Psychosocial Interventions for Anxiety and Depression in Adult Cancer Patients: Achievements and Challenges

Paul B. Jacobsen, PhD; Heather S. Jim, PhD

ABSTRACT  Psychosocial care is increasingly recognized as an essential component of the comprehensive care of the individual with cancer. Improving patients’ access to psychosocial care is important; however, ensuring that the care made available has been shown to be effective is just as important. Accordingly, the goal of this review is to describe an evidence-based approach to the psychosocial care of adults with cancer. The focus is on anxiety and depression because a considerable body of research has examined the impact of psychosocial interventions on these outcomes. After describing the sources, assessment, and prevalence of anxiety and depression in adults with cancer and presenting existing clinical practice guidelines for their management, previous publications that systematically reviewed evidence of the efficacy of psychosocial interventions are summarized. The use of these publications to derive specific recommendations for the use of psychosocial interventions in the management of anxiety and depression is then illustrated. In addition, examples are provided of interventions that are effective against anxiety and depression and have good potential for dissemination in routine clinical practice. The review concludes with a discussion of future directions for the continued development of an evidence-based approach to the psychosocial care of people with cancer. (CA Cancer J Clin 2008;58:214–230.) © American Cancer Society, Inc., 2008.

INTRODUCTION

There is growing recognition that psychosocial care is an important part of the comprehensive care of people diagnosed with cancer.1,2 Interest in psychosocial care can be viewed as part of a broader trend within oncology of evaluating care in terms of its impact on quality of life as well as quantity of life.3 In addition to trying to extend how long people live following a cancer diagnosis, the oncology community increasingly recognizes the value of considering how well people live. Psychosocial care, with its goals of relieving emotional distress and promoting well-being, is central to efforts to improve the quality of patients’ lives.

Improving cancer patients’ access to psychosocial care remains a critical issue. Many patients who could benefit from psychosocial care do not receive the help they need. Barriers include under-recognition of the need for psychosocial care by the primary oncology team4 and, even when recognized, the lack of professionals available in many communities to provide psychosocial care to cancer patients. Improving access, however, involves more than ensuring that any form of care is available. Psychosocial care that is ineffective may be worse than no care at all. With many different forms of psychosocial care now available and a growing body of research that can serve to guide practice, clinicians have an obligation to provide patients with the care that is likely to be beneficial for the type of problem they are experiencing. The use of research to guide practice is at the core of evidence-based medicine,5 a movement that seeks to integrate individual patient care with the best available research evidence. Much as the practice of oncology...
strives to be evidence-based, so too should the psychosocial care of cancer patients.

The goal of this review is to describe an evidence-based approach to the use of psychosocial interventions to manage anxiety and depression in adults with cancer. The focus is on anxiety and depression because a considerable body of research has examined the impact of psychosocial interventions on these outcomes. After describing the sources, assessment, and prevalence of anxiety and depression in adults with cancer and presenting existing clinical practice guidelines for their management, we summarize previous reviews of the research evidence and offer specific evidence-based recommendations for the use of psychosocial interventions in the management of anxiety and depression. We then provide examples of interventions that are effective and have good potential for dissemination in routine clinical practice. We conclude by identifying future directions for continued development of an evidence-based approach to the psychosocial care of people with cancer.

**SOURCES, ASSESSMENT, AND PREVALENCE OF ANXIETY AND DEPRESSION**

Anxiety and depression in adults diagnosed with cancer are well documented. Possible sources are varied and include problems predating cancer diagnosis, as well as reactions to the diagnosis of a severe and possibly life-threatening illness and the presence of unpleasant symptoms (e.g., pain, nausea, and fatigue). Concerns about disruptions in life plans, diminished quality of life, and disease recurrence or progression can also produce anxiety and depression. In addition, the physiologic effects of certain treatments (e.g., high-dose interferon therapy) on the central nervous system may directly produce anxiety or depression.9 Studies indicate that heightened anxiety and depression are not limited to the active treatment period and may persist for months or even years following successful treatment.10

Anxiety and depression can be assessed using a single-symptom approach, a multisymptom approach, and a clinical syndrome approach. The single-symptom approach refers to assessment methods that focus specifically on measuring anxious or depressed mood as a continuous variable (e.g., visual analog scales assessing the severity of anxious or depressed mood) or a categorical variable (e.g., clinical interview items assessing the presence/absence of anxious or depressed mood). The chief advantages of these methods are their brevity and the absence of item content (e.g., loss of appetite) that might reflect disease symptoms or treatment side effects rather than the presence of emotional difficulties. The chief disadvantages are the potential for single-item measures to yield unreliable findings, the limited information they yield about depression and anxiety, and the challenge of identifying clinically significant problems based solely on information about mood. With regard to research on psychosocial interventions, single-symptom measures have a very limited role. Although they might be used as outcome measures, the use of a single item to measure anxiety or depression if it is the primary study outcome does not seem wise given the limited information yielded and the potential for unreliable findings.

The multisymptom approach refers to assessment methods that focus on measuring constellations of anxiety or depressive symptoms. Common multisymptom approaches to measuring anxiety and depression in cancer patients include self-report scales such as the 20-item State-Trait Anxiety Inventory, the 20-item Center for Epidemiologic Studies Depression Scale, and the 14-item Hospital Anxiety and Depression Scale. The chief advantages of these methods are their established reliability and validity, their ability to detect change over time, and the availability of reference values for a variety of medical and nonmedical populations. The chief disadvantages are the presence on some measures of item content (e.g., loss of appetite) that might reflect disease symptoms or treatment side effects rather than emotional difficulties and the high positive correlation frequently observed between scores on anxiety measures and scores on depression measures. The presence of a high correlation suggests to some authors that these measures are mostly assessing negative affectivity, a nonspecific form of distress. Another disadvantage is the difficulty inherent in identifying clinically significant anxiety or depression and clinically significant improvement over time using measures that yield continuous scores. Reflecting the
established psychometric properties of many of these measures, multisymptom self-report scales are the most commonly used methods of assessing anxiety and depression as outcomes in research on psychosocial interventions.

The clinical syndrome approach refers to assessment methods used to detect the presence of an anxiety disorder (e.g., Generalized Anxiety Disorder) or a mood disorder (e.g., Major Depressive Disorder). In the United States, this approach involves the application of criteria identified in the Fourth Edition of the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders.\(^{15}\) For example, a diagnosis of a major depressive disorder requires the presence of 5 or more symptoms of depression, at least one of which is either depressed mood or loss of interest or pleasure in usual activities; additional symptoms may include somatic symptoms (e.g., changes in appetite) or cognitive symptoms (e.g., excessive or inappropriate guilt). A diagnosis of a generalized anxiety disorder requires the presence of excessive anxiety and worry, difficulty controlling the worry, plus 3 or more additional symptoms of anxiety (e.g., difficulty concentrating, irritability, or muscle tension). The chief advantage of these methods is their utility in identifying clinically significant forms of anxiety and depression. The chief disadvantages are the presence of item content that might reflect disease symptoms or treatment side effects rather than the presence of emotional difficulties and the lack of sensitivity to change inherent in an “all or nothing” syndromal approach to measuring emotional problems. The clinical syndrome approach has rarely been used in research on psychosocial interventions. One potential application would be to use the diagnosis of a mood or anxiety disorder as an eligibility criterion in order to evaluate interventions with individuals who are experiencing clinically significant problems. Another potential application would be to use the presence or absence of a mood or anxiety disorder as an outcome measure, in combination with scores on multisymptom measures, to help establish the clinical significance of observed intervention effects.

Estimates of the prevalence of anxiety and depression in adult cancer patients vary widely. For example, one review reported prevalence rates for depression in cancer patients ranging from 1.5% to 45%.\(^{16}\) Differences in prevalence may reflect whether anxiety and depression were assessed using a single-symptom approach, a multisymptom approach, or a clinical syndrome approach. Variability in prevalence is also likely a reflection of differences across studies in patient factors such as age and disease severity; evidence suggests anxiety and depression are greater in younger patients and patients with more advanced disease.\(^4\) Although prevalence estimates vary widely, evidence suggests that anxiety and depression are among the most common symptoms experienced by cancer patients.\(^{17,18}\)

---

**CLINICAL PRACTICE GUIDELINES FOR MANAGEMENT OF ANXIETY AND DEPRESSION IN CANCER PATIENTS**

In recent years, several organizations have proposed clinical practice guidelines that include recommendations for the management of anxiety and depression in cancer patients. Two of these guidelines are described subsequently to illustrate the different approaches that can be taken. The first approach is based largely on expert consensus, while the second is based on evaluation of the available research evidence.

The National Comprehensive Cancer Network (NCCN), currently comprised of 21 major cancer centers in the United States, has developed several clinical practice guidelines for the supportive care of cancer patients. The NCCN Guidelines for Distress Management, first issued in 1999\(^19\) and updated annually, consist primarily of recommendations for evaluation, treatment, and follow-up care that are organized in terms of clinical pathways. Most of the recommendations represent a uniform consensus among panel members based on lower-level evidence, such as clinical experience, as opposed to higher-level evidence, such as randomized controlled trials (RCTs). Recommendations for the management of anxiety and depression appear primarily in sections of the guidelines focusing on anxiety and mood disorders. Underlying each recommendation is the assumption that before initiating treatment, patients will have been referred to a mental health professional for psychological/psychiatric evaluation.
For patients with a mood disorder, the initial recommendation is for evaluation, diagnostic studies, and modification of factors potentially contributing to mood disorder symptoms such as concurrent medications, pain, and withdrawal states. Based on findings, subsequent recommendations include initiation of antidepressant medication, psychotherapy (with or without concurrent initiation of anxiolytic medication), and consideration of referral to social work services or pastoral services before follow up or reevaluation. For patients with an anxiety disorder, the initial recommendation is likewise for evaluation, diagnostic studies, and modification of factors potentially contributing to the presenting symptoms. Based on findings, subsequent recommendations include psychotherapy (with or without anxiolytic medication and/or antidepressant medication) before follow up or reevaluation. No specific forms of counseling or psychotherapy are recommended in these sections of the guidelines. However, in the section describing the delivery of social work services, several different psychosocial interventions are listed. For example, the guidelines recommend the use of educational and support groups and counseling and psychotherapy to address moderate to severe psychosocial problems. Table 1 provides brief descriptions of some of the more common psychosocial interventions described in these guidelines and the research literature.

In 2003, the National Breast Cancer Centre and the National Cancer Control Initiative in Australia published the first edition of *Clinical Practice Guidelines for the Psychosocial Care of Adults with Cancer.* These guidelines, based on available

| Term                              | Definition                                                                                                                                 |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Behavioral therapy                | A type of psychotherapy that focuses on identifying problematic behaviors and replacing them with more adaptive behaviors               |
| Cognitive therapy                 | A type of psychotherapy that focuses on recognizing and changing maladaptive thought patterns to reduce negative emotions and facilitate psychological adjustment |
| Cognitive-behavioral therapy      | A type of psychotherapy that focuses on recognizing and changing maladaptive thoughts and behaviors to reduce negative emotions and facilitate psychological adjustment |
| Communication skills training     | A set of techniques used to modify verbal and nonverbal interactions with the goals of reducing interpersonal conflict and increasing the accuracy of information exchanged |
| Counseling                        | Generic term used to refer to psychosocial care provided by a qualified professional                                                   |
| Education/psychoeducation         | Provision of information through print, audiovisual, or interpersonal channels designed to increase knowledge of a subject area and reduce uncertainty |
| Family therapy/counseling         | A type of psychotherapy that focuses on modifying problematic interactions within a family through conjoint sessions with family members |
| Guided imagery                    | Structured meditative activity using mental imagery to facilitate relaxation                                                             |
| Music therapy                     | Use of music to achieve therapeutic goals that may include relaxation, reminiscence, or emotional expression                              |
| Problem-solving therapy           | A type of psychotherapy that focuses on generating, applying, and evaluating solutions to identified problems                              |
| Psychotherapy                     | Generic term used to refer to psychosocial care provided by a qualified professional                                                   |
| Relaxation training               | Techniques for releasing physical or mental tension that may involve meditative activities, progressive tensing and relaxing of muscle groups, or use of guided imagery |
| Stress management training        | Techniques for managing stress that may include relaxation training, breathing exercises, or use of internal monologues                  |
| Support group                     | Meetings that may or may not be facilitated by a professional at which individuals discuss issues of common concern                    |
| Supportive-expressive group therapy | A type of psychotherapy that focuses on expression of emotions in a supportive group environment to reduce negative emotions and promote psychological adjustment |
Psychosocial Interventions for Anxiety and Depression in Adult Cancer Patients: Achievements and Challenges

TABLE 2  National Breast Cancer Centre and National Cancer Control Initiative Recommendations Relevant to Management of Anxiety and Depression Supported by Level I or Level II Evidence

| Recommendation                                                                 | Evidence Level |
|--------------------------------------------------------------------------------|----------------|
| Providing question prompt sheets to patients with cancer during an initial consultation promotes patient questions, reduces anxiety, improves recall, and shortens the consultation | II             |
| Providing patients with information about the procedure they are about to undergo reduces emotional distress and improves psychological and physical recovery | I              |
| Providing patients with practical details about the procedure (procedural information), a booklet, and/or a videotape decreases anxiety and psychological distress | II             |
| Providing patients with information about what they are likely to experience before, during, and after a procedure (sensory information) decreases anxiety | I              |
| Providing patients with psychological support before undergoing surgery reduces psychological distress | I              |
| Cognitive behavioral, psychoeducational, and crisis interventions, as well as combinations of education and behavioral or nonbehavioral interventions and anxiolytic medications, are effective in the treatment of anxiety | I              |
| Cognitive behavioral, psychoeducational, and supportive interventions, as well as combinations of education and behavioral or nonbehavioral interventions and cognitive behavioral interventions and antidepressants, are effective in the treatment of depression | I              |
| Supportive psychotherapy in combination with antidepressants such as selective serotonin reuptake inhibitors is effective for the management of post-traumatic stress disorder | I              |
| Depression can be managed by incorporating a combination of supportive psychotherapy, cognitive and behavioral techniques, and pharmacotherapy | I              |
| There is no evidence that any particular antidepressant is superior to another in the management of depression in people with cancer | I              |

Adapted from the National Breast Cancer Centre and National Cancer Control Initiative.²⁰

research evidence, are presented in the form of a series of recommendations accompanied by identification of the levels and sources of research support. Included in the document is a table summarizing recommendations for the psychosocial care of cancer patients that are based on systematic review of all relevant RCTs (Level I evidence) or on at least one properly designed RCT (Level II evidence). Those recommendations that relate primarily to the management of anxiety and depression appear in adapted form in Table 2. With regard to psychosocial interventions, the guidelines indicate that cognitive-behavioral and psychoeducational interventions are among several interventions effective in the treatment of anxiety and depression. An assumption underlying these guidelines is that evidence collected from other populations is generalizable to cancer patients. Specifically, some of the evidence cited in support of these recommendations includes systematic reviews and randomized trials conducted on populations other than cancer patients.

SYSTEMATIC REVIEWS AND META-ANALYSES

As mentioned previously, the use of research to guide clinical practice is at the core of evidence-based medicine.⁵ Consistent with an evidence-based approach, we sought to summarize conclusions from all existing systematic reviews and meta-analyses of the effects of psychosocial interventions on anxiety and depression in adults with cancer. Relevant publications were identified through several methods, including electronic searches of major databases (eg, MEDLINE and PsycINFO) and inspection of the reference lists of identified publications. Fourteen publications were identified that reached conclusions about the efficacy of psychosocial interventions for anxiety or depression (see Table 3).

Effects on Anxiety

Eight of the 14 publications identified offered conclusions about the efficacy of psychosocial interventions for anxiety in cancer patients. Six of the 8 publications reached positive conclusions.
### TABLE 3  Systematic Reviews and Meta-analyses of Psychosocial Interventions for Anxiety or Depression in Adults with Cancer

| Reference | Intervention Focus | Psychosocial Intervention Studies Reviewed | Findings | Conclusions |
|-----------|-------------------|------------------------------------------|----------|-------------|
| Devine EC, Westlake SK21 | Psychoeducational care | Randomized and nonrandomized studies of cancer patients | Positive results for anxiety reported in 95% of studies; $d = .56$, 95% CI = .42 to .70 | Many types of psychoeducational care show beneficial effects on anxiety and depression. |
| Lovejoy NC, Matteis M22 | Cognitive-behavioral interventions | Randomized and nonrandomized studies of cancer patients | Knowledge base for management of cancer-related depression with cognitive behavioral therapy is in the beginning phases of development | Several studies suggest that simple, brief therapy (6 sessions or fewer) provides effective relief in milder cases of cancer-related depression. |
| Bottomley A23 | Pharmacological and psychosocial interventions | Randomized and nonrandomized studies | Positive results for depression with individual and group interventions | A number of psychosocial approaches to the treatment of depression demonstrate positive effects. |
| Sellick SM, Crooks DL24 | Individual psychosocial counseling interventions | Randomized studies of cancer patients | Magnitude of treatment effects for depression in the 10 studies reviewed were classified as large (5), moderate (2), low (2), and none (1) | There is sufficient evidence to credit a counseling intervention with a positive effect on depression for both statistical and clinical significance. |
| Sheard T, Maguire P25 | Psychosocial interventions | Randomized studies of cancer patients | Anxiety: $d = .42$, 95% CI = .08 to .74; $d = .36$ based on criteria for developing a robust estimate Depression: $d = .36$, 95% CI = .06 to .66; $d = .19$ with positive outliers removed | Preventative psychosocial interventions may have a moderate clinical effect on anxiety but not depression. |
| Luebbert K, Dahme B, Hasenbring M26 | Relaxation training | Randomized studies of nonsurgical cancer patients | Anxiety: $d = .45$, 95% CI = .23 to .67 Depression: $d = .54$, 95% CI = .30 to .78 | Relaxation training has a significant (small) effect on anxiety and a significant (medium) effect on depression. |
| Redd WH, Montgomery GH, DuHamel KN27 | Behavioral interventions for cancer treatment side effects | Randomized and nonrandomized studies | 4 of 5 randomized studies and 13 of 14 nonrandomized studies demonstrated beneficial effects of behavioral intervention on anxiety | Multimodal behavioral intervention can ameliorate anxiety associated with invasive medical treatments. |
| Barsevick AM, Sweeney C, Haney E, Chung E28 | Psychoeducational interventions | Randomized and nonrandomized studies of cancer patients | Positive results for depression reported in 63% of studies reviewed | Psychoeducational interventions are effective in reducing depression. In particular, behavioral therapy, counseling/psychotherapy, and either of these combined with education are beneficial. |
| Newell SA, Sanson-Fisher RW, Savolainen NJ29 | Psychosocial interventions | Randomized studies of cancer patients of fair or better quality | Recommendations for anxiety tentatively against 8 strategies, neither for nor against 7 strategies, and tentatively for 1 strategy Recommendations for depression were tentatively against 7 strategies, neither for nor against 6 strategies, and tentatively for 0 strategies | Music therapy can be tentatively recommended for reducing anxiety, and several other strategies warrant further exploration. No intervention strategy can be recommended for reducing depression, but several warrant further exploration. |
| Ulterhoeve RJ, Vernooij M, Litjens M, et al30 | Psychosocial interventions for advanced cancer | Randomized studies of cancer patients | 1 of 10 studies reviewed showed a significant intervention effect for anxiety 6 of 10 studies reviewed showed a significant intervention effect for depression | The main benefit of psychosocial interventions in advanced cancer is an improvement of depression and feelings of sadness. |

— continued
Redd et al. conducted a systematic review of behavioral interventions for cancer patients undergoing treatment (primarily chemotherapy). Recommendations for the use of behavioral interventions were based on findings showing that 4 of 5 RCTs and 14 of 15 nonrandomized studies yielded significant results favoring the behavioral intervention condition. Jacobsen et al. conducted a systematic review of RCTs of psychosocial interventions in which anxiety was measured as an outcome. Among the 54 RCTs identified, 49 of 135 outcome analyses (36%) yielded significant results favoring the intervention condition. As described subsequently (see Table 4), these results generated numerous evidence-based recommendations for the use of psychosocial interventions to manage anxiety. The other 4 publications reached positive conclusions based on the results of meta-analyses demonstrating significant effect sizes for psychosocial interventions. Luebbert et al. reported a significant effect of small size ($d = .45$) for relaxation training with cancer patients not undergoing surgery based on 8 studies. Devine and Westlake reported a significant effect of medium size ($d = .56$) for psychosocial intervention based on 55 studies. Additional analyses limited to interventions tested in 5 or more studies yielded significant effect sizes (range = .46 to .74) for all the subcategories examined, including educational interventions and relaxation training interventions. Sheard and Maguire reported a significant effect of small size ($d = .42$) for psychosocial intervention based on 19 studies. Exclusion of nonrandomized trials and trials that did not meet other criteria for quality yielded a similar-sized effect ($d = .36$). Finally, Osborn et al. reported a significant effect of large size ($g = 1.99$) for cognitive-behavioral therapy in the post-treatment period based on 4 studies. The same publication reported a nonsignificant effect for educational intervention ($g = -.02$) based on one study.

In contrast, 2 of the 8 publications did not reach positive conclusions about the efficacy of psychosocial interventions in the management of...
anxiety. Both publications were systematic reviews. Uitterhoeve et al\(^3\) focused on psychosocial interventions for patients with advanced cancer. No recommendations were offered about use of psychosocial interventions for management of anxiety in this patient population based on evidence that only 1 of 10 RCTs showed a significant intervention effect. Newell et al\(^2\) evaluated the results of 25 RCTs of psychosocial interventions judged to be of fair or better quality in which anxiety was measured as an outcome. For a strategy to earn at least a tentative recommendation, at least 75% of the trials evaluating the strategy had to yield statistically significant results. Based on this criterion, only 1 of 16 strategies evaluated merited a tentative recommendation. Specifically, music therapy earned this recognition based on evidence that the only trial conducted of this therapy with anxiety as an outcome yielded positive results. Several additional therapies (eg, cognitive-behavioral therapy, communication skills training, and guided imagery) were judged to warrant further exploration based on patterns of significant results deemed inconsistent.

**Effects on Depression**

Thirteen of the 14 publications identified reached conclusions about the efficacy of psychosocial interventions for depression in cancer patients. It should be noted that the studies reviewed in these publications overlap to some extent with those reviewed in the publications summarizing the efficacy of psychosocial interventions for anxiety in cancer patients. This situation reflects the fact that many intervention studies assessed both anxiety and depression as outcomes.

Nine of the 13 publications identified reached positive conclusions about the efficacy of psychosocial interventions for depression in cancer patients. Seven of the 9 publications yielding positive conclusions were systematic reviews.

---

**TABLE 4  Evidence-based Recommendations for the Use of Psychosocial Interventions**

| Relaxation techniques, alone or combined with education/skills training, are effective in preventing or relieving: |
| --- |
| Anxiety\(^3\) and depression\(^5\) in newly diagnosed patients |
| Anxiety\(^4\) and depression\(^5\) in patients in the terminal phase of illness |
| Anxiety\(^6\) and depression\(^5\) in patients undergoing chemotherapy |
| Anxiety\(^7\) and depression\(^8\) in patients undergoing radiotherapy |
| Anxiety\(^9\) and depression\(^10\) in patients undergoing surgery |
| Anxiety\(^11\) and depression\(^12\) following completion of active treatment |

| Psychoeducation is effective in preventing or relieving: |
| --- |
| Anxiety\(^13\) and depression\(^14\) in newly diagnosed patients |
| Anxiety\(^15\) and depression\(^16\) in patients undergoing surgery |
| Anxiety\(^17\) in patients undergoing chemotherapy |
| Depression\(^18\) in patients undergoing chemotherapy |

| Supportive and supportive-expressive therapies are effective in preventing or relieving: |
| --- |
| Anxiety\(^19\) and depression\(^20\) in patients with metastatic disease |
| Anxiety\(^21\) and depression\(^22\) in patients undergoing chemotherapy |
| Anxiety\(^23\) in patients undergoing radiotherapy |
| Depression\(^24\) in patients undergoing surgery |

| Couples counseling is effective in preventing or relieving: |
| --- |
| Depression\(^25\) in patients undergoing surgery |

| Cognitive-behavioral therapy is effective in preventing or relieving: |
| --- |
| Depression\(^26\) in patients with metastatic disease |
| Anxiety\(^27\) in patients undergoing surgery |

| Cognitive therapy is effective in preventing or relieving: |
| --- |
| Depression\(^28\) in patients undergoing chemotherapy |
The supporting evidence presented by Bottomley and Lovejoy et al consisted primarily of summaries of clinical trials that yielded positive findings for psychosocial interventions. Sellick and Crooks based their positive recommendation on evidence that intervention effects were large or moderate in size in 7 of 10 RCTs reviewed. Barsevick et al reported that 30 of 48 randomized and nonrandomized studies identified (63%) yielded evidence supporting the benefits of psychosocial intervention. Among the many interventions evaluated in these studies, the evidence was viewed as sufficient to specifically recommend behavioral therapy, counseling/psychotherapy, and either of these approaches combined with education. Jacobsen et al identified 47 RCTs of psychosocial interventions in which depression was measured as an outcome. Of the 102 outcome analyses reported in these studies, 42 (41%) yielded significant results favoring the intervention condition. As described subsequently (see Table 4), these findings generated numerous evidence-based recommendations for the use of psychosocial interventions to manage depression. Finally, Uitterhoeve et al focused on RCTs conducted with patients with advanced cancer. Based on results showing a significant intervention effect for depression in 6 of 10 studies and for anxiety in only 1 of 10 studies (as noted previously), the authors concluded that the main benefit of psychosocial intervention in this patient population is improvement of depression and feelings of sadness.

The other publications reached positive conclusions based on the results of meta-analyses demonstrating significant effect sizes for psychosocial interventions. Luebbert et al reported a significant effect of medium size (\( d = .54 \)) for relaxation training with cancer patients not undergoing surgery based on 6 studies. Devine and Westlake reported a significant effect of medium size (\( d = .54 \)) for psychosocial intervention based on 40 studies. Additional analyses limited to interventions tested in 4 or more studies yielded significant effect sizes (range = .40 to .66) for each of the following: education, counseling, relaxation training, and combinations of the preceding strategies. Finally, Osborn et al reported a significant effect of large size (\( g = 1.21 \)) for cognitive-behavioral therapy in the post-treatment period based on 5 studies. The same publication reported a nonsignificant effect for educational intervention (\( g = -.06 \)) based on 2 studies.

In contrast, 4 of the 13 publications did not reach positive conclusions about the efficacy of psychosocial interventions in the management of depression. Newell et al evaluated the results of 15 RCTs of psychosocial interventions judged to be of fair or better quality in which depression was measured as an outcome. Using criteria described previously, none of the 13 strategies evaluated merited a tentative recommendation. However, several therapies (eg, cognitive-behavioral therapy and guided imagery) were judged to warrant further exploration based on patterns of significant results deemed inconsistent. Sheard and Maguire conducted a meta-analysis that yielded a significant effect of small size (\( d = .36 \)) for psychosocial intervention based on 20 studies. Results showed, however, that exclusion of 3 studies with very large positive effects reduced the effect size to a magnitude (\( d = .19 \)) considered by the authors to be clinically weak to negligible. The latter finding led to a conclusion that psychosocial interventions did not have a clinically significant effect on depression in cancer patients. Williams and Dale conducted a systematic review that distinguished studies based on whether the outcome was a reduction in clinically significant depression (a categorical measure) or in depressive symptomatology (a continuous measure). With regard to the former, the benefits of psychosocial intervention were evident in 3 of 4 RCTs. With regard to the latter, the benefits were evident in 7 of 10 RCTs of cognitive-behavioral therapy (the most frequently studied psychosocial intervention). These 2 results led to mixed conclusions. Although the authors concluded that more research was needed to determine the efficacy of psychosocial interventions in treating depression (ie, limiting clinically significant levels of depression), they also noted that cognitive-behavioral therapy appeared to be effective in reducing depressive symptoms. Rodin et al limited their systematic review to studies in which clinically significant depression was an eligibility criterion for participants. Based on findings showing that 2 of 4 studies demonstrated greater improvement in patients who received a psychosocial intervention, the authors...
concluded that the evidence for nonpharmaco-
logical treatment of depression in cancer is mixed.

Summarizing the Summaries

Differences in the scopes of the reviews, the
methods used to summarize findings across stud-
ies, and the manner in which recommendations
were reached seriously limit the conclusions that
can be drawn from these 14 publications. Indeed,
2 recent reviews of many of the same publica-
tions reached very different conclusions about
the overall effectiveness of psychosocial interven-
tions. While one review66 concluded that “the
preponderance of evidence furnished by these
systematic reviews, particularly that gleaned from
meta-analyses, suggests that psychological inter-
ventions are effective in managing distress,” the
other review67 concluded that “our review of
reviews, particularly the more systematic reviews,
provides no compelling evidence of broadly effec-
tive psychological interventions for reducing a
wide range of distress outcomes in cancer patients.”

Rather than attempt to reach an overall con-
clusion about the efficacy of psychosocial inter-
ventions, we believe it is more valuable to
examine how previous systematic reviews and
meta-analyses can be used to derive specific
evidence-based recommendations for the man-
agement of anxiety and depression in adults with
cancer. Before illustrating one approach to deriv-
ing evidence-based recommendations, we wish
to comment on one area in which nearly all the
publications reviewed were in agreement. That
is, nearly all identified weaknesses in the evi-
dence base that have important implications for
clinical practice. These weaknesses can be dis-
tilled down to 4 major areas of concern.

First, there are notable gaps in the literature
regarding the benefits of psychosocial interven-
tions for patients with certain demographic, dis-
ease, and treatment characteristics. With regard to
demographic characteristics, one review found
that eligibility was limited to men in only 5% of
studies.31 Similarly, there is little evidence regard-
ing the efficacy of psychosocial interventions
with members of ethnic and racial minority
groups. With regard to disease characteristics,
there are limitations in the evidence base related
to disease type and disease status. Most studies
are based on samples with several different types
of cancer, and except for breast cancer, very few
studies are limited to a single form of cancer.31 The
significance of this issue lies in the possibility that
the sources of anxiety and depression and the
psychosocial interventions needed to treat them
may vary considerably across different cancers.
For example, the psychosocial interventions
needed to address emotional problems related to
having a disease in a part of the body closely
related to sexual functioning (eg, breast cancer)
may differ considerably from those needed to
address problems related to having a disease in a
part of the body that directly affects cognitive
functioning (eg, brain cancer). A similar situa-
tion exists with regard to disease status. One
review found that 73% of studies did not focus
on a specific disease stage, and of those that did,
only 9% focused on patients with Stage IV or
metastatic disease.31 Although research suggests that
psychosocial interventions are effective against
depression in patients with advanced disease,30
the issue merits additional study based on evi-
dence suggesting that several forms of psycho-
logical distress worsen with advancing disease.4
With regard to treatment status, one review found
that only 8% of studies were limited to patients
not currently receiving treatment.31 Although
research suggests that cognitive-behavioral ther-
apy is effective in relieving anxiety and depression
in the post-treatment period,32 too few studies
have been conducted to adequately evaluate any
other form of psychosocial intervention.

The presence of inconsistent findings is a sec-
ond notable limitation of the evidence base. One
of the more negative evaluations of psychoso-
cial interventions comes from a review that eval-
uated whether at least 75% of the trials evaluating
a specific strategy yielded statistically significant
positive results.29 As noted previously, only one
strategy met this criterion for anxiety, and none
met it for depression.29 This lack of consistency
can be attributed in part to differences across
studies evaluating the same intervention strategy
in the demographic, disease, and treatment char-
acteristics of the samples recruited; the number
and timing of the outcome assessments per-
formed; and the outcome measures used. In addi-
tion, there may be considerable variation across
studies in the number and content of sessions for
interventions that share the same name (e.g., relaxation training). Adoption of common outcome measures and common terminology to describe the format and content of interventions is needed to promote greater standardization of methodology across studies.

The quality of the studies is a third area of concern. Inadequate reporting of study methodology appears to be a major problem. One review found that only 3% of trials provided sufficient information to permit evaluation of 10 indicators of study quality. However, problems are also evident when study methodology is adequately described. For example, the majority of studies conducted in the 1990s failed to account for patients lost to follow up in the outcome analyses performed. The widespread adoption by major journals of standardized descriptions of clinical trials procedures, such as the Consolidated Standards of Reporting Trials criteria, should have a positive influence on the quality of future studies.

The general lack of research on patients experiencing clinically significant levels of anxiety and depression is a fourth area of concern. One review found that only 5% of studies limited eligibility to patients experiencing some degree of anxiety, depression, or psychological distress. Based on the reported prevalence of anxiety and depression in oncology settings, the average patient in most intervention studies was likely to be experiencing low levels of anxiety and depression at the time they were recruited. In addition to limiting the statistical power to detect intervention effects, the lack of eligibility criteria based on current anxiety or depression raises questions about whether the findings are generalizable to patients experiencing clinically significant symptomatology. This issue is important since consensus-based clinical practice guidelines, such as those developed by NCCN, recommend the use of psychosocial interventions specifically for patients experiencing heightened distress. In the one review limited to studies of patients experiencing elevated levels of depression, evidence from the 4 studies identified was mixed regarding the efficacy of psychosocial interventions in treating depression, suggesting the need for additional research on this topic. By evaluating psychosocial interventions with patients experiencing moderate to severe symptoms of anxiety and depression, future research is likely to yield findings of greater relevance to clinical practice.

---

**EVIDENCE-BASED RECOMMENDATIONS FOR THE USE OF PSYCHOSOCIAL INTERVENTIONS TO MANAGE ANXIETY AND DEPRESSION**

The systematic reviews and meta-analyses described previously provide abundant information about the efficacy of psychosocial interventions in managing anxiety and depression in adults with cancer. The challenge is to translate this abundance of information into evidence-based recommendations that are relevant to clinical practice. An approach we developed previously that may be useful is to summarize the literature in terms of the number of RCTs that demonstrated efficacy in managing anxiety or depression based on intervention type and patient disease or treatment status. An adapted version of this summary appears in Table 4. Specifically, the table lists RCTs published between 1980 and 2003 for which significant ($P < .05$) effects were obtained for an intervention relative to a control condition. This listing is comprised only of studies retrieved as part of the review that could be classified according to intervention type and the disease or treatment status of the participants. Consideration might be given in the future to further classifying studies according to type of cancer and patient demographic characteristics (e.g., gender and race/ethnicity).

The information contained in the table can serve several useful purposes. First, it can be used to identify specific applications of psychosocial interventions for which there is empirical support. That is, treatment providers and patients can readily determine when in the disease course or at what point in the treatment process a specific intervention has been shown to be effective in preventing or relieving anxiety or depression. Second, inspection of the number of unique citations next to each listing provides information about the extent of the evidence for the identified use of a specific intervention strategy. Finally, the citations themselves identify publications that provide information about the content and delivery of the intervention strategy and the methodology used to evaluate it.
An example will serve to illustrate one way in which the table might promote evidence-based use of psychosocial interventions. Clinicians seeking to develop services to address anxiety in their patients undergoing chemotherapy would note that relaxation training, psychoeducation, and supportive or supportive-expressive therapies have all been found in RCTs to be effective in preventing or relieving anxiety in patients undergoing chemotherapy. They would further note that among these strategies, evidence is strongest (as measured by the number of supportive RCTs) for relaxation training. For the time period covered in the review, no other strategy was found to be effective in relieving anxiety among chemotherapy patients in more than a single RCT. The citations listed in the table would provide information about how efficacy was established, as well as examples of relaxation training interventions found to be effective with chemotherapy patients. Inspection of the individual publications would yield information about the number and timing of relaxation training sessions that yielded significant benefits and details about the clinical populations for which efficacy was established. Of particular importance for application to clinical practice would be information about whether the study used a pre-existing level of anxiety as an eligibility criterion. If so, results would suggest the intervention could be used to treat clinically significant anxiety (ie, to help an anxious patient). If not, results would suggest the intervention could be used to prevent or relieve the mild to moderate anxiety experienced by the typical chemotherapy patient.

**Examples of Evidence-Supported Interventions**

In this section we provide examples of psychosocial interventions found to be effective in managing anxiety or depression in people with cancer. We were guided by 3 considerations in selecting examples. First and foremost, the intervention had to have been found superior to a control condition in a published RCT. Second, we sought interventions that showed good potential for dissemination. That is, the interventions had to possess features suggesting they would be generally acceptable to patients and relatively easy to implement in terms of the professional time and resources required. Along these lines, preference was given to interventions consisting of 12 or fewer sessions and interventions that could be implemented using no more than one mental health professional. Finally, we sought to identify interventions that addressed common indications for preventing or managing anxiety and depression in people with cancer. Of the many interventions that met these considerations, we have selected 5 for illustrative purposes.

**Psychoeducation for New Cancer Patients**

McQuellon et al developed a brief psychoeducational orientation program designed to reduce anxiety and depression in patients starting cancer treatment. The intervention is delivered at the time of initial consultation with a medical oncologist and consists of a counselor meeting with the patient for 15 to 20 minutes to conduct a tour of the oncology clinic, describe clinic procedures, provide contact information for clinic services and local and national support services, and conduct a question and answer session during which the patient is given an opportunity to express concerns and the counselor can offer suggestions on how to cope.

Using an RCT design, the investigators evaluated the orientation intervention relative to a usual-care control condition. Patient-reported outcomes were assessed at the initial oncology clinic visit and at a follow-up assessment conducted 1 week later. Results indicated that patients receiving the orientation intervention reported significantly ($P < .001$) less anxiety and were significantly ($P < .001$) less likely to report clinically significant depressive symptomatology on standardized multisymptom self-report measures at the follow-up assessment. Additional analyses indicated that patients receiving the orientation intervention also reported significantly ($P < .01$) greater satisfaction with their care than patients receiving only usual care.

This trial is one of several that has demonstrated the benefits of psychoeducation in preparing patients for cancer treatment. In this example, a very brief form of psychoeducation was shown to be effective in reducing anxiety and depression in new medical oncology patients and in...
enhancing their satisfaction with care. Although the mechanisms responsible for these benefits were not directly examined, it seems likely the intervention worked by reducing “fear of the unknown” and emphasizing ways to cope with the stress of cancer and its treatment. The limited time and resources required to implement this intervention argue for making a brief orientation a routine part of care for new medical oncology patients. Similar programs might also benefit surgical and radiation oncology patients at their initial visits.

**Problem-solving Therapy for Distressed Cancer Patients**

Nezu et al. adapted a problem-solving therapy intervention found to be effective against major depressive disorder for use with distressed cancer patients. The intervention is delivered during 10 weekly 90-minute sessions during which patients are taught how to apply 4 key strategies to their present life circumstances: better define the nature of their problems; generate a wide range of possible solutions; systematically evaluate the potential solutions and select the most optimal ones to implement; and monitor and evaluate the actual solution outcome after implementation. In addition to developing a version administered individually to patients, the investigators developed a version that included the patient’s significant other as a problem-solving coach.

Using an RCT design, the investigators evaluated the 2 forms of problem-solving therapy relative to a wait-list control condition. Study participants were patients currently receiving treatment for a cancer diagnosed within the last 6 months who were experiencing significant psychological distress. Patient-reported outcomes were assessed before randomization and post-intervention in all 3 conditions and 6 months and 1 year after intervention in the problem-solving therapy conditions. Results indicated that patients randomized to either form of problem-solving therapy demonstrated significantly (P < .05) less depression post-intervention on a standardized, multisymptom, clinician rating measure. Additional analyses indicated that these benefits were maintained through the 1-year follow-up period.

This trial is one of the few to have been conducted with a sample limited to cancer patients experiencing heightened psychological distress at study entry. Findings showing both immediate and sustained intervention effects provide strong support for the use of problem-solving therapy as a treatment for depression in people with cancer. Viewed from a larger perspective, the results of this trial provide important evidence to support the NCCN Clinical Practice Guidelines, currently based largely on consensus, that recommend the use of psychotherapy for cancer patients experiencing moderate to severe psychological distress.

**Stress Management Training for Chemotherapy Patients**

Jacobsen et al. developed a self-administered form of stress management training designed specifically for patients undergoing chemotherapy. The intervention uses print and audiovisual materials to instruct patients in 3 common stress management techniques: paced abdominal breathing, progressive muscle relaxation training with guided imagery, and use of coping self-statements. As part of intervention, patients scheduled for outpatient chemotherapy meet for approximately 10 minutes with a clinician who provides the packet of instructional resources (booklet, audiocassette, and videotape) and explains their use in managing common physical and mental stressors encountered during chemotherapy treatment. Patients receive instructions on how to practice the techniques before the start of chemotherapy and when to use the techniques after the start of chemotherapy. The clinician who provides the materials subsequently meets with the patient in the chemotherapy clinic for approximately 5 minutes just before the start of the first treatment cycle to answer any questions and encourage use of the techniques after the start of chemotherapy.

Using an RCT design, the investigators compared the efficacy of this intervention to usual care only and professionally administered training in the same 3 techniques. Patient-reported outcomes were assessed before start of chemotherapy (before randomization) and at the start of
the second, third, and fourth treatment cycles. Findings indicated that patients who received self-administered training reported significantly (P < .05) less anxiety and depression on standardized, multisymptom self-report measures than patients who received only usual care. Differences between the professionally administered intervention and usual care-only conditions were in the same direction but were not statistically significant. As part of the same study, the investigators also calculated the costs of delivering the 2 stress management interventions. The average per-patient cost of the self-administered intervention was found to be 57% less than that of the professionally administered intervention ($47 versus $110).

This self-administered form of stress management training would appear to have considerable potential for dissemination to patients undergoing chemotherapy given that it costs only a modest amount more than usual care and requires minimal professional training and time to deliver. Additional research is needed, however, to determine whether it is effective in patients experiencing clinically significant levels of anxiety or depression before the start of chemotherapy since it has yet to be evaluated specifically for this indication.

Cognitive Therapy for Depression in Patients with Metastatic Cancer

Savard et al72 adapted a form of cognitive therapy developed for treatment of depression in the general population73 to meet the needs of patients with metastatic cancer. The goal of this therapy is to foster in patients an optimistic but realistic attitude toward their situation as opposed to an overly negative attitude (eg, only thinking of death) or overly positive attitude (eg, only hoping to be cured). The intervention consists of 8 weekly 60- to 90-minute sessions followed by 3 booster sessions at 3-week intervals. The sessions focus primarily on helping patients to modify dysfunctional or irrational thoughts about their cancer and other important situations in their lives.

The efficacy of this intervention was evaluated against a wait-list control condition using an RCT design. Participants were women with metastatic breast cancer who met criteria for having clinically significant depressive symptomatology. Patient-reported outcomes were assessed before and after the initial intervention period and 3 and 6 months after intervention in all participants who received cognitive therapy. Results indicated that patients in the cognitive therapy condition demonstrated significantly (P < .01) less depression postintervention than patients in the wait-list condition on a standardized, multisymptom clinician rating measure. Additional analyses indicated that a further significant (P < .01) reduction in depression occurred during the 6-month follow-up period among patients receiving cognitive therapy.

As noted previously, psychological distress tends to be greater in cancer patients with more advanced disease. Accordingly, there is likely to be considerable need for psychosocial interventions effective against depression in patients with metastatic disease. Previous research has documented the benefit of weekly supportive-expressive group psychotherapy conducted over the course of a year in preventing or relieving depression in women with metastatic breast cancer who were not selected on the basis of pre-existing psychological distress.59 The cognitive therapy evaluated by Savard et al72 has the advantages of being much shorter in duration and of having been tested in a sample of patients with pre-existing depressive symptomatology.

Group Cognitive-behavioral Therapy for Cancer Survivors

Simpson et al52 developed a group cognitive-behavioral intervention for women who had completed treatment for early-stage breast cancer. The intervention consists of 6 weekly 90-minute sessions led by a psychiatrist, with 2 breast cancer survivors serving as lay co-leaders. Building on a similar program developed by Cunningham and Tocco,74 the topics addressed during these meetings are progressive muscle relaxation, inner relaxation (self-hypnosis), other stress management techniques, mental imagery, goal setting, and planning and achieving change.

The investigators evaluated the efficacy of this intervention in an RCT in which it was compared with a no-intervention control condition.
Study participants were women who had completed treatment for Stage 0, I, or II breast cancer no more than 2 years previously. Individuals with mood or anxiety disorders were not excluded and comprised approximately 20% of the study sample. Patient-reported outcomes were assessed before randomization, immediately following intervention, and 1 and 2 years later. Findings indicated that patients who received the group cognitive-behavioral intervention reported significantly ($P < .05$) less depression on a standardized, multisymptom self-report measure immediately postintervention and at the 2-year follow up than patients who did not receive the intervention. As part of the same study, the investigators also examined participants' total billings to their Canadian provincial health care plan in the postintervention follow-up period. These were calculated to be 23.5% lower in the intervention condition than in the control condition.

This brief intervention demonstrated long-lasting effects on depression in the post-treatment period in a sample that included a considerable number of women with pre-existing problems with depression and anxiety. Evidence from the study suggests that addressing psychological distress in this patient population can also yield savings in health care costs. Given the limited resources required for implementation and the potential cost savings that may result, this intervention would appear to have considerable potential to be adopted as a program routinely offered to patients finishing treatment for early-stage breast cancer to promote positive adjustment to cancer survivorship.

**FUTURE DIRECTIONS**

The number and variety of RCTs conducted attests to the depth and breadth of research on the use of psychosocial interventions to manage anxiety and depression in adults with cancer. Nevertheless, important gaps exist in the literature. As noted previously, there is a dearth of research focusing on men and on ethnic and racial minority groups. In addition, few studies have focused on the management of anxiety and depression in patients with advanced disease and patients who have completed treatment. Perhaps the most glaring gap is the limited number of studies focusing on patients who are experiencing clinically significant levels of anxiety and depression. Conducting studies that address these gaps should be a priority for future research.

Three additional recommendations are offered that go beyond addressing existing gaps to reconsidering how studies of psychosocial interventions are conducted. All 3 recommendations reflect the need for research more relevant to clinical practice. First, studies of psychosocial interventions should be informed by the growing body of research demonstrating that cancer patients tend to experience symptoms in clusters rather than in isolation. Depression, for example, frequently co-occurs with pain, fatigue, and sleep problems in cancer patients. Recognizing this pattern, several RCTs have been designed specifically to test whether psychosocial interventions are effective against symptom clusters of this type. Second, psychosocial interventions need to be evaluated in combination with other approaches used to manage anxiety and depression. Based largely on consensus, the NCCN Clinical Practice Guidelines for Distress Management recommend the use of psychotherapy in combination with antidepressant and/or anxiolytic medication for patients with mood or anxiety disorders. RCTs are needed that explicitly test whether the combination of pharmacotherapy and psychotherapy is better than either approach alone in managing anxiety and depression. RCTs should also be conducted to test whether certain demographic, disease, or treatment characteristics predict whether a patient is likely to benefit more from psychotherapy or medication. Third, research is needed that evaluates the entire process through which patients might receive a psychosocial intervention in clinical practice. For example, the NCCN Clinical Practice Guidelines recommend that patients be screened routinely for distress and that patients found to have moderate to severe distress receive care that includes psychotherapy. Whether or not this strategy (routine screening followed by referral for psychotherapy only for distressed patients) results in better management of anxiety and depression than other strategies (eg, preventive interventions offered to all patients) has yet to be evaluated.
The final recommendations reflect the need to increase patient access to evidence-supported interventions. First, more research is needed on interventions that have the potential for widespread dissemination based on their being relatively inexpensive and requiring few professional resources to deliver. One approach would be to evaluate whether psychosocial interventions typically provided via face-to-face meetings with a clinician can be adapted for delivery via the Internet. Second, mechanisms need to be developed that facilitate the dissemination of evidence-supported interventions to clinicians caring for cancer patients. The National Cancer Institute and several partners recently developed a Web site that supplies information about research-tested intervention programs (http://rtips.cancer.gov/rtips/index.do). Although most of the psychosocial interventions currently listed focus on cancer prevention and detection, the Web site is being expanded to include interventions effective at improving quality of life. In addition to describing research-tested interventions, the Web site provides information about how to obtain the training manuals and other materials needed to deliver these interventions. This effort has the potential to become a very valuable resource for promoting evidence-based psychosocial care for cancer patients.

REFERENCES

1. Institute of Medicine. Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs. Washington, DC: The National Academies Press; 2007.
2. Institute of Medicine. Meeting Psychosocial Needs of Women with Breast Cancer. Washington, DC: The National Academies Press; 2004.
3. Jacobsen PB, Davis K, Cella D. Assessing quality of life in research and clinical practice. Oncol (Williston Park) 2002;16(suppl):133–139.
4. Fallowfield L, Ratcliffe D, Jenkins V, Saul J. Psychiatric morbidity and its recognition by doctors in patients with cancer. Br J Cancer 2001;84:1011–1015.
5. Sackett DL, Rosenberg WM, Gray JA, et al. Evidence based medicine: what it is and what it isn’t. BMJ 1996;312:71–72.
6. DeVoto E, Kramer BS. Evidence-based approach to oncology, in Chang AE, Ganz PA, Hayes DF, et al. (eds). Oncology: An Evidence-Based Approach. New York, NY: Springer; 2006:3–13.
7. Newport DJ, Nemeroft CB. Assessment and treatment of depression in the cancer patient. J Psychosom Res 1998;45:215–237.
8. Stark DP, House A. Anxiety in cancer patients. Br J Cancer 2000;83:1261–1267.
9. Capuron L, Ravaud A, Dantzer R. Early depressive symptoms in cancer patients receiving interleukin 2 and/or interferon alfa-2b therapy. J Clin Oncol 2000;18:2143–2151.
10. Cordova MJ, Andrykowski MA, Kenady DE, et al. Frequency and correlates of posttraumatic stress-disorder-like symptoms after treatment for breast cancer. J Consult Clin Psychol 1995;63:981–986.
11. Spielberger CD. Manual for the State–Trait Anxiety Inventory (Form Y). Palo Alto, CA: Consulting Psychologists Press; 1983.
12. Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. Appl Psychol Meas 1977;1:385–401.
13. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatr Scand 1983;67:361–370.
14. Clark LA, Watson D. Theoretical and empirical issues in differentiating depression from anxiety, in Becker J, Kleinman A (eds). Psychosocial Aspects of Depression. Hilldale, NJ: Erlbaum; 1991:39–65.
15. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4th ed. Washington, DC: American Psychiatric Association; 1994.
16. Pirl WF. Evidence report on the occurrence, assessment, and treatment of depression in cancer patients. J Natl Cancer Inst Monogr 2004;32:32–39.
17. Cleeland CS, Mendoza TR, Wang XS, et al. Assessing symptom distress in cancer patients: the M.D. Anderson Symptom Inventory. Cancer 2000;89:1634–1646.
18. Chang VT, Hwang SS, Feuerman M, et al. The memorial symptom assessment scale short form (MSAS-SF). Cancer 2000;89:1162–1171.
19. NCCN practice guidelines for the management of psychosocial distress. National Comprehensive Cancer Network. Oncology (Williston Park) 1999;13:113–147.
20. National Breast Cancer Centre and National Cancer Control Initiative. Clinical Practice Guidelines for the Psychosocial Care of Adults with Cancer. Camperdown, Australia: National Breast Cancer Centre; 2003.
21. Devine EC, Westlake TK. The effects of psychoeducational care provided to adults with cancer: meta-analysis of 116 studies. Oncol Nurs Forum 1995;22:1369–1381.
22. Lovejoy NC, Matess M. Cognitive-behavioral interventions to manage depression in patients with cancer: research and theoretical initiatives. Cancer Nurs 1997;20:155–167.
23. Bottomley A. Depression in cancer patients: a literature review. Eur J Cancer Care 1998;7:181–191.
24. Sellick SM, Crooks DL. Depression and cancer: an appraisal of the literature for prevalence, detection, and practice guideline development for psychological interventions. Psychooncology 1999;8:315–333.
25. Sheard T, Maguire P. The effect of psychological interventions on anxiety and depression in cancer patients: results of two meta-analyses. Br J Cancer 1999;80:1770–1780.
26. Luembert K, Dahme B, Hasenbring M. The effectiveness of relaxation training in reducing treatment-related symptoms and improving emotional adjustment in acute non-surgical cancer treatment: a meta-analytical review. Psychooncology 2001;10:490–502.
27. Redd WH, Montgomery GH, DuHamel KN. Behavioral intervention for cancer treatment side effects. J Natl Cancer Inst 2001;93:810–823.
28. Barsevick AM, Sweeney C, Haney E, Chung E. A systematic qualitative analysis of psychoeducational interventions for depression in patients with cancer. Oncol Nurs Forum 2002;29:73–84.
29. Newell SA, Sanson-Fisher RW, Savolainen NJ. Systematic review of psychological therapies for cancer patients: overview and recommendations for future research. J Natl Cancer Inst 2002;94:558–584.
30. Uitterhoeve RJ, Vernooy M, Lijten M, et al. Psychosocial interventions for patients with advanced cancer—a systematic review of the literature. Br J Cancer 2004;91:1050–1062.
31. Jacobsen PB, Donovan KA, Swaine ZN, et al. Management of anxiety and depression in adult cancer patients: toward an evidence-based approach, in Chang AE, Ganz PA, Hayes DF, et al. (eds). Oncology: An Evidence-Based Approach. New York, NY: Springer-Verlag; 2006:1552–1579.
32. Osborn RL, Demoncada AC, Feuerstein M. Psychosocial interventions for depression, anxiety, and quality of life in cancer survivors: meta-analyses. Int J Psycho Med 2006;36:13–34.
33. Williams S, Dale J. The effectiveness of treatment for depression/depressive symptoms in adults with cancer: a systematic review. Br J Cancer 2006;94:372–390.
34. Rodin G, Lloyd N, Katz M, et al. The treatment of depression in cancer patients: a systematic review. Support Care Cancer 2007;15:123–136.
35. Arakawa S. Relaxation to reduce nausea, vomiting, and anxiety induced by chemotherapy in Japanese patients. Cancer Nurs 1997;20:342–349.
Psychosocial Interventions for Anxiety and Depression in Adult Cancer Patients: Achievements and Challenges

36. Bindemann S, Soukop M, Kaye SB. Randomised controlled study of relaxation training. Eur J Cancer 1997;31:170–174.
37. Edgar L, Rosberger Z, Collet JP. Lessons learned: Outcomes and methodology of a coping skills intervention trial comparing individual and group formats for patients with cancer. Int J Psychiatry Med 2001;31:289–304.
38. Lissau C, White P. Efficacy of clinical hypnosis in the enhancement of quality of life of terminally ill cancer patients. Contemp Hypn 2001;18:145–160.
39. Jacobsen PB, Meade CD, Stein KD, et al. Efficacy and costs of two forms of stress management training for cancer patients undergoing chemotherapy. J Clin Oncol 2002;20:2851–2862.
40. Burish TG, Lyles JN. Effectiveness of relaxation training in reducing adverse reactions to cancer chemotherapy. J Behav Med 1981;4:65–78.
41. Burish TG, Carey MP, Kroezel MG, Greco FA. Conditioned side effects induced by cancer chemotherapy: prevention through behavioral treatment. J Consult Clin Psychol 1987;55:42–48.
42. Carey MP, Burish TG. Providing relaxation training to cancer chemotherapy patients: a comparison of three delivery techniques. J Consult Clin Psychol 1987;55:732–737.
43. Mantovani G, Astara G, Lampis B, et al. Evaluation by multidimensional instruments of health-related quality of life of elderly cancer patients undergoing three different ‘psychosocial’ treatment approaches. A randomized clinical trial. Support Care Cancer 1996;4:129–140.
44. Morrow GR. Effect of the cognitive hierarchy in the systematic desensitization treatment of anticipatory nausea in cancer patients: a component comparison with relaxation only, counseling, and no treatment. Cog Ther Res 1986;10:421–446.
45. Decker TW, Cline-Elsen J, Gallagher M. Relaxation therapy as an adjunct in radiation oncology. J Clin Psychol 1992;48:388–393.
46. Evans RL, Conns RT. Comparison of brief group therapies for depressed cancer patients receiving radiation treatment. Public Health Rep 1995;110:306–311.
47. Pruitt BT, Waligora-Seraphin B, McMahon T, et al. An educational intervention for newly-diagnosed cancer patients undergoing radiotherapy. Psychooncology 1993;2:55–62.
48. Cheung YL, Malassiotis A, Chang AM. The effect of progressive muscle relaxation training on anxiety and quality of life after stoma surgery in colorectal cancer patients. Psychooncology 2003;12:254–266.
49. Petersen RW, Quinlivan JA. Preventing anxiety and depression in gynaecological cancer: a randomised controlled trial. BJOG 2002;109:386–394.
50. Fawzy FI, Cousins N, Fawzy NW, et al. A structured psychiatric intervention for cancer patients. I. Changes over time in methods of coping and affective disturbance. Arch Gen Psychiatry 1990;47:720–725.
51. Elsesser K, van Berkel M, Sartory G. The effects of anxiety management training on psychological variables and immune parameters in cancer patients: a pilot study. Behav Cogn Psychoth 1994;22:13–23.
52. Simpson JS, Carlson LE, Trew ME. Effect of group therapy for breast cancer on healthcare utilization. Cancer Pract 2001;9:19–26.
53. McQuellon RP, Wells M, Hoffman S, et al. Reducing distress in cancer patients with an orientation program. Psychooncology 1998;7:207–217.
54. Wells ME, McQuellon RP, Hinkle JS, Cruz JM. Reducing anxiety in newly diagnosed cancer patients: a pilot program. Cancer Pract 1995;3:100–104.
55. Ali NS, Khalil HZ. Effect of psychoeducational intervention on anxiety among Egyptian bladder cancer patients. Cancer Nurs 1989;12:236–242.
56. McArdle JM, George WD, McArdle CS, et al. Psychological support for patients undergoing breast cancer surgery: a randomized study. BMJ 1996;312:813–816.
57. Jacobs C, Ross RD, Walker IM, Stockdale FE. Behavior of cancer patients: a randomized study of the effects of education and peer support groups. Am J Clin Oncol 1983;6:347–353.
58. Rawl SM, Given BA, Given CW, et al. Intervention to improve psychological functioning for newly-diagnosed patients with cancer. Oncol Nurs Forum 2002;29:967–975.
59. Goodwin PJ, Leszcz M, Ennis M, et al. The effect of group psychosocial support on survival in metastatic breast cancer. N Engl J Med 2001;345:1719–1726.
60. Speigel D, Bloom JR, Yalom I. Group support for patients with metastatic cancer. A randomized outcome study. Arch Gen Psychiatry 1981;38:527–533.
61. Edelman S, Bell DR, Kidman AD. A group cognitive behaviour therapy programme with metastatic breast cancer patients. Psychooncology 1999;8:295–305.
62. Watson M, Denton S, Baum M, et al. Counselling breast cancer patients: a specialist nurse service. Comms Psychol Quart 1988;1:25–34.
63. Christensen DN. Postmastectomy couple counselling: an outcome study of a structured treatment protocol. J Sex Marital Ther 1983;9:266–273.
64. Moynihan C, Bliss J, Davidson J, et al. Evaluation of adjuvant psychological therapy in patients with testicular cancer: randomised controlled trial. BMJ 1998;316:429–435.
65. Marchono G, Azzarello G, Checchin E, et al. The impact of a psychological intervention on quality of life in non-metastatic breast cancer. Eur J Cancer 1996;32A:1612–1615.
66. Andrzykowski MA, Manne SL. Are psychological interventions effective and accepted by cancer patients? I. Standards and levels of evidence. Ann Behav Med 2006;32:93–97.
67. Lepore SJ, Coyne JC. Psychological interventions for distress in cancer patients: a review of reviews. Ann Behav Med 2006;32:85–92.
68. Moher D, Schulz KF, Altman DG. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. Ann Intern Med 2001;134:657–662.
69. Kerrighard T, Breitbart W, Dent R, Strout D. Anxiety in patients with cancer and human immunodeficiency virus. Semin Clin Neuropsychiatry 1999;4:114–132.
70. Nezu AM, Nezu CM, Feloglu SH, et al. Project Genesis: assessing the efficacy of problem-solving therapy for distressed adult cancer patients. J Consult Clin Psychol 2003;71:1036–1048.
71. Nezu AM, Nezu CM, Perri MG. Problem-Solving Therapy for Depression: Theory, Research, and Clinical Guidelines. New York, NY: Wiley; 1989.
72. Savard J, Simard S, Gignaire I, et al. Randomized clinical trial on cognitive therapy for depression in women with metastatic breast cancer: psychological and immunological effects. Palliat Support Care 2006;4:219–237.
73. Beck AT, Rush AJ, Shaw BF, et al. Cognitive Therapy of Depression. New York, NY: Guilford Press; 1979.
74. Cunningham AJ, Tocco EK. A randomized trial of group psychoeducational therapy for cancer patients. Patient Educ Couns 1989;14:101–114.
75. Miaskowski C, Dood M, Lee K. Symptom clusters: the new frontier in symptom management research. J Natl Cancer Inst Monogr 2004;32:17–21.
76. Donovan KA, Jacobsen PB. Fatigue, depression, and insomnia: evidence for a symptom cluster in cancer. Semin Oncol Nurs 2007;23:127–135.
77. Gaston-Johansson F, Fall-Dickson JM, Bakos AB, et al. Conditioned side effects induced by cancer chemotherapy. Semin Oncol Nurs 2007;23:127–135.