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Mind–Body Interventions in Oncology

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Opinion statement

A number of mind–body interventions have been studied for use with cancer patients, primarily measuring outcomes relating to pain control, anxiety reduction, and enhancing quality of life. This chapter defines the scope and characteristics of mind–body interventions, followed by a selective review of research indicating their appropriate use or cautions in cancer care. Mind–body interventions included are hypnosis, imagery/relaxation, meditation, yoga, and creative therapies. Current evidence supports the efficacy of hypnosis and imagery/relaxation for control of pain and anxiety during cancer treatments. Meditation is supported for reductions in stress and improvements in mood, quality of life, and sleep problems. There is a growing body of support for yoga from randomized controlled trials for improving quality of life, sleep, and mood. Creative therapies such as visual arts, dance, and music may help cancer patients express their feelings and cope with the demands of a cancer experience. Research on biological marker effects of mind–body therapies remains inconclusive. Study of mind–body interventions generally requires additional, methodologically rigorous investigation of how various interventions best assist patients during various phases of cancer survivorship, although a major benefit of these therapies lies in the opportunity for patients to self-select them.

Introduction

The National Institutes of Health Center for Complementary and Alternative Medicine (NCCAM) defines mind–body medicine as "a variety of techniques designed to enhance the mind's capacity to affect bodily function and symptoms" [1••]. For purposes of this paper, "mind–body interventions" are defined as any treatment that addresses the interaction between the mind (thoughts, feelings) and body (physical processes).

A 2004 survey of American households found that 19% of respondents had used a mind–body therapy in the preceding year [2]. For cancer patients, that number ranges widely depending on type of therapy, diagnoses, year, and geographic region. Values range from a low of 16.9% use of relaxation in an Israeli sample [3] and 28% use of relaxation/meditation in an American breast cancer sample [4], to a high of 81.6% use of "mind–body" therapies in Hawaii [5•] and 60.6% in Taiwan [6]. A 2006 survey of over 2,000 breast cancer patients from the Nurses' Health Study cohort found that 32% used relaxation or imagery and 12% practiced yoga [7].

Therapies commonly used by cancer patients, including hypnosis, imagery, relaxation, meditation, and yoga, plus "creative therapies" (art, music therapy, and the like) [8], define the scope of this review. Psychotherapy and support groups are not included, as these well-documented interventions lie outside the purview of Integrative Oncology. The recent literature, addressing research results and indicating appropriate use of mind–body interventions, is summarized in this chapter for each major mind–body intervention reviewed.

Hypnosis

- Hypnosis is a natural state of aroused, attentive focal concentration coupled with a relative suspension of peripheral awareness and aimed at achieving symptom relief [9]. Techniques most often used for symptom reduction involve physical relaxation coupled with imagery that redirects attention from the distressing symptom. In this sense, it is sometimes difficult to distinguish, methodologically, hypnosis from imagery or relaxation, although hypnosis typically includes greater regulation of attention. Hypnosis works through physical relaxation plus attention control.
- In cancer care, hypnosis appears to be effective primarily for pain relief, analgesia, and anxiety reduction and for the control of nausea and vomiting [10–12]. Surgical and procedural pain also can be effectively controlled with hypnosis. In a randomized controlled trial, hypnosis was more effective in relieving pain and anxiety, and in improving hemodynamic stability, than standard care or structured attention [13]. Reviews of cancer pain in 2004, 2005, and 2006 [14–16•] conclude that there is evidence for the efficacy of hypnosis in controlling procedural-related pain and distress.
- Hypnosis may control anticipatory nausea and vomiting in pediatric cancer patients [17•] as well as adults. A recent review of hypnosis for emesis control covering six RCTs, five in children, indicated clinically significant reductions in anticipatory and conditioned nausea and vomiting [12]. Recent research documents the ability of hypnosis to improve depression and enhance natural killer cell counts in women with breast cancer [18], although the duration and clinical significance of such immune enhancement is questionable. A review of all studies of hypnosis for cancer patients published between 1999 and 2006 similarly concluded that hypnosis is a viable means of reducing pain and anxiety without side effects, while allowing patients to play an active role in their comfort and well-being [11••].

Guided imagery/relaxation

- Guided imagery involves engaging the imagination to create a sensory experience to achieve a clinical goal. The goal may be specific, such as to slow heart rate, stimulate immune function, or reduce pain or stress. More general goals include efforts to promote physical and psychic well-being. Imagery often is combined with progressive or passive muscle relaxation, which triggers what Herbert Benson termed the "relaxation response," a set of physiologic reactions to disengaging the automatic fight or flight system. The resulting cascade of physiologic events decreases heart rate, respiration, and blood pressure [19].
- As is known also for hypnosis, relaxation and guided imagery can help control nausea and vomiting associated with chemotherapy, and treat conditioned anticipatory nausea that some patients develop even at the sight of their treatment center [17•]. The National Comprehensive Cancer Network (NCCN) guidelines for the treatment of anticipatory

nausea and vomiting include relaxation/systematic desensitization, hypnosis/guided imagery and music therapy [20].

- Recent guided imagery studies for cancer patients generally focus on pain management, improving surgical outcomes, and enhancing quality of life. Guided imagery combined with music therapy successfully decreased mood disturbance and improved quality of life (QL) in cancer survivors [21••]. Another study investigating the effect of progressive muscle relaxation on anxiety and quality of life after stoma surgery in colorectal cancer patients found significant decreases in anxiety and social concerns, and improved QL in the domains of physical and psychological health [22]. Similarly, in 96 women randomly assigned to progressive relaxation plus imagery treatment group or to a usual care control during chemotherapy, mood and quality of life improved significantly in the treatment group as compared to controls [23].
- In an attempt to isolate the effects of imagery alone, a review of the 103 published imagery studies revealed only 6 RCTs that compared imagery to either a no-treatment control or to another active intervention such as relaxation or hypnosis. Overall, imagery was more effective than no treatment for reducing depression, anxiety, and discomfort and for improving quality of life, but its effects were comparable to other mind-body interventions such as relaxation or hypnosis [21••]. This suggests that patients' preference is as good a selection criterion as any other for mind–body therapies, and that the relative effectiveness of the individual therapies is similar across specific cancer diagnoses or age groups.

Meditation

- Once viewed by Western science as an esoteric Eastern novelty, meditation has become a worldwide practice and a topic of substantial research over the last three decades. Meditation is a family of techniques that intentionally train the mind in awareness and attention through mental focus on an object, sound, word, or phrase. Meditation's primary benefits include relaxation, psychological insight, and decreased stress and pain.
- Despite common features, there are many variations on the basic theme, such as mantra meditations, which involve repetition of a word or phrase to focus the mind, sometimes with a string of beads to count the number of mental repetitions; breath awareness meditations; and contemplative meditation, where a word or phrase is repeated in a thoughtful manner in an effort to fully understand the deeper meaning of the word or phrase. The emphasis in contemplative meditation is on the underlying meaning of the word or phrase, in contrast to mantra meditation where the emphasis is on the systematic repetition of the word and not on its philosophical significance.
- "Mindfulness Based Stress Reduction" (MBSR) [24•] may be the most studied type of meditation for cancer patients. MBSR combines the mindfulness-meditation practice of focused mental attention directed primarily on breath-awareness with gentle Hatha yoga in an 8-week group format. Attitudes of patience, acceptance, nonstriving, and the nonjudging of experience are consciously applied to the practice. The body of work investigating the efficacy of MBSR for patients with cancer has been reviewed in several publications since 2005 [25••–27].

- The bulk of the experimental work with MBSR has been conducted at the Tom Baker Cancer Centre (TBCC), where approximately 1,500 patients and caregivers have participated in related research since 1996. The work began with a study of 90 patients with various cancer diagnoses who were randomized to MBSR or to a wait-list control group. Patients randomized to MBSR improved significantly more on mood states and symptoms of stress when compared to controls. They reported less tension, depression, anger, concentration problems, and more vigor, as well as fewer peripheral manifestations of stress (e.g., tingling in hands and feet), cardiopulmonary symptoms of arousal, central neurological symptoms (e.g., dizziness, faintness), gastrointestinal symptoms, habitual stress behavioral patterns (e.g. smoking, grinding teeth, overeating, insomnia), anxiety/fear, and emotional instability compared to wait-list controls [28•].
- At six-month follow-up, similar benefits were seen, with more home meditation practice associated with greater decreases in overall mood disturbance, anxiety, depression, and irritability [29]. Later studies at TBCC and elsewhere substantiated these results. Bauer-Wu and Rosenbaum adapted MBSR for individual use in isolated hospitalized bone-marrow transplant (BMT) patients, finding immediate effects on levels of pain and anxiety [30]. The TBCC group also investigated the effects of MBSR on biological outcomes in a pre-post MBSR intervention with 59 early-stage breast and prostate cancer survivors [31–34]. T cell production of interleukin (IL)-4 increased and interferon gamma (IFN-γ) decreased, whereas NK cell production of IL-10 decreased. These results are consistent with a shift in immune profile from one associated with depressive symptoms to a more normal profile.

Yoga

- "Yoga" is derived from the Sanskrit word *yug*, meaning "to yoke" or "union" [35]. The yogis viewed the ultimate intent of yoga practice as uniting the individual with the universe, giving the individual a deeper awareness of life, where one no longer experiences living as separate, but instead as part of a larger whole [35]. In the Western world, yoga tends to be understood in terms of physical postures, which do indeed provide a static and active stretching, and isometric and dynamic strengthening, which improve flexibility, stability, strength and balance [36]. But yoga actually is a combination of meditation and physical postures.
- A Tibetan yoga intervention incorporating controlled breathing and visualization, mindfulness techniques, and low-impact postures in patients with lymphoma was evaluated in a randomized study. Patients in the yoga group reported significantly lower sleep disturbance scores compared with patients in the wait-list control group, including better subjective sleep quality, faster sleep latency, longer sleep duration, and less use of sleep medications [37].
- A recent randomized study compared six weeks of yoga classes to individual supportive counseling in a sample of 58 women with breast cancer undergoing radiation therapy [38]. Major improvement was found in the yoga group compared to the supportive care group for anxiety, depression, and stress, representing effect sizes well in the clinically significant range. In another RCT, 128 patients were randomly assigned to either a 7-week yoga intervention consisting of physical poses, breathing, and meditation exercises or a 12-week

wait-list control [39•]. Changes in quality of life parameters were assessed at baseline and at 3 months postintervention. The yoga group had significantly improved overall quality of life, emotional well-being, social well-being, and decreased distressed mood. Over 69% of the participants attended at least half of the yoga sessions, which suggests that significant benefit can be achieved even with intermittent attendance.

Creative therapies

- Mind–body interventions known collectively as creative therapies include art, music, dance, and writing therapy, or journaling. For cancer patients, creative therapies typically are intended to integrate physical, emotional, and spiritual care by facilitating creative ways for patients to respond to their cancer experience [40].
- There are many program descriptions in the literature that address the visual arts [41], music therapy [42], creative writing [41], and mixed-modality programs [43, 44]. With the exception of music therapy, few have been subjected to systematic evaluation. Music therapy is provided by professional musicians who received additional training in the use of music, rather than words, to facilitate communication and to achieve therapeutic goals. Many major medical institutions offer music therapy programs as well as internships for music therapists. Such programs tend to be well received by patients, family members, and oncology staff. Music therapy is especially beneficial at the end of life when patients may no longer be able to access words with facility. Music provides an outlet for the emotions.
- A randomized controlled study evaluating music therapy for patients undergoing autologous stem cell transplantation collected serial measurements of anxiety, depression, pain, and total mood disturbance. The music therapy group had significant decreases in their anxiety, depression and total mood disturbance compared with the standard-care control group [45•]. Randomized trial methodologies have been applied in a few efforts to evaluate art therapy programs. Women with nonmetastatic breast cancer undergoing radiotherapy were randomized to individual weekly art therapy sessions or to usual care. Women in the art program evidenced greater increases in coping resources than those assigned to the control group [46]. Finally, a unique modification of MBSR called Mindfulness-Based Art Therapy (MBAT) combines the principles of MBSR with other creative modalities. In a trial of 111 patients, researchers compared the eight-week MBAT intervention to a wait-list control in a cohort of women with mixed cancer types undergoing standard oncology care. Compared to the usual care group, the MBAT participants were found to have less depression, anxiety, somatic symptoms of stress, and less hostility [47].
- Studies of expressive writing techniques such as maintaining a journal show mixed results. Benefits were found in groups of general medical patients [48•], and in a randomized study of cancer patients who wrote about their cancer journey or about a neutral experience, patients in the experimental group reported significantly less sleep disturbance, better sleep quality and sleep duration, and less daytime dysfunction than the others [49]. However, another study of 71 individuals attending a community cancer support group reported increased distress when describing their cancer experience [50].

Conclusions

- Evidence for the usefulness of mind–body interventions in cancer care indicates that these noninvasive interventions effectively help patients cope with many common physical and emotional symptoms. Problems that can be effectively reduced include pain, nausea and vomiting, anxiety and depression, sleep disorders, and general decreased quality of life.
- Results found across the range of mind–body therapies indicate the utility of hypnosis, imagery and other relaxation therapies, meditation, yoga, and creative therapies.
- Overall, the outcome measures applied, rather than the specificity of the effect of the interventions themselves, may drive the conclusions drawn. While many mind–body interventions may affect similar change across a range of outcome measures, not all have been tested with broad outcome measures or compared to one another. Hence, in advising patients concerning the use of mind–body interventions, if the goal is to improve pain tolerance during medical treatments or procedures, hypnosis or relaxation/imagery have the most empirical support. If the goal is to decrease stress symptoms, MBSR has the largest evidence base thus far. If the intention is to assist coping and improve mood and quality of life, any of the interventions reviewed here are likely to be beneficial. But patient interest and preference, plus the opportunity to self-select, are paramount.
- Research in this area is still developing and often less than ideal. Future research might compare mind–body interventions to one another and to other active interventions, using larger sample sizes, a wider range of applicable outcome measures, broader sampling frames, and population-based recruitment methods of patients other than women with breast cancer who remain the target of most mind–body research. Longer follow-up periods also are needed.
- However, it is likely that patient interest, which drives the intensity of practice and its enjoyment, plays a major positive role. In theory, one might wish for studies that incorporate optimal research design, but such research also would have to include patient interest or self-selection criteria, as those may play the major role in research results. Meanwhile, these noninvasive, inexpensive therapies work for many patients, and they offer the rare additional opportunity for cancer patients to play a role in their own care by selecting and pursuing a regimen that they find appealing and helpful.

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- • Of importance
- •• Of major importance

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