

# Putting Evidence Into Practice<sup>®</sup>: Evidence-Based Interventions for Anxiety

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Anxiety is a common form of distress that oncology nurses often observe in their patients. The incidence of anxiety may be as high as 50% in recently diagnosed patients and may persist into survivorship. How nurses respond to patients experiencing distress and anxiety influences further assessment of the patient's concerns, identification of anxiety, and the initiation of appropriate interventions. Evidence-based interventions are essential to improving outcomes for patients experiencing anxiety and directing future research. The authors of this article reviewed the evidence of effectiveness for different interventions to reduce anxiety in patients with cancer.

**A**nxiety is a common form of distress that oncology nurses observe in patients. The incidence of anxiety may be as high as 50% in recently diagnosed patients. Chronic anxiety may be present in up to 30% of long-term survivors (Marrs, 2006). Oncology nurses often spend extended periods of time with patients, creating opportunities for patients to disclose their concerns. During routine care, patients may reveal their feelings about their diagnosis and treatment, changes in functioning, and worries about the future. How nurses respond to patients experiencing distress and anxiety influences further assessment of patients' concerns, identification of anxiety, and the initiation of appropriate treatment. Evidence-based interventions are essential to improving outcomes for patients experiencing anxiety and for directing future research.

Anxiety has been defined as feelings of distress or tension from known or unknown stimuli (Lehman & Rabins, 1999). As a subjective state, anxiety is characterized by emotional discomfort and apprehension followed by stimulation of a physiologic adaptation to stress. Two types of anxiety frequently are referred to in the literature: state anxiety and trait anxiety. State anxiety is a temporary condition (Spielberger, 1983) or a transitory emotional response to a stressful situation (Kim & Kim, 2005), whereas trait anxiety reflects a more general and long-standing quality (Spielberger) or a stable predisposition to anxiety as determined by a personality pattern (Kim & Kim). For the purposes of this literature review, anxiety is defined as an emotional or physiologic response to known or unknown causes that may range from a normal reaction to extreme dysfunction (indicative of an anxiety disorder), impact decision-making, impact adherence to treatment, and impair functioning or impact quality of life (American Psychiatric Association [APA], 2000; Faysman, 2002; Noyes, Holt, &

## At a Glance

- ✦ The Oncology Nursing Society Putting Evidence Into Practice<sup>®</sup> project team for anxiety reviewed evidence from studies and systematic reviews, as well as expert opinions regarding interventions, to prevent and treat anxiety in adults with cancer.
- ✦ Evidence supports the use of psychoeducational and psychosocial interventions in clinical practice, whereas pharmacotherapy and massage are likely to be effective interventions but require further evidence.
- ✦ Oncology nurses are in a unique position to screen, assess, prevent, and implement interventions to treat anxiety in patients with cancer.

Massie, 1998; Shahrokh & Hales, 2003; Vitek, Rosenzweig, & Stollings, 2006).

In addition to anxiety that may be considered normal, APA (2000) has described two types of anxiety disorders that may be

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experienced by patients with cancer: general anxiety disorder (GAD) and posttraumatic stress disorder (PTSD). GAD is characterized by at least six months of persistent and severe anxiety and worry that significantly impair social, occupational, and other important areas of functioning. In addition, anxiety that is seen in patients with cancer is accompanied by greater autonomic hyperactivity than in patients without cancer with GAD (Noyes et al., 1998). PTSD is characterized by the re-experiencing of an extremely traumatic event accompanied by symptoms of increased arousal (e.g., difficulty concentrating, hypervigilance, and difficulty falling or staying asleep) and by exaggerated reactions to certain situations and avoidance of stimuli associated with the trauma (APA; Shear, 2003). PTSD may be initiated or triggered by the diagnosis or treatment of cancer (Shear).

Patients respond to stressors, such as cancer, based on many factors. All patients bring their own personality, life experiences, prior coping strategies, age, maturity, culture, gender, spirituality, and unique support systems to a change in health status or functioning. The symptoms of anxiety may vary between patients and be manifested by a combination of physical and psychological symptoms. The presentation of anxiety may include physical symptoms such as tachycardia, sweating, and restlessness or psychological symptoms such as fear and worrying, recurrent thoughts, and difficulty concentrating (see Figure 1).

In the oncology setting, anxiety may be caused by aspects of the diagnostic and treatment process. Procedure-related anxiety may be brought on by chemotherapy (Andrykowski, 1990) and needle or blood phobias (Noyes et al., 1998). Anxiety accompanying needle or blood phobias may precipitate vasovagal responses with resulting bradycardia and a fall in blood pressure (Marrs, 2006; Noyes et al.). Other phobias to consider with patients with cancer include fear of doctors, taking medication or anesthesia, illness, injury, and death (Bottomley, 1998).

Anxiety may occur at different times during the course of a cancer diagnosis and treatment or may occur as part of a preexisting anxiety disorder. In patients with cancer, higher levels of anxiety are common around the time of diagnosis with cancer before patients have had an opportunity to integrate these new experiences into their frames of reality (Federchuk, Mediondo, & Matar,

- Initial diagnosis
- Beginning or ending treatment
- Change in treatment
- Change in functioning or roles
- During follow-up and screening tests
- Disease progression or metastases
- Waiting for recurrence
- Increasing symptoms such as pain
- Ending treatment or moving toward palliative or hospice care
- Change in family status
- Financial hardships
- Existential or spiritual crisis

**Figure 2. Vulnerable Points for Higher Anxiety**

2003). Other vulnerable points may occur over the course of the disease when patients experience higher anxiety in response to changes in treatment and prognosis (see Figure 2).

Because anxiety may be manifested by psychological and physical symptoms, both assessments are required to understand patients' experiences, identify problems, and decide appropriate interventions. Because some physiologic symptoms of anxiety also may be caused by underlying problems, such as hypoxia and sepsis, it is important to perform a thorough assessment of physical and psychological symptoms to determine the etiology of the symptoms. The National Comprehensive Cancer Network ([NCCN], 2008) developed standards of care for distress management. The Distress Thermometer (Jacobsen et al., 2005) was developed for measuring overall distress, including anxiety, in patients with cancer. The tool consists of a visual analog scale as well as a paper-and-pencil section to identify areas of concern for patients. Other paper-and-pencil tools include the Spielberger State-Trait Anxiety Inventory (STAI), the Hospital Anxiety and Depression Scale (HADS), Beck Anxiety Inventory (BAI), and the Brief Symptom Inventory (BSI) (see Table 1). Descriptions of screening tools for anxiety can be found at [www.ons.org/outcomes](http://www.ons.org/outcomes).

## Background

Nursing-sensitive patient outcomes (NSPOs) are those patient outcomes that are significantly impacted by nursing interventions (Oncology Nursing Society [ONS], n.d.). The ONS (2007) Research Agenda of 2005–2009 identified specific research initiatives, including compiling evidence regarding interventions for specific NSPOs. The evidence from literature searches would be synthesized and distributed to oncology nurses at the bedside to promote evidence-based practice.

To review and compile the evidence on specific NSPOs, ONS created the Putting Evidence Into Practice® (PEP) project teams, each consisting of two oncology advance practice nurses (APNs), two oncology staff nurses, and one oncology nurse researcher. Members of the team are selected from different geographical areas of the country to complete an evidence-based literature review for a specific patient outcome and follow a review process rating the evidence for each NSPO with the ONS Weight-of-Evidence Classification Schema (see Gobel, Beck, and O'Leary [2006] for the complete review process) (see Table 2).

### Psychological Symptoms

- Recurrent thoughts about diagnosis and treatment
- Concerns about changes in functioning and roles
- Fears about the future
- Worries about death
- Hypervigilance and scanning
- Difficulty concentrating

### Physical Symptoms

- Tachycardia or palpitations
- Sweating
- Perception of dyspnea or shortness of breath
- Headaches
- Restlessness and fidgeting
- Abdominal distress
- Loss of appetite

**Figure 1. Psychological and Physical Symptoms of Anxiety in Patients With Cancer**

**Table 1. Examples of Tools to Measure Anxiety**

| TOOL  | ITEMS       | SUBSCALES  | AUTHOR   |
|---|-------------|--|--|
| Hospital Anxiety and Depression Scale           | 14          | Anxiety<br>Depression  | Zigmond & Snaith, 1983   |
| Spielberger State Trait Anxiety Inventory       | 20          | Trait or state anxiety   | Spielberger, 1983  |
| Visual Analog Scale<br>Distress Inventory Scale | 1<br>(0–10) | Distress only<br>Questions regarding functioning and specific concerns | National Comprehensive Cancer Center, 2008<br>Jacobsen et. al., 2005 |
| Beck Anxiety Inventory                          | 21          | Anxiety  | Beck & Steer, 1990   |
| Brief Symptom Inventory                         | 53          | Three global indices<br>Nine symptom dimensions including anxiety      | Derogatis & Melisaratos, 1983  |

The PEP Anxiety project team reviewed the evidence in the literature to answer the question: What interventions are effective for preventing and treating anxiety in people with cancer?

## Review of the Literature

The purpose of this literature search was to review, critique, and assign levels of evidence from multidisciplinary research regarding interventions to prevent and treat anxiety in adults with cancer. For this literature search, five computerized databases were used: PubMed®, MEDLINE®, CINAHL®, PsycINFO®, EMBASE, and UpToDate. The keywords used in the literature search were *anxiety*, *anxiety disorders*, *distress*, *cancer*, *oncology*, and *neoplasms*. Because of the unique characteristics of pediatric populations and end-of-life care, this literature search focused on adult oncology patients not receiving end-of-life care. Studies regarding quality of life, anxiety during screening for a cancer diagnosis, and caregiver distress also were excluded from the review. Although anxiety is just one form of distress and may be part of other psychological conditions such as depression, this review focused on interventions to prevent and treat anxiety. If the results of a study explored multiple dimensions of distress or caregiver distress, the focus of this review was the findings pertaining to interventions to prevent and treat anxiety in patients with cancer. The search reviewed a five-year period (2002–2007) with an extended search over a 20-year period (1987–2007) for evidence regarding pharmacotherapy as an intervention for anxiety in patients with cancer.

## Results

### Recommended for Practice

**Psychoeducational interventions:** Various psychoeducational interventions have been studied to prevent or treat anxiety in patients with cancer. Psychoeducational interventions can be categorized into three main groups: information regarding a cancer diagnosis and treatment; information centered on the treatment facility, staff, and contacts; and information focusing

on self-care and symptom management. These interventions employ a wide range of mediums, including pamphlets and brochures, formal educational sessions, interactive computer-generated information, and the use of video or audio tapes (Deshler et al., 2006; Hoff & Haaga, 2005; Jones et al., 2006; Katz, Irish, & Devins, 2004; Williams & Schreier, 2004). Anxiety also may be decreased by other types of educational information, including information on relaxation techniques, nutrition, and exercise, to manage side effects (Williams and Schreier). Studies that used the terminology “education,” “educational session,” and “information” often included measures of anxiety and distress to evaluate the effectiveness of the interventions. Of the articles reviewed, the evidence suggests that psychoeducational interventions provide at least some benefits to patients experiencing anxiety related to their cancer diagnosis and are recommended for practice.

**Psychosocial interventions:** Various psychosocial interventions have been studied, with a variety of different interventions as a means to treat anxiety in patients with cancer. Types of psychosocial interventions included cognitive behavioral therapy (CBT), behavioral therapies, individual counseling, and support groups. Examples of cognitive therapies include distraction, thought monitoring, cognitive restructuring, and coping self-statements (Antoni, 2003; Jacobsen & Hann, 1998). Examples of behavioral therapies include systematic desensitization, biofeedback, and various relaxation training techniques. CBT studied with cancer survivors, using a combination of cognitive and behavioral techniques, reduced or eliminated mental and physical symptoms (Antoni et al., 2006; Arving et al., 2007; Kissane et al., 2003; Osborn, Demoncada, & Feuerstein, 2006; Targ & Levine, 2002). CBT may be offered in counseling sessions by trained therapists in individual (Shepherd et al., 2006) or group settings (Antoni et al.; Arving et al.; Kissane et al., Osborn et al.) or delivered individually using a videoconference format (Shepherd et al.). Individualized, interpersonal counseling via telephone (Badger, Segrin, Dorros, Meek, & Lopez, 2007) also has been shown to decrease anxiety. Oncology nurses may facilitate referrals for CBT, but this specialized therapy requires advanced educational training. Evidence at the highest level (Antoni et

**Table 2. Putting Evidence Into Practice® Weight-of-Evidence Classification Schema**

| WEIGHT-OF-EVIDENCE CATEGORY   | DESCRIPTION   | EXAMPLES   |
|-------------------------------|---|--|
| Recommended for practice      | Effectiveness is demonstrated by strong evidence from rigorously designed studies, meta-analyses, or systematic reviews. Expected benefit exceeds expected harms. | At least two multisite, well-conducted, randomized, controlled trials (RCTs) with at least 100 subjects<br>Panel of expert recommendation derived from explicit literature search strategy; includes thorough analysis, quality rating, and synthesis of evidence                |
| Likely to be effective        | Evidence is less well established than for those listed under recommended for practice.   | One well-conducted RCT with fewer than 100 patients or at one or more study sites<br>Guidelines developed by consensus or expert opinion without synthesis or quality rating   |
| Benefits balanced with harms  | Clinicians and patients should weigh the beneficial and harmful effects according to individual circumstances and priorities.                                     | RCTs, meta-analyses, or systematic reviews with documented adverse effects in certain populations  |
| Effectiveness not established | Data currently are insufficient or are of inadequate quality.   | Well-conducted case control study or poorly controlled RCT<br>Conflicting evidence or statistically insignificant results  |
| Effectiveness unlikely        | Lack of effectiveness is less well established than those listed under not recommended for practice.  | Single RCT with at least 100 subjects that showed no benefit<br>No benefit and unacceptable toxicities found in observational or experimental studies  |
| Not recommended for practice  | Ineffectiveness or harm clearly is demonstrated, or cost or burden exceeds potential benefit.   | No benefit or excess costs or burden from at least two multisite, well-conducted RCTs with at least 100 subjects<br>Discouraged by expert recommendation derived from explicit literature search strategy; includes thorough analysis, quality rating, and synthesis of evidence |

*Note.* Based on information from Mitchell & Friese, n.d.

al.; Arving et al.; Kissane et al.; Osborn et al., 2006) supports CBT as an intervention for patients with cancer with anxiety symptoms and is recommended for practice.

Additional high-level evidence substantiates the use of support groups as another form of psychosocial interventions. In the reviewed studies, support groups were conducted weekly or monthly to provide anxiety management techniques, coping skills, and therapeutic group support (Chujo et al., 2005; Manne et al., 2005; Miller, Chibnall, Videen, & Duckro, 2005). NCCN (2008) guidelines recommend psychotherapy with (or without) anxiolytic or antidepressant medications. Although special training and advanced education is required for individual or group psychotherapy, oncology nurses may facilitate support groups, teach coping skills, and offer therapeutic support to their patients.

## Likely to Be Effective

**Massage therapy:** Massage therapy was studied as an intervention to decrease anxiety in several studies with patients with cancer. It involves the manipulation of the soft tissues of the body. Although massage can be offered to assist in relaxation, aid in sleep, relieve muscle tension, and diminish cancer-related depression and pain, it's most consistent effect is a reduction in anxiety (Fellowes, Barnes, & Wilkinson, 2004). Because massage therapy involves the manipulation of tissues, it may require a physician's permission prior to recommending this intervention. Several studies demonstrated

significant decreases in anxiety with the greatest reduction occurring immediately after the massage (Hernandez-Reif et al., 2005; Jane, 2005; Wilkinson et al., 2007). The Wilkinson et al. study incorporated aromatherapy into the massage therapy. Two studies examined the duration of the effect and described a range from 18 hours (Jane) to 6–10 weeks (Wilkinson et al.). In total, four studies provided significant evidence for massage therapy as likely to be effective in the treatment of anxiety in patients with cancer.

**Pharmacotherapy:** If psychosocial and psychoeducational interventions are not sufficient to treat patients' anxiety, pharmacologic treatments may be necessary to help patients manage their anxiety and distress. Pharmacotherapy has been studied as an intervention to treat anxiety in patients with cancer (Pasquini et al., 2006) and for the purposes of this review, is defined as the use of medications to treat anxiety in patients diagnosed with cancer. Since the 1980s, studies have examined a variety of pharmacologic agents, including alprazolam (Holland et al., 1991; Wald, Kathol, Noyes, Carroll, & Clamon, 1993), midazolam (Mentes, Unsal, Baran, Argun, & Ertunc, 2005), propofol (Mentes et al.), fluoxetine (Razavi et al., 1996) and olanzapine (Khojainova, Santiago-Palma, Kornick, Breitbart, & Gonzales, 2002).

After reviewing the evidence in the literature, pharmacologic agents are likely to be effective in the treatment of anxiety but should always be combined with psychosocial interventions. Effective medications may include anxiolytics (antianxiety), antidepressants, azapirones, antihistamines, and atypical neuroleptics (Holland et al., 1991) (see Figure 3). Certain medications



|                       |             |
|-----------------------|-------------|
| Alprazolam            | Lorazepam   |
| Antidepressants       | Midazolam   |
| Antihistamines        | Mirtazapine |
| Atypical neuroleptics | Olanzapine  |
| Azapirones            | Other       |
| Benzodiazepines       | Paroxetine  |
| Buspirone             | Propofol    |
| Diazepam              | Risperidone |
| Excitalopram          | Sertraline  |
| Hydroxyzine           | Venlafaxine |

**Figure 3. Medications Used to Treat Anxiety in Patients With Cancer**

such as midazolam, a potent benzodiazepine, and propofol, an anesthetic agent, should only be used when patients are monitored closely such as in an intensive care unit or during medical procedures.

Unfortunately, few studies have adequate sample sizes of patients with cancer to determine the most effective agents with the lowest side-effect profile for decreasing anxiety in this group. Overall, the reviewed studies in combination with expert opinion (NCCN, 2008) support the evidence that pharmacologic agents are likely to be effective in decreasing anxiety in patients with cancer.

## Effectiveness Not Established

**Complementary and alternative therapies:** Complementary and alternative therapies (CAM) encompass a diverse group of medical practices that are not considered to be part of conventional medical treatment. The list of what is considered CAM therapies continually changes as interventions that previously were considered CAM therapies are adopted into conventional health care and newer treatments emerge (National Center for Complementary and Alternative Medicine, 2007). CAM therapies included in this review are meditation, yoga, guided imagery, drawing, and dance therapy (Targ & Levine, 2002).

Evidence exists suggesting the effectiveness of some CAM therapies, but few well-designed studies demonstrate their efficacy in patients with cancer nor multiple studies using the same intervention are lacking. One large, randomized, control trial with a sample of women with breast cancer (N = 181) examined the effect of multiple CAM therapies on anxiety versus standard group meetings providing psychosocial support (Targ & Levine, 2002). Although the study demonstrated decreased anxiety in both groups, it was unable to determine which CAM intervention decreased anxiety. Because of the lack of multiple studies and consistent research regarding specific therapies, the effectiveness of CAM is not established.

**Exercise, music and art therapy, and distraction:** Increasingly, newer interventions are being studied to examine their effect on anxiety in patients with cancer. Exercise, music and art therapy, and distraction all have been used as interventions in studies to explore their effect on anxiety in this population. Of this group of interventions, exercise was studied the most frequently. The definition of exercise is a physical activity that is planned or structured involving repetitive bodily move-

ment done to improve or maintain one or more of the components of physical fitness—cardiorespiratory endurance (aerobic fitness), muscular strength, muscular endurance, flexibility, and body composition (Centers for Disease Control and Prevention, 2007). Four studies examined the effect of exercise on anxiety in patients with cancer. Of these studies, one randomized clinical trial demonstrated a significant reduction in anxiety after a telephone-delivered self-managed exercise protocol (Badger et al., 2007). Two of the studies had very small sample sizes, limiting the significance of the findings (Burnham & Wilcox, 2002; Segar et al., 1998). One study (N = 91) did not randomize the sample to the interventions but did demonstrate a significant reduction in anxiety (Midtgaard et al., 2005). Because well-designed studies with large sample sizes are few, the effectiveness of exercise as an intervention to prevent and treat anxiety in patients with cancer has not been established at this time.

Art and music therapy and distraction also have been studied as ways to decrease anxiety in patients with cancer. One quasiexperimental study using art therapy sessions administered by a registered art therapist or counselor demonstrated significant decrease in anxiety scores (Nainis et al., 2005). Two other studies examined the use of distraction or music as interventions to reduce anxiety in patients with cancer. A randomized clinical trial compared music versus simple distraction and a control group (Kwekkeboom, 2003) and another study compared patients receiving computer-simulated virtual reality (visual and auditory input) during chemotherapy versus patients in a control group (Schneider & Hood, 2007). Both studies failed to demonstrate a statistically significant reduction in anxiety. Because of the varying interventions and lack of significant findings, the effectiveness of art and music therapy and distraction are not established.

**Foot reflexology:** Foot reflexology was used as an intervention to decrease anxiety in patients with cancer in two studies. This manual technique is based on the theory that reflex areas on the feet correspond to specific glands, organs, and parts of the body (Stephenson, Swanson, Dalton, Keefe, & Engelke, 2007). The reflex areas are stimulated by pressure from the reflexologist's thumb or forefinger. Special training is required to perform this manual technique correctly. Although both studies (Quattrin et al., 2006; Stephenson et al.) demonstrated a significant decrease in anxiety following foot reflexology, the sample sizes were small (N = 30, N = 86, respectively). The effectiveness of this intervention also is not established.

**Homeopathy:** Homeopathy is a form of medicine based on the Law of Similars (i.e., an ill person can be treated using a substance that can produce, in a healthy person, symptoms similar to those of the illness) (National Center for Homeopathy, 2007). Studies on the effectiveness of homeopathy on anxiety levels demonstrated mixed or contradictory results in one systematic review (Pilkington, Kirkwood, Rampes, Fisher, & Richardson, 2006). Because of the lack of established effectiveness in the systematic review, the effectiveness of homeopathy is not established.

**Meditation:** The practice of meditation is one of the alternative therapies considered by many patients to decrease anxiety and improve their quality of life. Two studies addressed meditation either as the sole intervention or in combination with other therapies such as aromatherapy.

One small randomized clinical trial (N = 31) evaluated autogenic training, a type of meditation used for reducing stress, and demonstrated a significant decrease in anxiety scores (Hidderley & Holt, 2004). Another larger trial (N = 181) evaluated meditation as one technique of several CAM interventions. The study did not demonstrate significant reduction in decreased anxiety levels (Targ & Levine, 2002). Because of the small sample size in one study and lack of findings in the second study, the effectiveness of meditation is not established.

**Progressive muscle relaxation:** Progressive muscle relaxation (PMR) uses a combination of tension and relaxation of different muscle groups in combination with deep breathing (Cheung, Molassiotis, & Chang, 2003). All three studies used PMR as an intervention by providing audiotapes describing the step-by-step procedure for muscle relaxation as well as written instructions in two of the studies. Although one study demonstrated a statistically significant improvement in the state-anxiety level over a 10-week period (Cheung et al.), two other studies did not have significant results (Hernandez-Reif et al., 2005; Sloman, 2002). Because of the inconsistent findings and the small sample sizes, the effectiveness of PMR is not established.

**Reiki:** Reiki, a type of energy touch therapy originating in Japan during the early 1900s, has been explored as an intervention to decrease anxiety in patients with cancer. Although Reiki is a low-risk therapy, Reiki practitioners with clinical experience, training, and professionalism are difficult to identify and the intervention itself may not be consistent. In a pilot study, a crossover design with randomization to the condition showed a statistically significant reduction in anxiety after Reiki but the study had a very limited sample size (N = 16) (Tsang, Carlson, & Olsen, 2007). The small sample size in a single study does not establish the effectiveness of this therapy.

**Relaxation breathing exercise:** Relaxation breathing exercise (RBE) consists of muscle relaxation exercises combined with relaxation breathing. In one study, the treatment group was educated by a researcher for 10 minutes and then given a 30-minute tape with specific instructions for RBE for daily use over a six-week period after allogeneic stem cell transplantation (Kim & Kim, 2005). State anxiety levels (transitory emotional responses to stressful situations) after RBE demonstrated a significant decrease in anxiety. Because of the small sample size (N = 42) in a single study, the effectiveness of RBE is not established.

## Therapeutic Touch

Therapeutic touch is an energy therapy performed by trained practitioners who move their hands with deliberate intent through the patient's energy field to assess and treat energy field imbalances without actually touching the body (Shames & Keegan, 2000). In a small study using mixed methods, no significant difference was observed in anxiety levels before and after therapeutic touch between the intervention and the control group. Both groups expressed feelings of calmness, relaxation, security, and control (Kelly, Sullivan, Fawcett, & Samarel, 2004). Because of the small sample size (N = 18) and no significant difference between the intervention and control groups, the effectiveness of this therapy is not established.

## Implications for Clinical Practice and Future Research

The review of the literature by the project team revealed evidence to support some interventions to prevent and treat anxiety in patients with cancer. Psychosocial and psychoeducational interventions are supported by strong evidence from multiple, rigorously conducted studies and are recommended for practice in the oncology setting. Oncology nurses are in the position to assess patients for anxiety, provide validation and therapeutic support to patients, conduct support groups, facilitate support groups, and help coordinate referrals for more intensive cognitive behavioral therapies. Oncology nurses frequently use psychoeducational interventions such as teaching patients and families about cancer and its treatment, providing written and video information, and promoting symptom management and self-care strategies; all of which are supported by the evidence in the literature. Some of the psychosocial interventions may include cognitive and behavioral strategies and require advanced or specialized preparation. Nurses can identify and refer patients for those strategies.

Further exploration is needed to identify the most effective psychoeducational and psychosocial interventions for specific patients. Some interventions are likely to decrease anxiety in patients with cancer but require further investigation to establish their effectiveness. Massage therapy was found to be an effective intervention in one systematic review; however, the duration of the response is variable across studies, ranging from 18 hours to 6–10 weeks. Future research is needed to explore the massage techniques, timing of the intervention, and subgroups of patients with cancer who may benefit from massage therapy.

Although pharmacotherapy is well known and frequently used in the clinical oncology setting, little evidence could be found since 1980 to support specific medication(s), dosing or timing of medications to reduce anxiety in patients with cancer. Further studies are urgently needed to explore the effects of pharmacotherapy in the oncology setting; specifically, the types and dosages of medications at different points in the cancer trajectory and phases of treatment.

Several interventions have been explored but their effectiveness has not been established at this point in time: exercise, complementary and alternative medicine, exercise, art and music therapy, distraction, foot reflexology, homeopathy, meditation, progressive muscle relaxation, Reiki, relaxation breathing exercises, and therapeutic touch. Although insufficient evidence exists at this time to support these interventions, many have demonstrated significant decreases in anxiety in patients with cancer and further studies are needed to validate their effectiveness. Studies need to be rigorously designed with larger sample sizes as well as consistency across the intervention and control groups.

## Conclusions

Evidence supports the use of interventions to prevent and treat anxiety in patients with cancer. Because specific events may be vulnerable points for increased anxiety, screening for

distress and anxiety is necessary across the cancer trajectory. In 2007, the Institute of Medicine proposed a new standard to include psychosocial issues as a part of routine care (Pirl et al., 2007; Young, 2007). Oncology nurses are in the ideal position to assist with screening, supporting, intervening, and coordinating care for patients with cancer and their families who are impacted by anxiety along the cancer journey. Further studies will support some of the previous research as well as clarify specific interventions and the populations for which they are effective. Oncology nurses can move their clinical wisdom to the level of scientific evidence with future research in collaborative, multidisciplinary studies. Ultimately, distress and anxiety in patients with cancer may be preventable or detectable and treated with the most effective interventions.

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## References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Andrykowski, M.A. (1990). The role of anxiety in the development of anticipatory nausea in cancer chemotherapy: A review and synthesis. *Psychosomatic Medicine*, 52(4), 458-475.
- Antoni, M. (2003). *Stress management intervention for women with breast cancer*. Washington, DC: American Psychological Association.
- Antoni, M.H., Wimberly, S.R., Lechner, S.C., Kazi, A., Sifre, T., Ur-cuyo, K.R., et al. (2006). Reduction of cancer-specific thought intrusions and anxiety symptoms with a stress management intervention among women undergoing treatment for breast cancer. *American Journal of Psychiatry*, 163(10), 1791-1797.
- Arving, C., Sjoden, P.O., Bergh, J., Hellbom, M., Johansson, B., Glimelius, B., et al. (2007). Individual psychosocial support for breast cancer patients: A randomized study of nurse versus psychologist interventions and standard care. *Cancer Nursing*, 30(3), E10-E19.
- Badger, T., Segrin, C., Dorros, S.M., Meek, P., & Lopez, A.M. (2007). Depression and anxiety in women with breast cancer and their partners. *Nursing Research*, 56(1), 44-53.
- Beck, A.T., & Steer, R.A. (1990). *Manual for the Beck Anxiety Inventory*. San Antonio, TX: Psychological Corporation.
- Bottomley, A. (1998). Anxiety and the adult cancer patient. *European Journal of Cancer Care*, 7(4), 217-224.
- Burnham, T.R., & Wilcox, A. (2002). Effects of exercise on physiologic and psychological variables in cancer survivors. *Medicine and Science in Sports and Exercise*, 34(12), 1863-1867.
- Centers for Disease Control and Prevention. (2007). Glossary of terms. Retrieved November 28, 2007, from <http://www.cdc.gov/search>
- Cheung, Y.L., Molassiotis, A., & Chang, A.M. (2003). The effect of progressive muscle relaxation training on anxiety and quality of life after stoma surgery in colorectal cancer patients. *Psycho-Oncology*, 12(3), 254-266.
- Chujo, M., Mikami, I., Takashima, S., Saeki, T., Ohsumi, S., Aogi, K., et al. (2005). A feasibility study of psychosocial group intervention for breast cancer patients with first recurrence. *Supportive Care in Cancer*, 13(7), 503-514.
- Derogatis, L.R., & Melisaratos, N. (1983). Brief Symptom Inventory: An introductory report. *Psychological Medicine*, 13(3), 595-605.
- Deshler, A.M., Fee-Schroeder, K.C., Dowdy, J.L., Mettler, T.A., Novotny, P., Zhao, X., et al. (2006). A patient orientation program at a comprehensive cancer center. *Oncology Nursing Forum*, 33(3), 569-578.
- Faysman, K. (2002). Cultural dimensions of anxiety and truth telling. *Oncology Nursing Forum*, 29(5), 757-759.
- Federchuk, M.K., Mediondo, O.A., & Matar, J.R. (2003). Improving community cancer care: Bringing psychosocial support to private practice. *Journal of Psychosocial Oncology*, 21(2), 23-37.
- Fellowes, D., Barnes, K., & Wilkinson, S. (2004). Aromatherapy and massage for symptom relief in patients with cancer. *Cochrane Database of Systematic Reviews*, 2, CD002287.
- Gobel, B.H., Beck, S.L., & O'Leary, C. (2006). Nursing-sensitive patient outcomes: The development of the Putting Evidence Into Practice® resources for nursing practice. *Clinical Journal of Oncology Nursing*, 10(5), 621-624.
- Hernandez-Reif, M., Field, T., Ironson, G., Beutler, J., Vera Y., Hurley, J., et al. (2005). Natural killer cells and lymphocytes increase in women with breast cancer following massage therapy. *International Journal of Neuroscience*, 115(4), 495-510.
- Hidderley, M., & Holt, M. (2004). A pilot randomized trial assessing the effects of autogenic training in early stage cancer patients in relation to psychological status and immune system responses. *European Journal of Oncology Nursing*, 8(1), 61-65.
- Hoff, A.C., & Haaga, D.A. (2005). Effects of an education program on radiation oncology patients and families. *Journal of Psychosocial Oncology*, 23(4), 61-75.
- Holland, J.C., Morrow, G.R., Schmale, A., Derogatis, L., Stefanek, M., Berenson, S., et al. (1991). A randomized clinical trial of alprazolam versus progressive muscle relaxation in cancer patients with anxiety and depressive symptoms. *Journal of Clinical Oncology*, 9(6), 1004-1011.
- Jacobsen, P.B., Donovan, K.A., Trask, P.C., Fleishman, S.B., Zabora, J., Baker, F., et al. (2005). Screening for psychological distress in ambulatory cancer patients. *Cancer*, 103(7), 1494-1502.
- Jacobsen, P.B., & Hann, D.M. (1998). Cognitive-behavioral interventions. In J.C. Holland (Ed.), *Psycho-Oncology* (pp. 717-729). New York: Oxford University Press.
- Jane, S. (2005). Effects of full-body massage on pain intensity, anxiety, and physiologic relaxation in Taiwanese patients with metastatic bone pain: A pilot study. *University of Washington, PhD*, 1-148.
- Jones, R.B., Pearson, J., Cawset, A.J., Bental, D., Barrett A., White, J., et al. (2006). Effect of different forms of information produced for cancer patients on their use of the information, social support, and anxiety: Randomised trial. *BMJ*, 332(7547), 942-948.
- Katz, M.R., Irish, J.C., & Devins, G.M. (2004). Development and pilot testing of a psychoeducational intervention for oral cancer patients. *Psycho-Oncology*, 13(9), 642-653.
- Kelly, A.E., Sullivan, P., Fawcett, J., & Samarel, N. (2004). Therapeutic touch, quiet time, and dialogue: Perceptions of women with breast cancer. *Oncology Nursing Forum*, 31(3), 625-631.
- Khojainova, N., Santiago-Palma, J., Kornick, C., Breitbart, W., & Gonzales, G.R. (2002). Olanzapine in the management of cancer pain. *Journal of Pain and Symptom Management*, 23(4), 346-350.
- Kim, S.D., & Kim, H.S. (2005). Effects of a relaxation breathing exercise on anxiety, depression, and leukocyte in hemopoietic stem cell transplantation patients. *Cancer Nursing*, 28(1), 79-83.
- Kissane, D.W., Bloch, S., Smith, G.C., Miach, P., Clarke, D.M., Ikin, J., et al. (2003). Cognitive-existential group psychotherapy for



- women with primary breast cancer: A randomized controlled trial. *Psycho-Oncology*, 12(6), 532-546.
- Kwekkeboom, K.L. (2003). Music versus distraction for procedural pain and anxiety in patients with cancer. *Oncology Nursing Forum*, 30(3), 433-440.
- Lehman, S.W., & Rabins, P.V. (1999). Clinical geropsychiatry. In J.J. Gallo, J. Busby-Whitehead, P.V. Rabins, R.A. Silliman, J.B. Murphy (Eds.), *Riechel's care of the elderly: Clinical aspects of aging* (pp. 179-189). Philadelphia: Lippincott Williams and Wilkins.
- Manne, S.L., Ostroff, J.S., Winkel, G., Fox, K., Grana, G., Miller, E., et al. (2005). Couple-focused group intervention for women with early stage breast cancer. *Journal of Consulting and Clinical Psychology*, 73(4), 634-646.
- Marrs, J.A. (2006). Stress, fears, and phobias: The impact of anxiety. *Clinical Journal of Oncology Nursing*, 10(3), 319-322.
- Mentes, S.D., Unsal, D., Baran, O., Argun, G., & Ertunc, F.N. (2005). Effect of sedation with midazolam or propofol on patient's comfort during cancer chemotherapy: A prospective, randomized, double-blind study in breast cancer patients. *Journal of Chemotherapy*, 17(3), 327-333.
- Midtgaard, J., Rorth, M., Stelter, R., Tveteras, A., Andersen, C., Quist, M., et al. (2005). The impact of a multidimensional exercise program on self-reported anxiety and depression in cancer patients undergoing chemotherapy: A phase II study. *Palliative and Supportive Care*, 3(3), 197-208.
- Miller, D.K., Chibnall, J.T., Videen, S.D., & Duckro, P.N. (2005). Supportive-affective group experience for persons with life-threatening illness: Reducing spiritual, psychological, and death-related distress in dying patients. *Journal of Palliative Medicine*, 8(2), 333-343.
- Mitchell and Friese. (n.d.). Weight of evidence. Retrieved September 14, 2008, from <http://www.ons.org/outcomes/tables/sleep/woe.shtml>
- Nainis, N., Paice, J.A., Ratner, J., Wirth, J.H., Lai, J., & Shott, S. (2005). Relieving symptoms in cancer: Innovative use of art therapy. *Journal of Pain and Symptom Management*, 31(2), 162-169.
- National Center for Complementary and Alternative Medicine. (2007). What is CAM? Retrieved March 6, 2008, from <http://nccam.nih.gov/health/whatiscam>
- National Center for Homeopathy. (2007). What is homeopathy? Retrieved March 7, 2008, from <http://nationalcenterforhomeopathy.org>
- National Comprehensive Cancer Network. (2008). *NCCN Clinical Practice Guidelines in Oncology™: Distress management* [v.1.2008]. Retrieved March 6, 2008, from [http://www.nccn.org/professionals/physician\\_gls/PDF/distress.pdf](http://www.nccn.org/professionals/physician_gls/PDF/distress.pdf)
- Noyes, R., Holt, C.S., & Massie, M.J. (1998). Anxiety disorders. In J.C. Holland (Ed.), *Psycho-Oncology* (pp. 548-563). New York: Oxford University Press.
- Oncology Nursing Society. (n.d.). Outcomes resource area. Retrieved March 6, 2008, from <http://www.ons.org/outcomes>
- Oncology Nursing Society. (2007). Oncology Nursing Society research agenda 2005-2009. Retrieved March 13, 2008, from <http://ons.org/research/information/agenda.shtml>
- Osborn, R.L., Demoncada, A.C., & Feuerstein, M. (2006). Psychosocial interventions for depression, anxiety and quality of life in cancer survivors: Meta-analysis. *International Journal of Psychiatry in Medicine*, 36(1), 13-34.
- Pasquini, M., Biondi, M., Constantini, A., Cairoli, F., Ferrarese, G., Picardi, A., et al. (2006). Detection and treatment of depressive and anxiety disorders among cancer patients: Feasibility and preliminary findings from a liaison service in an oncology division. *Depression and Anxiety*, 23(7), 441-448.
- Pilkington, K., Kirkwood, G., Rampes, H., Fisher, P., & Richardson, J. (2006). Homeopathy for anxiety and anxiety disorders: A systematic review of the research. *Homeopathy*, 95(3), 151-162.
- Pirl, W.F., Muriel, A., Hwang, V., Kornblith, A., Greer, J., Donelan, K., et al. (2007). Screening for psychosocial distress: A national survey of oncologists. *Journal of Supportive Oncology*, 5(10), 499-504.
- Quattrin, R., Zanini, A., Buchini, S., Turello, D., Annunziata, M.A., Vidotti, C., et al. (2006). Use of reflexology foot massage to reduce anxiety in hospitalized cancer patients in chemotherapy treatment: Methodology and outcomes. *Journal of Nursing Management*, 14(2), 96-105.
- Razavi, D., Allilaire, J.F., Smith, M., Salimpour, A., Verra, M., Desclaux, B., et al. (1996). The effect of fluoxetine on anxiety and depression symptoms in cancer patients. *Acta Psychiatrica Scandinavica*, 94(3), 205-210.
- Schneider, S.M., & Hood, L.E. (2007). Virtual reality: A distraction intervention for chemotherapy. *Oncology Nursing Forum*, 34(1), 39-46.
- Segar, M.L., Katch, V.L., Roth, R.S., Garcia, A.W., Portner, T.I., Glickman, S.G., et al. (1998). The effect of aerobic exercise on self-esteem and depressive and anxiety symptoms among breast cancer survivors. *Oncology Nursing Forum*, 25(1), 107-113.
- Shahrokh, N.C., & Hales, R.E. (2003). *American psychiatric glossary*. Washington, DC: American Psychiatric Association.
- Shames, K.H., & Keegan, L. (2000). Touch: Connecting with the healing power. In B.M. Dossey, L. Keegan, & C.E. Guzzetta (Eds.), *Holistic nursing: A handbook for practice* (3rd ed., p. 614). Gaithersburg, MD: Aspen.
- Shear, M.K. (2003). Optimal treatment of anxiety disorders. *Patient Care*, 37, 18-32.
- Shepherd, L., Goldstein, D., Whitford, H., Thewes, B., Brummell, V., & Hicks, M. (2006). The utility of videoconferencing to provide innovative delivery of psychological treatment for rural cancer patients: Results of a pilot study. *Journal of Pain and Symptom Management*, 32(5), 453-461.
- Sloman, R. (2002). Relaxation and imagery for anxiety and depression control in community patients with advanced cancer. *Cancer Nursing*, 25(6), 432-435.
- Speilberger, C.D. (Ed.). (1983). *Manual for the State Trait Anxiety Inventory* (form Y). Palo Alto, CA: Consulting Psychologists Press.
- Stephenson, N.L., Swanson, M., Dalton, J., Keefe, F.J., & Engelke, M. (2007). Partner-delivered reflexology: Effects on cancer pain and anxiety. *Oncology Nursing Forum*, 34(1), 127-132.
- Targ, E.F., & Levine, E.G. (2002). The efficacy of a mind-body-spirit group for women with breast cancer: A randomized controlled trial. *General Hospital Psychiatry*, 24(4), 238-248.
- Tsang, K.L., Carlson, L.E., & Olson, K. (2007). Pilot crossover trial of Reiki versus rest for treating cancer-related fatigue. *Integrative Cancer Therapies*, 6(1), 25-35.
- Vitek, L., Rosenzweig, M.Q., & Stollings, S. (2006). Distress in patients with cancer: Definition, assessment, and suggested interventions. *Clinical Journal of Oncology Nursing*, 11(3), 413-418.
- Wald, T.G., Kathol, R.G., Noyes, R., Jr., Carroll, B.T., & Clamon, G.H. (1993). Rapid relief of anxiety in cancer patients with both alprazolam and placebo. *Psychosomatics*, 34(4), 324-332.
- Wilkinson, S.M., Love, S.B., Westcombe, A.M., Gambles, M.A., Burgess, C.C., Cargill, A., et al. (2007). Effectiveness of aromatherapy massage in the management of anxiety and depression in patients with cancer: A multicenter randomized controlled trial. *Journal of Clinical Oncology*, 25(5), 532-539.



- Williams, S.A., & Schreier, A.M. (2004). The effect of education in managing side effects in women receiving chemotherapy for treatment of breast cancer [Online exclusive]. *Oncology Nursing Forum*, 31(1), E16-E23. Retrieved August 27, 2008, from <http://ons.metapress.com/content/b366435/01rul712/fulltext.pdf>
- Young, P. (2007). Caring for the whole patient: The Institute of Medicine proposes a new standard of care. *Community Oncology*, 4, 748-751.
- Zigmond, A.S., & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67(6), 361-370.

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For more information about evidence-based interventions for anxiety, including the Putting Evidence Into Practice® resource card for anxiety, definitions, evidence tables, and a complete list of references, visit [www.ons.org/outcomes/volume4/anxiety.shtml](http://www.ons.org/outcomes/volume4/anxiety.shtml). PEP resources for several other nursing-sensitive patient outcomes are available at [www.ons.org/outcomes](http://www.ons.org/outcomes).

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