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Post-traumatic stress disorder and cancer

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Abstract

Being diagnosed with and treated for cancer is highly stressful and potentially traumatic. An extensive literature has evaluated the prevalence, predictors, and correlates of cancer-related post-traumatic stress disorder (PTSD) symptoms and diagnoses. In this qualitative review of cancer-related PTSD literature, we highlight conceptual, methodological, and diagnostic issues, and identify clinical implications and areas for future research. Cancer-related PTSD has been documented in a minority of patients with cancer and their family members, is positively associated with other indices of distress and reduced quality of life, and has several correlates and risk factors (eg, prior trauma history, pre-existing psychiatric conditions, poor social support). The literature on treatment of cancer-related PTSD is sparse. Existing literature on cancer-related PTSD has used DSM-IV-TR diagnostic criteria; the revised DSM-5 PTSD criteria have important implications for the assessment of cancer-related distress. Application of PTSD diagnosis to patients with cancer has been critiqued on conceptual and methodological grounds, and important differential diagnosis considerations should be taken into account. Psychosocial assessment of patients with cancer should include careful evaluation of pre-cancer diagnosis trauma and psychiatric history, and diagnostic interviewing should consider concurrent conditions (eg, adjustment disorder). Treatment of cancer-related PTSD should be approached with caution and be informed by existing evidence-based approaches for traumatic stress.

Introduction

Being diagnosed with and treated for cancer is highly stressful and potentially traumatic. Emotional responses to this experience can range from acute fear, sadness, and anger to enduring adjustment difficulties, anxiety, and depression. On the basis of studies documenting traumatic stress-like reactions (eg, intrusive ideation, reactivity to reminders, avoidance) in patients with cancer, the DSM-IV-TR[1] post-traumatic stress disorder (PTSD) diagnostic criteria were expanded to include diagnosis and treatment of a life-threatening illness as a stressor that could elicit PTSD. An extensive literature emerged, evaluating the prevalence, predictors, and correlates of cancer-related PTSD symptoms and diagnoses.[2–10]

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Declaration of interests

We declare no competing interests.

PTSD has also been documented following myocardial infarction, cerebrovascular accidents, HIV infection, burns, and other medical stressors.[11–13] Changes in the DSM-5[14] PTSD diagnostic criteria have important implications for assessment of cancer-related PTSD,[15] but research with the updated criteria is limited. Here, we review cancer-related PTSD literature, highlight conceptual, methodological, and diagnostic issues, and identify clinical implications and areas for future research (panel 1).

Panel 1

Key questions

- What aspects of the cancer experience might constitute a traumatic stressor?
- What is the prevalence and course of cancer-related PTSD?
- What are the correlates of cancer-related PTSD?
- What conceptual, methodological, and diagnostic issues are relevant to understanding of cancer-related PTSD?
- How does the cancer-related PTSD literature inform clinical practice in the oncology setting?

Cancer as a traumatic stressor

Cancer diagnosis and treatment entail a series of stressors. For many, the cancer experience begins with detection of an abnormality on self-examination (eg, breast self-examination), a laboratory test (eg, prostate-specific antigen), screening procedure (eg, colonoscopy), routine imaging (eg, mammogram), or clinical examination (eg, skin cancer screening). A period of heightened anxiety follows during the progression of diagnostic, staging, and histology procedures.[16] Discovery that one has a life-threatening illness can be shocking and can undermine assumptions of invulnerability, predictability, and control.[17] Uncertainty, processing medical information, and complex decision making regarding treatment can make the early period of the illness trajectory particularly overwhelming.[18] Treatment of malignant disease might entail a series of acute and prolonged challenges, including surgery, chemotherapy, radiation, immunotherapy, and hormonal therapy and their related side-effects (eg, pain, disfigurement, fatigue, gastrointestinal symptoms, skin irritation, hot flashes), as well as medical complications that occur as a result of the disease, treatment, or comorbid conditions.[8] More invasive treatments, including stem cell transplantation, might be life threatening.[19] Recurrent, metastatic disease has a poorer prognosis and more limited treatment options than does earlier-stage disease, and might occur in the context of an already arduous illness experience.[20] A substantial proportion of patients who transition to cancer survivor status face lingering fears of recurrence and residual physical and emotional sequelae.[21] Together, diagnosis and treatment of cancer pose a cascade of physical, emotional, practical, and social demands on the individual and their support network.

Evidence suggests that a substantial proportion of people with cancer might experience their diagnosis and treatment as traumatic. Several studies[22–24] using the DSM-IV-TR PTSD

diagnostic criteria have asked patients with breast cancer if they experienced diagnosis and treatment of cancer as a threat to their life or physical integrity (criterion A1) and if they responded with fear, helplessness, or horror (criterion A2). Across these studies, 50–60% of respondents (34–46 patients) endorsed both criteria; perception of life threat was more common than were responses of fear, helplessness, or horror. Mehnert and Koch[25] found that cancer was a traumatic stressor for 69 (54%) of 127 patients with breast cancer. Andrykowski and colleagues[26] found that of 189 survivors of lung cancer, 70 (37%) patients endorsed diagnosis and treatment as a traumatic stressor using DSM-IV criteria, and 108 (57%) patients did so using DSM-5 diagnostic criteria. Similarly, Mulligan and colleagues[27] found that nearly half (70 of 170 patients) of a predominantly male sample of veterans with heterogeneous cancer types endorsed cancer as a traumatic stressor. Thus, evidence suggests that cancer might be experienced as traumatic by some—though not all—people who face cancer.

Prevalence and course

A substantial literature exists regarding estimated prevalence rates of cancer-related PTSD (table). Abbey and colleagues' meta-analysis[2] reviewed 25 studies (21 of which were of patients with breast cancer) of cancer-related PTSD in a total of 4189 adult cancer survivors. Prevalence rates varied widely depending on method of assessment. Studies using self-report PTSD symptom measures yielded prevalence estimates of clinically significant symptom levels ranging from 7·3% (95% CI 4·5–11·7; ten studies) to 13·8% (9·5–19·6; 11 studies), depending on screening scoring method used. Investigations using more stringent, clinician-administered structured diagnostic interviews for PTSD yielded a lifetime prevalence estimate of 12·6% (7·4–20·7; seven studies) and a current prevalence estimate of 6·4% (4·1–9·9; 12 studies).[2] Other studies[22,28] suggest that an additional 10–20% of patients with cancer might experience subsyndromal levels of PTSD symptoms and that subclinical post-traumatic stress symptoms are associated with distress and impaired quality of life.

The prevalence of cancer-related PTSD has also been evaluated in childhood cancer survivors and their parents. Bruce's systematic review[4] considered 24 studies—published between 1994 and 2004—of cancer-related PTSD diagnosis and symptoms in child survivors and their parents. Studies that used PTSD symptom scales yielded rates of clinically significant symptoms ranging from 0 (309 participants) to 12·5% (95% CI 4·4–20·6; 64 participants) in childhood cancer survivors and from 9·8% (4·7–14·9; 130 participants) to 44·0% (21·1–66·9; 18 participants) in their parents. Investigations that employed a structured clinical interview yielded rates of current cancer-related PTSD ranging from 4·7% (1·3–8·1; 150 participants) to 20·8% (11·6–30·4; 72 participants) in childhood cancer survivors and from 6·2% (0·3–12·1; 65 participants) to 25·0% (7·7–42·3; 24 participants) in their parents. Such studies yielded rates of lifetime cancer-related PTSD ranging from 20·5% (11·5–29·5; 78 participants) to 35·0% (15·5–54·5; 23 participants) in childhood cancer survivors and from 27·0% (14·6–39·4; 49 participants) to 54·0% (34·1–73·9; 24 participants) in their parents. In general, mothers appeared to experience higher rates of PTSD symptoms due to their child's cancer experience than did fathers.[4]

Cancer-related PTSD symptoms have also been evaluated in spouses, children, and siblings of patients with cancer. In a study[29] of 42 patients with head and neck cancer and their partners, 28·6% (95% CI 3·0–54·2) of partners met screening criteria for so-called PTSD caseness (defined in this study as endorsement of at least one re-experiencing symptom, at least three avoidance or numbing symptoms, and at least two arousal symptoms). Studies[30–32] of adult children of patients with cancer have found children's cancer-related PTSD screening rates to range from 13·3% (95% CI 5·0–21·6; 64 participants) to 19·4% (5·5–33·3; 31 participants). Evidence exists that parental pre-cancer diagnosis trauma history might increase risk for children's distress.[35] In an investigation[33] of 125 children with a sibling who had cancer, 28 (22·4%; 95% CI 14·7–29·3) children met PTSD criteria on a symptom report measure. Another study[34] found that eight (2·2%; 0·6–3·4) of 368 adult siblings of long-term cancer survivors met PTSD criteria. Thus, substantial empirical evidence suggests that cancer might elicit PTSD symptoms in patients and their family members.

Data regarding the course of cancer-related PTSD symptoms are sparse. Although some studies[36,37] suggest a decline in symptoms for most patients as time passes after diagnosis and treatment, others suggest an increase.[38,39] One study[40] suggests fluctuation of symptoms over the first few years after diagnosis. Cancer-related acute stress disorder appears to have modest predictive power for later development of cancer-related PTSD, and early dissociative symptoms have proven an even stronger predictor, whereas delayed-onset cancer-related PTSD seems rare.[36]

Correlates of cancer-related PTSD

Correlates of cancer-related PTSD have been identified (panel 2). Abbey and colleagues' meta-analysis[2] of studies of cancer-related PTSD in adult cancer survivors identified young age, advanced disease, and recently completed treatment as risk factors for increased cancer-related PTSD (p values <0·05). These variables parallel Ozer and colleagues' review[41] of risk factors for PTSD in the general population (ie, young age, increased threat, recent trauma).

Panel 2

Risk factors for cancer-related PTSD

- Pre-cancer diagnosis or lifetime trauma history
- Pre-cancer diagnosis or lifetime history of PTSD or other psychiatric conditions
- Low socioeconomic status
- Young age
- Limited social support or presence of negative social support
- Advanced disease
- Invasive treatment

- Dissociative symptoms regarding cancer experience (eg, unable to recall cancer diagnosis discussion with doctor)
- Persistent intrusive re-experiencing of cancer-related experiences that have occurred (eg, repeated mental replaying of initial diagnosis, harrowing treatment experiences)

In addition, various individual studies have linked an array of other factors to cancer-related PTSD. For example, increased cancer-related PTSD has been associated with reduced income (univariate correlation coefficient [*r*]=−0·38) and education (*r*=−0·37),[42] increased pre-cancer diagnosis personal life stressors and trauma exposure (*r*=0·23–0·27),[43,44] past parental trauma exposure,[35] pre-cancer diagnosis mental health conditions,[37,44] increased appraisal of cancer as a threat (*r*=0·30),[24] peritraumatic dissociation after cancer diagnosis (*r*=0·71),[36] acute stress reactions early in the cancer experience (*r*=0·48),[36] poor social support (*r*=−0·20),[45] increased social constraints (*r*=0·60),[24] low emotional self-efficacy (standardised β=−0·46),[46] and avoidant coping (*r*=42).[47] Most of these variables correspond with established predictors of non-cancer-related PTSD in adults; prior trauma, pre-existing mental health difficulties, family history of psychopathology, increased perceived threat posed by the trauma, poor post-trauma social support, and peritraumatic dissociation and distress have all been related to PTSD in the general population.[41]

Research has also linked cancer-related PTSD to other indices of distress and functioning. Shand and colleagues' meta-analysis[9] of 26 studies that reported on association between cancer-related PTSD and other outcomes and variables of interest showed that cancer-related PTSD symptoms were positively correlated with depression (*r*=0·56, 95% CI 0·44 to 0·65; 11 studies, 1442 participants), anxiety (*r*=0·65, 0·50 to 0·76; seven studies, 1103 participants), and global distress (*r*=0·62, 0·55 to 0·69; eight studies, 968 participants), and negatively correlated with social support (*r*=−0·33, −0·48 to −0·17; four studies, 263 participants) and physical quality of life (*r*=−0·44, −0·60 to −0·24; seven studies, 980 participants). In this meta-analysis, cancer-related PTSD symptoms were weakly but positively correlated (*r* =0·13, 0·03 to 0·23; five studies, 401 participants) with cancer-related post-traumatic growth—the perception of positive life changes due to a traumatic experience.[9]

Few studies have examined the biological correlates of cancer-related PTSD. Yehuda[48] posited that the hypothalamic-pituitary-adrenal axis dysregulation seen in PTSD might be relevant to understanding cortisol changes in cancer. Luecken and colleagues[49] found that all-cause PTSD symptoms (including a few cases of cancer-related PTSD) in a sample of patients with breast cancer were associated with reduced levels of morning cortisol (*r*= −0·34). Glover and Poland's study[50] of mothers of survivors of paediatric cancer found that mothers with PTSD symptoms due to their child's cancer showed lower total urinary cortisol (p=0·01) and higher urinary norepinephrine (p=0·07) than did mothers without PTSD symptoms. Mothers with PTSD symptoms also showed a variety of indications of allostatic load.[51] Thomas and colleagues[52] evaluated female partners of patients with prostate cancer and found that women with at least subthreshold PTSD (most cases of which were due to their partner's cancer experience) evidenced blunted diurnal cortisol production (p<0·01).

Although PTSD has been associated with worsened health behaviour in non-cancer populations,[53] data regarding links between cancer-related PTSD and diet, physical activity, health-care use, and screening behaviour are limited. One hypothesis[54] is that threat and uncertainty posed by cancer and other life-threatening medical stressors might negatively affect health behaviour; however, the few studies that have attempted to evaluate this connection have not been conclusive.[55]

Conceptual, methodological, and diagnostic issues

The utility and appropriateness of the traumatic stressor construct and PTSD diagnosis in conceptualisation of cancer-related distress and adjustment difficulties have been questioned.[15,25,56] Cancer is a multi-faceted, ambiguous, unfolding stressor rather than a discrete event that poses a clear and immediate threat. The initial stressor of diagnosis is primarily informational;[57] in many cases, patients are told of a potentially life-threatening condition that might not be causing physical symptoms or impairment at that moment. In addition, the threat posed by cancer—ie, malignant cells in the body—is largely internal, ever-present, and unavoidable.[7] Perhaps most importantly, even after treatment completion, cancer recurrence is a threat that requires ongoing vigilance and monitoring,[54] meaning survivors might never be post the experience of cancer.[5]

Methodological limitations of existing studies of cancer-related PTSD further complicate the picture. To date, most studies have used the DSM-IV-TR diagnostic criteria for PTSD; as discussed below, the more stringent and expanded DSM-5 criteria have important implications for the assessment of cancer-related distress.[15] Most studies of cancer-related PTSD have been cross-sectional, precluding assessment of the onset and course of symptoms over time. In addition, existing studies of cancer-related PTSD have rarely evaluated pre-cancer-diagnosis, baseline psychiatric symptoms or comorbid conditions that have developed since cancer diagnosis; this information is needed to determine whether reports of cancer-related PTSD symptoms reflect exacerbation of pre-existing distress or more general cancer-related adjustment difficulties.[15] Samples of predominantly white female patients with breast cancer are over-represented in the existing cancer-related PTSD literature; the generalisability of these findings to the broader population of patients with cancer is unclear. Most investigations have relied on self-report PTSD symptom measures; by contrast to gold-standard clinician-administered structured diagnostic interviews for PTSD, symptom measures might inflate rates of PTSD caseness[2,15] and fail to capture the specific nature of the perceived trauma and the frequency, severity, and functional impact of the symptoms in question.[7,15]

With DSM-5's shift to the Trauma- and Stressor-Related Disorders diagnostic category and revision of the PTSD diagnostic criteria, the applicability of PTSD diagnosis to cancer-related distress warrants further scrutiny, particularly with regard to differential diagnosis.[15] The Trauma- and Stressor-Related Disorders diagnostic category acknowledges the continuum of responses to stressful or traumatic events, from transient, normative emotional reactions to more substantial and impairing but time-limited adjustment disorders, and finally to more severe psychopathology, including acute stress disorder and PTSD.[15] Most studies of cancer-related PTSD have not also assessed for adjustment disorder,[15] even

though this diagnosis appears to be more common than PTSD among patients with cancer[25,58] and might be more appropriate for people with subsyndromal cancer-related PTSD symptoms, people experiencing more diffuse symptoms of anxiety or depression regarding their cancer experience, and people whose cancer experience does not meet diagnostic criteria for a traumatic stressor.

Examination of the DSM-5 diagnostic criteria for PTSD[14] raises specific concerns regarding their application to patients diagnosed with and treated for cancer.[15] The so-called stressor criterion (criterion A) entails “exposure to actual or threatened death, serious injury, or sexual violence” in a variety of ways (eg, direct exposure, witnessing in person, learning of). The revision of criterion A from DSM-IV-TR to DSM-5 (ie, increasing objective threat and dropping subjective response) was intended to reduce subjectivity in determining whether a stressor was traumatic. The supporting text on diagnostic features in DSM-5 specifically states “A life-threatening illness or debilitating medical condition is not necessarily considered a traumatic event. Medical incidents that qualify as traumatic events involve sudden, catastrophic events.” Thus, for the experience of cancer to meet criterion A, it must entail acute, severe complications or other extreme adverse events. Although such medical events seem to occur with regularity in the oncology setting, no research has been done on the proportion of patients for whom cancer would meet the DSM-5 stressor criterion.

If cancer does meet criterion A as a traumatic stressor, several additional criteria must be met to warrant a diagnosis of cancer-related PTSD.[14] These criteria include at least one intrusion symptom (criterion B), at least one avoidance symptom (criterion C), at least two symptoms reflective of negative alterations in cognitions and mood (criterion D), and at least two arousal and reactivity symptoms (criterion E). This constellation of symptoms must be present for more than 1 month (criterion F), cause clinically significant distress or impairment (criterion G), and not be caused by the physiological effects of a substance (including medication) or a medical condition (criterion H).

Application of these criteria to patients with cancer requires attention to detail and phenomenology, with distinction between psychopathological and normative responses to cancer diagnosis and treatment. For instance, fears of future recurrence, disease progression, and death are common among patients with cancer and differ from intrusive memories or re-experiencing of cancer-related stressors that have already occurred.[15,54] Similarly, avoidance reactions must be in response to traumatic memories of past cancer-related events, rather than feared, anticipated future events. Various alternative explanations to PTSD for negative alterations in cognitions or mood might exist. Specifically, an inability to recall certain aspects of the cancer experience might be due to neurocognitive side-effects of treatment, blaming of oneself for the diagnosis might be reality-based (eg, smoking leading to lung cancer, excessive alcohol use leading to cirrhosis and hepatocellular cancer), and diminished interest in previously enjoyed activities might be due to practical obstacles, symptoms or side-effects of treatment, or shifts in values and goals. With regard to arousal and reactivity symptoms, concentration and sleep difficulties are common treatment side-effects among patients with cancer and might not be indicative of traumatic stress reactions.[5]

Foundational to these points is the fact that cancer represents an existential threat. It is not unrealistic or distorted for people facing cancer to recognise and worry that their disease might shorten their life, to think more about their death, and to question their relationships, their values, and the assumptions they hold about control and predictability of their lives.[17,59] Indeed, patients with cancer commonly report existential angst, death anxiety, aloneness, and a sense of loss of meaning, freedom, and control.[59] Thus, pathologisation of normative responses to the cancer experience should be avoided.

Although this existential threat can lead to extreme distress, it can also prompt shifts in priorities and values, views of self and others, and sense of meaning and spirituality. Post-traumatic growth[60]—which has alternately been referred to as stress-related growth, benefit finding, perceived benefits, growth through adversity, and existential growth—has been studied in a broad range of populations of patients with cancer. This multidimensional construct includes perceived positive changes in personal strength, new possibilities, relating to others, appreciation of life, and spiritual change.[60] Although findings regarding the relationship between cancer-related post-traumatic growth and cancer-related PTSD have been inconsistent,[9,61,62] the perceived threat posed by cancer might set the stage for both to occur.[24,26]

In light of these conceptual, methodological, and diagnostic issues, careful diagnostic interviewing, history taking, and broad assessment of functioning are essential and might result in more conservative and appropriate application of the cancer-related PTSD diagnosis. Such an approach might also paint a more complete picture of psychosocial functioning that includes both psychological distress and positive aspects of wellbeing and growth.

Implications for practice

Literature on cancer-related PTSD has important implications for clinical practice. First, integration of psychosocial assessment and support into oncology care settings is essential, both in active treatment[63] and survivorship[64] phases of care. Many patients with cancer undergoing treatment do not have the time or energy to seek care in a separate mental health setting; embedding psycho-oncology specialists in medical settings is crucial to patient-centred care.

Second, assessment of patients' psychiatric and trauma histories should be a standard part of the history and physical. Given the predictive power of previous trauma history for development of PTSD symptoms in response to cancer[44,65,66] and the possibility that the uncertainty, perceived threat, and sensory stimuli (eg, smells, body sensations) related to cancer might be a trigger of prior trauma symptoms, the context in which the cancer experience is playing out needs to be understood. This information could be collected by the treating physician or by an embedded mental health clinician. Such careful evaluation at initial clinic visits can help to determine whether current distress is an exacerbation of a pre-existing condition, a rekindling of PTSD symptoms related to a prior trauma, or a new response to the cancer diagnosis and treatment.[15]

Third, ongoing screening for distress is a key component of the National Comprehensive Cancer Network's clinical practice guidelines, and clinical pathways for management of acute stress, traumatic stress, and adjustment disorders have been specified.[67] Routine assessment of distress via the National Comprehensive Cancer Network's distress thermometer and accompanying problem checklist can detect patients with elevated psychosocial concerns. More formal diagnostic assessment of specific psychiatric symptoms, including depression, anxiety, and PTSD, can follow.

Fourth, the applicability of evidence-based psychotherapeutic PTSD treatments (eg, prolonged exposure[68] or cognitive processing therapy[69]) to cancer-related PTSD should be carefully considered. Indeed, PTSD-specific interventions have shown utility in patients with cancer. Kangas and colleagues' randomised trial[70] found that early administration of a cognitive behavioural therapy (CBT) intervention—with components of imaginal and in-vivo exposure—was more effective than supportive therapy in reducing total (ie, including re-experiencing, avoidance or numbing, and arousal symptom clusters) PTSD symptoms at 12-month follow-up in patients with head and neck cancer (67% improved *vs* 20% improved). DuHamel and colleagues[71] found that a ten-session, telephone-based CBT intervention designed to address cancer-related PTSD was more effective than was an assessment-only control condition in reduction of intrusive ideation ($p<0·05$), avoidance ($p<0·001$), and general distress and depression ($p<0·05$) in haemapoietic stem-cell transplant survivors. Eye movement desensitisation and reprocessing (EMDR)[72] interventions have also shown promise in reduction of cancer-related PTSD symptoms ($p<0·001$),[73] although the mechanisms of EMDR are unclear.[74] Supportive expressive group therapy[59] has reduced re-experiencing and avoidance symptoms in women with metastatic breast cancer (effect size 0·25, $p=0·03$).[75]

Interventions that were not necessarily designed to address cancer-related PTSD have shown positive effects. Approaches that include CBT components have yielded some positive effects.[76] Cognitive behavioural stress management[77] interventions have shown beneficial effects on intrusive thoughts (effect size 0·55)[78] and total PTSD symptoms (effect size 1·02)[79] in women with breast cancer. Other coping skills-based approaches have been shown to reduce total PTSD symptoms.[80] A couples-based coping intervention reduced avoidance symptoms in patients with breast and gynaecological cancer (effect size 0·34–0·39).[81] Mindfulness-based approaches have also had a positive effect on cancer-related avoidance (effect size 0·41) and hyperarousal (effect size 0·07–0·41) symptoms.[82] Promising interventions—still requiring rigorous evaluation—for illness-related traumatic stress include narrative therapy[83] and dyadic interventions that promote emotional disclosure.[84,85]

Fifth, caution is advised in application of general PTSD medication guidelines to patients with cancer-related PTSD. Pharmacotherapy for cancer-related PTSD has received very little research attention. Lindgren and colleagues[86] found that β blockers appeared to reduce intrusive ideation by 32% in newly diagnosed patients with cancer ($p<0·05$). We could not identify any other pharmacological treatment trials for cancer-related PTSD.

The literature offers some guidance on the management of cancer-related anxiety and sleep disruption. A range of classes of medications has been used for cancer-related anxiety,

including antidepressants, benzodiazepines, and non-benzodiazepine anxiolytics, with benzodiazepines also being used for symptom management (eg, nausea, insomnia).[87] Selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) are used for long-term anxiety in patients with cancer.[88] Clonidine, an α-adrenergic agonist, has been used to reduce sympathetic outflow, peripheral vascular resistance, and catecholamine output.[89] Prazosin, an α_1-adrenergic receptor antagonist, and trazodone, an antidepressant that selectively inhibits serotonin uptake, decrease nightmares and improve sleep quality.[90,91] High-level evidence supports use of eszopiclone, risperidone, and olanzapine as an adjunct therapy in treatment for PTSD-related insomnia and nightmares.[92] Davidson[93] develops a case that tricyclic antidepressants deserve to be re-examined in PTSD, noting the residual morbidity of many patients with poor response to the current evidence-based therapies, although these therapies are more strongly anticholinergic and far more dangerous in overdose than are SSRIs or SNRIs.

Prior trauma history appears to have important implications for the use of psychoactive medication and psychotherapy with PTSD. Nemeroff and colleagues' dismantling study[94] of combined psychotherapy and antidepressant medication in patients with chronic depression showed that, overall, the combination worked better than either therapy alone; however, patients with a history of childhood trauma responded more positively to psychotherapy than to antidepressant medication, and conversely, patients with no trauma history responded more positively to medication than to psychotherapy. These results suggest that a history of childhood trauma indicates a need for intensive psychotherapy, even when antidepressant medication is used. This consideration is especially important for patients with cancer, given findings that such a diagnosis might trigger a recurrence of prior trauma-related symptomatology—eg, among Holocaust survivors.[66]

Search strategy and selection criteria

We identified articles by searching several databases, including Ovid MEDLINE, PsycINFO, PsycARTICLES, Psychology and Behavioral Sciences Collection, and Academic Search Complete. We did updated searches for all languages from Jan 1, 1989, to July 1, 2016. For each search, all relevant subject headings and free text terms were used to represent "PTSD" AND "cancer". The total number of references retrieved was 1637.

Drug–drug interactions between psychotropics and cancer agents are potential problems.[95] Some anti-depressants, such as fluoxetine, fluvoxamine, and paroxetine, might lower serum concentrations of endoxifen—the active tamoxifen metabolite—reducing the effectiveness of the drug. Sertraline, citalopram, escitalopram, and venlafaxine generally have a lesser effect on tamoxifen metabolism.[96] Benzodiazepines should be used with caution in medical patients given the risks for adverse drug effects (eg, gait impairment, psychomotor slowing), motor vehicle and other accidents, unsafe behaviours, dependency, tolerance, delirium, and withdrawal.[97]

Conclusion

Being diagnosed with and treated for cancer is highly stressful and might lead to persistent psychopathology in a minority of patients. The application of the PTSD diagnosis to cancer-related adjustment difficulties is not without controversy. Thoughtful and careful assessment and development of appropriate treatment pathways can optimise detection and management of distress and traumatic stress in the oncology setting.

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Table

Prevalence of cancer-related PTSD

	Percentage (95% CI)
Adult patients	
Self-report screening[2]	7·3% (4·5–11·7) to 13·8% (9·5–19·6)
Structured clinical interview	
Current PTSD[2]	6·4% (4·1–9·9)
Lifetime PTSD[2]	12·6% (7·4–20·7)
Subsyndromal[22–28]	10–20%
Partners of patients	
Self-report screening[29]	28·6% (3·0–54·2)
Adult children of patients	
Self-report screening[30–32]	13·3% (5·0–21·6) to 19·4% (5·5–33·3)
Childhood patients	
Self-report screening[4]	0–12·5% (4·4–20·6)
Structured clinical interview	
Current PTSD[4]	4·7% (1·3–8·1) to 20·8% (11·6–30·4)
Lifetime PTSD[4]	20·5% (11·5–29·5) to 34·7% (15·5–54·5)
Parents of child patients	
Self-report screening[4]	9·8% (4·7–14·9) to 44·0% (21·1–66·9)
Structured clinical interview	
Current PTSD[4]	6·2% (0·3–12·1) to 25·0% (7·7–42·3)
Lifetime PTSD[4]	27·0% (14·6–39·4) to 54·0% (34·1–73·9)
Child siblings of child patients	
Self-report screening[33]	22·4% (14·7–29·3)
Adult siblings of long-term childhood survivors	
Self-report screening[34]	2·2% (0·6–3·4)

PTSD=post-traumatic stress disorder.