



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Symptomatology, assessment, and treatment of anxiety in older adults with cancer



Kelly M. Trevino ^{*}, Rebecca M. Saracino, Andrew J. Roth

Memorial Sloan Kettering Cancer Center, 641 Lexington Avenue, 7th Floor New York, NY 10022, United States of America

1. Overview

Anxiety is a normal response to a perceived threat and is characterized by worry that is difficult to control, restlessness, difficulty concentrating and sleeping, fatigue, and muscle tension [1]. The objective threat posed by cancer likely accounts for the high rates of anxiety in cancer patients and survivors [2]. In fact, many studies indicate that rates of anxiety are higher than rates of depression in cancer patients across age groups [3,4]. For older adults, the threat of cancer occurs in the context of other threats posed by aging [5,6]. Many older adults experience age-related physical changes such as frailty, medical comorbidities, and mobility limitations [7–9]; cognitive changes ranging from normative declines in memory and processing speed to severe changes due to diseases like dementia [10,11]; and shrinking social networks due to the disability and death of loved ones, all of which can contribute to increasing anxiety. Cancer and treatment effects such as fatigue and nausea can add to and exacerbate these age-related changes [12–16].

In the context of cancer and aging, it is perhaps unsurprising that many older adults with cancer suffer from elevated anxiety. Estimates of the prevalence of anxiety vary widely due, in part, to variation in assessment methods. However, across studies, over 40% of older adults with cancer report clinically significant anxiety [17–19]. While anxiety tends to reduce over time [20], approximately half of older adults with cancer who are five or more years post-diagnosis endorse cancer-related worries [21]. This finding suggests that anxiety may be chronic, existing even after older adults complete cancer treatment.

Further, anxiety increases in the context of additional threats such as surgery and disease progression [2]. The role of additional threats is particularly important to consider in the context of the COVID-19 pandemic. COVID-19 has unique negative implications for patients with cancer due to delays in diagnosis and initiation of cancer treatment, disruption of ongoing treatment and supportive care, and reduced patient access to support networks and coping strategies, resulting in high rates of COVID-19 distress [22]. For older adults, the higher rates of infection and mortality from COVID-19 are additional and significant stressors that further increase the importance of addressing the mental health needs of older adults with cancer [23].

Anxiety is clearly prevalent in older adults with cancer, influenced by the aging process, and exacerbated by external stressors such as COVID-19. Oncologists are often tasked with treating this anxiety, including in settings with no or limited mental health resources. Up to half of distressed older adults with cancer do not receive psychosocial services [24,25]. One reason for this undertreatment may be a lack of provider knowledge of the prevalence and importance of anxiety and strategies for anxiety assessment and treatment tailored for older adults with cancer [26]. Therefore, the purpose of this paper is to provide a brief overview of anxiety in older adults with cancer with recommendations that can be integrated into oncology care in order to reduce rates of untreated anxiety and improve the psychological well-being of older adults with cancer. The topics to be addressed are: (1) problems associated with anxiety; (2) considerations for anxiety screening; and (3) considerations for anxiety treatment.

2. Problems associated with anxiety

Anxiety warrants treatment not only because of its inherent distress but also because of its association with other problems in older patients. Patients with elevated anxiety report worse physical symptoms, including greater fatigue, nausea, pain, shortness of breath, worse social and cognitive function [27–35] and poor quality of life [32,33]. High anxiety can also interfere with treatment and decision-making. Patients with elevated anxiety have greater difficulty communicating with the healthcare team [36], worse treatment adherence and response [27,37,38], more treatment interruptions [38], longer hospitalizations [39], and higher mortality [40]. Anxiety is also associated with patients' understanding of their prognosis and treatment decisions. For example, older men with prostate cancer who report high anxiety start treatment earlier, despite evidence that early initiation does not improve survival but does impair quality of life [41,42].

3. Anxiety Screening: Considerations for Older Adults with Cancer

The American Society of Clinical Oncology (ASCO) recommends screening for anxiety at the initial visit, with changes in disease status, at transition to end-of-life care, and when otherwise clinically indicated using the Generalized Anxiety Disorder-7 (GAD-7) scale [43,44]. Validated cut-off scores have been developed for mild (score: 5–9), moderate (score: 10–14), and severe anxiety (score: 15–21). Other anxiety screening measures have been developed for older adults (e.g., Geriatric Anxiety Inventory [45], Geriatric Anxiety Scale [46],

^{*} Corresponding author at: 641 Lexington Ave., 7th Floor New York, NY 10022, United States of America.

E-mail address: trevinok@mskcc.org (K.M. Trevino).

Memorial Anxiety Scale for Prostate Cancer [47,48]) and in younger adults with validation in older adults (e.g., State-Trait Anxiety Inventory [49], Beck Anxiety Inventory [50,51]). Important factors to consider when selecting a screening measure include the overlap of symptoms of anxiety and disease and treatment effects (e.g., fatigue, sleep disruption) and the similarity in cognitive symptoms (e.g., difficulty concentrating) of anxiety and aging [52]. Screening measures with less emphasis on the somatic and cognitive symptoms of anxiety may more accurately differentiate anxiety from cancer and aging-related processes and minimize erroneous referrals to mental health treatment.

Anxiety in response to a threat can be adaptive by motivating patients to take action to address problems and meet their needs. However, if the severity of the anxiety is disproportionate to the threat, it can be maladaptive and problematic. Determining whether anxiety in older adults with cancer is disproportionate to the threat is difficult due to the challenge of quantifying the threat posed by cancer and aging, change in that threat over time, and lack of clarity regarding the normal course of anxiety during cancer [2,53]. One benchmark for identifying maladaptive anxiety is the degree to which anxiety symptoms impair function. For example, anxiety-driven behaviors such as avoidance and frequent reassurance seeking can interfere with relationships and patients' ability to engage in daily tasks [2]. Strategies for screening for functional impairment due to anxiety are available. For example, the GAD-7 includes a final item that assesses the impact of anxiety symptoms on the patient's ability to "do your work, take care of things at home, or get along with other people." [44] Defining maladaptive anxiety based on this type of functional impairment allows for a patient-centered approach that considers the threat posed by both cancer and aging and the unique characteristics and situation of each older adult.

Older adults have higher rates of medical comorbidities and frailty than younger patients [54]. Therefore, consideration of underlying physiological conditions that may present as anxiety (e.g., pain, dyspnea, delirium) is particularly important in this population [54,55]. Further, central nervous system metastases, pheochromocytomas and pituitary microadenomas, non-hormone secreting pancreatic cancers, and dyspnea associated with lung cancer have symptoms that mimic anxiety disorders [56]. Metabolic and endocrine abnormalities, as well as some medications used in the cancer setting, such as steroids, antiemetics and some chemotherapy agents, can also cause anxiety [57]. Identifying and treating these underlying causes reduces the likelihood of misdiagnosis and long-term impact of a condition mistaken for anxiety.

4. Anxiety Treatment: Considerations for Older Adults with Cancer

ASCO recommends cognitive-behavioral therapy (CBT) and/or pharmacologic treatment for anxiety in patients with cancer using a stepped-care approach based on anxiety severity [43]. CBT is a time-limited (2–10 sessions) problem-focused [58,59] psychological treatment that targets thoughts and behaviors that increase distress [58,60]. CBT is among the most researched psychotherapies across age groups with enough studies to warrant reviews of meta-analyses over the past 10–15 years [61,62]. Effect sizes for CBT relative to wait list, no-treatment, and psychological placebo control conditions are medium to large with some studies showing a sustained effect of CBT 8–10 years post-treatment [62,63]. A review of 17 studies of evidence-based treatments (as defined by the American Psychological Association [64]) in older adults identified CBT as an efficacious treatment for late-life distress [65,66].

CBT has also been extensively evaluated in cancer patients [67]. CBT has been shown to be efficacious for depression and anxiety in cancer patients [59,67,68], including when telephone delivered [69,70] and is a cost-effective treatment for psychological distress in cancer care [71–74]. CBT is particularly appropriate for older adults with cancer due to the high adverse effect rates of and limited research on psychotropic medications in this population [75,76]. Further, polypharmacy is

prevalent in older adults with cancer [77,78] and is associated with adverse outcomes [78–80]. CBT is beneficial in that it can reduce distress without contributing to polypharmacy.

Pharmacologic management of anxiety in older adults with cancer involves the judicious use of antidepressants, benzodiazepines, and antipsychotics [81]. Clinical evidence supports the use of the medications in the treatment of anxiety in older adults with cancer. However, randomized controlled trials are required to establish the risks and benefits of medication use for this patient population. Benzodiazepines are often first line of treatment for anxiety in younger adults due to their positive impact on ongoing and high intensity anxiety and panic attacks. Additional benefits include decreased restlessness, improvements in sleep initiation and insomnia, reduced irritability and chemotherapy-induced nausea, and enhanced muscle relaxation. However, the calming effects of benzodiazepines can overextend to cause sedation, problems concentrating, forgetfulness, dizziness and muscle relaxation, which can lead to problems with ambulation, driving, focusing and working. Individually or combined, these side effects make falls and other accidents more likely in vulnerable populations. Further, benzodiazepines are prescribed as controlled substances due to the potential for misuse and subsequent harm. It is important to discuss the distinctions between dependence, tolerance, and addiction with patients and be aware of concomitant substance use or abuse.

Antidepressants can be alternative medications for anxiety and may be a more appropriate initial preventive treatment for generalized anxiety or panic attacks in older people with cancer [82]. If a benzodiazepine is prescribed, consider using lower doses depending on patient frailty. As always, evaluate drug–drug interactions and liver, kidney and cardiac function; gradually increase the dose; and closely monitor for side effects. For older adults, it is particularly important to check liver function tests and conduct a baseline cognitive screen to allow for evaluation of the impact of the medication on cognitive function.

The use of low-dose antipsychotics is common clinical practice for short-term treatment of severe anxiety when benzodiazepines cannot be used because of frailty or respiratory compromise. However, in older adults, clinicians should consider the risks and benefits of antipsychotics carefully, especially in patients with underlying dementia, due to reports of increased mortality and risk of cardiovascular and cerebrovascular events in this population.

5. Take home messages

Older adults with cancer face the dual threat of aging and cancer. Anxiety is prevalent in older adults with cancer and associated with poor quality of life and cancer treatment response. External stressors such as COVID-19 further exacerbate this anxiety and heighten the importance of identifying and treating anxiety in older adults with cancer. The evaluation and treatment of anxiety in older adults must consider the overlap of symptoms of anxiety, disease and treatment effects, and aging processes. Screening for anxiety using measures validated in older adults promotes referral to evidence-based psychotherapy and pharmacologic interventions effective for anxiety. Reducing anxiety symptoms with these treatments has the potential to improve the quality of life, physical symptoms, and engagement in cancer care of older adults with cancer.

Disclosures

The authors have no conflicts of interest to disclose.

Contributors

Trevino: Manuscript Writing, Approval of Final Article.
Saracino: Manuscript Writing, Approval of Final Article.
Roth: Manuscript Writing, Approval of Final Article.

Acknowledgments

This research is funded in part by grants from the National Institute on Aging and American Federation for Aging Research (Trevino, K23AG048632) and the National Cancer Institute (P30 CA008748). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies. Sponsors did not have a role in study design; the collection, analysis and interpretation of data; the writing of the report; or the decision to submit the article for publication. We would like to thank the MSK Psycho-oncology in Aging and Cancer research laboratory (PAC MSK) for providing feedback on this paper.

References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed.; 2013 Washington DC.
- Stark DP, House A. Anxiety in cancer patients. *Br J Cancer* 2000;83:1261–7.
- Mitchell AJ, Ferguson DW, Gill J, Paul J, Symonds P. Depression and anxiety in long-term cancer survivors compared with spouses and healthy controls: a systematic review and meta-analysis. *Lancet Oncol* 2013;14:721–32.
- Puigpinos-Riera R, Graells-Sans A, Serral G, et al. Anxiety and depression in women with breast cancer: social and clinical determinants and influence of the social network and social support (DAMA cohort). *Cancer Epidemiol* 2018;55:123–9.
- Kypriotakis G, Deimling GT, Piccinin AM, Hofer SM. Correlated and coupled trajectories of cancer-related worries and depressive symptoms among long-term cancer survivors. *Behav Med* 2016;42:82–92.
- Deimling GT, Bowman KF, Wagner LJ. The effects of cancer-related pain and fatigue on functioning of older adult, long-term cancer survivors. *Cancer Nurs* 2007;30:421–33.
- Zhang X, Sun M, Liu S, et al. Risk factors for falls in older patients with cancer. *BMJ Support Palliat Care* 2018;8:34–7.
- Deimling GT, Sterns S, Bowman KF, Kahana B. Functioning and activity participation restrictions among older adult, long-term cancer survivors. *Cancer Invest* 2007;25:106–16.
- Deimling GT, Sterns S, Bowman KF, Kahana B. The health of older-adult, long-term cancer survivors. *Cancer Nurs* 2005;28:415–24.
- Parpa E, Tsilika E, Gennimata V, Mystakidou K. Elderly cancer patients' psychopathology: a systematic review: aging and mental health. *Arch Gerontol Geriatr* 2014;60:9–15.
- Bluetmann SM, Mariotto AB, Rowland JH. Anticipating the "silver tsunami": prevalence trajectories and comorbidity burden among older cancer survivors in the United States. *Cancer Epidemiol Biomarkers Prev* 2016;25:1029–36.
- Dura-Ferrandis E, Mandelblatt JS, Clapp J, et al. Personality, coping, and social support as predictors of long-term quality-of-life trajectories in older breast cancer survivors: CALGB protocol 369901 (Alliance). *Psychooncology* 2017;26:1914–21.
- van Abbema D, van Vuuren A, van den Berkmortel F, et al. Functional status decline in older patients with breast and colorectal cancer after cancer treatment: a prospective cohort study. *J Geriatr Oncol* 2017;8:176–84.
- Oh PJ. Predictors of cognitive decline in people with cancer undergoing chemotherapy. *Eur J Oncol Nurs* 2017;27:53–9.
- Klepin HD, Tooz JA, Pardee TS, et al. Effect of intensive chemotherapy on physical, cognitive, and emotional health of older adults with acute myeloid leukemia. *J Am Geriatr Soc* 2016;64:1988–95.
- Derks MG, de Glas NA, Bastiaannet E, et al. Physical functioning in older patients with breast cancer: a prospective cohort study in the TEAM trial. *Oncologist* 2016;21:946–53.
- Nelson CJ, Balk EM, Roth AJ. Distress, anxiety, depression, and emotional well-being in African-American men with prostate cancer. *Psychooncology* 2010;19:1052–60.
- Kasparian NA, McCloone JK, Butow PN. Psychological responses and coping strategies among patients with malignant melanoma: a systematic review of the literature. *Arch Dermatol* 2009;145:1415–27.
- Teunissen SC, de Haes HC, Voest EE, de Graeff A. Does age matter in palliative care? *Crit Rev Oncol Hematol* 2006;60:152–8.
- Pang L, de la Cruz M, Wu J, Liu D, Naqvi M, Bruera E. Symptom frequency and change of oldest old cancer patients. *Support Care Cancer* 2019;27:4165–70.
- Deimling GT, Bowman KF, Sterns S, Wagner LJ, Kahana B. Cancer-related health worries and psychological distress among older adult, long-term cancer survivors. *Psycho-Oncology* 2006;15:306–20.
- Büntzel J, Klein M, Keinki C, Walter S, Büntzel J, Hübner J. Oncology services in corona times: a flash interview among German cancer patients and their physicians. *J Cancer Res Clin Oncol* 2020;1–3.
- Mohile S, Dumontier C, Mian H, et al. Perspectives from the Cancer and aging research group: caring for the vulnerable older patient with cancer and their caregivers during the COVID-19 crisis in the United States. *J Geriatr Oncol* 2020;11:753–60.
- Zebrack B, Kayser K, Bybee D, et al. A practice-based evaluation of distress screening protocol adherence and medical service utilization. *J Natl Compr Canc Netw* 2017;15:903–12.
- Trevino KM, Nelson CJ, Saracino RM, Korc-Grodzicki B, Sarraf S, Shahrokni A. Is screening for psychosocial risk factors associated with mental health care in older adults with cancer undergoing surgery? *Cancer* 2020;126:602–10.
- Trevino KM, Healy C, Martin P, et al. Improving implementation of psychological interventions to older adult patients with cancer: convening older adults, caregivers, providers, researchers. *J Geriatr Oncol* 2018;9:423–9.
- Fujii M, Ohno Y, Tokumaru Y, et al. Manifest anxiety scale for evaluation of effects of granisetron in chemotherapy with CDDP and 5FU for head and neck cancer. *Support Care Cancer* 2001;9:366–71.
- Brown LF, Kroenke K. Cancer-related fatigue and its associations with depression and anxiety: a systematic review. *Psychosomatics* 2009;50:440–7.
- Reddy SK, Parsons HA, Elsayem A, Palmer JL, Bruera E. Characteristics and correlates of dyspnea in patients with advanced cancer. *J Palliat Med* 2009;12:29–36.
- Salvo N, Zeng L, Zhang L, et al. Frequency of reporting and predictive factors for anxiety and depression in patients with advanced cancer. *Clin Oncol* 2012;24:139–48.
- Andrykowski MA. The role of anxiety in the development of anticipatory nausea in cancer chemotherapy: a review and synthesis. *Psychosom Med* 1990;52:458–75.
- Horney DJ, Smith HE, McGurk M, et al. Associations between quality of life, coping styles, optimism, and anxiety and depression in pretreatment patients with head and neck cancer. *Head Neck* 2011;33:65–71.
- Smith EM, Gomm SA, Dickens CM. Assessing the independent contribution to quality of life from anxiety and depression in patients with advanced cancer. *Palliat Med* 2003;17:509–13.
- Delgado-Guay M, Parsons HA, Li Z, Palmer JL, Bruera E. Symptom distress in advanced cancer patients with anxiety and depression in the palliative care setting. *Support Care Cancer* 2009;17:573–9.
- Bruera E, Schmitz B, Pither J, Neumann CM, Hanson J. The frequency and correlates of dyspnea in patients with advanced cancer. *J Pain Symptom Manage* 2000;19:357–62.
- Schag CA, Heinrich RL. Anxiety in medical situations: adult cancer patients. *J Clin Psychol* 1989;45:20–7.
- Pedersen AE, Sawatzky JA, Hack TF. The sequelae of anxiety in breast cancer: a human response to illness model. *Oncol Nurs Forum* 2010;37:469–75.
- Greer JA, Pirl WF, Park ER, Lynch TJ, Temel JS. Behavioral and psychological predictors of chemotherapy adherence in patients with advanced non-small cell lung cancer. *J Psychosom Res* 2008;65:549–52.
- Prieto JM, Blanch J, Atala J, et al. Psychiatric morbidity and impact on hospital length of stay among hematologic cancer patients receiving stem-cell transplantation. *J Clin Oncol* 2002;20:1907–17.
- Chan CM, Wan Ahmad WA, Yusof MM, Ho GF, Krupat E. Effects of depression and anxiety on mortality in a mixed cancer group: a longitudinal approach using standardised diagnostic interviews. *Psychooncology* 2015;24:718–25.
- Dale W, Hemmerich J, Bylow K, Mohile S, Mullaney M, Stadler WM. Patient anxiety about prostate cancer independently predicts early initiation of androgen deprivation therapy for biochemical cancer recurrence in older men: a prospective cohort study. *J Clin Oncol* 2009;27:1557–63.
- Latini DM, Hart SL, Knight SJ, et al. The relationship between anxiety and time to treatment for patients with prostate cancer on surveillance. *J Urol* 2007;178:826–31.
- Andersen BL, DeRubeis RJ, Berman BS, et al. Screening, assessment, and care of anxiety and depressive symptoms in adults with cancer: an American Society of Clinical Oncology guideline adaptation. *J Clin Oncol* 2014;32:1605–19.
- Spitzer RL, Kroenke K, Williams JB, Lowe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006;166:1092–7.
- Pachana NA, Byrne GJ, Siddle H, Koloski N, Harley E, Arnold E. Development and validation of the geriatric anxiety inventory. *Int Psychogeriatr* 2007;19:103–14.
- Segal DL, June A, Payne M, Coolidge FL, Yochim B. Development and initial validation of a self-report assessment tool for anxiety among older adults: the geriatric anxiety scale. *J Anxiety Disord* 2010;24:709–14.
- Roth AJ, Rosenfeld B, Kornblith AB, et al. The memorial anxiety scale for prostate cancer: validation of a new scale to measure anxiety in men with prostate cancer. *Cancer* 2003;97:2910–8.
- Roth A, Nelson CJ, Rosenfeld B, et al. Assessing anxiety in men with prostate cancer: further data on the reliability and validity of the memorial anxiety scale for prostate cancer (MAX-PC). *Psychosomatics* 2006;47:340–7.
- Stanley MA, Novy DM, Bourland SL, Beck JG, Averill PM. Assessing older adults with generalized anxiety: a replication and extension. *Behav Res Ther* 2001;39:221–35.
- Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988;56:893–7.
- Kabacoff RI, Segal DL, Hersen M, Van Hasselt VB. Psychometric properties and diagnostic utility of the Beck anxiety inventory and the state-trait anxiety inventory with older adult psychiatric outpatients. *J Anxiety Disord* 1997;11:33–47.
- Balsamo M, Cataldi F, Carlucci L, Fairfield B. Assessment of anxiety in older adults: a review of self-report measures. *Clin Interv Aging* 2018;13:573–93.
- Andersen BL, Tewfik HH. Psychological reactions to radiation therapy: reconsideration of the adaptive aspects of anxiety. *J Pers Soc Psychol* 1985;48:1024–32.
- Roth AJ, Modi R. Psychiatric issues in older cancer patients. *Crit Rev Oncol Hematol* 2003;48:185–97.
- Winell J, Roth AJ. Psychiatric assessment and symptom management in elderly cancer patients. *Oncology* 2005;19:1479–90.
- Hinshaw DB, Carnahan JM, Johnson DL. Depression, anxiety, and asthenia in advanced illness. *J Am Coll Surg* 2002;195:271–7.
- Mehta RD, Roth AJ. Psychiatric considerations in the oncology setting. *CA Cancer J Clin* 2015;65:300–14.
- Moorey SG, S. Cognitive behaviour therapy for people with Cancer. New York: Oxford University Press; 2002.

- [59] Osborn RL, Demoncada AC, Feuerstein M. Psychosocial interventions for depression, anxiety, and quality of life in cancer survivors: meta-analyses. *Int J Psychiatry Med* 2006;36:13–34.
- [60] Freeman A. *Clinical applications of cognitive therapy* Springer Science & Business Media ; 2004.
- [61] Butler AC, Chapman JE, Forman EM, Beck AT. The empirical status of cognitive-behavioral therapy: a review of meta-analyses. *Clin Psychol Rev* 2006;26:17–31.
- [62] Olatunji BO, Cisler JM, Deacon BJ. Efficacy of cognitive behavioral therapy for anxiety disorders: a review of meta-analytic findings. *Psychiatr Clin North Am* 2010;33:557–77.
- [63] Buller DB, Walkosz BJ, Andersen PA, Scott MD, Cutter GR. Sustained use of an occupational sun safety program in a recreation industry: follow-up to a randomized trial on dissemination strategies. *Transl Behav Med* 2015;5:361–71.
- [64] Chambless DL, Ollendick TH. Empirically supported psychological interventions: controversies and evidence. *Annu Rev Psychol* 2001;52:685–716.
- [65] Ayers CR, Sorrell JT, Thorp SR, Wetherell JL. Evidence-based psychological treatments for late-life anxiety. *Psychol Aging* 2007;22:8–17.
- [66] Hall J, Kellett S, Berrios R, Bains MK, Scott S. Efficacy of cognitive behavioral therapy for generalized anxiety disorder in older adults: systematic review, meta-analysis, and meta-regression. *Am J Geriatr Psychiatry* 2016;24:1063–73.
- [67] Moyer A, Sohl SJ, Knapp-Oliver SK, Schneider S. Characteristics and methodological quality of 25 years of research investigating psychosocial interventions for cancer patients. *Cancer Treat Rev* 2009;35:475–84.
- [68] Greer JA, Traeger L, Bemis H, et al. A pilot randomized controlled trial of brief cognitive-behavioral therapy for anxiety in patients with terminal cancer. *Oncologist* 2012;17:1337–45.
- [69] Watson M, White C, Lynch A, Mohammed K. Telephone-delivered individual cognitive behavioural therapy for cancer patients: an equivalence randomised trial. *Psychooncology* 2017;26:301–8.
- [70] Brenes GA, Danhauer SC, Lyles MF, Hogan PE, Miller ME. Telephone-delivered cognitive behavioral therapy and telephone-delivered nondirective supportive therapy for rural older adults with generalized anxiety disorder: a randomized clinical trial. *JAMA Psychiat* 2015;72:1012–20.
- [71] Carlson LE, Bultz BD. Efficacy and medical cost offset of psychosocial interventions in cancer care: making the case for economic analyses. *Psychooncology* 2004;13:837–49.
- [72] Dieng M, Cust AE, Kasparian NA, Mann GJ, Morton RL. Economic evaluations of psychosocial interventions in cancer: a systematic review. *Psycho-Oncol* 2016;25:1380–92.
- [73] Duijts SF, Faber MM, Oldenburg HS, van Beurden M, Aaronson NK. Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors—a meta-analysis. *Psychooncology* 2011;20:115–26.
- [74] Faller H, Schuler M, Richard M, Heckl U, Weis J, Kuffner R. Effects of psycho-oncologic interventions on emotional distress and quality of life in adult patients with cancer: systematic review and meta-analysis. *J Clin Oncol* 2013;31:782–93.
- [75] Molton IR, Terrill AL. Overview of persistent pain in older adults. *Am Psychol* 2014;69:197–207.
- [76] Nightingale G, Hajjar E, Swartz K, Andrei-Sendecki J, Chapman A. Evaluation of a pharmacist-led medication assessment used to identify prevalence of and associations with polypharmacy and potentially inappropriate medication use among ambulatory senior adults with cancer. *J Clin Oncol* 2015;33:1453–9.
- [77] Prithviraj GK, Koroukian S, Margevicius S, Berger NA, Bagai R, Owusu C. Patient characteristics associated with polypharmacy and inappropriate prescribing of medications among older adults with cancer. *J Geriatr Oncol* 2012;3:228–37.
- [78] Lees J, Chan A. Polypharmacy in elderly patients with cancer: clinical implications and management. *Lancet Oncol* 2011;12:1249–57.
- [79] Maher RL, Hanlon J, Hajjar ER. Clinical consequences of polypharmacy in elderly. *Expert Opin Drug Saf* 2014;13:57–65.
- [80] Badgwell B, Stanley J, Chang GJ, et al. Comprehensive geriatric assessment of risk factors associated with adverse outcomes and resource utilization in cancer patients undergoing abdominal surgery. *J Surg Oncol* 2013;108:182–6.
- [81] Thekdi SM, Trinidad A, Roth A. Psychopharmacology in cancer. *Curr Psychiatry Rep* 2015;17:529.
- [82] Shimizu K. Treatment of anxiety and stress-related disorders. In: Grassi L, Riba MB, editors. *Psychopharmacology in Oncology and Palliative Care A Practical Manual*. Springer; 2014. p. 129–44.