PSYCHOTERAPIA 2 (181) 2017
strony: 5–20

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COGNITIVE-BEHAVIOURAL THERAPY IN CANCER TREATMENT

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cognitive-behavioural therapy
anxiety disorders
depression

Summary

The changes which occur after cancer diagnosis such as hospitalisations, appointments, stressful procedures, medical check-ups, fear of pain, disability, dependence and death are a serious burden for many patients and can lead to depression and anxiety disorders. Due to a number of challenges cancer patients have to face, cancer can be understood as a critical life event, which requires a process of adaptation. Cognitive-behaviour therapy in physical illnesses consists of modifying those thoughts and behaviours, which can sustain mental problems even if their source is in struggling with a physical illness. When cancer appears to be the main developmental task for a patient and his family is to give illness experience such a meaning which reinforces their competence and efficacy. The aims of this article include: 1) a short description of cognitive-behaviour therapy and its modification in cancer treatment, 2) justification for cognitive-behaviour therapy in cancer, 3) a presentation of two protocols in depression and anxiety disorders therapy during cancer treatment, 4) a review of research results on cognitive-behaviour therapy effectiveness in cancer.

Cognitive-Behavioural Therapy in cancer patients

The aim of this article is to discuss cognitive-behavioural therapy for the patients with cancer to and present two therapy protocols that have been empirically confirmed in terms of effectiveness in the treatment of depression and anxiety disorders accompanying the disease.

The confrontation with the diagnosis of cancer for patients and their family is a big cognitive, emotional, social and existential challenge. The disease starts a downward spiral of losses: the loss of the job, deterioration of the material situation or exclusion from the society. Many emotional reactions, such as shock, disbelief, anger, fright, apathy, melancholy, denial, confusion, the feeling of losing control over one's life, the fear of death or omission important life events appear in response to diagnosis of cancer [1].

1. Psychosocial image of cancer

Cancer evokes diversified spectrum of psychosocial requirements. Rolland [2] divided the diseases according to: the beginning – acute vs. mild symptoms; the clinical course – progressive (metastatic cancer), stable (breast cancer at early stage), recurrent (leukaemia, myeloma); (3) result: diseases which

usually don't influence the life's length, e.g. basal cell carcinoma are up on one end of continuum and up on the other end there are progressive, terminal diseases, such as metastatic cancer, in between there are more unpredictable diseases, which may shorten the life and cause sudden death; (4) causing invalidity – diseases significantly vs. insignificantly impairing functioning. The diseases in separate groups imply distinct psychological situation of patients and their families.

Cancer is a process spread over time, which has characteristic points, transitional stages and changeable requirements. Rolland [2] distinguishes three main stages of development of the disease, namely, crisis, chronic phase and terminal phase.

2. A brief characteristic of Cognitive-Behavioural Therapy

The concept of cognitive-behavioural therapy (CBT) refers to a wide range of psychological approaches, which emphasize the role of thoughts and behaviours in triggering and sustaining psychological distress. This therapy is structured around and focused on the problem, where recognition or conscious access to thoughts and beliefs are central. The interactions of thoughts, behaviours, emotions and physical sensations are emphasised in the assumptions. The cognitive-behavioural therapy helps the patients control if their current view of a given situation is adequate or helpful, question their opinions and support exploring alternate thoughts [3-5].

The CBT reinforces the sense of self-efficiency through teaching a patient to identify and modify useless thoughts, beliefs and behaviours. The therapist and the patient work together over setting the aim of the therapy and creating a shared conceptualization. The therapist helps the patients treat their negative beliefs as hypotheses about themselves. Next, they are tested using cognitive and behavioural techniques. This approach is called empiricism based on cooperation. The patients are treated as experts of their own problems and experiences. The therapist proposes searching for solutions to the problems together, namely, the patient provides raw data, such as thoughts and behaviour, and the therapist provides the structure and competences in problem solving. The therapeutic sessions have a structured form, take place according to the plan established by the therapist and include both setting new and checking previous homework, which purpose is testing beliefs and new ways of coping between sessions. The therapeutic aims are clearly stated. Moreover, the patient's progress is monitored and evaluated all the time. They are asked for feedback during each session [3-5].

The interventions used in CBT are based on profound conceptualisation of a patient's problems. The conceptualisation is a working hypothesis, which tries to explain the background and mechanism of the patient's lingering difficulties, in accordance with the theory underlying CBT and data collected during

the diagnosis process. The therapist openly shares the conceptualisation with the patient and modifies it under the feedback. The conceptualisation constitutes the basis of the theory [3-5].

3. Mental disorders in the course of cancer and their treatment recommendations.

The question how the cognitive-behavioural therapy helps the patients cope with cancer has at least two answers. Firstly, psychological difficulties experienced by the sick are similar to the ones in which experimental studies, which belong to the mainstream medicine based on scientific evidence and prove effectiveness of CBT. The occurrence of depression fluctuates from 15% to 25%, which includes about 13% of patients with major depressive disorder [6]. Clinically relevant anxiety symptoms occur with about 30-40% of patients [7]. The symptoms relatively frequently co-occur. Stark and the others [8] proved that 38% of patients with anxiety disorders also had greater depression disorders. Moreover, the patients treated for mental disorders in the past are at increased risk of their occurrence after the cancer diagnosis. In addition to the proven effectiveness in the treatment of depression, generalised anxiety disorder and panic attacks, the therapy provides methods of working with problems typical of cancer, such as insomnia or chronic fatigue [9, 10]. Furthermore, the theory underlying CBT and therapeutic approaches which focus on normalising the response to stress, cooperation and solving problems are particularly helpful in understanding stress reactions and various strategies of coping with it and treating those maladaptive [3].

Table 1. **Recommendations of American Society of Clinical Oncology in the field of diagnosis, assessment and treatment of depression and anxiety disorders of the patients with cancer**

Diagnosis, assessment, treatment: depression in adult patients with cancer		
The level of symptomatology on the basis of PHQ-9	Further screening	Treatment
None/mild symptomatology Score 1–7		Offer referral to supportive care services
Moderate symptomatology, score 8–14	Identify pertinent history/specific risk factors for depression: ▪ Familial history of depression ▪ Prior depressive disorder ▪ Psychiatric treatment in past ▪ Illness severity ▪ Gender ▪ Relationship status ▪ Presence of chronic illness(es) in addition to cancer ▪ Socioeconomic status	Moderate symptoms: low intensity interventions include: ▪ Individually guided self-help based on CBT ▪ Group based CBT for depression ▪ Group psychosocial interventions ▪ Structured physical activity program ▪ Pharmacologic interventions

Moderate to severe symptomatology, score 15–19		Moderate to severe, severe symptoms: high intensity interventions include: ▪ Individual psychotherapy (CBT, interpersonal therapy) ▪ Pharmacologic interventions ▪ Combined: psychotherapy and pharmacology
Severe symptomatology, score 20–27		
Diagnosis, assessment, treatment: anxiety disorders in adults with cancer		
The level of symptomatology on the basis of GAD-7	Further screening	Treatment
None/ mild symptomatology Score 0-4, 5-9		Offer referral to supportive care services
Moderate symptomatology Score 10-14	Identify pertinent history/specific risk factors for anxiety: ▪ Familial history of anxiety ▪ Prior psychiatric treatment ▪ History or presence of alcohol or substance use or abuse ▪ Presence of other chronic illness(es)	Moderate symptoms: low intensity interventions include: ▪ Education and active monitoring ▪ Self-help based on CBT ▪ Group psychosocial interventions ▪ Pharmacologic interventions ▪ Combined: psychotherapy and pharmacology
Moderate to severe symptomatology, score 15-21		Moderate to severe, severe symptoms: high intensity interventions include: ▪ Individual psychotherapy (CBT, applied relaxation) ▪ Pharmacologic interventions ▪ Combined: psychotherapy and pharmacology

The National Institute for Health and Clinical Excellence (NICE, 2009) [11] also recommends cognitive-behavioural therapy in case of depression accompanying chronic diseases of the adults as proven in empirical research, in treatment of moderate and severe depression. What is more, NICE proposes creating a model of psychological interventions based on graded care for cancer patients according to aggravation of depression symptoms (Table 2).

Table 2. **The model of graded care in application of psychological interventions**
Own elaboration on the basis of: Depression in adults with a chronic physical health problem. NICE clinical guideline 91 [11].

Step 4: Severe depression; risk to life; severe self-neglect Medication, high-intensity psychological interventions, electroconvulsive therapy, crisis service, combined treatments, multiprofessional and inpatient care
Step 3: Persistent subthreshold depressive symptoms or mild to moderate depression with inadequate response to initial interventions; moderate and severe depression Medication, high-intensity psychological interventions, combined treatments, collaborative care and referral for further assessment and interventions
Step 2: Persistent subthreshold depressive symptoms; mild to moderate depression Low-intensity psychosocial interventions, psychological interventions, medication and referral for further assessment and interventions
Step 1: All known and suspected presentations of depression Assessment, support, psychoeducation, active monitoring and referral for further assessment and interventions

4. The process of adaptation to cancer

In the case of a critical life event such as cancer, people have to work out more adequate, new ways of functioning, which means initiation of a restructuring process of their hitherto experience [1].
Jimmie Holland and Jane Gooen-Piels [12] distinguish three phases of adapting to cancer: (1) initial reaction to diagnosis – patients frequently undermine the results or doctor's competences and distorts information they get, (2) dysphoria – a patient starts acknowledging the reality of the diagnosis, often feels emotional tension, which evokes insomnia, problems with concentration, loss of appetite, lowering of mood and increased anxiety; owing to information about the treatment possibility, the patient may start feeling hopeful and optimistic, (3) adaptation – the patient develops strategies of coping with the disease due to which the imbalance caused by the disease is restored and maintained.

According to transactional stress approach, the diagnosis and treatment are serious stressors. Lazarus and Folkman [13] distinguish two types of cognitive assessment in a stressful situation: the initial assessment of the diagnosis as a challenge, threat or loss leads to the secondary assessment of one's own capacities and available resources of coping with disease. If a diagnosis is seen as a challenge possible to cope with and prognoses are optimistic, positive adaptation style called 'fighting spirit' will form. It expresses mobilisation to cope with the disease.

If a diagnosis is regarded as a loss or defeat and death as inevitable, the strategy 'helplessness/hopelessness' arises. The patient then passively surrenders to the illness. A person who is focused on the endangerment associated with the disease and unpredictability of the future becomes anxiously absorbed with disease and each change interprets as deterioration of health.

Fatalism and cognitive avoidance are two other models of interpretation and coping with disease. Patients asked, 'What can be done about it?' search for responsibility outside by handing it over to doctors,

faith or God tend to have fatalistic attitude to the disease. However, for some people the stress associated with the illness may so intensive that they minimize, avoid or even negate the gravity of the situation. Direct denial of the disease diagnosis is relatively rare, but trivialising the disease seriousness or its influence no life is frequent. Cognitive avoidance can be an active coping strategy with illness when it is based on deliberate pushing thoughts about disease away and distracting the attention from it [14]. Research proves that the patients with dominant strategies either 'anxious preoccupation' or 'helpless-hopeless' feel grater emotional distress and have a poorer quality of life connected with the disease in comparison to the patients with 'fighting spirit' strategy [3].

5. Beliefs appearing in cancer disease

In health psychology, the key role in adapting to the disease has its cognitive representation. On the basis of years of research, Leventhal [15] created the self-regulation model of illness and health, which consists of five dimensions concerning patient's beliefs about the essence of the disease, its causes, estimated duration and course, expected consequences, possibilities of controlling it and, finally, recovery. The model emphasises that the strategies of coping with the disease are influenced by its image. The self-regulation model is specification and clarification of the stress concept and dealing with it in the chronic disease. It allows explaining how it influences the patients' lives changing their moods, behaviours, thinking about themselves and the world. In this model the high importance is assigned to processes connected with assigning the meaning to the illness, because they may determine the undertaken actions in order to meet its challenges. CBT is underlined by similar assumptions: thoughts, beliefs about the disease, shape its experiencing.

The cognitive model shows that the meaning assigned by the patient to the symptoms, treatment and side effects determines the emotional reaction and the effects of serious disease have not only physical nature. The interpretation of the diagnosis of the cancer depends on both beliefs about oneself, others and the world and the illness and the treatment. For some people this kind of disease may be a confirmation of hidden fears and activate beliefs such as: 'I am weak', 'The world is dangerous and unpredictable', 'No one will help me'. An individual can have intermediary beliefs and coping strategies directed towards alleviating the unconditional negative beliefs; the cancer diagnosis often triggers the strategies used in the past. For instance, an individual who has the 'The world is dangerous and unpredictable, I am vulnerable, it is not possible to depend on anyone' key beliefs may cope with them by working out the 'As long as I can control my life I am safe' intermediary belief and apply such strategies as perfectionism and independence. Cancer confirms the anxiety, belief in a dangerous world, its weakness and the hitherto

strategies of controlling appear to be ineffective since he or she may be forced to depend on others during the treatment and no longer be self-sufficient [3].

6. Basic principles of Cognitive-Behavioural Therapy in cancer diseases

Methods of cognitive-behavioural therapy in cancer are similar to those applied in the standard cognitive-behavioural therapy for depression and anxiety treatment, although sometimes they require some modifications because of side effects of the treatment, disease symptoms and adaptation process to it. Therapy has to often take place not in the therapist' office but in oncology and haematology wards or at patient's home. Fluctuations in aggravation of the disease symptoms, its side effects and the necessity of hospitalisation may disturb the course and pace of the therapy. In practice, it means that sessions are less formal, more flexible, adapted to the patient's physical condition and supportive and the therapy itself is often shorter and has more limited aims. The fundamental task is to reach maximal change with minimum number of interventions. Furthermore, a therapy is connected with involvement of the patient's family and medical staff [3].

The significant difference between the cognitive-behavioural therapy of individuals with physical disease and the ones with mental disorders is reality of threats they are facing. It is important to distinguish between unrealistic assessments, such as a woman with early stage breast cancer is scared that she will die within a year, and the realistic ones, for example a woman with advanced metastatic breast cancer worries that she will not see her children growing up. If thoughts of an ill person are definitely unrealistic, the standard methods of questioning negative thoughts can be applied. However, if negative thoughts are realistic, therapy is rather based on the coping and solving problems techniques. Moorey [16] points out that facing life-threatening diseases patient's negative thoughts frequently are not the result of cognitive distortions but they reflect the adequate overview.

Stage 1: engagement and conceptualisation

During the first session the therapist makes a contract with the patient and during following ones they build conceptualisation together. The stage of disease and its severity is considered in setting the aims of the therapy. Figure 1 represents aa simple conceptualisation of a patient with advanced cancer.

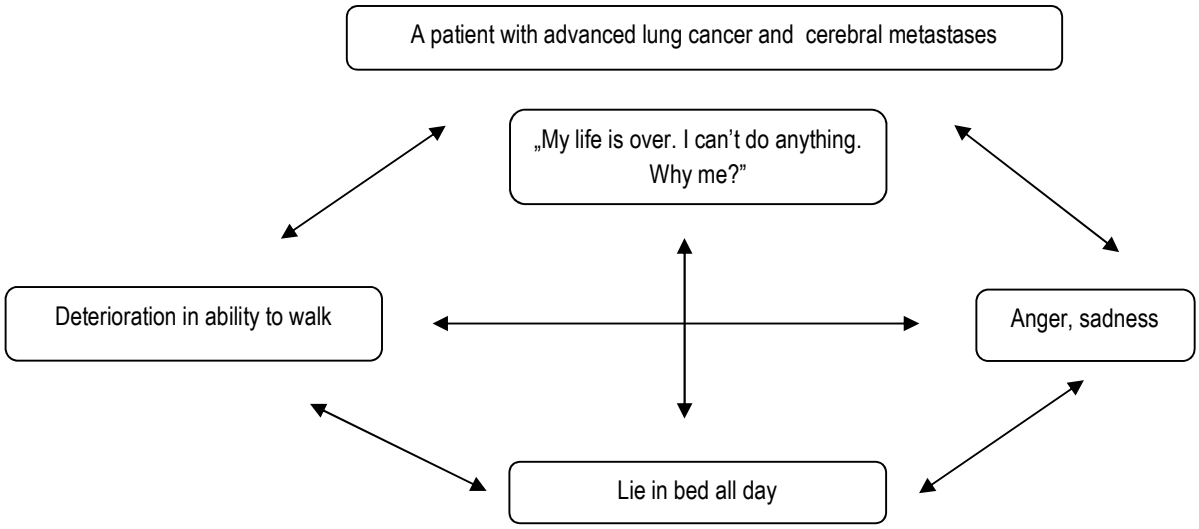

Fig. 1. **A patient with advanced lung tumour – conceptualisation**.
Own elaboration on the basis of Cognitive therapy by Moorey S, Watson M.. W: Holland J, Breitbart W, Butow P, Jacobsen P, Loscalzo M, Mccorkle R, edited by Psychooncology. Oxford: Oxford University Press; 2015, pp. 458–463 [3].

Stage 2: Cognitive and behavioural interventions

Interactions applied result from conceptualisation. Figure 1 demonstrates how a woman with cancer disease found herself in a 'vicious circle' of negative thinking and withdrawal. Ruminations about illness and death evoked the feelings of hopelessness, despair and anger. The physical symptoms such as weakness and pain along with the sense of hopelessness caused that the woman stopped getting out of bed which, in turns, resulted in her feeling of isolation and even greater weakening. In the above case, firstly the patient's thoughts and behaviour were analysed in response to pain. In the next steps it is possible to choose following interactions: (1) emotional techniques to make it easier to survive the predicted mourning; (2) cognitive techniques to test the patient's beliefs that her life has ended and can do nothing about it; (3) behavioural experiment to test the veracity of the negative belief [3].

The cognitive techniques

The threat of cancer disease triggers many negative thoughts and their questioning is inherent to CBT (Table 3).

Table 3. **Questioning automatic thoughts.**

Questioning automatic thoughts
– What is the evidence to believe it is true?
– What is the evidence not to believe it is true?
– Is there an alternative way of looking at the situation?
– What is the worst that could happen?
– What is the best that could happen?
– What will happen most probably?
– What is the effect of thinking this way?
– What would I say to a friend if he or she were in this situation?
– If my friend knew I think this way, what would he or she tell me?
– Do I blame myself for something I didn't have influence on?
– Do I ignore some strong or positive points in me or this situation?
– How can I deal with this?

Own elaboration on the basis of: Moorey, Watson, 2015; Moorey, Greer, 2006; Padesky, Greenberger, 2004. [3, 4, 17]

The used techniques vary with the stage of the disease and prognosis. Patients whose prognosis is good can be helped by searching for and against proof to their beliefs that the future is hopeless. In case of poor prognosis, techniques that refer to the soundness not usefulness of a given thinking are more suitable. For instance, the breakdown of costs and benefits of given thoughts indicates that they are ruminative not helpful and, in effect, they impede solving problems and slow the process of going through the predicted mourning. The cognitive-behavioural therapy may help patients to cope with worrying, as well. It is possible to achieve for example by devoting some the time of day for ruminations and the remaining time for planning activities that will give them the sense of control over their lives. Sometimes realistic thoughts conceal anxieties such as patients' anxiety what will happen to their families after they die. Revealing the anxieties allows the emotional abreaction of predicted loss or development of more effective strategies of solving problems [3].

Some thoughts are focused not on the disease itself but on the consequences connected with it that relate to self-esteem and competence. The patients might feel stigmatised, rejected by the society and might blame themselves for the disease occurrence. Their sense of helplessness comes from the 'all or nothing' thinking. For instance, thinking 'If I cannot be the person, who I have been so far, I am nobody', which leads to concentrating on loss areas rather than areas that can be potentially controlled. Thoughts related to guilt, shame, anger on others and oneself, helplessness often are cognitive distortions, so cognitive techniques can be very useful for checking their legitimacy and functionality [3].

Behavioural techniques

Behavioural techniques consist of providing tasks that the patients can cope well with, which strengthens their sense of effectiveness and control. As a result they may also be released from distress and think more positively about their coping skills. Negative beliefs are changed into hypotheses. For example, the belief "If I cannot do what I have done so far, my life is over" can be tested with the following experiment: The patient is asked to estimate the likelihood that she will enjoy doing small things for the next week. During the next session the results of this behavioural experiment are discussed. Patients usually notice that they have felt more pleasure than they anticipated and, as a result, the vicious circle of inactivity is broken. For depressed patients or those with severe physical ailments, big tasks need to be divided into small steps (tasks grading). The tasks should be meaningful and satisfying for the patients so a therapist can ask for help their family members who know them well. In the case of anxious patients, behavioural experiments allow them to test situations they are afraid of in safe conditions [3].

Stage 3: Strengthening doping and ending therapy

The length and structure of this phase depends on the contract established at the beginning. If therapy lasts 12 or more sessions, it is possible to work on key beliefs, which gives chance to develop and fully assess the impact of the disease on the patient's life. Shorter therapies focus on coping here and now. At the end of therapy, therapists together with patients summarize what the patients have learned, what they have to work on, what can be a source of complications in the future and how to deal with them [3].

7. CBT in anxiety disorders in cancer patients

Greer et al. [18, 19] have developed a short CBT protocol adapted to treat anxiety disorders in patients with advanced cancer. These patients struggle with realistic fears of disease progression, disability, dying, consequences of death for loved ones and existential fear of death ("What will happen to me when I die?"). Symptoms of anxiety often coexist with dyspnoea, chronic fatigue, nausea, pain and poor quality of life. In addition, anxiety can aggravate the severity of symptoms and side effects.

The goal of this therapy is to help patients with advanced cancer to learn strategies to reduce anxiety and worrying and at the same time develop the ability to cope with the symptoms of the disease and treatment side effects. Therapy is short, consists of six to seven sessions, during which the patient goes through four modules: (1) psycho-education and goal setting, (2) relaxation training, (3) coping with fears associated with cancer, and (4) activity planning and pacing.

The basic goals of the first module (approximately one session) include: (1) allowing patients to share their own way of understanding the symptoms of anxiety in the context of their incurable disease;

(2) providing information about CBT anxiety models; showing how advanced cancer patients can experience anxiety on a physical, cognitive and behavioural level, (3) increase motivation for therapy by setting goals and showing how CBT helps to achieve them.

The first module begins with a conversation about the patient's experience with cancer, its treatment, and concerns connected with the illness. Many patients monitor their symptoms acutely and interpret some of them, such as dyspnoea or pain, as a signal of deterioration or impending death. Patients often also worry about the future of their families and financial issues. On the behavioural level, anxiety is usually manifested by avoiding threatening situations. In the context of cancer, such avoidance can mean refusing to undergo medical treatment, adhere to medical recommendations or undergo medical check-up due to increased anxiety over medical procedures and treatment side effects. On the other hand, patients may over-monitor their somatic symptoms, seek reassurance of their condition in different physicians or withdraw from activity. Physical symptoms of anxiety most often include: accelerated breathing, palpitations, muscle tension, abdominal pain. These symptoms may be aggravated due to the illness process and its treatment. Patients and therapists may have doubts about whether these symptoms are due to anxiety, disease progression or treatment. But regardless of aetiology, many of the techniques used in CBT are helpful in coping with both anxiety and medical symptoms. In the first module, the patients also analyse why they want to take the therapy, list two or three clearly defined goals, and explore potential obstacles to their achievement. The other modules can be flexibly adjusted to the patients' problems and goals [18].

In the second module (approximately one session), the primary goals are: (1) helping patients to understand the acute reaction to stress and the mechanism by which physiological symptoms of anxiety can exacerbate the symptoms of cancer and its treatment; (2) building a sense of competence in coping with somatic symptoms through respiratory exercises and autogenic training. These techniques play an important role in coping with chronic diseases and symptoms associated with cancer. Before applying respiratory and relaxation techniques, patients should consult with their physicians to ensure that there are no contraindications for therapy. Patients with advanced cancer often suffer from dyspnoea, which is a source of increased anxiety. Therefore, in this module, the patient and the therapist thoroughly analyse the time and place of dyspnoea, paying attention to whether symptoms occur during rest, exercise or emotional stimulation. Patients practice diaphragmatic breathing and breathing through clenched lips to cope with symptoms such as shortness of breath and reduce stress. Patients who, due to their condition, have difficulties with deep breathing, learn slow breathing with prolonged exhalation. Breathing through

clenched lips is commonly used in chronic obstructive pulmonary disease because it provides natural resistance to prolonging the exhalation phase, strengthens the respiratory muscles and frees up trapped air from the lungs. The second module ends with autogenic relaxation which combines visualization and body awareness to reduce stress. Autogenic training is safe for patients with various chronic diseases experiencing acute and chronic pain, as it does not involve muscle tension [18].

Basic goals in module three (approximately three sessions) include: (1) helping patients identify automatic thoughts and distinguish unrealistic, distorted worries from those realistic; (2) teaching patients the skills of adaptive thinking through the use of cognitive restructuring techniques and coping strategies focused on the present; (3) identifying and resolving any avoiding behaviours which can interfere with the patient's functioning or cancer treatment. Although many of the concerns associated with advanced cancer are justified in reality, their intensity can be compounded by unrealistic, catastrophic predictions and negative beliefs about one's coping skills, which adds up to additional burden. Problem-solving skills are used to deal with realistic concerns, and if one cannot take action, then emotion-based techniques (e.g. self-soothing) or acceptance-based techniques (e.g. mindfulness) are recommended. In terms of problem solving, patients with advanced cancer learn primarily how to divide overwhelming tasks into smaller, feasible steps to reduce cognitive and behavioural avoiding. These steps typically include: defining a problem, formulating possible solutions, choosing the best possible solution, and developing an action plan. On the other hand, the goal of emotion-based and acceptance-based techniques is to focus less on the future and its potential risks, and to build greater awareness of the present and the ability to cope [18].

Chronic fatigue and pain are one of the most common and most stressful symptoms experienced by patients with advanced cancer that seriously interfere with their daily functioning and are associated with fear and poor quality of life. Therefore, the fourth module covers the following objectives: (1) helping patients prepare and adapt to the fluctuations in endurance and symptoms associated with the disease and its treatment; (2) educating patients to prioritize both their daily duties and their activities that give them pleasure; (3) helping in activity planning and determining its pace according to the patients' priorities and their physical limitations resulting from cancer and its treatment. One of the goals of activity planning is to save energy while enhancing the patient's functioning, as both overstraining and over-saving oneself often lead to greater fatigue and pain. Therefore, determining the pace of action consists of helping the patients to identify the limits of their endurance (e.g. by checking how soon they begin to feel fatigue or pain from the start of the activity), teaching the patients to rest during physically demanding tasks so they can do more and maintain the optimum levels of energy and functioning in remaining days. Setting a pace

means keeping the same amount of activity each day irrespective of wellbeing according to time limits determined by comparing patient's good and bad days of the patient [18].

8. CBT in depression treatment

Brothers and co-workers [20] have combined biobehavioral interventions (BBI) adapted to cancer patients with strategies underlying CBT for the treatment of depression. Key elements of behavioral and cognitive therapy include: cognitive restructuring, daily activity monitoring, increased time spent on pleasant activities, and questioning key beliefs.

The biobehavioral model of stress in cancer helps to understand the interaction of psychological, behavioral and biological factors relevant for the progression of cancer. Stress related to cancer often entails an avalanche of negative consequences on the psychological, behavioral and biological levels, but if reduced, the avalanche can be stopped and the individual can develop. Figure 2 depicts the biobehavioral model of stress in cancer [20].

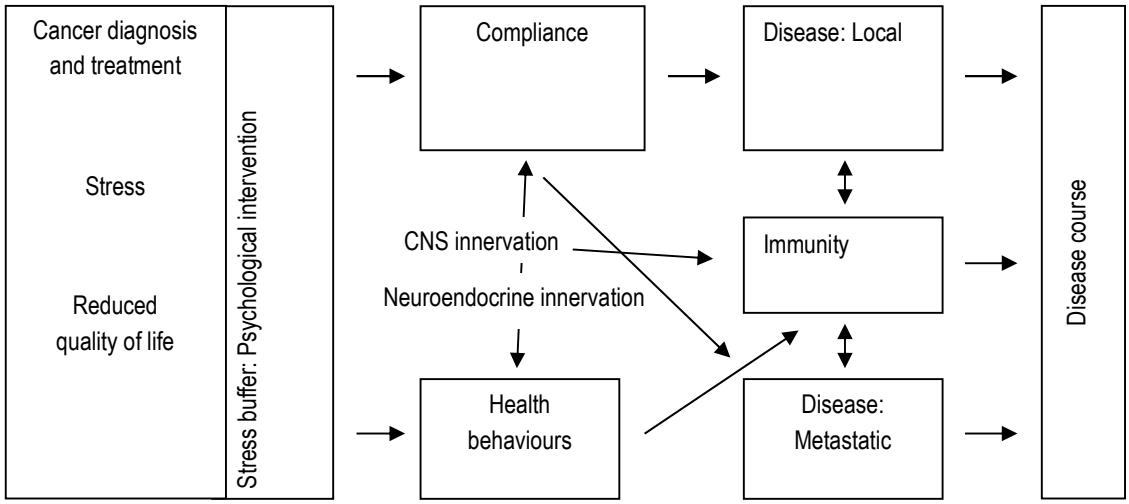

Figure 2. **The biobehavioural model of cancer stress and disease course**
based on: Brothers B, Yang H, Strunk D, Andersen B. Cancer patients with major depressive disorder: testing a biobehavioural/cognitive behaviour intervention. J. Cons. Clin. Psychol. 2011, 79(2): 253–260 [20].

The protocol consists of 12-20 75-minute sessions where patients learn the elements of biobehavioural interventions and cognitive therapy. These impacts include: progressive muscle relaxation, psycho-education on stress, anxiety and depression, psycho-education on cancer and coping with treatment side effects, training in communication with medical staff, assistance in seeking social support, assertive communication training, and problem solving skills, increasing physical activity, and discussing the stages of change and obstacles that may arise in the future. The goals of biobehavioural interventions

are: reduction of stress, improvement of the quality of life, increase of positive and reduction of negative health behaviours, improvement of cooperation between patient and medical staff. Table 4 summarizes the treatment by determining whether particular components are derived from biobehavioural interventions (BBI) or cognitive-behavioural therapy (CBT) [20].

Table 4. **Summary of therapy session content in cancer treatment**

Session(s)	Topic
1–12	Progressive muscle relaxation training (BBI)
1	Responding to the cancer crisis: stress, anxiety/depression, and coping (BBI)
2–3	Coping: seeking disease information and managing treatment side effects (BBI)
2–4	Behavioural activation: rationale for mood improvement, daily activity/symptom log, review success and obstacles, scheduling activities (CBT)
4	Communication with health care providers (BBI)
5–6	Social support: social network identification, emotional versus tangible social support, negative versus positive social support (BBI)
5–8	Cognitive reappraisal: rationale for mood improvement, thoughts record, generating alternative thoughts (CBT)
7–8	Communicating needs: friends, coworkers, parents, siblings, partners, children (BBI)
8–9	Problem solving: defining the problem and generating solutions, designing action plan (BBI)
9–10	Core beliefs: introduction and evaluation of core beliefs (CBT)
10	Exercise: introduction to rhythmic walking (BBI)
11	Review of therapy components: obstacles to maintenance and stages of change as a process (BBI)
12	Strategies for successful maintenance (CBT)

based on: Brothers B, Yang H, Strunk D, Andersen B. Cancer patients with major depressive disorder: testing a biobehavioural/cognitive behaviour intervention. J. Cons. Clin. Psychol. 2011, 79(2): 253–260 [20].

9. Effectiveness of behavioural and cognitive therapy in cancer treatment

The meta-analysis by Osborn and co-workers [22] demonstrated the effectiveness of CBT in the treatment of depression (ES = 1.2; 95% CI = 0.22–2.19), anxiety disorders (ES = 1,99; 95% CI = 0.69–3.31) and quality of life (ES = 0,91; 95% CI = 0,38–1,44). In the analysed therapies, control tests were held between one week and fourteen months after the end of therapy. The quality of life of patients has improved both short-term (ES = 1.45, 95% CI = 0.43–2.47) and long-term (ES = 0.26; 95% CI = 0.06–0.46).

Studies on the efficacy of the protocol developed by Greer and co-workers [19] have shown that patients undergoing CBT reported 35% reduction in anxiety symptoms and 11% in a control group. In addition, patients in CBT reported weakened intrusive disease-related thoughts and fewer avoidance behaviours than patients awaiting treatment. Significantly, therapy was appropriate and available to patients with advanced cancer, approximately 80% of them completed at least five therapeutic sessions. Studies on the effectiveness of the depression treatment protocol developed by Brothers and co-workers [20] have shown that the symptoms of depression have been significantly reduced when assessed both by patients and clinicians: clinically significant changes were seen in 61% (20 out of 33) patients using the

Beck Depression Scale and 69% (18 of 26) according to the Hamilton Depression Scale. In addition, significant improvements have been reported in perceived chronic fatigue ($F(1.32) = 7.17$, $p = 0.012$, $d = 0.477$) and mental health, a component of quality of life ($F(1.32) = 18.18$, $p < 0.001$, $d = -0.750$). However, studies have shown no improvement in pain and physical well-being, which is also a part of the quality of life.

Summary

Studies show that cognitive behavioural therapy is effective in treating psychological problems both in patients with early-stage and advanced cancer. CBT helps patients cope with their primary task of giving meaning to the illness by incorporating this experience into their views or modifying their existing beliefs.

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