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REVIEW ARTICLES

Mindfulness and psychosocial care in cancer: Historical context and review of current and potential applications

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ABSTRACT

Mindfulness-based interventions and mindfulness techniques have become increasingly popular in psychosocial care. These interventions have also been increasingly used with cancer patients and survivors. However, more attention is due to issues such as how these techniques may be specifically relevant for an oncology population and whether the religious derivation of mindfulness should be considered by frontline psychosocial clinicians. This article provides a history and overview of the use of mindfulness in psychosocial cancer care.

KEYWORDS: Psycho-oncology, Mindfulness, Meditation, Cancer

INTRODUCTION

Since the mid- to late 1990s, there has been increased interest in the use of mindfulness in behavioral health. This has led to more and better research trials of mindfulness-based interventions, which have in turn led to growing enthusiasm for the use of mindfulness among psychosocial clinicians (Baer, 2003; Allen et al., 2006; Salmon et al., 2009). This enthusiasm has also been evident within psychosocial oncology, and recent years have seen the development of a body of literature on the efficacy of mindfulness-based interventions for cancer patients and survivors. The current article will address the history and current applications of mindfulness in behavioral health, focusing on the application of mindfulness in psychosocial cancer care. We hope that providing this overview will be a helpful guide for oncology care providers.

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Mindfulness is often defined as a form of awareness that can be cultivated with the regular practice of certain attentional or meditative exercises. Regularly "keeping one's complete attention to the experience on a moment-to-moment basis" (Marlatt & Kristeller, 1999, p. 68) can foster a reduction in anxiety, improvements in concentration, and an improved capacity for sustained attention. The potential utility of such improvements for cancer patients and survivors is clear, as this population frequently suffers from multi-variant forms of emotional, spiritual, and existential distress (Moadel et al., 1999; Zabora et al., 2001; Strang et al., 2004; Mako et al., 2006), as well as treatment side effects such as fatigue, pain, and difficulties with concentration.

Similarities and Distinctions between Mindfulness and Standard Relaxation Techniques

Mindfulness techniques are often categorized as a type of relaxation exercise. Although mindfulness techniques can be used in this way, there are some

important distinctions between mindfulness and relaxation. One such distinction is historical; mindfulness techniques have their origin in the Hinayana Buddhist tradition. In contrast, the history of traditional Western relaxation exercises can be traced back to autogenic training, which was described by Schulz in the 1930s (Schultz & Luthe, 1959), and to the tradition of hypnosis dating back to the early nineteenth century. Second, relaxation is not a primary goal of mindfulness exercises. Whereas relaxation exercises are intended to increase activity of the parasympathetic nervous system (Wolpe, 1958), mindfulness exercises are intended to improve the ability to attend to present-moment sensations and mental activity, and to improve the ability to "let go" of thoughts. Although sustained and repeated application of mindfulness exercises often brings about the same parasympathetic activation seen in relaxation exercises, this activation can be thought of as a healthy byproduct of the exercises, not their primary aim.

Possible Mechanisms

The possible mechanisms by which mindfulness-based interventions affect levels of psychological distress have been the topic of some attention in the literature. Shapiro et al. (2006) suggest that mindfulness practice consists of three primary components: intention, attention, and attitude. Individuals who intentionally attend to events with openness and acceptance can initiate a shift in perspective that can lead to a number of positive outcomes. This process is sometimes described as overcoming "experiential avoidance," an aversion to unpleasant physical, emotional, and cognitive events (Hayes et al., 1996). Therefore, it has been suggested that the mechanisms by which mindfulness works may be similar to exposure, a technique widely used in treatment of phobias and other anxiety disorders. In that context, exposure has demonstrated consistent efficacy in treating a range of disorders such as depression and anxiety (Barlow, 2008). The ability to cultivate cognitive, emotional, and behavioral flexibility in responding to the environment can help promote health and well-being. Further, focusing one's energy on the present moment can also lead to greater acknowledgment of that which is meaningful and important in one's life, and thus promote positive interpersonal relationships and reflection on the way in which one's time and energy is spent. These possible mechanisms, along with the reduced physiological arousal and pain often associated with mindfulness practice, could represent an effective modality in assisting patients with depression and anxiety associated with cancer.

HISTORICAL BACKGROUND

The origin of mindfulness techniques as used in psychosocial care today can be traced back to Ancient India. In the fifth century B.C.E., Siddhartha Gautama, the historical Buddha, became adept at meditation techniques that were already in practice at the time. His students passed on his teachings for generations in a tradition that eventually became known as Buddhism. Through the centuries, Buddhism spread in Asia through two principal routes. The southern route took Buddhism to Sri Lanka and Southeast Asia including modern-day Thailand and Myanmar. A Northern route took Buddhism through Tibet and China, spreading as far east as Japan. The Buddhism spread on the southern route (also known as the "Hinayana" tradition) took on somewhat different emphases than that of the northern, or "Mahayana" tradition. It is the Hinayana tradition as practiced in Southeast Asia that is the origin of mindfulness meditation as used in recent health interventions in the West.

Although there had been some awareness of Buddhism in the West for centuries, the Western familiarity with and understanding of Buddhism began to increase in the early twentieth century. In the first half of the century, a small number of European scholars and ascetics including Eugen Herrigel, Heinrich Harrer, Lama Anagarika Govinda, Nyanaponika Thera, and Alexandra David-Neel traveled to Asian countries with Buddhist traditions and returned to Europe with chronicles of their experiences with Buddhist monastics and teachers. During the same period, American-born scholar Walter Evans-Wentz traveled to Ceylon and India and translated several important Tibetan Buddhist texts into English. Also during this time, Daisetz T. Suzuki, a Japanese scholar, traveled extensively in the West and played a major role in introducing Westerners to Zen Buddhism. Western intellectuals and writers such as Carl Jung and Alan Watts, both influenced by Suzuki, also contributed significantly to the spreading of Buddhist ideas in the West. In the mid-twentieth century, several Buddhist masters traveled from Asia to the West, further accelerating Western familiarity with Buddhism. This process was driven to an extent by the flight of many Buddhist lamas from Tibet following the 1959 Chinese invasion. Notable Buddhist teachers coming to the West during this period included Shunryu Suzuki Roshi, Chogyam Trungpa Rinpoche, and Philip Kapleau (an American who returned to the United States from Japan in the 1960s). Also aiding the spread of Buddhism to the West was the Beat tradition in literature, which held Buddhism in high regard. Specifically, many of the writings of Jack Kerouac and Allen Ginsberg reflected the authors'

familiarity with Buddhism. In the late 1960s and early 1970s, several Western students of Buddhism traveled to Asia to study under renowned Buddhist teachers there, such as Satya N. Goenka, Ajahn Chah Subhatto, and Tenzin Gyatso (the Dalai Lama). Many of these students returned and propagated Buddhist ideas, and some took on students of their own.

The use of mindfulness in Western health settings can be most directly attributed to the popularity of mindfulness-based stress reduction (MBSR), an 8-week intervention developed by Jon Kabat-Zinn and colleagues in their work at the University of Massachusetts Medical School. Kabat-Zinn had studied meditation in the Thai (Hinayana) tradition and drew heavily from meditative techniques in the development of MBSR. MBSR was originally developed to help patients with chronic pain. MBSR utilizes meditation techniques in a secular context and was developed for patients from any religious or spiritual background. MBSR, described subsequently in greater detail, uses three principal mindfulness meditation techniques: sitting meditation, mindful yoga, and the body scan. Each of these techniques involves the practice of sustained attention on the breath, the body, or sensory input. MBSR also contains psychoeducational material about stress, as well as behavioral exercises such as activity scheduling.

Is mindfulness religious? Implications of Buddhist origins

As mentioned previously, mindfulness originates in the Buddhist tradition. Meditation holds a place of central importance in Buddhism; it is considered an irreplaceable means with which to transcend the cycle of attachment and suffering known as *samsara*. Practitioners of Buddhist meditation use meditation not as a means of stress reduction, but to help attenuate our tendencies toward craving, aggression, and ignorance. Whether one considers Buddhism to be a religious tradition or a philosophical one is a matter of semantics. As most people identify Buddhism as a religion, patients with their own religious tradition may be averse to practicing mindfulness if they are aware of its Buddhist derivation. However, mindfulness as taught in MBSR and the other clinical interventions described previously contain no material that is essentially religious.

USE OF MINDFULNESS SKILLS IN HEALTHCARE INTERVENTIONS

Dialectical Behavior Therapy (DBT)

Several other psychosocial interventions make use of a mindfulness component. These interventions typically target various types of psychopathology, including emotional dysregulation, anxiety, and depression. The most widely used of these interventions is DBT (Linehan, 1993). DBT is a multimodal intervention used primarily in the treatment of borderline personality disorder and other disturbances of emotional regulation. Several clinical trials have supported the efficacy of DBT in the treatment of personality disorders (Rizvi & Linehan, 2001). DBT is based on a combination of cognitive-behavioral and mindfulness components, and uses a skills training approach to change problematic behavior patterns. The skills training in DBT covers four areas: interpersonal effectiveness, emotion regulation, distress tolerance, and mindfulness (Shaw Welch et al., 2006). Mindfulness in DBT is presented as an amalgam of several skills, each of which describes one aspect of mindfulness. This presentation aims to facilitate patients' application of mindfulness to emotion regulation.

Mindfulness-Based Cognitive Therapy (MBCT)

Another intervention that makes significant use of mindfulness is MBCT (Segal et al., 2002), a group intervention that combines MBSR with cognitive-behavioral therapy. Research suggests that MBCT has efficacy in preventing depressive relapse among those with major depressive disorder (Teasdale et al., 2000; Ma & Teasdale, 2004), and may be useful in the treatment of patients with active depression as well (Finucane & Mercer, 2006). MBCT uses mindfulness as a tool to reduce identification with depressive thoughts and depressive thought patterns, thus disrupting the relapse process. This is accomplished by the use of various exercises and discussions. Patients practice the skill of relating with thoughts and other mental events using a nonjudgmental and passive stance.

Acceptance and Commitment Therapy (ACT)

ACT (Hayes et al., 1999) is a form of psychotherapy that aims to reduce patients' tendencies to avoid aspects of their subjective experience. ACT teaches patients to replace avoidance-based strategies with an acceptance of present-moment experience. This acceptance can be used with feelings, thoughts, memories, and sensations. ACT fosters psychological flexibility by emphasizing six areas: acceptance, cognitive defusion, being present, self as context, values, and committed action (Hayes et al., 2006). The first three of these areas can be viewed as components of mindfulness as well. Similarly to DBT, ACT breaks down mindfulness into subcomponents that can be more readily learned and understood, and integrates it into a cognitive-behavioral therapy.

MBSR

MBSR is perhaps the most direct adaptation of mindfulness meditation into a healthcare intervention. It was originally administered over 10 weeks (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985), although this was later modified to 8 weeks. The weekly sessions are typically conducted in a group format. The length of the weekly sessions varies somewhat, with some studies reporting times as short as 90 minutes (e.g., Carlson et al., 2003) and some as long as 2.5 hours (e.g., Reibel et al., 2001). Also included is a day-long silent retreat that lasts typically 7.5 hours (Kabat-Zinn et al., 1992). Early studies on MBSR examined its effects on chronic pain (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985, 1987). Studies in the mid-1990s and later examined the effectiveness of MBSR for reducing anxiety and other psychological outcomes in various populations, including solid organ transplant patients (Gross et al., 2010), medical students (Rosenzweig et al., 2003), and psychotherapy outpatients (Weiss et al., 2005). Some studies focused on medical outcome variables in addition to mental health variables. For example, studies have investigated the effect of MBSR on symptoms of rheumatoid arthritis (Pradhan, 2007) and rates of resolution of psoriatic lesions (Kabat-Zinn et al., 1998).

USE OF MINDFULNESS-BASED INTERVENTIONS IN CANCER

Empirically, the MBSR program has demonstrated efficacy in promoting positive psychological and biological health outcomes in a range of populations and diseases. These have included, for example, improved mood in patients with chronic pain (Plews-Organ et al., 2005), improved resolution of psoriatic lesions in patients with psoriasis (Kabat-Zinn et al., 1998) and improved CD4+ T lymphocyte counts in HIV-infected adults (Creswell et al., 2009). Participation in the MBSR program has also been shown to impact participants' moods with studies demonstrating reduced stress and increased mindfulness in working adults (Klatt et al., 2009), and reduced exhaustion, improved quality of life, positive affect, and mindfulness in distressed individuals (Nyklicek & Kuijpers, 2008). Similar findings have been demonstrated in nursing home residents, who reported improved quality of life and reduced depression after the 8-week course (Ernst et al., 2008), while college students reported reduced stress and increased forgiveness (Oman et al., 2008). Further, researchers have reported reduced distress and improved well-being in individuals diagnosed with rheumatoid arthritis (Pradham et al., 2007) and reduced depression in those diagnosed with fibromyalgia (Sephton et al., 2007).

The role of MBSR in assisting patients diagnosed with cancer has also been explored. For example, Witek-Janusek et al. (2008) reported a range of positive health outcomes in early stage breast cancer patients who participated in the MBSR course. Participants assigned to the MBSR group were found to re-establish immunoregulatory levels more rapidly than those in the control group while also demonstrating reduced levels of cortisol and improved quality of life and coping efficacy.

Four reviews of MBSR address the use of this intervention in cancer populations. Ledesma and Kumana (2009) conducted a meta-analysis of 10 studies examining the MBSR program's effects on cancer-related distress. The authors reported a Cohen's d of .48 across factors associated with psychological well-being and a d of 0.18 for physical health factors. Based on this evidence, it was concluded that although further research was needed, the MBSR program appeared to consistently improve patients' psychosocial adjustment to cancer. Smith et al. (2005) and Ott et al. (2006) conducted systematic reviews of the literature to assess the empirical support for mindfulness meditation as part of supportive care in cancer. These reviews, which assessed both randomized controlled and uncontrolled trials of the MBSR program, identified consistent positive effect on mood, coping, sleep quality, and reductions in stress; however, both reviews noted the need for more methodologically rigorous research in this empirical domain. In this light, Matchim and Armer (2007) conducted a review of outcome measures used in assessing MBSR programs. They reported that a range of outcomes have been assessed in studies of MBSR, including, for example, mood, stress, anxiety, adjustment, quality of life and locus of control. These studies reported predominantly positive results, therefore suggesting that participation in the MBSR program can be associated with positive outcomes across a range of psychological domains. Whereas research is needed to explore the effect of mindfulness-based interventions in various cancer diagnoses and clinical settings, these interventions appear to possess a high degree of clinical relevance in assisting cancer patients to manage this disease. Although additional methodologically rigorous studies in this area are needed, including studies that assess factors as quality of life, health care utilization and physiological variables, the evidence we have does support the efficacy of MBSR for stress, coping, and psychological functioning in cancer (Ott et al., 2006). The abovementioned reviews also note the methodological limitations of studies of MBSR in cancer, and the need for consistency in the content and format of MBSR, as well as in instruments used to measure outcome.

Effectiveness of Mindfulness on Medical Symptoms for Cancer Patients

Fatigue is the most frequently reported physical symptom in cancer patients (Kangas et al., 2008; Carlson et al., 2004). Some studies of mindfulness-based interventions have reported effects on fatigue. Speca et al. (2000), in a study of MBSR of cancer outpatients found improvement in a measure of vigor, but no improvement in fatigue. Lengacher et al. (2009) found that MBSR improved energy levels in breast cancer survivors. Carlson and Garland (2005), using an uncontrolled pre-post design, found improvements in fatigue, sleep, and sleep quality in a sample of cancer outpatients. Using a similar design, Carlson et al. (2007) found significant reduction in cortisol and a reduction in pro-inflammatory cytokines. Witek-Janusek et al. (2008) used a controlled but non-randomized design and found improved peripheral blood mononuclear cell natural killer (NK) cell activity and cytokine regulation in breast cancer patients receiving MBSR compared with controls.

Pain is another commonly reported complaint in oncology patients (Fitzgibbon, 2001; Breitbart et al., 2010). There is a significant body of research establishing the efficacy of MBSR for chronic pain in non-cancer populations. However, very little work has been done investigating the efficacy of mindfulness-based interventions for cancer pain. One of the reasons for this is that cancer pain often presents in an inpatient setting where weeks-long mindfulness interventions may not be feasible. However, for those patients with chronic cancer pain, it is entirely plausible that mindfulness-based interventions might be helpful.

Effectiveness of Mindfulness on Cancer–Related Distress

Mindfulness may be most useful as a coping strategy for various anxiety-related symptoms in cancer patients and survivors. Medical treatment for cancer can produce distressing side effects such as hair loss and fatigue. These physical symptoms can, in turn, lead to anxiogenic thoughts such as, "This nausea will never stop" or "I look really terrible without my hair." Fears of negative treatment outcomes can present as significant psychological symptomatology during treatment. Similarly, fears of recurrence have been associated with significant anxiety for survivors (Humphris et al., 2003; Skaali et al., 2009; Simard et al., 2010).

There is some preliminary evidence that mindfulness-based interventions can be efficacious for worry, a symptom that affects cancer survivors at various stages of their treatment and recovery (Stefanek et al., 1989; Lehto & Cimprich, 2009). One common form of worry experienced by cancer survivors after treatment is fear of recurrence (FOR) (Hodges & Humphris, 2008). FOR is among the most common types of worry reported after the conclusion of treatment (Northouse, 1989). Mindfulness-based treatments for distress may be particularly well-suited to address FOR because of their emphasis on changing one's relationship with thoughts about the future. Mindfulness skills help patients learn to tolerate negative thoughts about the future without giving into either rumination or repression. Mindfulness-based interventions often present this as an innate skill that we all have, but often do not cultivate.

A number of groups have begun to explore the applicability of mindfulness-based support interventions to the challenges and stressors faced by cancer survivors who have completed treatment for their cancer. Carlson and Garland (2005) explored the effect of the MBSR program in a heterogeneous group of cancer survivors, reporting that participation was associated with significant reductions in stress, mood disturbance, sleep disturbance, and fatigue. Carlson et al. (2003, 2004) investigated the effectiveness of the MBSR program in reducing psychosocial distress and enhancing immunoregulation in a group of breast and prostate cancer survivors. The sample had a median time of 6 months since treatment with a range of from 3 months to 20 years. It was reported that completion of the MBSR program was associated with a significant reduction in stress, enhanced quality of life, and significant changes in cancer-related immunoregulation.

Similar findings were established by Tacon et al. (2004), who investigated the effectiveness of the MBSR course in assisting a group of women diagnosed with breast cancer, the majority of whom had completed active treatment. Once again, significant reductions in stress and anxiety were reported by participants, along with greater adjustment to cancer. Finally, Brown and Ryan (2003) evaluated the MBSR program in a group of 58 breast or prostate cancer patients who were on average 2 years post-treatment. Whereas the authors reported a similarly positive impact of the MBSR program, observing reductions in mood disturbance and stress, they also indicated that these positive changes were highly correlated with an increase in mindfulness skills, as measured by the Mindful Attention and Awareness Scale.

Depression and anxiety are the two most frequently diagnosed forms of psychological co-morbidity associated with cancer in an adult population (Newport & Nemeroff, 1998; Stark & House, 2000; Massie, 2004). Whereas cognitive-behavioral therapy remains the

empirically supported psychosocial treatment of choice for symptoms of psychosocial distress (Barlow, 2008), mindfulness-based treatments may possesses characteristics uniquely appropriate for treatment of cancer-related distress. Mindfulness-based treatments utilize broadly applicable stress reduction techniques and coping mechanisms that can be employed by individuals in a range of stress-invoking circumstances, and aid in managing distressing thoughts and feelings that can accompany the cancer experience. These treatments aim to promote a more accepting approach to physical pain and psychological distress, potentially reducing the level of physiological arousal associated with symptoms. Similarly, these interventions typically promote an accepting psychological stance toward cognitions that tend to increase perceived stress or rumination. Preliminary studies suggest that mindfulness reduces rumination through changing one's response to ruminative thoughts (Deyo et al., 2009) in structured mindfulness interventions such as MBSR (Kabat-Zinn, 1990; 1993) and MBCT (Teasdale et al, 2000).

Use of Mindfulness for Self-Care

The treatment of cancer can be challenging for both the patient and health professionals, particularly at the end of life. Whereas the current article has focused on the role of mindfulness approaches in patient care, the potential role that these approaches can play in the self-care of health professionals is also important (Irving et al., 2009). Mindfulness-based interventions have been explored in improving the health and well-being of a range of health professionals, including medical students (Hassed et al., 2009), hospice volunteers (Scherwitz et al., 2006) and nurses (Cohen-Katz et al., 2004, 2005). In these studies, care providers would typically be asked to undertake the daily practice of mindfulness meditation for a 6–8 week period. These interventions sought to promote effective management of burnout and stress, enhance compassion and presence with patients, and increase the frequency and regularity of self-care practices (meditation, exercise, proper diet). In these studies, care providers were asked to undertake practice of mindfulness skills, ranging from practice as part of a broader well-being intervention (Schwerwitz et al., 2006; Hassed et al., 2009) to daily practice for 6–8 weeks (Cohen-Katz et al., 2005). Participating staff and volunteers reported improved relaxation, interpersonal relationships, and self-care practices (Cohen-Katz et al., 2005), improved mood and quality of life, lower hostility (Hassed et al., 2009), and increased compassion and reduced fear of death (Scherwitz et al., 2006).

CONCLUSIONS

At present, there is more reason to recommend mindfulness-based interventions for the psychological effects of cancer than for the physical ones. These interventions can be considered complementary treatments that can often be easily integrated with cognitive-behavioral and other treatment approaches. Mindfulness has led an interesting journey from Asian Buddhist traditions to acceptance in the West and then as a healthcare tool. It is unique in the armamentarium of healthcare tools in that it involves a self-directed health intervention – meditation – that is not physically demanding like exercise, and does not have the negative side effect profile sometimes found in pharmaceutical interventions.

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