REVIEW ARTICLE

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Cognitive-Behavioral Therapy and Related Psychological Interventions for Anxiety and Depression in Advanced Cancer: A Narrative Review

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Abstract

Background: Cancer continues to be a major contributor to illness and death worldwide, with its prevalence rising due to factors such as aging populations and lifestyle influences. Individuals living with cancer frequently experience significant psychological distress, particularly in the form of anxiety and depression. Psychological interventions grounded in evidence, including Cognitive-Behavioural Therapy (CBT), have received growing attention as potential supports for those with advanced stages of the disease.

Objective: This review aims to consolidate current knowledge on the effectiveness of CBT and related therapeutic approaches for addressing anxiety and depression in people with advanced cancer.

Methods: A narrative review method was adopted to integrate findings from various sources, including systematic reviews, randomized trials, pilot studies, and research protocols, all examining CBT, mindfulness-based practices, and other forms of psychotherapy within advanced cancer populations.

Results: Findings suggest that CBT and similar interventions can provide meaningful relief from anxiety and depressive symptoms, though the degree of benefit varies. Mindfulness-based approaches appear particularly helpful in promoting a sense of existential well-being and supporting caregivers. Some structured CBT programs have not demonstrated consistent benefits across all patient groups, with improvements often observed in specific subpopulations. Overall, broader psychotherapeutic approaches indicate the potential for moderate symptom reduction, but evidence remains limited. Newer approaches, such as behavioural activation, are currently under study and may offer alternative options.

Conclusion: Psychological therapies, including CBT, show important but variable effects in managing anxiety and depression in individuals with advanced cancer. Interventions that are tailored to individual patient characteristics, levels of distress, and situational needs may be more effective. Continued research through well-designed, focused trials is essential to better understand how these therapies can be optimized in this population.

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Introduction

Cancer still stands as one of the greatest threats to human health worldwide, bringing profound pain, disability, and loss of life to millions of families in virtually every nation. Roughly one person in every six or seven will eventually receive a cancer diagnosis during their lifetime, and the diseases that appear most frequently continue to be those of the lung, breast, and prostate [1]. The steady rise in new cases owes much to people living longer than ever before, combined with widespread habits such as cigarette smoking, excess body weight, diets low in protective foods, and heavy alcohol consumption, all of which quietly drive higher rates of lung [5], colorectal [3], pancreatic [2], and stomach cancers [6]. Inherited genetic alterations

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further increase risk for certain individuals, most clearly in breast and pancreatic tumours and quite possibly in gastric malignancy as well [2,7]. At the same time, the growing tendency to detect and label slow-growing thyroid lesions that would never have caused harm adds artificial inflation to incidence figures and muddies our understanding of the true burden [11]. Outcomes remain starkly uneven across cancer types: patients facing prostate or thyroid disease frequently enjoy survival that approaches one hundred percent over the long term, whereas those diagnosed with cancers of the pancreas, oesophagus, stomach, or liver typically see fewer than one patient in six or seven still alive five years later [1,3,5,7].

Alongside the physical toll, many patients experience persistent depression or anxiety, which can severely affect quality of life and even disease progression. For example, nearly half of Iranian women newly diagnosed with breast cancer meet criteria for major depressive disorder [14], and about one-fifth of patients in lower-resource settings suffer major depression, with a similar proportion experiencing severe anxiety [15]. Fatigue, sleep disturbance, and weight loss make distinguishing depression from disease symptoms tricky, particularly among older adults [16]. Yet early detection and management of depression can reduce pain, improve coping, and in some cases, slightly prolong survival [17]. These findings underscore the need for routine mood screening and close collaboration between oncology and mental health teams [12,13].

Cognitive Behavioural Therapy (CBT) is a structured, goal-oriented approach that helps patients identify and change unhelpful thoughts and behaviors. It has proven effective across numerous chronic medical and neurological conditions [18,20]. Innovations include combining CBT with D-cycloserine to accelerate fear extinction, incorporating physical exercise to enhance neuroplasticity, and integrating elements from Stoic philosophy or Acceptance and Commitment Therapy (ACT) to encourage value-driven change [21,22].

Clinical research shows that CBT, whether delivered individually by trained therapists or in group formats led by nurses or psychologists, reduces depression and anxiety in medically ill populations [23,26]. Adding CBT to antidepressants improves response when medication alone is insufficient, with benefits lasting up to a year [24]. Neuroimaging studies confirm that successful CBT normalizes amygdala activity and strengthens prefrontal control, providing biological evidence of its impact [25].

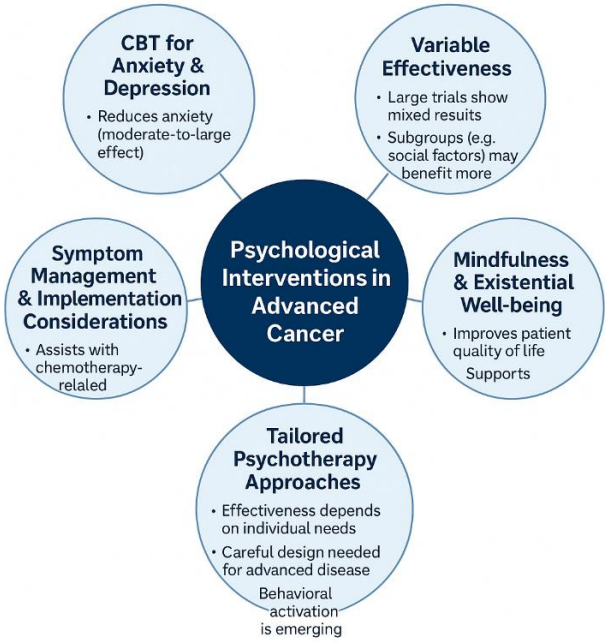
Results

Evidence increasingly supports CBT for relieving psychological distress in patients with advanced cancer, particularly when anxiety and depression are present. A meta-analysis by Xia et al. [27] found moderate reductions in anxiety and depression, especially in treatments lasting two to eight weeks. While studies varied, the overall trend points to real clinical benefits as a non-pharmacological intervention. Mindfulness-based programs also show promise in enhancing existential wellbeing and preparing patients and caregivers for end-of-life decisions [28].

However, outcomes are not uniformly positive. The CanTalk trial in the UK, testing telephone-based CBT, did not show overall improvement in depressive symptoms, though widowed, divorced, or separated participants appeared to benefit [30,32]. Systematic reviews note that evidence for psychological therapies in advanced cancer is generally low quality, with substantial variability in results [29]. These findings suggest that CBT and related interventions can be valuable, but effectiveness depends on carefully tailoring the therapy to individual circumstances, disease stage, and social context [35].

What do we know?

Psychological interventions for people with advanced cancer tend to offer modest but inconsistent benefits. Brief cognitive-behavioural approaches show the most reliable reductions in anxiety and depression. Mindfulness-based programs also look promising, particularly for enhancing existential well-being and supporting caregivers, though evidence in other areas is patchy. Broader reviews suggest psychotherapy might moderately ease depressive symptoms, but conclusions are limited by the uneven quality of studies. Large trials of structured CBT, however, have generally failed to show clear benefits for depression in unselected advanced-cancer populations, indicating that success may hinge on baseline distress, individual needs, or how the therapy is tailored. Behavioural activation is emerging as a possible alternative, though its effectiveness remains uncertain. Interventions incorporating behavioural or cognitive-behavioural strategies can also help manage physical symptoms, especially in patients with a higher initial symptom burden. Our results are summarized in figure 1.



Discussion

Our review brings together evidence showing that CBT and related psychological interventions can help reduce anxiety and improve psychological well-being in people with advanced cancer, although the benefits are often modest [36]. Meta-analyses support moderate reductions in anxiety, especially with brief CBT programs [36], yet large trials like the manualized CanTalk study found no overall effect on depression, highlighting that even well-established interventions can yield null results [37]. This suggests that effectiveness may depend on factors such as patient characteristics or intervention design, an idea reinforced by findings showing tailored mobile CBT apps can benefit specific groups, like widowed or separated patients [38-41].

Mindfulness-based approaches also show promise, particularly in enhancing existential well-being and reducing fatigue [37]. Similarly, Acceptance and Commitment Therapy (ACT) consistently improves quality of life and alleviates psychological distress, though studies often have small sample sizes and low certainty of evidence [38,39]. Technology-assisted interventions, such as tailored CBT apps, appear especially promising for increasing access to care, addressing some of the practical barriers in palliative care [41]. Nonpharmacological symptom management—including fatigue, dyspnea, and psychosocial distress—further underscores the importance of flexible psychological interventions [40]. However, factors like short session times and high attrition in palliative care can limit effectiveness, emphasizing the need for carefully designed programs [39].

Evidence suggests that tailoring interventions to patient needs improves outcomes. For example, meta-analytic data indicate that shorter, structured mindfulness programs with minimal home practice show better results for patients with advanced lung cancer [37]. Mindfulness-based interventions, in particular, demonstrate robust effects. Chayadi Ellentika et al. [42] reported moderate-to-large improvements in depression (Hedges' g = 0.43), anxiety (g = 0.55), and fatigue (g = 0.43). Hofmann Stefan G et al. [43] similarly found significant reductions in anxiety (g = 0.63) and mood symptoms (g = 0.59) across clinical populations, including cancer patients, while Dong Xue et al. [46] reported sustained reductions in anxiety (SMD = -0.60) and depression (SMD = -0.39) following an 8-week MBSR program in breast cancer patients. While some effect sizes vary slightly across studies, the overall trend supports mindfulness as an effective approach for emotional and existential outcomes [Our Study].

CBT evidence is more nuanced. Meditation-based practices embedded in CBT or MBCT reduce physiological stress markers, reinforcing the biological plausibility of psychological symptom improvement [44]. Internet-based CBT (iCBT) is effective for reducing depressive symptoms in patients with chronic health conditions, highlighting its potential for cancer populations facing comorbid depression [45]. Yet, large RCTs like CanTalk show variable effects, with benefits largely confined to specific subgroups [46], underscoring the challenge of achieving consistent outcomes in heterogeneous, severely ill populations.

Taken together, these findings suggest that CBT, mindfulness, and ACT can provide meaningful relief, particularly for anxiety, though effectiveness often depends on intervention format, duration, and patient characteristics [42-46]. Anxiety appears to be a more responsive target than depression, which shows more variable outcomes. Future efforts should focus on individualized, flexible, and mechanism-informed approaches, potentially incorporating biological markers of stress to optimize interventions for advanced cancer patients [44].

Table 1. reviewed publications

Study ID	Design	Samples	Cancer Type/Stage	CBT Method	Outcome	Conclusion
Tian 2024 [27]	Systematic Review/Meta-Analysis	1597 patients	Advanced Cancer	CBT	Reduces anxiety (SMD -0.55, 95% CI -0.82 to -0.27), depression (SMD -0.38, 95% CI -0.58 to -0.17)	CBT (2-8 weeks) effectively reduces anxiety/depression symptoms.
Mosher 2024 [28]	Pilot RCT	33 dyads (P+C)	Advanced Cancer	Mindfulness Intervention	Improves patient existential well-being, caregiver QoL, reduces caregiver burden; mixed other outcomes	Mindfulness intervention shows promise for quality of life and advance care planning support.
Okuyama 2017 [29]	Systematic Review/Meta-Analysis	N/A (Review)	Advanced/Incurable Cancer	Various Psychotherapies	Low quality evidence for reduced depression (SMD -0.67, 95% CI -1.06 to -0.29)	Psychotherapy may moderately help depression, but evidence is weak & inconsistent.
Serfaty 2019 [30]	Parallel-group RCT	115 per arm	Advanced Cancer	Manualised CBT	No significant reduction in depression (BDI-II SMD -0.84, 95% CI -2.76 to 1.08)	CBT not clinically effective for depression in advanced cancer overall, except subgroups.
Hirayama 2023 [31]	Protocol	N/A (Protocol)	Advanced Cancer	Behavioral Activation (BA)	Not yet determined (Planned primary outcome: BDI-II reduction)	BA is a potential treatment option; study underway to assess effectiveness.
Serfaty 2020 [32]	Parallel-group RCT	230 participants	Advanced Cancer	Manualised CBT	No significant treatment effect on primary outcome (BDI-II)	Similar to CanTalk 2019, CBT delivery was proficient but not clinically effective.
Sherwood 2005 [34]	Randomized Clinical Trial	124 pts	Advanced Cancer	Cognitive Behavioral Interv	Reduces symptom severity (esp. younger patients), dependent on baseline depressive symptoms	CBT-based intervention helps manage chemotherapy symptoms, particularly in younger pts.
Akechi 2012 [35]	Review (Not Primary Study)	N/A (Review)	Advanced Cancer	Various Psychotherapies	No specific quantitative outcome; discusses clinical utility and challenges	Psychotherapy is important for depression in advanced cancer, requires tailored approach.

Conclusion

Psychological interventions, especially CBT and mindfulness-based therapies, offer modest but clinically relevant benefits for anxiety and overall psychological well-being in advanced cancer. Depression outcomes are inconsistent and influenced by patient subgroups, baseline distress, and intervention design. Tailored, flexible, and mechanistically informed interventions—integrated into oncology care—are essential for maximizing therapeutic impact in this vulnerable population.

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