

# Mental distress evaluation and intervention for cancer patients\*

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## Abstract

Mental distress is prevalent among cancer patients. Many measurements have been developed to screen and evaluate such distress. About one-third of the persons with cancer will experience significant levels of distress, requiring targeted psychosocial intervention. Mental distress has been endorsed as the sixth vital sign by the International Psycho-Oncology Society (IPOS) in 2009. The need for effective screening and psychological interventions is well recognized as a necessary, integral part of oncology care. This systematic review examines the psychometric properties of the existing tools used to screen patients for emotional distress and the applicable intervention methods.

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Cancer is one of the leading causes of global morbidity and mortality [1–2], causing 8.8 million deaths in 2015. Globally, nearly one-sixth of deaths are caused by cancer [3]. The economic impact of cancer is large and growing; the estimated total annual economic cost of cancer in 2010 was about 1.16 trillion US dollars [4].

Cancer patients not only suffer from physical pain, but their quality of life is also largely affected by psychological distress. According to Vachon [5], one-third of cancer patients experience mental distress. The National Comprehensive Cancer Network (NCCN) defines distress as “a multifactorial unpleasant emotional experience of a psychological (i.e., cognitive, behavioral, emotional), social, and/or spiritual nature that may interfere with

the ability to cope effectively with cancer, its physical symptoms, and its treatment. Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness, and fear. Such can transform into disabling conditions, such as depression, anxiety, panic, social isolation, and existential and spiritual crisis [6]. At present, mental distress has become the sixth vital sign [7]. Therefore, effective identification of the psychological distress level of cancer patients and effective intervention are very important for the treatment and quality of life for cancer patients. This systematic review below examines the psychometric properties of the existing tools used to screen patients for emotional distress and the applicable methods of intervention.

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## Evaluation measurements

Shneidman proposed a paper-and-pencil test (with pictures), called the Psychological Pain Assessment Scale (PPAS), for assessing the level of “psychache” experienced by individuals, a term he defines as follows: “Psychache is the hurt, anguish, or ache that takes hold in the mind...the pain of excessively felt shame, guilt, fear, anxiety, loneliness, angst, dread of growing old or of dying badly.” (p. 13). The PPAS is an attempt to bridge the interpersonal phenomenological gulf (or problem) regarding psychological pain by means of using visual stimuli (pictures); it is an obvious application of Murray’s TAT principle<sup>[8]</sup>.

Orbach *et al*<sup>[9]</sup> developed the Orbach & Mikulincer Mental Pain Scale (OMMP) based on the theory of Shneidman<sup>[8]</sup> and Bolger<sup>[10]</sup>. This self-rating 5-point Likert scale with 44 items consists of nine factors: (1) irreversibility, (2) loss of control, (3) narcissist wounds, (4) emotional flooding, (5) freezing, (6) self-estrangement, (7) confusion, (8) social distancing, and (9) emptiness (4 aspects). The higher the value on each factor, the higher the mental pain. Some studies<sup>[11]</sup> performed a confirmatory factor analysis on OMMP and confirmed the five-factor model after excluding some items and showed acceptable internal consistency levels and test-retest reliability.

Holden *et al*<sup>[12]</sup> developed the Psychache Scale (PAS), a more concise tool for assessing psychological distress, with 13 items rated on a 5-point scale. PAS assesses the frequency of psychological distress rather than its intensity. Similar to OMMP, PAS aims to explore the relationship between psychological distress and suicidal tendencies. The reliability and validity test of the Chinese version of the scale<sup>[13]</sup> shows that the fitting index of the factor form structure is good ( $\chi^2/df = 2.66$ , RMSEA = 0.06, CFI = 0.97, NFI = 0.95, IFI = 0.97). The internal consistency coefficient of the scale is 0.90, the split-half reliability is 0.80, and the test-retest reliability after 2 weeks is 0.60.

Steven Mee *et al*<sup>[14]</sup> developed the Mee-Bunney Psychological Pain Assessment Scale (MBPPAS) to assess the frequency and intensity of psychological distress in patients with major depressive episodes. This 5-point Likert scale includes 10 items, to provide clinicians with a quick assessment of psychological pain. The Cronbach’s alpha coefficient of the scale in the depression test was 0.827, with the control group at 0.941<sup>[14]</sup>. The revision of MBPPAS in other countries also shows good reliability and validity (Cronbach’s alpha coefficient is 0.95, and the total score of the project is 0.51–0.89)<sup>[15]</sup>.

The Three-Dimensional Psychological Pain Scale (TDPPS) is a self-evaluation scale with a total of 17 items of the Likert 5-point scale. It is divided into three dimensions of pain arousal (with eight items), painful feelings (with six items), and active pain avoidance (with

three items). The original intention of the scale was to explore the role of psychological distress in suicide risk. The Cronbach’s alpha coefficient of the scale was 0.88, and the Cronbach’s alpha coefficients of the three subscales were 0.68, 0.84, and 0.89, respectively<sup>[16]</sup>.

The Distress Management Screening Measure (DMSM)<sup>[17]</sup> is a tool for assessing the psychological pain of cancer patients. This tool includes a Distress Thermometer (DT) and a Problem List (PL). The DT is a single-item psychological pain self-assessment tool which assesses the average pain level experienced by patients in the past week; scores range from 0 to 10 (0 = painless and 10 = extremely painful). The DT also includes a list of questions with a total of 40 questions, covering five areas of the cancer patient’s illness, including practical, communication, emotional, physical, and belief/religious issues. The NCCN recommends the use of distress thermometers as a screening tool to quickly identify the psychological distress of cancer patients and is widely used in clinical practice globally.

The following scales are also often used in clinical practice to assess the psychological status of cancer patients:

Brief Pain Inventory (BPI)<sup>[18]</sup>. It measures the patient’s pain history, pain intensity, and the effects various activities have on pain. BPI is well validated in patients with cancer and chronic pain.

The European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30)<sup>[19]</sup> is used to measure the quality of life associated with cancer. The questionnaire is composed of 5 multi-item scales (physical, role, social, emotional and cognitive functioning) and 9 single items (pain, fatigue, financial impact, appetite loss, nausea/vomiting, diarrhea, constipation, sleep disturbance and quality of life). The EORTC QLQ-C30 consists of 30 items, each rated from 1 (“not at all”) to 4 (“very”), according to the 4-point Likert scale. Two items in the Global Health and Quality of Life subscale use 7 points. All functional scales and individual scores are converted to a score between 0–100 points. The higher the scores of the five functional scales and the Global Health Status Scale, the better the function. The higher the symptom scale score, the more severe the symptoms.

In addition, some scales that measure general psychological conditions such as depression and anxiety can also reflect the level of psychological distress in cancer patients to some extent. There are several categories according to the number of entries in the scale:

### *Ultra-short scale (1–4 entries)*

Anxiety questions, Brief Case Find for Depression (BCD), Depression question, Interest questions, Complex Depression and Combination Depression Questions, One-question Interview, Edmonton Symptom Assessment

System (ESAS), and the Visual Analog Scale (VAS).

#### *Short scale (5–20 entries)*

Beck Depression Inventory-Short Form (BDI-SF), Brief Edinburgh Depression Scale (BEDS-6), Brief Symptom Inventory-18, (BSI-18), the Center for Epidemiological Studies' Depression Scale (CES-D), Edinburgh Postnatal Depression Scale (EPDS), General Health Questionnaire-12 (GHQ-12), Hospital Anxiety and Depression Scale (HADS), Hornheide Questionnaire (9-9), Impact of Event Scale (IES), Memorial Anxiety Scale for Prostate Cancer (MAX-PC), Psychological Distress Inventory (PDI), Patient Health Questionnaire-9 (PHQ-9), Post-Traumatic Stress Disorder Checklist (PTSD checklist and PCL-C), Life Comprehensive Quality Visual Analog Scale (overall quality of life visual analog scale, POMS-LASA), and the Zung Self-Rating Depression Scale (ZSDS).

#### *Long scale (greater than or equal to 21 items)*

Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Distress Inventory for Cancer (DI-C), General Health Questionnaire-28 (GHQ-28), Mood Evaluation Questionnaire (MEQ), Profile of Moods State-short form (POMS-SF), Cancer Psychosocial Screening Questionnaire (Psychosocial Screening for Cancer, PSSCAN), Questionnaire on Stress in Cancer Patients (QCS-R23), and the Rotterdam Symptom Checklist (RSCL).

However, there are certain problems in using the above tools:

(1) There are differences in the definition of the concept of psychological distress. In some studies, simple anxiety and depression are used instead of psychological distress;

(2) Assessment scales are mostly universal scales, lacking specific scales for cancer patients, such as the commonly used Hospital Anxiety and Depression Scale (HADS), Brief Symptom Inventory (BSI), Symptom Checklist (SCL-90), Profile of Mood Scale (POMS), Patient Health Questionnaire (PHQ-2), etc.;

(3) Some assessment scales do not report their psychometric properties well, thus limiting their clinical use value;

(4) Some scales are just translated into Chinese without modification, and there is a lack of consideration of cultural differences between Chinese and foreign cultures, such as the Chinese version of the Concise Pain Scale (BIP-C);

(5) Tools like the PPAS, PAS, TDPPS only emphasize the relationship between distress and suicide;

(6) Some tools are not specifically used in cancer patients, for example, the MBPPAS is used to assess patients with major depressive episodes;

(7) Some tools like the PAS only evaluates the frequency of psychological pain and not the intensity;

(8) Distress management screening tools like the DT and PL are currently widely used in cancer patients, however, one simple item on the DT thermometer might produce great error, and the PL uses closed questions (only yes or no) without taking intensity into account.

## **Mental intervention methods**

With the development of medical technology in recent years, the survival rate of cancer patients has increased significantly and the quality of life with the disease and survival have become more prominent. The impact of various medical treatments on the patient's psychology and life are the cause of the decline in quality of family life. Studies inside China and abroad have confirmed that cancer patients have different levels of emotional disorders and affect the rehabilitation and prognosis of patients<sup>[20-22]</sup>. Psychological research shows that when people are emotionally anxious, nervous, or depressed for extended periods due to certain factors, the concentration of corticosteroids in the blood will continue to be high, which will inhibit the phagocytosis of macrophages, the proliferation of T-cells, and the ability of cells in general to secrete antibodies. In Zebrack *et al*<sup>[23]</sup>, a study of adolescent cancer patients showed that without counseling services, especially professional mental health services, long-term psychological distress was significantly associated. Therefore, the psychological status of cancer patients should be given full attention in nursing and treatment work.

Present methods of intervention for cancer patients include psychological education training, skills training, and psychotherapy consultation. Common psychological interventions are described below.

### *Cognitive-Behavior Therapy (CBT)*

CBT is a short-term, goal-oriented psychotherapy treatment that takes a hands-on, practical approach to problem-solving (and was developed by A. T. Beck). It is an effective skill to improve the quality of life of both patients and caregivers and also reduces the degree of psychological distress by correcting irrational thoughts, thereby reducing negative emotions and behaviors. Studies have confirmed the improvement of CBT effectiveness in the treatment of depressive symptoms in diabetic patients<sup>[24]</sup>, chronic pain management<sup>[25]</sup> and the use of psychological education interventions in the framework of self-care, combined with nurse guidance, can decrease the mental distress of patients<sup>[26]</sup>. In addition, a large number of studies have shown that CBT has a significant effect on decreasing the psychological pain of cancer patients, such as decreasing insomnia<sup>[27]</sup>, relieving stress and emotional distress<sup>[28-29]</sup>.

### *Mindfulness-Based Stress Reduction (MBSR)*

Mindfulness is the psychological process of purposely bringing one's attention to experiences occurring in the

present moment without judgment, which one can develop through the practice of meditation and other training<sup>[30]</sup>. MBSR advocates eight attitudes: The beginner's state of mind; Non-judgment; Acknowledgment; Non-striving; Equanimity; Letting-be; Self-reliance; Self-compassion<sup>[31]</sup>.

MBSR is an 8-week evidence based, scientifically researched program, developed in 1979 by Dr. Jon Kabat-Zinn at The University of Massachusetts Medical School. Its purpose is to teach patients to use their inner physical and mental strength to actively do something irreplaceable for others. MBSR emphasizes focusing on patients being present and accepting the current experiences in their entirety; encouraging patients to behave in active and flexible ways to change areas of their lives where change is possible<sup>[32]</sup>.

MBSR is often used clinically in affective disorders and chronic pain to assist in alleviating certain symptoms suffered by patients. Domestic and international studies have shown that MBSR treatment of patients suffering cancer<sup>[33]</sup>, cardiovascular disease<sup>[34]</sup>, arthritis<sup>[35]</sup>, infertility<sup>[36]</sup>, diabetes<sup>[37]</sup>, undergoing elective surgery<sup>[38]</sup> and community chronic pain patients<sup>[39]</sup>, has good intervention effects and a variety of outcomes for patients, such as improving anxiety and depression levels, reducing perceived stress levels<sup>[40-41]</sup>, reducing pain perception and degree<sup>[39]</sup>, reducing the degree of cancer-induced fatigue<sup>[42]</sup>, improving quality of life<sup>[36]</sup> and sleep quality<sup>[43]</sup>, improving immunity<sup>[44]</sup>, and self-efficacy<sup>[45]</sup>.

At present, MBSR is an effective treatment in alleviating the psychological pain of cancer patients. A number of international studies have shown that MBSR can significantly reduce the psychological pain of patients with lung cancer<sup>[46-47]</sup>, breast cancer<sup>[48-49]</sup>, and prostate cancer<sup>[50]</sup>.

#### *Music Therapy*

This treatment approach utilizes evidence-based musical interventions in the clinical context to improve patients' quality of life. Music therapists use music and its many facets—physical, emotional, mental, social, aesthetic, spiritual—to help patients improve their health in cognitive, motor, emotional, communicative, social, sensory, and educational domains by using both active and receptive music experiences. Such includes improvisation, re-creation, composition, receptive methods, and discussions of music.

Guo JY *et al*<sup>[51]</sup> showed that individualized music intervention can alleviate preoperative anxiety in patients undergoing laparoscopic surgery. Zheng ML *et al*<sup>[52]</sup> conducted both music interventions and health education for an experimental group, whilst the control group only received health education. Their results show that the anxiety levels of the experimental group decreased significantly after the intervention and, additionally,

physiological indexes such as blood pressure and heart rate became more stable. The results of Li Ronghuan *et al*<sup>[53]</sup> show that factor scores of compulsivity, interpersonal, anxiety, depression, paranoid and hostility of the music intervention group were significantly lower than in the conventional care group. Additionally, studies have shown that yoga combined with music relaxation training can alleviate cancer-related fatigue in breast cancer chemotherapy patients<sup>[54]</sup>, increase the compliance<sup>[55]</sup> and also relieve pain.

#### *Supportive-Expressive Therapy (SET)*

SET is a psychological treatment method that intervenes in patients with severely impaired mental health through advice, encouragement, and related measures. The goal of SET is to maximize or improve the patient's psychological state by maintaining or improving their self-esteem level and minimizing or even preventing the symptoms from being repeated. Goodwin's study<sup>[56]</sup> showed that group-supported expression therapy does not prolong the survival of patients with metastatic breast cancer, but it can improve the patient's mood and perception of pain. Reuter *et al*<sup>[57]</sup> show that breast cancer patients have a good acceptance of group support expression therapy, postoperative quality of life, decreasing tumor-related fatigue and coping strategies have improved. Additionally, 1 year after intervention, patients report continued positive results.

#### *Meaning-Centered Group Psychotherapy (MCGP)*

The Center of Mind Psychotherapy (MCP) is a form of psychological intervention specifically developed for when patients exhibit a loss of mental health or a loss of the meaning of life, as well as the potential pain that often occurs in patients with advanced cancer. The MCGP intervention conducts meaning-centered psychotherapy in the form of a group. Studies<sup>[58]</sup> have shown that patients treated with MCGP have significantly improved mental health and quality of life, and depression, despair, accelerated death desires, and physical symptoms are decreased, compared with those receiving supportive group therapy.

## **Conclusion**

Mental distress is an important factor affecting cancer patients' psychological and physical well-being. Though much research in Western countries has been conducted on distress evaluation and intervention with cancer patients, there is not enough evidence for China. Reliable and effective intervention methods and tools need to be developed and tested.

## **Conflicts of interest**

The authors indicated no potential conflicts of interest.

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