

Brief Report

Can mindfulness-based interventions help adolescents with cancer?

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Abstract

During the past 30 years, there has been an increase in the incidence of cancer in adolescents. While recent studies have illustrated remarkable resilience in youth living with cancer, they can also face daunting acute and chronic adjustment struggles, cognitive and school problems, family and peer relational difficulties, depression, post-traumatic stress symptoms, and other anxiety disorders. Mindfulness-based interventions (MBIs), increasingly shown to be effective in a variety of medical and mental health settings, may be particularly beneficial for adolescents with cancer. This paper reviews evidence from clinical trials of MBIs showing a variety of benefits for adult cancer patients, adolescents with anxiety disorders and chronic pain, and clinically healthy teenagers, which collectively point to likely benefits of MBIs for teen cancer patients. The authors also explore ways that the particular psychological problems often faced by teen cancer patients, including anxiety about the future, may be especially well suited to mindfulness approaches such as learning to observe physical sensations, thoughts, and emotions, as well as cultivating compassion towards themselves and others. The paper concludes with an exploration of unanswered and potential research questions regarding the future use of MBIs with adolescents with cancer, and potentially with teenagers with other chronic diseases.

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During the past 30 years, there has been an increase in the incidence of cancer in adolescents [1]. While recent studies have illustrated remarkable resilience in youth living with cancer [2], they can also face daunting psychosocial challenges including acute and chronic adjustment struggles, anxiety (including fear of recurrence), depression, post-traumatic stress, cognitive and school difficulties, and social problems [3].

Contemplative or mindfulness-based practices have been introduced in secular clinical settings as a means of fostering skills to cultivate emotional and physical well-being. Mindfulness-based interventions (MBIs) are becoming increasingly popular in both medical and mental health settings, and the literature supporting their efficacy is growing [4]. Beneficial outcomes in clinical trials with adult cancer patients [5], adolescents with anxiety disorders and chronic pain [6,7], and clinically healthy teenagers [8] all suggest that MBIs could benefit adolescents with cancer. Given the absence of published research specific to adolescents with cancer, Georgetown University hosted a 1-day 'think tank', bringing together distinguished experts in mindfulness and in adult and pediatric psycho-oncology to review the current literature and to explore potential benefits and opportunities of utilizing MBIs with this population. Recognizing the importance of consumer representation, the panel included a young adult living with cancer. Building on that meeting, this paper examines the potential benefits of mindfulness training (MT) for adolescents throughout the treatment trajectory and beyond. We then reflect on potential challenges and unanswered research questions pertinent to MT in this population.

Cancer during adolescence

Adolescence is a crucial time of identity formation and emerging independence, two developmental processes that can be disrupted significantly by cancer. Treatment, lasting from months to several years and potentially including chemotherapy, radiation, surgery, repeated medical visits and prolonged home and/or hospital schooling, forces teenagers to depend more on parents or other caretakers than is developmentally normative. Loss of independence, isolation from peers, changes in family and peer interactions, and the stark unpredictability of the illness can all have lasting emotional effects on the patient and other family members [3]. Preoccupation with how the disease will affect appearance, relationships, school participation, sexuality, and their future overall can profoundly affect self-image, identity, and mood [3]. Some teenagers reassert their independence by skipping medications or ignoring activity restrictions. This can lead to medical complications and an escalating cycle of avoidant coping, worsening health, and worsening emotional distress [9].

The challenges are not limited to those in active treatment. Up to two-thirds of pediatric cancer survivors experience at least one 'late effect' two or more years after treatment. These include disruptions in school/work and relationships, neurocognitive deficits (in memory, attention, cognitive processing speed, and executive functioning), post-traumatic stress symptoms, depression, and other psychiatric conditions [10]. Even years after treatment, worries about recurrence or secondary cancers can become chronic and at times disabling.

Mindfulness training

Mindfulness has been defined as the awareness that emerges through paying attention, purposefully and non-judgmentally, to the unfolding of experience moment to moment, including one's thoughts, feelings, and bodily sensations. [11,12] Taught traditionally in the context of Buddhist meditation, mindfulness has been increasingly embraced in the West in secular contexts, including medicine, psychology, law, business, and education [4]. Mindfulness is a dimension of awareness that can be developed through instruction and practice. Cultivating mindfulness involves learning to observe and accept one's thoughts, emotions, and physical sensations, as well as external events, as constantly changing phenomena, as opposed to identifying with or reacting reflexively to them. In the process, people who develop mindfulness skills may ultimately gain greater freedom to choose how they respond to whatever is happening in each moment. In addition to these cognitive dimensions, mindfulness entails some element of intention, broadly related to kindness, compassion, and relieving or reducing suffering. While the usefulness of mindfulness-based therapy for reducing depression and anxiety symptoms in mothers of children with cancer has been reported [13], the unique mix of emotional, social, and psychological stressors facing teens with cancer may be particularly amenable to MT as well.

Clinical and research interest in mindfulness in the US and other Western settings has grown tremendously, in large part because of mindfulness-based stress reduction (MBSR), an evidence-based 8-week intervention developed in the 1970s by Jon Kabat-Zinn and colleagues [11]. MBSR aims to reduce stress and improve coping skills through training in formal practices such as sitting meditation, body scanning, mindful walking, and gentle movement. In each of these, the student pays attention to one's breath, thoughts, or physical sensations, gently and non-judgmentally bringing attention back whenever it has wandered onto something else. Another component of MBSR is 'loving kindness meditation', in which the student silently repeats phrases designed to cultivate feelings of compassion and care towards himself or herself and others. Mindfulness-based cognitive therapy for depression (MBCT), which grew out of both MBSR and cognitive behavior therapy (CBT), is an evidence-based intervention of growing clinical and research importance, aimed at preventing relapse of clinical depression [14]. MBCT is brief, structured, and adaptable to include cognitive approaches to managing physical symptoms contributing to depressed mood, suggesting that it may have particular utility in addressing depression in medically ill populations.

MBIs for adult cancer patients

In a systematic review of recent studies using MBSR, MBCT, and three other MBIs with adult cancer patients, Shennan *et al.* (2011) [5] concluded that MT holds significant promise in the overall care of adults with cancer. Collectively, the studies documented significant reductions in anxiety, depression, stress, and sexual difficulties, as well as improvements in self-perceived well-being and physiological markers of stress and immune function.

These more recent data reinforce an earlier body of evidence that MBIs (in both group and individualized formats) can reduce symptoms such as stress, anxiety, anger, and depressed mood, while improving sleep and overall quality of life, both for patients in active cancer treatment and those in post-treatment [15]. Two limitations of research to date include the lack of meaningful comparisons between different MBIs, and the absence of long-term follow-up to evaluate the sustained impact of these interventions.

Mindfulness-based interventions with adolescents

In a recent review of MT programs for high school students, Meiklejohn and colleagues found that mindfulness-based initiatives demonstrated improvements in working memory, attention, academic skills, social skills, emotional regulation, self-esteem, and mood, as well as decreases in anxiety, stress, and fatigue [8]. Similarly, in a school-based mindfulness curriculum with 120 healthy female adolescents, Broderick and Metz (2009) found statistically relevant reductions in negative affect, fatigue, and somatic complaints. Trends for improvements were also seen in emotion regulation, feelings of calmness, relaxation, and self-acceptance [16]. In a qualitative study with participants ages 13 to 19 years that utilized in-depth interviews to explore the context, perceptions, and experiences of urban youth who engaged in an adaptation of MBSR, all participants reported some positive benefits and enhanced self-awareness ranging from a reframing and reduction of daily stressors to transformational shifts in life orientation and well-being [17].

Although no published trials of MBIs for teens with cancer were identified in our literature search, several studies examined the physical and emotional impact of MT on adolescents with other chronic conditions. Biegel *et al.* (2009) conducted a randomized controlled trial of MBSR for teenagers (MBSR-T, comprising 8 two-hour classes) with 102 adolescents ages 14–18 years old with various psychiatric diagnoses. Findings included significant reductions in anxiety, depression, somatization, perceived stress, obsessive symptoms, a number of Axis-I diagnoses, and interpersonal conflict. Global Assessment of Functioning scores, ratings of self-esteem and sleep quality, and subsequent mindfulness measures were all improved [18]. In their 2011 study of inner city youth, 40% of whom were HIV positive, Kerrigan *et al.* [17] found that completing MBSR may contribute to reduced peer conflict, improved behavior and attitudes, enhanced social relationships, and increased feelings of connectedness to others. Such outcomes could play an important role in ameliorating the feelings of being different and disconnected from peers that so often cause suffering in teens living with cancer.

Mindfulness training for teens with cancer

Many of the benefits reported to date from MT could potentially be especially beneficial to adolescent cancer patients, both during active treatment and during survivorship. During treatment, anxiety about events that have not yet happened is common, ranging from daily concerns including 'Will I be able to get through today's

Can mindfulness-based interventions help adolescents with cancer?

Table 1. Areas of future research investigation

Can mindfulness training be optimally delivered to teens with cancer?
Would teens with cancer be more receptive to a regularly scheduled group such as MBSR-T, or an individualized, web or phone-app based approach?
Can mindfulness training for this population have a lasting impact without sustained post-intervention reinforcement? If not, how can that be accomplished?
How important is outside (home) practice in deriving benefits for teens with cancer?
What are the pros and cons of providing concurrent mindfulness training to parents and siblings of participating teenagers?
What is the role of training clinic staff in the MBI to be used prior to beginning an intervention?
Could an MBI be useful and helpful for adolescents nearing end-of-life care?
What specific outcomes and measures are most appropriate with this population?
What are the pros and cons of providing MBIs to adolescents with cancer versus targeting a group that includes teens with other chronic diseases?

MBI, mindfulness-based intervention; MBSR-T, mindfulness-based stress reduction for teenagers

procedure?’ or ‘Will I feel well enough to visit with my friend tonight?’ to the more momentous, ‘Will I graduate with my class?’ and profound, ‘When or how will I die?’ By developing skills at simply observing thoughts and emotions (e.g. changes in appearance or having to miss out on activities with peers) and returning repeatedly and non-judgmentally to the present moment, adolescents with cancer might become less consumed by thoughts and feelings rooted in the un-fixable past or fearfully imagined future. This shift in perspective may also increase their ability to tolerate uncomfortable emotions or sensations and therefore decrease mood, anxiety, and pain symptoms, and improve sleep and other factors impacting health related quality of life.

Next steps and brief summary

This review suggests that there is a role for mindfulness-based interventions in the care of adolescents with cancer. Research with MBIs should incorporate validated outcome measures that assess stress, post-traumatic symptoms, anxiety, depression, sleep, connectedness to others, cognitive functioning (e.g. working memory and executive functioning) and cohesiveness, overall well-being, and global functioning. Qualitative methods may also be helpful in shedding light on the process by which

mindfulness works in youth living with cancer. Specific research questions that warrant exploration and investigation can be found in Table 1.

Finally, the question of when MBSR or other MBIs may be contraindicated is only beginning to receive attention [19], including whether the amount and regularity of mindfulness skills at home correlate with benefits. What is the minimum effective dose of MBI for adolescents with cancer? Can adolescent cancer patients with cognitive or neuro-psychiatric problems secondary to brain surgery, radiation, or chemotherapy participate adequately? Will those who are experiencing fatigue be motivated to initiate or practice MBIs? Are there developmental issues that will play a role in the success of MBIs? Will adolescents choose to participate in a group-based treatment such as MBSR with other oncology patients, or will they prefer to spend as little time as possible in ‘cancer-related’ activities that they may not consider central to their medical care? Additionally, the time commitment required of patients participating in MT is worth noting. Whether MBSR can be tailored to adapt to the current needs of a potential group, whether adolescents facing the challenges of cancer will choose to participate in MBSR, and whether MBSR can help adolescents learn to cope or better accept the physical and emotional symptoms experienced as a result of cancer or its treatment has yet to be determined.

In summary, recent research in the area of MT with adult cancer patients and adolescents suggests that adolescents with cancer, and by extension, adolescents with other chronic and life-threatening illnesses might benefit from MBIs. Yet, the need exists for evidence that MBIs are efficacious, effective, disseminable, cost-effective, and plausible in resource limited settings. These data can only be obtained through carefully designed controlled trials. With the rapid growth in mind-body interventions, this is an exciting area that warrants further attention and research.

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