

# A Scoping Review of the Application of Cognitive Behavioral Therapy in Benefit Finding among Cancer Patients

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## Abstract

**Objective:** To conduct a scoping review on studies concerning the application of cognitive behavioral therapy (CBT) in benefit finding among cancer patients, summarize the core components and current application status of CBT, so as to provide evidence and references for clinical medical and nursing staff to implement CBT and carry out relevant research. **Methods:** In accordance with the methodological standards of scoping reviews, domestic and international databases were retrieved, including China National Knowledge Infrastructure (CNKI), Wanfang Data, VIP Database, Chinese Biomedical Literature Database (CBM), PubMed, Cochrane Library, Embase, CINAHL and Web of Science. The retrieval period covered from database establishment to September 2023. All eligible literatures were synthesized and analyzed. **Results:** A comprehensive evaluation of the 14 included studies was performed from three dimensions: core intervention components, outcome indicators and intervention effects. **Conclusion:** Cognitive behavioral therapy exerts positive effects on elevating the level of benefit finding in cancer patients. Individualized intervention protocols should be further developed in future research, and more high-quality randomized controlled trials are required to verify its long-term intervention efficacy.

## Keywords

Cancer; Cognitive Behavioral Therapy; Benefit Finding; Scoping Review.

## 1. INTRODUCTION

The latest data from the International Agency for Research on Cancer (IARC) [1] indicated that there were approximately 19.3 million newly diagnosed cancer cases globally in 2020, of which roughly 4.57 million occurred in China. The continuously climbing cancer incidence rate each year has created a heavy medical burden. Cancer patients endure distressing physical symptoms stemming from malignancy and its corresponding treatments, alongside severe psychological distress [2]. Driven by advances in positive psychology, researchers have begun to explore positive psychological changes experienced by cancer patients post-diagnosis and throughout the treatment course. Benefit finding is defined as a cognitive adaptation process wherein individuals reconstruct their cognition to detect positive gains when confronting adversities [3]. This construct can enhance patients' immune function, regulate health-promoting behaviors, buffer adverse emotions, and further facilitate disease rehabilitation [4].

Cognitive Behavioral Therapy (CBT) refers to a psychotherapeutic intervention that helps individuals recognize and alter dysfunctional cognitive and behavioral schemas, so as to improve emotional status and mental well-being [5]. In recent years, derivative interventions built upon CBT have been developed via combination with auxiliary therapeutic strategies, including Cognitive-Behavioral Stress Management (CBSM) [6] and Mindfulness-Based

Cognitive Therapy (MBCT) [7]. Accumulated research evidence has verified that CBT can boost the level of benefit finding, relieve anxiety and depressive symptoms, and foster positive affect among cancer patients [8,9].

Having been widely applied in psychological research, CBT has progressively permeated clinical nursing research and garnered extensive attention from scholars at home and abroad. Nevertheless, substantial heterogeneity persists across existing CBT protocols with respect to intervention contents, delivery modalities and outcome measures, which poses challenges to real-world clinical implementation. Furthermore, high-quality clinical trials are still warranted to robustly validate its therapeutic effects. A scoping review allows investigators to synthesize comprehensive evidence on a specific research topic and identify heterogeneity as well as research gaps within current literature [10]. The present study performed a scoping review of literature focusing on the application of CBT for benefit finding among cancer patients, aiming to furnish evidence-based references for clinical medical and nursing practitioners to carry out CBT interventions and relevant research.

## 2. MATERIALS AND METHODS

### 2.1. Determination of Research Objectives and Questions

The research group formulated the research objectives and core research questions based on preliminary literature review and group discussions, which were listed as follows: ① What are the detailed components of CBT-based interventions, including delivery formats, intervention approaches, frequency and duration? ② What are the effects of CBT when applied to improve benefit finding among cancer patients?

### 2.2. Search Strategy

Studies were retrieved from nine databases, namely China National Knowledge Infrastructure (CNKI), Wanfang Data, VIP Chinese Journal Database, Chinese Biomedical Literature Database (CBM), PubMed, Cochrane Library, Embase, CINAHL, and Web of Science. The search period spanned from database inception to September 2023. The retrieval was performed using a combination of Medical Subject Headings (MeSH), free-text terms, and Boolean operators.

Standardized English Search Terms: “cognitive behavioral therapy/cognitive behavio\* therap\*/cognitive behavio\* intervention\*/cognitive therap\*/cognitive intervention\*/behavio\* therap\*/behavio\* intervention\*/cognitive psychotherap\*/CBT”

“neoplas\*/cancer\*/tumor\*/tumour\*/malignan\*/carcinom\*/oncolog\*/leukemia\*/lymphoma\*” “benefit finding/perceived benefit/making meaning/finding meaning/positive change”. Standardized Chinese Search Terms: “认知行为疗法/认知行为治疗/认知行为干预/认知疗法/行为疗法/认知行为/认知心理疗法” “癌/癌症/瘤/肿瘤/淋巴瘤/白血病” “益处发现/疾病获益感/发现意义/积极改变”. The detailed search strategy for PubMed is illustrated in Figure 1.

### 2.3. Inclusion and Exclusion Criteria for Literature

The inclusion criteria were established in accordance with the PCC framework [11]: ① Population (P): Patients with a confirmed diagnosis of cancer; ② Concept (C): Studies reporting CBT-based interventions delivered to cancer patients; ③ Context (C): All types and levels of medical institutions aiming to improve the level of benefit finding among cancer patients. Exclusion criteria were set as follows: ① Papers published in languages other than Chinese and English; ② Literatures with inaccessible full texts; ③ Duplicate publications; ④ Literature types including scoping reviews, systematic reviews, research protocols, conference abstracts, policies and clinical guidelines.

## 2.4. Literature Screening and Data Extraction

All retrieved records were imported into Rayyan software to remove duplicates [12]. Two trained researchers independently conducted primary screening of titles and abstracts in strict accordance with the predefined inclusion and exclusion criteria, followed by secondary screening through full-text reading. Any discrepancies encountered throughout the screening procedure were resolved through discussion with a third researcher to finalize the included studies. Data extraction of eligible literature was performed independently by the two researchers. Conflicts arising during data extraction were arbitrated by the third researcher. Major extracted information included authors, year and country of publication, study design, research participants, sample size, intervention protocols, and outcome indicators.

```
#1 "Neoplasms"[MeSH Terms]
#2 (((((((neoplas*[Title/Abstract]) OR (cancer* Title/Abstract))) OR (tumor*
[Title/Abstract])) OR (tumour*[Title/Abstract])) OR (malignan* [Title/Ab-
stract])) OR (carcinom* (Title/Abstract))) OR (oncolog* (Title/Abstract)))
OR (leukemia*[Title/Abstract])) OR (lymphoma* [Title/Abstract])
#3 #1 OR #2
#4 "Cognitive Behavioral Therapy"[MeSH Terms]
#5 (((((((cognitive behavio* therap* [Title/Abstract]) OR (cognitive behavio*
intervention* [Title/Abstract])) OR (cognitive therap*[Title/Abstract])) OR
(cognitiveintervention*[Title/Abstract])) OR (behavio* therap* [Title/Ab-
stract])) OR (behavio* intervention* [Title/Abstract])) OR (cognitive psych-
otherap*[Title/Abstract])) OR (CBT[Title/Abstract])
#6 #4 OR #5
#7 (((benefit finding[Title/Abstract]) OR (perceived benefit[Title/Abstract]))
OR (making meaning[Title/Abstract])) OR (finding meaning[ Title/Abstract]
)) OR (positive change[Title/Abstract])
#8 #3 AND #6 AND #7
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**Figure 1.** Search Strategy for PubMed

## 3. RESULTS

### 3.1. Literature Screening Outcomes

A total of 901 records were retrieved via initial database searches. After duplicate elimination, 790 unique records remained. Upon screening titles and abstracts, 603 irrelevant citations were excluded. The full texts of the remaining 187 articles were assessed for eligibility, among which 170 papers were eliminated for the following reasons: inconsistent research topics or participants, mismatched publication types, repetitive content, and unavailable full texts. Three research protocols were further excluded, leaving 14 eligible studies finally included in this scoping review [8,9,13-24].

### 3.2. Basic Characteristics of Included Studies

Among the 14 included studies, 2 were conducted in Australia [23,24], 7 in the United States [8,9,17-19,21,22], 1 in the United Kingdom [20], and 4 in China [13-16], with publication years ranging from 2000 to 2022. In terms of study design, 13 articles were randomized controlled trials [8,9,13-22,24], and 1 was a prospective longitudinal study [23].

### 3.3. Core Components of Cognitive Behavioral Therapy

#### 3.3.1 Training Modules of CBT

Of the 14 included studies, 12 articles [8,9,13-19,22-24] contained theoretical training sessions on CBT, whose core training modules were detailed as follows: ① Thematic training on CBT theories: introducing the objectives, core contents and specific intervention protocols of CBT; ② Training sessions on relaxation techniques, covering diaphragmatic breathing, guided imagery, meditation, and progressive muscle relaxation; ③ Thematic education for emotional support, including facilitating emotional expression, boosting self-efficacy, and cultivating conflict resolution skills.

Among the 14 included studies, four reported standard CBT skill training [9,13-15], eight adopted CBSM protocols [8,16-22], and two applied MBCT programs [23,24]. The core skill components covered cognitive restructuring and relaxation training (including mindful breathing, progressive muscle relaxation, self-suggestion and guided imagery), as well as mindfulness meditation practices such as body scan, moving meditation and combined meditation exercises.

Three studies [8,18,22] incorporated emotional support modules. Supported by group discussion atmosphere and role modeling from group members and facilitators, participants were facilitated to express emotions, relieve stress, build close interpersonal bonds, and achieve improved mental well-being.

#### 3.3.2 Delivery Formats of CBT

The delivery formats of CBT mainly consisted of in-person and online training. Thirteen included studies [8,9,13-23] adopted in-person training, which delivered face-to-face theoretical lectures and skill training for cancer patients. One study [24] used online training, where participants received intervention sessions remotely via telephone interviews. The interventions were predominantly administered through didactic lectures, group meetings, group skill practices, individual self-practice, audio-guided exercises, expressive journal writing, and homework assignments.

#### 3.3.3 Duration of CBT Interventions

The shortest intervention duration across studies was 5 weeks [9,13,20]. The most frequently adopted longest duration was 10 weeks [8,16-19,21,22]. Excluding one study that failed to report relevant duration information [14], the remaining trials implemented interventions lasting 8 weeks [15,23,24].

### 3.4. Outcome Indicators and Effects of CBT

The outcome indicators concerning the application of CBT to promote benefit finding among cancer patients in included studies fell into two categories: intervention efficacy and patients' intervention experience. ① Indicators reflecting intervention efficacy in cancer patients: The included studies confirmed that CBT yielded varying degrees of improvements in multiple dimensions, including patients' benefit finding [8,13-21], negative emotions [8,9,15,16,18,19,20,23], mindfulness levels [23,24], stress levels [9,20-23], sleep quality [14], quality of life [13,15-17,23], and immune biomarkers [18,19,21,24]. In terms of benefit finding, the vast majority of studies demonstrated that CBT could elevate the level of benefit finding among cancer patients to a certain extent. For negative emotions, assessments mainly focused on stress, anxiety and depression, and results verified that CBT effectively alleviated patients' negative emotional states. Mindfulness levels were measured via the Freiburg Mindfulness Inventory (FMI) to evaluate the effects of MBCT on participants' mindfulness. Stress levels were assessed using three scales: the 21-item Depression Anxiety Stress Scale (DASS-21), Perceived Stress Scale (PSS), and Measure of Current Status (MOCS). Sleep quality was evaluated with the Pittsburgh Sleep Quality Index (PSQI). Quality of life was measured by the EORTC Quality of Life

Questionnaire-Core 30 (EORTC QLQ-C30) and Functional Assessment of Cancer Therapy-General (FACT-G). All measurements revealed favorable intervention effects. In addition, McGregor et al. [18] detected immune biomarkers (lymphocytes, serum cortisol, T cells and helper T cells) and further explored the immunological impacts of CBT on patients' immune function. ② Indicators reflecting patients' intervention experience Twelve studies [8-11,13-16,20-23] reported experiential outcomes of participants, covering positive and negative experiences. Positive experiences referred to increased subjective well-being and relieved symptom distress after intervention. Negative experiences denoted barriers and challenges encountered during course learning and daily practice, which interfered with patients' routine lives.

## **4. DISCUSSION**

### **4.1. Clinical Significance of Scoping Review on CBT for Promoting Benefit Finding among Cancer Patients**

This scoping review found that patients presented gradual declines in anxiety and depression after receiving CBT interventions. This phenomenon may be explained by the fact that CBT systematically provides patients with disease-related knowledge and psychological coping skills, which rectifies their distorted and maladaptive cognitive-behavioral patterns and generates new cognitive insights. By helping patients understand the intrinsic nature of their disease, CBT cultivates positive internal psychological resources in patients, enabling them to cope with cancer proactively and resist negative psychological states including anxiety and depression triggered by cancer and other traumatic events. Meanwhile, CBT facilitates positive psychological transformations in patients. Such changes assist individuals in exploring and building internal resilience, developing optimistic perceptions of their disease, identifying positive meanings embedded in cancer experiences, and rebuilding confidence in social interaction and daily life. Consequently, CBT exerts a promotive effect on patients' benefit finding, further elevating their quality of life as well as physical and mental health status.

### **4.2. CBT interventions for cancer patients' benefit finding are holistic and diverse yet insufficiently individualized**

In this scoping review, CBT intervention protocols demonstrated holistic characteristics. Professional psychological expertise is a prerequisite for delivering CBT, which highlights the vital role of introductory theoretical training prior to formal intervention [25]. Among the included studies, 12 articles [8,9,13-19,22-24] arranged thematic theoretical lectures before skill training. Such training enables cancer patients to recognize the value of CBT in promoting benefit finding and master standardized CBT practical skills, thereby boosting their engagement and concentration during training and ensuring smooth intervention delivery. Collectively, the design of CBT intervention protocols exhibits holistic properties. Future researchers developing and implementing relevant interventions are recommended to prioritize the continuity and integrity of protocols, acquire systematic psychological knowledge and complete standardized training, integrate theoretical teaching with hands-on skill practice, and rigorously monitor all intervention procedures to guarantee robust intervention efficacy.

In addition, CBT interventions presented diversified content modules. The present review identified five core components of CBT applied to enhance benefit finding among cancer patients: theoretical training, cognitive restructuring, relaxation training, mindfulness meditation, and emotional support. Evidence indicates that integrated protocols such as CBSM and MBCT—derived from standard CBT supplemented with auxiliary components including mindfulness meditation and emotional support—yield prominent therapeutic effects. Nevertheless, existing literature has noted a key limitation [26]: standardized, one-size-fits-all

CBT training overlooks interindividual heterogeneity and lacks tailored strategies, thereby compromising intervention outcomes. Only five of the included studies [13,15,17,18,22] incorporated personalized supportive measures for cancer patients. Accordingly, future CBT interventions should fully account for patients' unique circumstances, conduct comprehensive assessments of individual psychological status and personalized needs, and develop diversified, individually tailored CBT protocols for clinical practice.

#### **4.3. Insufficient Outcome Indicators and Unverified Long-term Effects of CBT**

The findings of this scoping review indicated that evaluations of CBT efficacy were divided into two dimensions: therapeutic outcomes and patients' intervention experience. The majority of indicators measuring therapeutic effects were psychological metrics, whereas physiological, biochemical, imaging and economic evaluation indexes were sparsely adopted. This observation was consistent with the research conducted by McGregor et al. [18]. Accordingly, future studies should not only investigate the impacts of CBT on benefit finding in cancer survivors, but also implement comprehensive assessments covering patients' physical health outcomes and the cost-effectiveness of medical and nursing services. Continuous optimization of CBT outcome indicators is essential to promote the standardized, sustainable clinical application of CBT. Furthermore, the primary studies incorporated in this review possess multiple methodological limitations, including limited sample sizes, single-center RCTs, and inadequate post-intervention follow-up. It is suggested that future researchers conduct large-sample, multicenter RCTs with prolonged follow-up durations to validate the long-term therapeutic effects of CBT.

## **5. SUMMARY**

This scoping review systematically synthesized existing evidence regarding benefit finding among cancer patients and confirmed that CBT could effectively elevate patients' levels of benefit finding. Nevertheless, several methodological limitations weaken the robustness of the present conclusions. First, only Chinese and English publications were retrieved for inclusion. Second, the primary studies lacked large-sample, multicenter RCTs and long-term post-intervention follow-up. Third, no methodological quality appraisal was performed on the included literature. At present, domestic research on CBT application remains in the exploratory stage in China. Future investigations should focus on developing individualized CBT intervention protocols and conducting more high-quality RCTs to verify the long-term therapeutic effects of CBT.

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