all of which significantly impact the patient's quality of life (Galvin and Godfrey, 2001; Hancock et al., 1993). Hence, there is a great need for further work aimed at assisting patients in coping with their situation.

Coping strategies, as proposed by Lazarus, refer to the ability to adjust cognitive and emotional efforts on an ongoing basis in order to deal with external and/or internal demands that are felt to be a burden or that exceed a person's resources or capacity (Lazarus and Folkman, 1984, p. 178). Adaptive strategies have been found to play a mediating role in emotional adjustment (Galvin and Godfrey, 2001), while maladaptive strategies including substance abuse, denial, or withdrawal from relationships, are associated with high levels of anxiety and depression (Kennedy and Rogers, 2000).

Research evaluating the efficacy of CBT techniques in treating various disorders has facilitated their application in patients with spinal cord injuries. For example, CBT has been used in the treatment of emotional disorders (Elliott and Kennedy, 2004) which, alongside exacerbating fatigue and cognitive decline, have a marked adverse impact on social functioning (Kuzu et al., 2022). King and Kennedy (1999) noted that coping training yielded improvements in depressive symptoms and anxiety that persisted for up to two years after the interventions. Several studies have reported that implementation of psychotherapy (Kahan et al., 2006) or psychotherapy combined with pharmacotherapy (Kemp et al., 2004), or psychotherapy with physiotherapy (Dorstyn et al., 2010; Duchnick et al., 2009) yielded improvements in depressive symptoms compared to controls six months later. Positive changes in depressive symptoms were also found in patients and caregivers who received CBT with a view to improving their quality of life (Schulz et al., 2009).

The efficacy of CBT in the treatment of anxiety among patients with spinal cord injury remains uncertain. Craig et al. (1997) found no decrease in anxiety after CBT, but other authors (Dorstyn et al., 2010; Kennedy and Rogers, 2000; King and Kennedy, 1999) report a mild improvement in anxiety symptoms, although the observed improvement was only sustained in the short term, and the severity of symptoms ultimately reverted to pre-intervention levels. However, it

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is important to highlight that the employed CBT protocols did not specifically target anxiety and were only assessed as an additional measure.

While the data regarding coping strategies and adaptation to illness show promise, it needs to be stressed that the existing research is limited and based on a heterogeneous groups of patients (Li et al., 2017). A correlation was noted between poorer social functioning on a given day with increased fatigue, increased depressive symptoms, and subjectively-perceived decline in cognitive functions (Kuzu et al., 2022). Furthermore, it was observed that the level of hope in patients with SCI positively correlated with life satisfaction, adjustment, and adaptive coping styles (such as planning, acceptance and fighting spirit), while showing a negative correlation with reported life problems, social withdrawal, and engagement in dependent relationships (Dorsett et al., 2017). Earlier studies on coping strategies after spinal cord injury failed to show any effect of CBT on self-esteem (Craig et al., 1997) or locus of control (King and Kennedy, 1999). However, CBT was found to have positive effects on disability adjustment six months after the end of the intervention (Duchnick et al., 2009), as well as improved life satisfaction and engagement in a variety of activities, both immediately after the therapeutic intervention and two years later (Kemp et al., 2004; Khan et al., 2014).

CBT appears to be a promising therapeutic intervention that enhances patients' adaptation to disability and promotes the development of effective coping strategies. Nonetheless, further randomised studies with heterogeneous patient groups and larger samples are needed to evaluate different therapeutic protocols and techniques, individual and group interactions, and their long-term effects. It may also be valuable to verify the efficacy of CBT delivered online or over the phone via video conferencing, particularly in the patient group concerned. This type of psychotherapeutic intervention would likely facilitate quicker establishment of relationships and allow earlier integration of psychotherapy into the treatment process.

CONCLUSIONS

Although our review of studies exploring the application and efficacy of recent and classical CBT in patients with spinal complaints has yielded promising outcomes, it is not possible to draw definitive conclusions or recommendations at this time. The examined studies exhibit a range of limitations, including high heterogeneity, small group sizes, and a wide diversity of research protocols. Further randomised and controlled trials based on clear inclusion and exclusion criteria are needed, and these should involve other homogeneous patient populations. Moreover, these studies should evaluate therapeutic objectives, the efficacy of specific interventions, the psychotherapeutic protocol employed, as well as the duration and intensity of interventions. They should also examine the improvements achieved with regard to age, sex, premorbid functioning, and type of condition, and consider the effects of environmental and psychological factors as potential mediators of the ultimate therapeutic goal.

Nevertheless, it is clear that cognitive-behavioural therapy can be effective for managing pain, emotional distress, and behavioural issues in individuals with spinal complaints. Although further research is warranted, the preliminary evidence suggests that this should focus on exploring the benefits of CBT in this patient group.

Conflict of interest

The authors do not declare any financial or personal links with other persons or organisations that might adversely affect the content of the publication or claim any right to the publication.

Author contributions

Writing of manuscript: AP, WL. Critical review of manuscript: MR. Final approval of manuscript: AP, WL, MR.

References

Adams MA: Biomechanics of back pain. Acupunct Med 2004; 22: 178–188.
Anson K, Ponsford J: Evaluation of a coping skills group following traumatic brain injury. Brain Inj 2006; 20: 167–178.
Archer KR, Devin CJ, Vanston SW et al.: Cognitive-behavioral-based physical therapy for patients with chronic pain undergoing lumbar spine surgery: a randomized controlled trial. J Pain 2016; 17: 76–89.
Bae HW, Rajaee SS, Kanim LE: Nationwide trends in the surgical management of lumbar spinal stenosis. Spine (Phila Pa 1976) 2013; 38: 916–926.
Barbiellini Amidei C, Salmaso L, Bellio S et al.: Epidemiology of traumatic spinal cord injury: a large population-based study. Spinal Cord 2022; 60: 812–819.
Barrett D, Brintz CE, Zaski AM et al.: Dialectical pain management: feasibility of a hybrid third-wave cognitive behavioral therapy approach for adults receiving opioids for chronic pain. Pain Med 2021; 22: 1080–1094.
Beck AT, Davis DD, Freeman A (eds.): Cognitive Therapy of Personality Disorders. 3rd ed., Guliford Press, 2015.
Beck JS: Cognitive Therapy for Challenging Problems: What to do When the Basics Don't Work. Guilford Press, 2005.
Beck JS: Terapia poznawczo-behawioralna. Podstawy i zagadnienia szczegółowe. 2nd ed., Wydawnictwo Uniwersytetu Jagiellońskiego, 2012.
Bédard M, Felteau M, Marshall S et al.: Mindfulness-based cognitive therapy: benefits in reducing depression following a traumatic brain injury. Adv Mind Body Med 2012; 26: 14–20.
Boos N, Aebi M: Choroby kręgosłupa. Vol. 1, Medipage, Warszawa 2016.
Borza L: Cognitive-behavioral therapy for generalized anxiety. Dialogues Clin Neurosci 2017; 19: 203–208.
Burke D, Lennon O, Blake C et al.: An internet-delivered cognitive behavioural therapy pain management programme for spinal cord injury pain: a randomized controlled trial. Eur J Pain 2019; 23: 1264–1282.
Coronado RA, Ehde DM, Pennings JS et al.: Psychosocial mechanisms of cognitive-behavioral-based physical therapy outcomes after spine surgery: preliminary findings from mediation analyses. Phys Ther 2020; 100: 1793–1804.
Craig AR, Hancock K, Dickson H et al.: Long-term psychological outcomes in spinal cord injured persons: results of a controlled trial using cognitive behavior therapy. Arch Phys Med Rehabil 1997; 78: 33–38.
Davidson K: Cognitive Therapy for Personality Disorders. A Guide for Clinicians. 2nd ed., Routledge, 2008.

Diaz E, Morales H: Spinal cord anatomy and clinical syndromes. Semin Ultrasound CT MR 2016; 37: 360–371.
Djurasovic M, Glassman SD, Howard JM et al.: Health-related quality of life improvements in patients undergoing lumbar spinal fusion as a revision surgery. Spine (Phila Pa 1976) 2011; 36: 269–276.
Dorsett P, Geraghty T, Sinnott A et al.: Hope, coping and psychosocial adjustment after spinal cord injury. Spinal Cord Ser Cases 2017; 3: 17046.
Dorstyn DS, Mathias JL, Denson LA: Psychological intervention during spinal rehabilitation: a preliminary study. Spinal Cord 2010; 48: 756–761.
Duchnick JJ, Letsch EA, Curtiss G: Coping effectiveness training during acute rehabilitation of spinal cord injury/dysfunction: a randomized clinical trial. Rehabil Psychol 2009; 54: 123–132.
Eli I, Lerner DP, Ghogawala Z: Acute traumatic spinal cord injury. Neurol Clin 2021; 39: 471–488.
Elliott TR, Kennedy P: Treatment of depression following spinal cord injury: an evidence-based review. Rehabil Psychol 2004; 49: 134–139.
Fann JR, Bombardier CH, Vannoy S et al.: Telephone and in-person cognitive behavioral therapy for major depression after traumatic brain injury: a randomized controlled trial. J Neurotrauma 2015; 32: 45–57.
Figueiredo N: Motor exam of patients with spinal cord injury: a terminological imbroglio. Neurol Sci 2017; 38: 1159–1165.
Fleckenstein J, Floessel P, Engel T et al.: Individualized exercise in chronic non-specific low back pain: a systematic review with meta-analysis on the effects of exercise alone or in combination with psychological interventions on pain and disability. J Pain 2022; 23: 1856–1873.
Fritsch CG, Ferreira ML, Maher CG et al.: The clinical course of pain and disability following surgery for spinal stenosis: a systematic review and meta-analysis of cohort studies. Eur Spine J 2017; 26: 324–335.
Galvin LR, Godfrey HP: The impact of coping on emotional adjustment to spinal cord injury (SCI): review of the literature and application of a stress appraisal and coping formulation. Spinal Cord 2001; 39: 615–627.
Hancock KM, Craig AR, Dickson HG et al.: Anxiety and depression over the first year of spinal cord injury: a longitudinal study. Paraplegia 1993; 31: 349–357.
Hanus-Atras K, Iżecka J: bóle kręgosłupa – przyczyny, postępowanie. Med Og 2010; 16: 315–322.
Hartvigsen J, Hancock MJ, Kongsted A et al.; Lancet Low Back Pain Series Working Group: What low back pain is and why we need to pay attention. Lancet 2018; 391: 2356–2367.
Hawley LA, Newman JK: Group interactive structured treatment (GIST): a social competence intervention for individuals with brain injury. Brain Inj 2010; 24: 1292–1297.
Henke AM, Billington ZJ, Gater DR Jr: Autonomic dysfunction and management after spinal cord injury: a narrative review. J Pers Med 2022; 12: 1110.
Henschke N, Ostelo RW, van Tulder MW et al.: Behavioural treatment for chronic low-back pain. Cochrane Database Syst Rev 2010; 2010: CD002014.
Ho EKY, Chen L, Simic M et al.: Psychological interventions for chronic, non-specific low back pain: systematic review with network meta-analysis. BMJ 2022; 376: e067718.
Hoffman BM, Papas RK, Chatkoff DK et al.: Meta-analysis of psychological interventions for chronic low back pain. Health Psychol 2007; 26: 1–9.
Kahan JS, Mitchell JM, Kemp BJ et al.: The results of a 6-month treatment for depression on symptoms, life satisfaction, and community activities among individuals aging with a disability. Rehabil Psychol 2006; 51: 13–22.
Kassolik K, Rajkowska-Labon E, Tomasik T et al.: Recommendations of the Polish Society of Physiotherapy, the Polish Society of Family Medicine and the College of Family Physicians in Poland in the field of physiotherapy of back pain syndromes in primary health care. Fam Med Prim Care Rev 2017; 19: 323–334.
Keeley P, Creed F, Tomenson B et al.: Psychosocial predictors of health-related quality of life and health service utilisation in people with chronic low back pain. Pain 2008; 135: 142–150.
Kemp BJ, Kahan JS, Krause JS et al.: Treatment of major depression in individuals with spinal cord injury. J Spinal Cord Med 2004; 27: 22–28.
Kennedy P, Rogers BA: Anxiety and depression after spinal cord injury: a longitudinal analysis. Arch Phys Med Rehabil 2000; 81: 932–937.
Khan F, Amatya B, Drummond K et al.: Effectiveness of integrated multidisciplinary rehabilitation in primary brain cancer survivors in an Australian community cohort: a controlled clinical trial. J Rehabil Med 2014; 46: 754–760.
King C, Kennedy P: Coping effectiveness training for people with spinal cord injury: preliminary results of a controlled trial. Br J Clin Psychol 1999; 38: 5–14.
Kirshblum SC, Burns SP, Biering-Sorensen F et al.: International standards for neurological classification of spinal cord injury (revised 2011). J Spinal Cord Med 2011; 34: 535–546.
Klonoff P: Psychotherapy after Brain Injury. Principles and Techniques. Guilford Press, 2010.
Kuzu D, Troost JP, Carlozzi NE et al.: How do fluctuations in pain, fatigue, anxiety, depressed mood, and perceived cognitive function relate to same-day social participation in individuals with spinal cord injury? Arch Phys Med Rehabil 2022; 103: 385–393.
Lamb M, Brenner JS: Back pain in children and adolescents. Pediatr Rev 2020; 41: 557–569.
Lazarus RS, Folkman S: Stress, Appraisal, and Coping. Springer, New York 1984.
Leahy R: Techniki terapii poznawczej. Podręcznik praktyka. 2nd ed., Wydawnictwo Uniwersytetu Jagiellońskiego, 2018.
Lee H, Hübscher M, Moseley GL et al.: How does pain lead to disability? A systematic review and meta-analysis of mediation studies in people with back and neck pain. Pain 2015; 156: 988–997.
Lepping P, Whittington R, Sambhi RS et al.: Clinical relevance of findings in trials of CBT for depression. Eur Psychiatry 2017; 45: 207–211.
Li Y, Bressington D, Chien WT: Systematic review of psychosocial interventions for people with spinal cord injury during inpatient rehabilitation: implications for evidence-based practice. Worldviews Evid Based Nurs 2017; 14: 499–506.
Liu C, Ferreira GE, Shaheed CA et al.: Surgical versus non-surgical treatment for sciatica: systematic review and meta-analysis of randomised controlled trials. BMJ 2023; 381: e070730.
Ma TW, Yuen ASK, Yang Z: The efficacy of acceptance and commitment therapy for chronic pain: a systematic review and meta-analysis. Clin J Pain 2023; 39: 147–157.
Malpus Z, Nazar Z, Smith C et al.: Compassion focused therapy for pain management: '3 systems approach' to understanding why striving and self-criticism are key psychological barriers to regulating activity and improving self-care for people living with persistent pain. Br J Pain 2023; 17: 87–102.
Mariano TY, Urman RD, Hutchison CA et al.: Cognitive behavioral therapy (CBT) for subacute low back pain: a systematic review. Curr Pain Headache Rep 2018; 22: 15.
Middleton JW, Dayton A, Walsh J et al.: Life expectancy after spinal cord injury: a 50-year study. Spinal Cord 2012; 50: 803–811.
Milanov I: Back pain. Pediatr Med Rodz 2014; 10: 253–264.
Minen M, Jinich S, Vallespir Ellett G: Behavioral therapies and mind-body interventions for posttraumatic headache and post-concussive symptoms: a systematic review. Headache 2019; 59: 151–163.
Moreira-Silva I, Teixeira PM, Santos R et al.: The effects of workplace physical activity programs on musculoskeletal pain: a systematic review and meta-analysis. Workplace Health Saf 2016; 64: 210–222.
Müller-Jensen L, Ploner CJ, Kroneberg D et al.: Clinical presentation and causes of non-traumatic spinal cord injury: an observational study in emergency patients. Front Neurol 2021; 12: 701927.
Nguyen S, McKay A, Wong D et al.: Cognitive behavior therapy to treat sleep disturbance and fatigue after traumatic brain injury: a pilot randomized controlled trial. Arch Phys Med Rehabil 2017; 98: 1508–1517.e2.
Norman-Nott N, Hesam-Shariati N, Wilks CR et al.: Internet-delivered dialectical behavioral therapy skills training for chronic pain: protocol for a randomized controlled trial. JMIR Res Protoc 2023; 12: e41890.

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O'Keeffe M, George SZ, O'Sullivan PB et al.: Psychosocial factors in low back pain: letting go of our misconceptions can help management. Br J Sports Med 2019; 53: 793–794.
O'Keeffe M, O'Sullivan P, Purtill H et al.: Cognitive functional therapy compared with a group-based exercise and education intervention for chronic low back pain: a multicentre randomised controlled trial (RCT). Br J Sports Med 2020; 54: 782–789.
Parrish JM, Jenkins NW, Parrish MS et al.: The influence of cognitive behavioral therapy on lumbar spine surgery outcomes: a systematic review and meta-analysis. Eur Spine J 2021; 30: 1365–1379.
Pinheiro MB, Ferreira ML, Refshauge K et al.: Symptoms of depression as a prognostic factor for low back pain: a systematic review. Spine J 2016; 16: 105–116.
Ponsford J, Lee NK, Wong D et al.: Factors associated with response to adapted cognitive behavioral therapy for anxiety and depression following traumatic brain injury. J Head Trauma Rehabil 2020; 35: 117–126.
Popiel A, Pragłowska E: Psychoterapia poznawczo-behawioralna. Teoria i praktyka. 2nd ed., Wydawnictwo Naukowe PWN, 2022.
Qaseem A, Wilt TJ, McLean RM et al.; Clinical Guidelines Committee of the American College of Physicians: Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. Ann Intern Med 2017; 166: 514–530.
Rolving N, Nielsen CV, Christensen FB et al.: Does a preoperative cognitive-behavioral intervention affect disability, pain behavior, pain, and return to work the first year after lumbar spinal fusion surgery? Spine (Phila Pa 1976) 2015; 40: 593–600.
Rolving N, Nielsen CV, Christensen FB et al.: Preoperative cognitive-behavioural intervention improves in-hospital mobilisation and analgesic use for lumbar spinal fusion patients. BMC Musculoskelet Disord 2016; 17: 217.
Rolving N, Oestergaard LG, Willert MV et al.: Description and design considerations of a randomized clinical trial investigating the effect of a multidisciplinary cognitive-behavioural intervention for patients undergoing lumbar spinal fusion surgery. BMC Musculoskelet Disord 2014; 15: 62.
Sarin F, Wallin L, Widerlöv B: Cognitive behavior therapy for schizophrenia: a meta-analytical review of randomized controlled trials. Nord J Psychiatry 2011; 65: 162–174.
Schulz R, Czaja SJ, Lustig A et al.: Improving the quality of life of caregivers of persons with spinal cord injury: a randomized controlled trial. Rehabil Psychol 2009; 54: 1–15.
Shaygan M, Böger A, Kröner-Herwig B: How does reduction in pain lead to reduction in disability in patients with musculoskeletal pain? J Pain Res 2019; 12: 1879–1890.
Szepietowska-Illach A: Paradygmat psychoterapii poznawczo-behawioralnej w diagnozie i rehabilitacji neuropsychologicznej. In: Szepietowska EM, Daniluk B (eds.): Rehabilitacja neuropsychologiczna – ujęcie holistyczne. Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, 2018: 177–198.
The Lancet: Rethinking chronic pain. Lancet 2021; 397: 2023.
The Lancet Rheumatology: The global epidemic of low back pain. Lancet Rheumatol 2023; 5: e305.
Thoma N, Pilecki B, McKay D: Contemporary cognitive behavior therapy: a review of theory, history, and evidence. Psychodyn Psychiatry 2015; 43: 423–461.
van Tulder MW, Ostelo RW, Vlaeyen JW et al.: Behavioural treatment for chronic low back pain. Cochrane Database Syst Rev 2000; (2): CD002014.
Turner JA, Jensen MP: Efficacy of cognitive therapy for chronic low back pain. Pain 1993; 52: 169–177.
Vlaeyen JWS, Linton SJ: Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain 2000; 85: 317–332.
Wertli MM, Eugster R, Held U et al.: Catastrophizing – a prognostic factor for outcome in patients with low back pain: a systematic review. Spine J 2014a; 14: 2639–2657.
Wertli MM, Rasmussen-Barr E, Held U et al.: Fear-avoidance beliefs – a moderator of treatment efficacy in patients with low back pain: a systematic review. Spine J 2014b; 14: 2658–2678.
Wewege MA, Bagg MK, Jones MD et al.: Comparative effectiveness and safety of analgesic medicines for adults with acute non-specific low back pain: systematic review and network meta-analysis. BMJ 2023; 380: e072962.
Williams ACC, Fisher E, Hearn L et al.: Psychological therapies for the management of chronic pain (excluding headache) in adults. Cochrane Database Syst Rev 2020; 8: CD007407.
Wu AM, Cross M, Elliott J et al.: Global, regional, and national burden of neck pain, 1990 to 2020 and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. 2023. Available at SSRN: https://ssrn.com/abstract=4427441 or http://dx.doi.org/10.2139/ssrn.4427441.
Zaina F, Tomkins-Lane C, Carragee E et al.: Surgical versus non-surgical treatment for lumbar spinal stenosis. Cochrane Database Syst Rev 2016; 2016: CD010264.
Zelencich LM, Wong D, Kazantzis N et al.: Predictors of anxiety and depression symptom improvement in CBT adapted for traumatic brain injury: pre/post-injury and therapy process factors. J Int Neuropsychol Soc 2020; 26: 97–107.