

## REVIEW

# The efficacy of cognitive-behavioral therapy for treating major depressive disorder comorbid with chronic disease

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Chronic disease can severely impact an individual's quality of life, influencing both physical and mental health. Major depressive disorder is one of the most common diagnoses among patients with physical conditions. Cognitive-behavioral therapy is a prominent evidence-based psychological treatment for depression. The objective of the present review is to summarize current research on the efficacy of this intervention in medically ill patients with comorbid depression. First, the relation between chronic disease and depression will be briefly described. Following this introduction, studies examining the efficacy of cognitive and behavioral techniques for reducing depressive symptoms in patients with frequent chronic diseases will be outlined. Subsequently, the effects of the psychological treatment for different patient populations will be analyzed. Finally, a few recommendations for adapting the intervention protocols to various target groups of people with specific characteristics will be provided in order to improve the mental health of patients with chronic medical conditions.

**Keywords:** depression, chronic disease, cognitive-behavioral therapy

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## Chronic disease and depression

Despite the fact that life span is longer now, chronic medical conditions are more prevalent than in the last century. Chronic medical conditions are persistent diseases, which may deteriorate, fluctuate, or be characterized by remissions. Common chronic diseases are cardiovascular problems, diabetes, cancer, or arthritis. In order to manage a chronic disease, patients often engage in various health-related behaviors such as taking medication, dieting, exercising and seeing physicians to check their status [1].

The relation between chronic disease and depression is complex, in the sense that depression may influence the course and evolution of other medical conditions, while chronic health problems also exacerbate depressive symptoms [2]. People with chronic health conditions have a poor quality of life, especially if they present multi-morbidity or if the disease onset occurs at a young age [3,4]. It has been shown that depressive symptoms increase following the diagnosis of chronic conditions such as diabetes, heart disease and cancer [5]. Moreover, a community study found that chronic disease interacts with depression to predict the number of outpatient visits, hospitalizations and days spent in the hospital among elderly, and self-rated health mediates this association [6]. Chronic pain in particular, which occurs in many medical conditions, is strongly associated with depressive symptoms and even with suicidal ideation [7,8]. Several factors that promote psychological adjustment to chronic diseases were identified, such as

emotional stability, rational and flexible cognitive styles, as well as the pursuit of attainable goals [9,1].

## The efficacy of cognitive-behavioral therapy

### The efficacy of cognitive-behavioral therapy for major depressive disorder in patients with chronic disease

Cognitive-behavioral therapy (CBT) is a widely used psychological treatment for various mental disorders, including major depressive disorder, which targets dysfunctional beliefs or cognitions believed to contribute to mood disturbances. It proved to be an effective intervention for reducing depressive symptoms at short-term, mid-term and long-term follow-up [10]. Several studies suggest that combination treatment using pharmacotherapy and CBT is a sustainable intervention for preventing relapses in major depressive disorder [11]. There is evidence that an integrative CBT or rational emotive behavioral therapy intervention can reduce negative emotions and increase emotional stability, and the most important mechanism of change was found to be restructuring the low frustration tolerance irrational belief [12].

Concerning the management of chronic disease, CBT involves the use of various cognitive and behavioral techniques for influencing factors that trigger, maintain or worsen the symptoms. Simple techniques such as agenda setting, self-monitoring, behavioral experiments, and changing dysfunctional thoughts may be applied to help patients deal with chronic medical conditions [13].

CBT proved to be a viable intervention for depressive symptoms that come with chronic disease in randomized clinical trials, which demonstrated that patients benefit from the psychological treatment in terms of symptom

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reduction, relapse prevention, improved functioning in the community, adherence to treatment, workplace involvement, and satisfaction with care received [14]. A meta-analysis explored the effectiveness of CBT for treating depression in patients with cardiovascular disease, showing that the intervention significantly reduced both depression and anxiety, and improved quality of life. CBT sessions typically involved teaching patients to monitor their mood by identifying and challenging the thoughts and behaviors which lead to their depressed or anxious state [15]. Similarly, studies showed that CBT may relieve symptoms of depression in a relative short period of time (under eight weeks of treatment) in patients diagnosed with chronic obstructive pulmonary disease [16]. A randomized trial conducted in a rural primary care setting revealed that a tailored, integrated care model that incorporated CBT principles is beneficial in terms of both behavioral and glycemic outcomes in patients with type 2 diabetes and comorbid depression. In other words, the alleviation of depressive symptoms following the psychological intervention may promote healthier lifestyle choices and treatment adherence, which are very important for managing diabetes [17]. Moreover, the results of a meta-analysis proved that CBT may be effective in reducing depressive symptoms and fasting glucose in diabetes patients with depression, improving their overall quality of life [18]. Major depressive disorder is also common among patients with end stage renal disease that require kidney transplantation or dialysis, which is a burdensome treatment. CBT demonstrated positive outcomes for alleviating depressive symptoms in hemodialysis patients [19]. A study that comparatively tested the effects of CBT and pharmacological treatment with sertraline concluded that, after 12 weeks of intervention, depression scores were modestly better with sertraline treatment than with CBT, but both were efficient strategies for depression in hemodialysis patients [20]. In a similar way, a study compared three interventions for depression (individual CBT, supportive-expressive group therapy, and the antidepressant sertraline) in patients with multiple sclerosis, a chronic disease of the central nervous system that is often disabling. After 16 weeks of treatment, the most significant changes regarding the diagnosis of major depressive disorder were seen in multiple sclerosis patients who received the CBT or sertraline treatments, in comparison with those who participated at the supportive group treatment [21]. This research results are in line with the conclusion of another review demonstrating that psychological and pharmacological interventions are efficient in reducing depressive symptoms among individuals with multiple sclerosis [22]. CBT is also considered the gold-standard psychological intervention for mood and anxiety disorders, or insomnia associated with cancer [23,24]. For example, a significant number of cancer survivors with major depressive disorder as a primary diagnosis met criteria for remission after 20 individual sessions of CBT. In this particular study, the CBT intervention protocol included

techniques like behavioral activation and scheduling activities, cognitive reappraisal, thought-records, alternative thoughts generation, evaluation of core beliefs, and strategies for successful maintenance [25].

### **The efficacy of telephone- and internet-delivered cognitive-behavioral therapy in patients with chronic disease and depression**

Some studies explored specific aspects related to treating major depressive disorder in people with chronic illness. Besides CBT treatment as usual, research analyzed the effectiveness of other delivering modalities. A meta-analysis showed that telephone-delivered CBT had a significant impact on depression scores in patients with various medical conditions such as lung and heart disease, multiple sclerosis, or liver problems [26]. Other research supported this outcome, showing that telephone-delivered and classical face-to-face CBT are equally effective for reducing mental health problems associated with chronic obstructive pulmonary disease, chronic health failure, and cancer [27-29]. Furthermore, telephone-based CBT may be a cost-saving and preventive approach for treating anxiety or depression associated with other physical conditions [30]. Beyond that, the intervention quality is most likely not affected, since individuals with chronic medical problems may often prefer this delivery method, especially at times of high distress [31]. Similarly, internet delivered CBT is promising as an alternative to traditional intervention among people with chronic health conditions, but further research is recommended to explore this field [32]. For example, a randomized controlled trial highlighted that internet-delivered CBT was effective in preventing depression at six-month follow-up in older adults with multimorbidity [33].

### **The efficacy of cognitive-behavioral therapy in specific populations of patients with chronic disease and comorbid major depressive disorder**

A few investigations explored the effects of CBT on psychological problems associated with chronic diseases in specific patient populations. Gender differences may be an important factor that affects the outcomes of psychological intervention in patients with coronary artery disease and depression. Specifically, women generally present more signs of negative affect and show a stronger response to the CBT treatment [34]. Regarding youth population, a review concluded that psychological interventions based on cognitive and behavioral principles are likely to work with children and adolescents who present moderate symptoms of these disorders and a diagnosis of a long-term physical condition such as respiratory, cardiovascular and gastrointestinal conditions, diabetes or cancer [35]. These results are also supported by other studies that indicated positive outcomes of CBT among children with inflammatory bowel disease, chronic renal disease and malignant tumor during chemotherapy [36-38]. An intervention protocol for youth was provided in a trial that evaluated the effec-

tiveness of guided internet- and mobile-based CBT for adolescents and young adults with somatic conditions and comorbid depression and anxiety symptoms. The on-line intervention content included modules with various objectives like becoming aware of personal strengths and abilities, integrating physical and pleasurable activities into daily life, learning to deal with bad moods and dysfunctional cognitions, improving skills for coping with intense emotions, or increasing social support [39]. Besides, research emphasized that brief CBT reduces suicidal ideation in older veterans with chronic illnesses like congestive heart failure or chronic obstructive pulmonary disease and elevated depression [40].

Additionally, medically ill patients with religious beliefs may benefit from an adaptation of CBT that integrates religious elements from five major world confessions (Christianity, Judaism, Islam, Buddhism, and Hinduism). The intervention protocol implemented in this research comprised of classical CBT techniques for depression like behavioral activation or identifying and challenging unhelpful thoughts, as well as more spiritual themes such as dealing with loss, coping with faith struggles, altruism, generosity, spiritual growth and hope [41]. Likewise, it was shown that an acceptance-oriented CBT approach incorporated in a multimodal rehabilitation program for highly distressed patients with rheumatic diseases. The intervention focused on acceptance as a way to acknowledge the medical condition and to engage in valued life activities despite disturbing symptoms. An acceptance framework was thought to improve patients' coping flexibility; that is, the restructuring of cognitions and behavior can help both dealing with situations that can be changed and embracing the unavoidable consequences of the disease as a strategy to face situations that cannot be changed [42].

### Limitations and considerations for future research

Although there is an increased research interest into this area, there are several limitations of the existing studies. First, this research is often limited to people with specific characteristics, restricting the generalization of results [18,33]. Therefore, future research directions should include investigating the efficacy of cognitive-behavioral therapy for major depressive disorder in people with chronic health conditions from populations that differ in terms of ethnicity, age, and educational level. Second, different chronic diseases have varying clinical pictures, which may influence which symptoms of major depressive disorder should be the focus of treatment [39]. Consequently, further studies are needed to explore the efficacy of CBT interventions for patients with different clusters of physical symptoms, such as pain, choking, and fatigue. Third, most of the randomized clinical trials investigated depressive symptoms through self-report measures [15, 19]. Subsequent studies could double self-reports with more objective measures, such as neuroimaging techniques, for

mapping the neuronal effects of major depressive disorder in chronically ill patients, as well as the changes associated with the psychological treatment.

### Conclusions and future research recommendations

In conclusion, psychological interventions based on CBT principles and techniques are a viable treatment option for major depressive disorder comorbid with chronic diseases. Research findings indicate that CBT can help reducing depressive symptoms in patients diagnosed with a wide range of medical conditions. Alleviating affective problems, CBT may promote healthy lifestyle decisions and behavioral changes that promote the long-term well-being of medically ill people. The intervention can be flexibly adapted to various delivery conditions and specific patient populations in order to maximize its advantages. Further research may clarify particular requirements of certain patient groups with the purpose of developing more targeted CBT approaches for depression co-occurring with lasting physical illness.

### Authors' contribution

C. C. (Conception or design of the work, data interpretation; drafting and critical revise; final approval of the version to be published; agreement to be accountable for all aspects of the work).

C. P. (Conception of the work; data interpretation; drafting and critical revise; final approval of the version to be published; agreement to be accountable for all aspects of the work).

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### Conflict of interest

None to declare.

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